

Review Article

Plantago ovata as a low-cost community-based dietary fibre intervention: a narrative review of evidence and public health applications

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ABSTRACT

Dietary fibre is an important but often underemphasized component of preventive nutrition and community health practice. *Plantago ovata* Forssk., commonly known as psyllium or Isabgol, is a soluble, gel-forming fibre widely used in South Asia and traditionally described in Unani dietotherapy as a demulcent and bulk-forming agent for digestive balance. A narrative review was conducted to synthesize traditional Unani descriptions and contemporary biomedical evidence on *Plantago ovata*, with emphasis on gastrointestinal and metabolic outcomes and public health applications. Literature was searched in PubMed, PubMed Central, Google Scholar, Scopus and Web of Science, with a supplementary search updated in May 2026. Evidence from randomized controlled trials and meta-analyses supports psyllium for improving stool frequency and consistency among adults with constipation, with additional modest benefits on low-density lipoprotein cholesterol and selected glycaemic indices. Its physiological effects are related to water-holding capacity, stool bulking, delayed glucose absorption, bile acid binding and possible modulation of gut microbiota. Psyllium has practical relevance as a low-cost, culturally familiar and generally safe adjunct that can be incorporated into dietary counselling at primary care and community levels. Public health messages should emphasize food-based fibre intake, adequate fluid intake, gradual introduction, medication spacing and recognition of warning symptoms.

Keywords: *Plantago ovata*, Psyllium, Isabgol, Dietary fibre, Community health, Public health nutrition

INTRODUCTION

Dietary fibre is an important component of preventive nutrition and community health practice. In routine primary care and community-level counselling, much attention is given to reducing sugar, salt and fat intake, whereas adequate fibre intake is less consistently promoted. The dietary guidelines for Indians emphasize healthy dietary patterns based on vegetables, fruits, pulses, whole grains, nuts and seeds, all of which contribute dietary fibre and other protective nutrients.¹ Low dietary fibre intake is relevant because it contributes

to poor bowel function and constipation and is also associated with adverse cardiometabolic outcomes. In this context, simple, affordable and culturally acceptable dietary fibre interventions may have practical value in preventive and promotive health care.

Plantago ovata Forssk., commonly known as psyllium or Isabgol, is a soluble, gel-forming dietary fibre widely used in South Asia. The husk has high water-holding capacity and forms a viscous gel when mixed with water. This gel-forming property explains several physiological effects, including increase in stool bulk, improvement in stool consistency, delayed gastric emptying, reduced

intestinal absorption of cholesterol and glucose, and possible modulation of the gut microbiota.^{2,3} Psyllium has therefore been studied in relation to constipation, lipid profile, glycaemic control and gut health.

Relevance of *Plantago ovata* is not limited to modern nutraceutical research. Isabgol has a long history of use in traditional systems of medicine, including Unani medicine. In Unani dietotherapy/Ilaj-bil-Ghiza, Isabgol is traditionally described as demulcent and bulk-forming dietary agent used for digestive balance and habitual constipation.⁷ This cultural familiarity is important from a public health perspective, particularly in Indian and South Asian communities where Isabgol is inexpensive, commonly available and widely recognised by general population.

Modern biomedical evidence supports several potential health benefits of psyllium. A systematic review and meta-analysis on constipation reported improvement in stool-related outcomes with fibre supplementation, with psyllium among the better-supported fibres.³ Another meta-analysis of randomized controlled trials found that psyllium reduced low-density lipoprotein cholesterol and other lipid markers, suggesting relevance for cardiovascular risk reduction.⁴ Evidence also indicates that psyllium may improve fasting blood glucose, HbA1c and insulin resistance markers, although heterogeneity exists across studies and populations.⁵ In addition, gut microbiota research suggests that psyllium supplementation may increase stool water and influence microbial composition, with effects more marked among constipated individuals.⁶

From a community medicine perspective, psyllium is important not merely as a supplement, but as a potentially scalable dietary counselling tool. It is low-cost, culturally familiar, generally safe and easy to communicate during primary care and community-based health education. Health and Wellness Centres, outpatient clinics, school health platforms, Anganwadi centres and frontline health workers may provide opportunities to promote adequate dietary fibre intake and appropriate use of psyllium where indicated. However, public health counselling should remain balanced and evidence-based, emphasizing adequate fluid intake, gradual introduction, appropriate dose and avoidance of exaggerated therapeutic claims. The present narrative review was undertaken to synthesize traditional Unani descriptions and contemporary scientific evidence on *Plantago ovata*, with emphasis on constipation, lipid profile, glycaemic control, gut microbiota and public health applications. The review also explores its potential role as a culturally acceptable and low-cost dietary fibre intervention in community-based preventive nutrition and primary care practice.

LITERATURE SEARCH

This narrative review was conducted to synthesize traditional Unani descriptions and contemporary scientific

evidence on *Plantago ovata* Forssk., commonly known as psyllium or Isabgol, with particular emphasis on its relevance as a low-cost dietary fibre intervention in community health practice. The review focused on three broad areas: traditional use of Isabgol in Unani dietotherapy, modern evidence on gastrointestinal and metabolic outcomes, and possible public health applications in primary care and community-based nutrition counselling.

A literature search was carried out using PubMed, PubMed Central, Google Scholar, Scopus and Web of Science. In addition, relevant Unani literature and AYUSH-related publications were reviewed to identify traditional descriptions of Isabgol, particularly its use in *Ilaj-bil-Ghiza* and as a demulcent, bulk-forming and digestive-regulating agent. A supplementary search was updated in May 2026. Recent biomedical literature was prioritized, while older classical and traditional medicine sources were included where necessary for historical and conceptual context.

The search terms included "*Plantago ovata*", "psyllium", "Isabgol", "dietary fibre", "soluble fibre", "constipation", "stool frequency", "lipid profile", "LDL cholesterol", "glycaemic control", "fasting blood glucose", "HbA1c", "gut microbiota", "prebiotic", "Unani medicine", "Ilaj-bil-Ghiza" and "community health". Boolean operators were used to combine search terms, including: ("psyllium" OR "*Plantago ovata*" OR "Isabgol") AND ("constipation" OR "gastrointestinal function"); ("psyllium" OR "soluble fibre") AND ("LDL cholesterol" OR "lipid profile"); ("psyllium" OR "*Plantago ovata*") AND ("fasting blood glucose" OR "HbA1c" OR "glycaemic control"); and ("Isabgol" OR "*Plantago ovata*") AND ("Unani medicine" OR "Ilaj-bil-Ghiza").

The review included randomized controlled trials, systematic reviews, meta-analyses, narrative reviews and other studies evaluating psyllium in relation to constipation, stool characteristics, lipid profile, glycaemic indices and gut microbiota. Articles discussing traditional Unani concepts, pharmacological actions and therapeutic uses of Isabgol were also included. Studies were excluded if they were animal studies, evaluated polyherbal formulations without a separate assessment of psyllium, focused on non-fibre interventions, had very short duration, or did not report relevant clinical or public health outcomes.

Relevant information was extracted regarding study design, population, dose and duration of psyllium use, major outcomes, safety considerations and possible community-level implications. For modern biomedical evidence, findings were summarized mainly from high-quality systematic reviews and meta-analyses, along with selected randomized controlled trials. No new statistical pooling or meta-analysis was performed. The findings were synthesized narratively under thematic headings: traditional and Unani perspective, constipation and

gastrointestinal outcomes, lipid profile, glycaemic control, gut microbiota and mechanisms, safety, and public health applications.

REVIEW FINDINGS

Traditional and Unani perspective of Isabgol

Plantago ovata Forssk., commonly known as Isabgol or psyllium, has been described in traditional medicine literature as a mucilaginous plant drug used mainly for gastrointestinal complaints. In Unani literature, it is also referred to as Bazr-e-qatuna or Asapghol. The seed and husk are the commonly used parts, and the husk is traditionally known as Saboos-e-Asapghol. When soaked in water, the seeds or husk swell and develop a mucilaginous coating, which forms the basis of its traditional use as a soothing and bulk-forming agent.⁷

In Unani medicine, diet and drug therapy are not considered completely separate domains, particularly for substances that are used as both food-like agents and medicinal preparations. Isabgol fits this interface because it is commonly used in household practice as well as in traditional therapeutic contexts. Within the framework of *Ilaj-bil-Ghiza*, it may be understood as a dietary or food-based supportive intervention for restoring digestive balance. Traditional descriptions emphasize its demulcent, lubricant and laxative properties, which correspond clinically to its use in habitual constipation and bowel regulation.⁷

The traditional indication of Qabz, or constipation, is especially relevant to the present review because it corresponds closely with the modern understanding of psyllium as a bulk-forming fibre. The water-absorbing and gel-forming behaviour described traditionally is also consistent with pharmacopoeial descriptions of *Semen Plantaginis*, where swelling of the mucilaginous seed coat increases stool bulk and lubrication, thereby supporting defecation.²

The public health relevance of this traditional background lies in acceptability. In many Indian households, Isabgol is already familiar as a simple remedy for constipation and digestive discomfort. This familiarity may help overcome resistance to dietary counselling, especially when compared with unfamiliar supplements or medicines. From a Community Medicine perspective, such cultural acceptability is important because interventions are more likely to be adopted when they are affordable, locally available and already understood by the community.

However, the traditional role of Isabgol should be interpreted carefully. Classical descriptions provide historical and cultural context, but public health recommendations must be guided by contemporary evidence on efficacy, dose, safety and target populations. Therefore, in this review, the Unani perspective is used

not as a substitute for modern evidence, but as a culturally relevant foundation that supports the feasibility of psyllium-based dietary counselling in community health practice.

MODERN EVIDENCE ON PSYLLIUM FIBRE

Constipation and stool outcomes

The best-established clinical use of psyllium is in the management of constipation. Psyllium acts mainly as a bulk-forming fibre. Its husk absorbs water, forms a viscous gel and increases stool water content, thereby improving stool softness and facilitating bowel movement.^{2,12} This mechanism is consistent with both its traditional use and contemporary understanding of soluble fibre physiology.

A recent systematic review and meta-analysis of randomized controlled trials evaluated fibre supplementation in adults with chronic constipation. The review included 16 RCTs with 1,251 participants and found that fibre supplementation improved response to treatment, stool frequency and stool consistency compared with control. The authors also observed that psyllium and pectin had significant effects, and that better outcomes were seen with fibre doses above 10 g/day and treatment duration of at least four weeks.³

These findings are important for community health practice because constipation is a common complaint in primary care and is frequently managed with over-the-counter remedies, laxatives or home remedies. Psyllium provides a non-pharmacological option that can be explained through simple counselling. However, fibre supplementation may increase flatulence or bloating initially, highlighting the need for gradual introduction and adequate fluid intake.^{3,13}

Lipid profile and cardiovascular risk markers

Psyllium has also been studied for its effect on lipid profile, particularly low-density lipoprotein cholesterol. The cholesterol-lowering effect is believed to be related to the viscosity of soluble fibre, binding of bile acids in the intestine and increased fecal bile acid excretion, which may promote hepatic conversion of cholesterol into bile acids. This mechanism makes psyllium relevant as a dietary adjunct in cardiovascular risk reduction, especially when combined with a diet low in saturated fat and cholesterol.

A systematic review and meta-analysis by Jovanovski et al. included 28 randomized controlled trials with 1,924 participants. Psyllium supplementation at a median dose of approximately 10.2 g/day significantly reduced LDL cholesterol by -0.33 mmol/L, non-HDL cholesterol by -0.39 mmol/L and apolipoprotein B by -0.05 g/L. The evidence quality was graded as moderate for LDL and non-HDL cholesterol and high for apolipoprotein B.⁴ In

clinical terms, the LDL reduction of -0.33 mmol/L corresponds approximately to a reduction of 12-13 mg/dL, which is modest but meaningful as part of a broader lifestyle and dietary risk-reduction strategy.

Regulatory recognition also supports this lipid-related role. The United States Code of Federal Regulations permits a health claim that diets low in saturated fat and cholesterol and including soluble fibre from certain foods may reduce the risk of heart disease; for psyllium seed husk, the specified daily intake associated with this claim is 7 g or more of soluble fibre from psyllium seed husk.⁸ This does not mean psyllium should replace lipid-lowering drugs where indicated, but it supports its role as an evidence-based dietary adjunct.

Glycaemic control

Psyllium may influence glycaemic indices through delayed gastric emptying, increased intestinal viscosity and slower carbohydrate absorption. This is relevant in public health because diabetes and prediabetes are major concerns in primary care, and dietary counselling remains a foundation of prevention and control.

A GRADE-assessed systematic review and meta-analysis by Gholami et al included 19 randomized controlled trials with 962 participants and assessed the effect of psyllium on fasting blood sugar, HbA1c, HOMA-IR and insulin. Psyllium significantly reduced fasting blood sugar by -6.89 mg/dL, HbA1c by -0.75% and HOMA-IR by -1.17 compared with placebo, while the effect on insulin was not statistically significant. The authors noted that effects were not significant for intervention durations shorter than 50 days, and that HbA1c changes were not significant when psyllium intake was below 10 g/day.⁵

These findings suggest that psyllium may have a supportive role in individuals with metabolic risk, particularly when used in adequate dose and duration.

However, the evidence should be interpreted cautiously because trials differed in baseline glycaemic status, dose, duration, background diet and other interventions. Therefore, psyllium should be presented as an adjunct to standard dietary advice and medical care, not as an independent treatment for diabetes.

Gut microbiota and possible mechanisms

The gut microbiota may provide an additional mechanistic link between psyllium intake and bowel function. Although psyllium is less fermentable than some other soluble fibres, it can alter stool water content and may influence microbial composition. In a human study comparing constipated patients and healthy controls, psyllium supplementation increased stool water and was associated with changes in intestinal microbiota, with effects more marked among constipated participants.⁶

Jalanka et al reported that psyllium supplementation was associated with microbiota changes related to stool water, gastrointestinal transit and short-chain fatty acid-associated taxa.⁶ These findings support the possibility that psyllium may not act only through mechanical bulking, but also through interaction with the intestinal microbial environment. Nevertheless, microbiota evidence remains mechanistic and should be considered supportive rather than definitive for clinical or public health recommendations.

Overall, modern evidence suggests that psyllium has the strongest support for constipation and stool outcomes, moderate support for lipid improvement, and emerging but heterogeneous evidence for glycaemic control and gut microbiota modulation (Table 1). For community medicine practice, this pattern of evidence supports positioning psyllium as a low-cost, culturally acceptable dietary fibre adjunct within broader nutrition counselling, rather than as a stand-alone therapeutic intervention.

Table 1: Summary of evidence on psyllium/*Plantago ovata*.

Outcome/domain	Main evidence	Dose/duration indicated in evidence	Key findings	Community medicine implication
Constipation and stool outcomes	Systematic review and meta-analysis of RCTs	Better outcomes reported with psyllium, doses >10 g/day and duration ≥4 weeks	Improved response to treatment, stool frequency and stool consistency	Useful as a non-pharmacological adjunct in constipation counselling
Lipid profile	Systematic review and meta-analysis of 28 RCTs	Median dose approximately 10.2 g/day	LDL cholesterol reduced by about -0.33 mmol/L; non-HDL cholesterol and apoB also reduced	Can be discussed as an adjunct to lifestyle modification in cardiometabolic risk
Glycaemic control	GRADE-assessed systematic review and meta-analysis of 19 RCTs	Benefits more evident with adequate dose and longer duration	Fasting blood sugar, HbA1c and HOMA-IR reduced; insulin effect not significant	Supportive adjunct in metabolic-risk counselling, not a substitute for diabetes care

Continued.

Outcome/domain	Main evidence	Dose/duration indicated in evidence	Key findings	Community medicine implication
Gut microbiota and mechanism	Human mechanistic study	Short-term supplementation	Increased stool water and microbiota changes, more marked among constipated participants	Provides mechanistic support, but not enough alone for public health recommendation
Traditional acceptability	Unani literature and traditional medicine review	Not dose-standardized in traditional literature	Described as demulcent, lubricant and laxative; culturally familiar as Isabgol	May improve acceptability of fibre counselling in Indian/South Asian communities

*RCT, randomized controlled trial; LDL, low-density lipoprotein; HOMA-IR, Homeostatic Model Assessment for Insulin Resistance.

Public health and community medicine applications

Relevance of *Plantago ovata* in community medicine lies in its potential use as simple dietary counselling tool rather than as stand-alone therapeutic agent. Public health nutrition increasingly emphasizes food-based prevention of disease, and dietary fibre is an important component of such counselling. Psyllium should therefore be positioned within broader fibre-rich dietary pattern, not as replacement for fruits, vegetables, pulses and whole grains.¹

In primary care and community settings, psyllium may have practical relevance for three overlapping groups. First, it may be useful for adults with habitual constipation where dietary fibre intake is low and no alarm symptoms are present. Second, it may be considered as an adjunct to lifestyle modification among persons with dyslipidaemia or cardiometabolic risk. Third, it may support dietary counselling among individuals with diabetes or prediabetes, provided it is clearly explained as an adjunct and not as a substitute for medical care. The strongest evidence supports its role in constipation, while lipid and glycaemic benefits should be presented as modest supportive effects.³⁻⁵

The Indian primary healthcare system provides several possible platforms for such counselling. Under Ayushman Bharat, Health and Wellness Centres were intended to deliver comprehensive primary health care closer to the community, including services for non-communicable diseases and health promotion.⁹ This makes them a suitable setting for brief dietary counselling on fibre intake, constipation prevention, lifestyle modification and cardiometabolic risk reduction.

The National Programme for Prevention and Control of Non-Communicable Diseases also provides a relevant programmatic context. The programme focuses on strengthening infrastructure, health promotion, population-based screening, early diagnosis, management and referral for major NCDs.¹⁰ Within such services, counselling on dietary fibre can be integrated with existing advice on salt reduction, healthy diet, physical activity, tobacco cessation and weight management.

At the community level, counselling should be simple and practical. The message should not be limited to "take Isabgol", but should include broader advice such as increasing intake of vegetables, fruits, pulses and whole grains; drinking adequate water; maintaining physical activity; and avoiding unnecessary dependence on stimulant laxatives. Psyllium may be discussed as an additional option for selected individuals who have inadequate fibre intake, constipation or metabolic risk, especially when it is affordable and culturally acceptable.

The Unani and cultural background of Isabgol may strengthen acceptability, particularly in settings where traditional remedies are already trusted. However, integration into community medicine practice requires an evidence-based approach. Traditional familiarity can be used to improve communication and adherence, while modern evidence should guide dose, duration, expected benefits and safety advice. A proposed framework for integrating *Plantago ovata* into community-based dietary fibre counselling is shown in Figure 1.

DOSE, SAFETY AND COUNSELLING CONSIDERATIONS

For community and primary care use, psyllium should be presented as a dietary fibre adjunct rather than a curative medicine. Most clinical evidence has used daily doses around 7-10 g/day or higher, depending on the outcome studied. In lipid-related evidence, psyllium was used at a median dose of approximately 10.2 g/day, while the FDA-authorized health claim for coronary heart disease risk reduction refers to 7 g or more per day of soluble fibre from psyllium seed husk as part of a diet low in saturated fat and cholesterol.^{4,8}

For constipation, psyllium acts as a bulk-forming laxative by absorbing liquid in the intestine, swelling and forming a bulky stool that is easier to pass.¹² NHS guidance for ispaghula husk emphasizes that it usually takes two to three days to work and should be taken with plenty of fluids.¹³ In community counselling, this means that people should be told not to expect an immediate stimulant-laxative effect.

The most important safety message is adequate fluid intake. Psyllium should be mixed properly with water and consumed with sufficient fluid, because its swelling property can worsen constipation or create choking or obstruction risk if taken dry/with inadequate water.^{13,15} Common minor adverse effects include bloating, flatulence and abdominal discomfort, especially when fibre intake is increased suddenly.^{13,15} Therefore, counselling should emphasize gradual introduction, adequate hydration and continuation of natural food-based fibre sources such as pulses, whole grains, vegetables and fruits.

Psyllium should also be used cautiously in people with swallowing difficulty, suspected intestinal obstruction, severe abdominal pain, persistent vomiting or severe constipation with inability to pass stool or flatus. People with recurrent constipation should not continue self-medication indefinitely without evaluation. Medical

consultation is needed when constipation is associated with red-flag features such as rectal bleeding, blood in stool, persistent abdominal pain, vomiting, fever, unexplained weight loss or symptoms that do not improve with self-care.^{14,15}

Another practical counselling point is separation from other oral medicines. Since psyllium forms a viscous gel and can affect intestinal transit and absorption, patients should avoid taking it at same time as regular medicines, especially elderly persons/those taking multiple drugs. EMA monograph notes that enteral absorption of concomitantly administered medicines and supplements, including minerals, vitamins, cardiac glycosides, coumarin derivatives, carbamazepine and lithium, may be delayed.¹⁵ Linus Pauling Institute also notes possible interference with absorption of drugs such as carbamazepine, lithium and warfarin when taken together.¹⁶

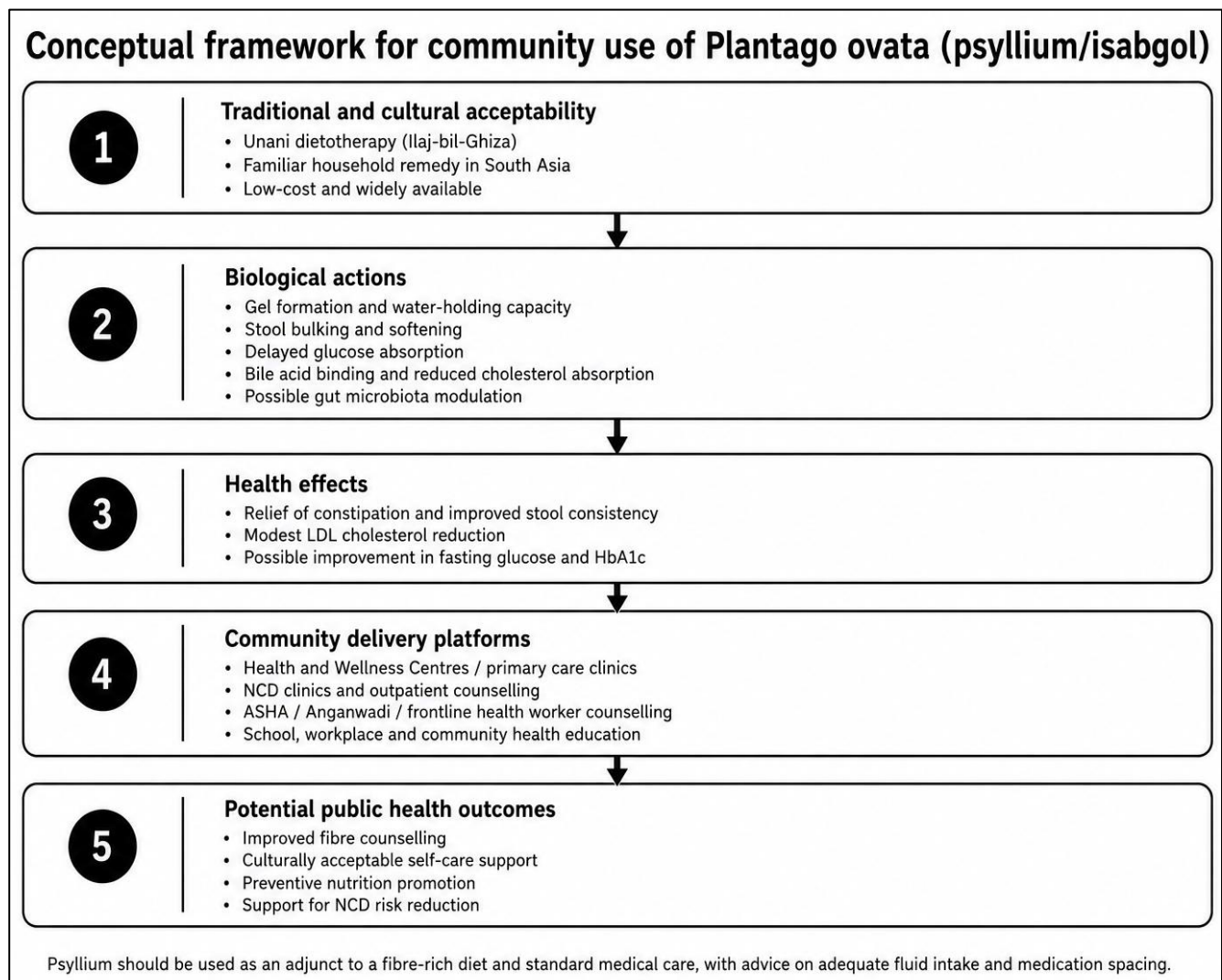


Figure 1: Conceptual framework for community use of *Plantago ovata* as a dietary fibre intervention.

*Caption: The framework illustrates how the traditional and cultural acceptability of *Plantago ovata*/psyllium may be linked with its biological actions, health effects, community delivery platforms and potential public health outcomes. Psyllium should be promoted as an adjunct to a fibre-rich diet and standard medical care, with appropriate advice regarding adequate fluid intake, gradual introduction, medication spacing and referral for warning symptoms.

Available evidence does not suggest that usual-dose, short-term psyllium supplementation causes clinically significant vitamin or micronutrient deficiency. In a randomized controlled trial among adults with overweight and obesity, 15 g/day psyllium supplementation for three months did not produce significant between-group differences in serum micronutrient concentrations, and the authors concluded that short-term fibre supplementation was unlikely to compromise nutritional status.¹⁷ However, because psyllium forms a viscous gel in the intestine, it may reduce or delay absorption of some oral medicines or micronutrient supplements when taken simultaneously. Therefore, patients should be advised to keep a time gap between psyllium and regular medicines or supplements, particularly elderly persons, patients

taking multiple drugs, and those using medicines with narrow therapeutic windows.

In public health messaging, psyllium should not be promoted as a universal supplement for the whole population. The first-line message should remain improvement of overall dietary fibre intake through locally available foods. Psyllium may be considered for selected individuals with habitual constipation, low fibre intake, dyslipidaemia or metabolic risk, provided counselling includes realistic expectations. The expected lipid and glycaemic benefits are modest and adjunctive; psyllium should not replace statins, antidiabetic drugs or standard medical care when these are indicated (Table 2).^{4,5}

Table 2: Safety and counselling checklist for community use of psyllium.

Counselling point	Practical message
Role of psyllium	Use as an adjunct to a fibre-rich diet and standard medical care, not as a cure or replacement for medicines.
Start gradually	Sudden high fibre intake may cause bloating, flatulence or abdominal discomfort.
Take with adequate water	Mix properly in water and drink immediately; avoid consuming dry psyllium.
Expected onset	It usually does not act immediately like stimulant laxatives; effect may take 2-3 days.
Food-based fibre first	Encourage vegetables, fruits, pulses, whole grains, nuts and seeds as the main fibre sources.
Medicines and supplements	Usual-dose psyllium is not known to cause vitamin deficiency, but it may reduce or delay absorption of some medicines or supplements if taken together; keep a 2-3-hour gap where feasible.
Red-flag symptoms	Refer if constipation is associated with bleeding, blood in stool, persistent abdominal pain, vomiting, fever, inability to pass gas, unexplained weight loss or persistent change in bowel habit.
Special caution	Use carefully in elderly persons, those with swallowing difficulty, suspected obstruction, multiple medicines or drugs with narrow therapeutic windows.
NCD counselling	Present lipid and glycaemic benefits as modest supportive effects only; do not replace statins, antidiabetic medicines or prescribed care.

IMPLEMENTATION FRAMEWORK FOR COMMUNITY PRACTICE

For *Plantago ovata* to be useful in Community Medicine, its promotion should be integrated into routine dietary counselling rather than delivered as an isolated supplement-based recommendation. A practical framework may include identification of suitable beneficiaries, brief counselling, safe-use instructions, follow-up and referral where required. Such an approach would allow psyllium to be used responsibly within existing primary care and community health platforms.

At the first level, counselling should focus on the general population through health education on dietary fibre. The message should emphasize naturally fibre-rich foods such as whole grains, pulses, vegetables, fruits, nuts and seeds. Psyllium may be introduced as one example of a soluble fibre that is culturally familiar and commonly used in Indian households. This general approach is appropriate for health education sessions at Health and Wellness Centres, Anganwadi centres, school health activities,

workplace health sessions and community outreach programmes.^{1,9}

At the second level, selected individuals may receive more specific advice. These may include adults with habitual constipation, low dietary fibre intake, sedentary lifestyle, dyslipidaemia, diabetes, prediabetes or other cardiometabolic risk factors. In such individuals, psyllium can be discussed as an adjunct to dietary improvement, physical activity and standard medical care. The strongest recommendation can be made for constipation-related use, while lipid and glycaemic benefits should be explained as modest supportive effects.³⁻⁵

At the third level, primary care providers should screen for contraindications and warning symptoms before advising continued use. Individuals with severe abdominal pain, vomiting, suspected intestinal obstruction, dysphagia, gastrointestinal bleeding, unexplained weight loss or persistent change in bowel habit should be referred for medical evaluation rather than being managed only with fibre supplementation.^{14,15}

For implementation through NCD clinics or screening programmes, psyllium counselling may be incorporated into broader lifestyle advice for persons with diabetes, hypertension, obesity or dyslipidaemia. However, it should not be presented as a substitute for prescribed drugs or clinical management. Instead, it may be described as a low-cost dietary adjunct that can support bowel health and may contribute modestly to lipid and glycaemic improvement when used along with appropriate diet and lifestyle modification.^{4,5,10}

Documentation and follow-up are also important. In primary care settings, patients advised psyllium may be asked about bowel frequency, stool consistency, bloating, adherence, fluid intake and concurrent medication use during follow-up visits. For NCD patients, lipid and glycaemic parameters should continue to be monitored according to standard clinical protocols. In community programmes, operational research may assess acceptability, adherence, cost, perceived benefit, adverse effects and feasibility of integrating fibre counselling into routine health education.

LIMITATIONS OF CURRENT EVIDENCE AND FUTURE RESEARCH NEEDS

Although the available evidence supports the role of psyllium in constipation and suggests additional benefits for lipid and glycaemic outcomes, several limitations must be considered before translating these findings into community-level recommendations. First, the strength of evidence is not uniform across outcomes. The evidence is strongest for constipation and stool-related outcomes, while lipid-lowering effects are modest and glycaemic benefits show greater heterogeneity across studies.³⁻⁵ Therefore, psyllium should be presented as a supportive dietary fibre intervention rather than as a treatment for dyslipidaemia or diabetes.

Second, the included studies differ in population characteristics, baseline dietary fibre intake, health status, dose, duration, formulation and background diet. These differences make it difficult to define one universal dose or duration for all community settings. In several studies, better outcomes were observed with doses around or above 10 g/day and longer duration of use, but the exact response may vary according to baseline diet, adherence, fluid intake and underlying disease status.³⁻⁵

Third, much of the modern evidence comes from clinical trials or controlled research settings rather than large-scale community-based programmes. As a result, evidence on real-world acceptability, adherence, cost-effectiveness, long-term use and feasibility through primary healthcare systems remains limited. This is especially important in India, where dietary practices, household beliefs, affordability and access to counselling vary widely between urban, rural and socio-economic groups.

Fourth, the gut microbiota evidence is promising but still emerging. Existing studies suggest that psyllium may influence stool water content and microbial composition, particularly among constipated individuals.⁶ However, microbiota findings are mechanistic and should not yet be used as the main basis for public health recommendations. More human studies are required to clarify the relationship between psyllium, short-chain fatty acids, bowel function and metabolic outcomes.

Fifth, traditional Unani descriptions provide valuable cultural and historical context, but they cannot replace contemporary clinical evidence. The Unani perspective may improve acceptability and help explain why Isabgol is already familiar in Indian households, but recommendations for community use must be guided by modern evidence on safety, dose, expected benefits and contraindications.^{7,15}

Future research should focus on pragmatic and community-based studies. Trials conducted through primary health centres, Health and Wellness Centres, outpatient clinics or community nutrition platforms could assess whether fibre counselling, with or without psyllium, improves constipation symptoms, dietary practices, lipid profile, glycaemic indices and quality of life. Implementation research is also needed to study adherence, acceptability, side effects, health worker feasibility and cost-effectiveness. In addition, locally relevant studies should compare psyllium counselling with broader food-based fibre counselling, because public health interventions should prioritize improvement in overall diet quality rather than dependence on a single fibre supplement.

CONCLUSION

Plantago ovata Forssk., commonly known as psyllium or Isabgol, represents a useful convergence between traditional dietary practice and contemporary evidence-based nutrition. Its gel-forming, water-holding and bulk-forming properties provide a biological basis for its long-standing use in constipation and digestive regulation. Modern evidence supports its benefit in improving stool frequency and consistency, with additional modest effects on LDL cholesterol and selected glycaemic indices. Emerging evidence also suggests possible effects on the gut microbiota, although this area requires further research.

From a community medicine perspective, the main value of psyllium lies in its feasibility as a low-cost, culturally familiar and generally safe dietary fibre adjunct. It can be incorporated into broader counselling on healthy diet, adequate fibre intake, hydration, physical activity and prevention of cardiometabolic risk. Health and Wellness Centres, primary care clinics, NCD clinics, school health platforms and community outreach activities may provide practical opportunities for such counselling.

However, psyllium should not be promoted as a universal remedy or a substitute for balanced diet, medical treatment or standard NCD care. Its use should be accompanied by clear advice regarding adequate fluid intake, gradual introduction, spacing from other oral medicines and recognition of warning symptoms requiring medical evaluation. Traditional familiarity with Isabgol may improve acceptability, but public health recommendations must remain guided by contemporary evidence.

Overall, *Plantago ovata* may be considered a practical example of culturally acceptable preventive nutrition in community health practice. Further community-based and implementation research is needed to assess its acceptability, adherence, safety, cost-effectiveness and role within routine primary healthcare services.

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