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Research Paper

Low-Glycaemic-Index Rice for People with Diabetes: Nutritional Evidence, Consumer Acceptance, and Strategies to Increase Market Sales

*Parush Vohra, **Dr. Ritu Dhawan
**Research Scholar, Invictus International*
***Associate Professor, Khalsa University, Amritsar*

Abstract
Rice is a major staple food across India, but the type of rice, its processing, cooking method, serving size, and the foods eaten alongside it can influence post-meal blood-glucose responses. This paper examines the potential of low-glycaemic-index (GI) rice as a food choice for people who need to manage diabetes and explores how a trustworthy product could gain wider market acceptance. A narrative review of peer-reviewed studies and guidance documents was used to identify nutritional considerations, product opportunities, consumer barriers, and responsible marketing approaches. The literature indicates that GI varies substantially among rice varieties and processing methods; brown, less-polished, selected high-amylose, and some parboiled or specially bred low-GI varieties may offer useful options. However, evidence does not support presenting any rice as a cure or as a food that guarantees blood-glucose control. The commercial opportunity therefore depends on validated product testing, transparent labelling, acceptable taste and texture, affordability, and partnerships with qualified health professionals. The paper recommends a staged market-entry plan combining product verification, consumer research, sampling, retail and digital distribution, and careful monitoring of repeat purchases. The central conclusion is that sales growth should be built on credible evidence and customer trust rather than exaggerated health claims.

Keywords
Low-GI rice; diabetes; glycaemic index; resistant starch; consumer acceptance; food marketing; India.

I. Introduction

Diabetes is a major and growing public-health concern in India. The International Diabetes Federation's 2025 Diabetes Atlas estimates that approximately 89.8 million adults aged 20–79 in India were living with diabetes in 2024, with the number projected to rise substantially by 2050 (IDF, 2025). In a country where rice is an important part of everyday meals, improving the nutritional quality of rice-based diets is relevant to both public health and the food industry.

The phrase "rice for diabetic patients" can refer to several different products: brown or unpolished rice, parboiled rice, rice varieties naturally higher in amylose or resistant starch, or varieties specifically bred and tested for a lower GI. These products are not interchangeable. White rice can be rapidly digested, but the glycaemic response differs by variety, processing, cooking, and meal composition. The glycaemic index ranks carbohydrate-containing foods by the rise in blood glucose after consuming a standard amount of available carbohydrate; it is not a complete measure of a food's overall healthfulness. Glycaemic load also considers the amount of carbohydrate in a usual serving.

The research and business question addressed here is: How can a rice product with scientifically verified lower-GI characteristics be positioned to meet the needs of people managing diabetes and grow sales in the Indian market, without making misleading medical claims? The paper links nutrition evidence with practical product, pricing, promotion, and distribution strategies.

Objectives

- Review evidence on how rice variety, milling, and preparation influence glycaemic response.
- Identify potential customer needs and barriers to buying a specialised rice product.
- Propose ethical marketing and distribution strategies that could increase trial, trust, and repeat purchase.
- Recommend a practical research plan to test consumer acceptance and commercial viability.

II. Methodology

This is a narrative literature review and applied marketing analysis based on selected peer-reviewed review articles, clinical evidence summaries, Indian diabetes guidance, and the International Diabetes Federation's country estimates. The sources were selected for their relevance to rice, glycaemic response, diabetes nutrition, and the proposed market. The paper does not claim to be a systematic review: no exhaustive database search, formal risk-of-bias scoring, original laboratory analysis, or primary survey was conducted for this draft.

For a real product launch, the literature review should be supplemented by laboratory testing of the exact rice product and a consumer study in the intended sales region. A suitable consumer study could use a short questionnaire and tasting session with adults who purchase rice for their households, including people managing diabetes and family members who make food-buying decisions. Participation should be voluntary, and personal health information should be collected only when necessary and with appropriate consent.

III. Literature Review and Discussion

Rice variety and processing matter

A review by Kaur, Ranawana, and Henry (2016) found that reported GI values for rice and rice products vary according to variety, composition, and processing. A later systematic review similarly identified starch characteristics, cultivar, parboiling, cooking, storage, and reheating as important contributors to differences in post-meal glycaemic and insulinaemic responses (Boers et al., 2015). This means a product should not be described as "diabetic-friendly" solely because it is brown, parboiled, premium-priced, or marketed as traditional. Its nutritional claims should be based on the actual product and suitable evidence.

Brown rice and less-polished rice

Brown rice retains more of the outer grain layers than fully milled white rice and generally contains more fibre and other grain components. In a study of Indian parboiled BPT-5204 rice, Shobana et al. (2017) reported a lower GI for the brown-rice sample than for the more-polished samples tested. This finding supports the importance of milling, but it should not be assumed to apply to every variety or brand. Cooking time and texture can also affect whether consumers are willing to switch.

Evidence on health outcomes is mixed. A systematic review and meta-analysis by Malik et al. (2022) found an association between higher white-rice intake and greater type 2 diabetes risk, while brown-rice intake was associated with lower risk in cohort studies. However, intervention trials comparing brown and white rice showed inconsistent results for glycaemic control. Another meta-analysis of controlled trials found no significant overall improvement in HbA1c or fasting blood glucose from brown rice compared with white rice, although some other measures differed (see the cited review in the reference list). These findings call for balanced claims: brown or less-polished rice may be a useful dietary option, but it does not replace individualised nutrition advice, medication, or glucose monitoring.

Low-GI and resistant-starch rice

Research is also exploring rice with lower GI or higher resistant starch. Resistant starch is not digested in the same way as readily available starch in the small intestine. A 2025 review by Tiozon and colleagues describes progress in breeding and developing rice with lower GI or higher resistant starch, while highlighting the challenge of getting these varieties adopted widely. Research on Indian rice varieties has also found meaningful differences in resistant starch and GI between varieties (Prasad et al., 2017). The commercial implication is that a seller should identify the exact variety and publish reliable test results rather than rely on a broad category name.

What this means for customers

People managing diabetes may look for foods that fit their familiar meals, are easy to cook, taste acceptable, and are affordable. Family members may also influence purchase decisions. A product that is nutritionally promising but has a poor texture, requires unfamiliar cooking, or costs substantially more than regular rice may struggle to achieve repeat sales. Clear preparation instructions, portion guidance reviewed by a qualified dietitian, and recipes using familiar Indian dishes can reduce the effort involved in trying the product.

The evidence therefore supports a product-and-trust strategy rather than a medical promise. The most defensible proposition is a rice product whose variety, processing, and GI characteristics have been tested and explained clearly, accompanied by the reminder that blood-glucose responses vary among individuals and meals.

Market Opportunity and Consumer Barriers

A specialised rice product could serve several overlapping customer groups: adults who manage diabetes, households where one member has diabetes, health-conscious consumers, and shoppers seeking less-polished or higher-fibre grains. The product should not imply that everyone with diabetes needs the same diet. The actual

decision to purchase will likely depend on a combination of perceived health value, trust in the label, taste, ease of cooking, price, availability, and recommendations from credible professionals.

Likely barriers

- Trust: consumers may be sceptical of health claims, especially if the product is not supported by clear testing.
- Price: a premium can discourage households that buy rice in bulk.
- Taste and texture: brown or less-polished rice may cook differently from familiar white rice.
- Confusion: terms such as "low GI," "whole grain," and "diabetes rice" may be misunderstood.
- Availability: shoppers may not find the product in their usual grocery shop or preferred online store.

These barriers should be measured rather than assumed. Before a large launch, a small pilot can compare two or three price points, package sizes, label designs, and cooking instructions. A tasting test should ask about taste, aroma, texture, ease of preparation, and purchase intent separately. Purchase intent is not the same as an actual sale, so the pilot should also track how many trial customers buy again.

Strategies to Increase Sales

Build the product around verified evidence

First, select the specific rice variety and production process. Obtain appropriate laboratory analysis from a competent facility for relevant nutritional composition and, where a GI claim is intended, use a recognised testing protocol. Keep batch traceability and quality-control records. The label should state what has actually been tested, by whom, and under which method, where permitted. Regulatory and food-labelling requirements should be reviewed before using claims such as "low GI," "high fibre," or "suitable for people with diabetes."

Use clear, responsible positioning

A suitable brand promise could focus on "tested rice options for informed everyday choices" rather than claiming to treat or prevent diabetes. Avoid statements such as "controls diabetes," "reduces blood sugar," "safe for all diabetic patients," or "eat without restriction" unless a specific claim is legally authorised and scientifically substantiated. No rice product should be described as a substitute for medication or professional advice. Use simple explanations of GI, portion size, and balanced meals, reviewed by a qualified dietitian or healthcare professional.

Make the product easy to try

Offer trial packs and family-size packs, with cooking instructions printed on the package. Include familiar recipe ideas such as vegetable pulao, lemon rice, curd rice, and rice paired with pulses and vegetables. Recipes should be framed as serving suggestions, not as guaranteed blood-glucose-management plans. Sampling at grocery stores, community events, or nutrition-awareness sessions can help consumers judge taste and cooking performance before committing to a larger pack.

Build credibility through partnerships

Potential partners include registered dietitians, diabetes educators, grocery retailers, pharmacies that sell packaged foods, and community health programmes. Professionals should be free to provide independent advice and should not be paid to make unsupported endorsements. Educational leaflets and short videos can explain the difference between a product's GI, carbohydrate content, and serving size. Any testimonials should be genuine, permission-based, and not presented as proof of clinical effectiveness.

Use digital and retail channels together

Use a simple website or product page with the variety name, ingredients, nutrition panel, test information, cooking instructions, price, pack sizes, and frequently asked questions. Short videos can demonstrate cooking and compare preparation steps, without suggesting that one rice is universally best for all people with diabetes. Online marketplaces and local grocery stores can support discovery, while direct-to-consumer orders may help the business learn which pack sizes and messages perform best. Retail displays should use clear, consistent language rather than fear-based messaging.

Encourage repeat purchases

After the first purchase, invite voluntary feedback on taste, cooking time, packaging, price, and likelihood of repurchase. Use this feedback to improve the product. Loyalty offers or multi-pack discounts may help, but the brand should avoid pressuring customers through fear of diabetes complications. Sales success should be measured by repeat purchases and customer satisfaction as well as first-time orders.

Proposed Research Plan and Performance Measures

A practical pilot could be carried out over eight weeks. In weeks 1–2, verify the product specifications, check applicable labelling rules, and conduct short interviews with 10–15 adult shoppers. In weeks 3–4, run a small taste test with a clearly documented sample and collect feedback on flavour, texture, preparation, perceived value, and package design. In weeks 5–8, sell the product through one or two retail outlets and one online channel, recording units sold, conversion from sampling to purchase, customer complaints, and repeat purchases. These numbers are a proposed plan, not findings from completed fieldwork.

Key performance indicators should include: (1) trial-to-purchase conversion; (2) repeat-purchase rate within the pilot period; (3) customer rating for taste and cooking convenience; (4) percentage of buyers who understand the product label; (5) sales volume by pack size and channel; (6) gross margin after packaging and distribution; and (7) return, complaint, or refund rate. Results should be reviewed by customer segment and channel, while protecting participants' privacy.

The pilot should also test whether customers understand that a lower-GI product is not carbohydrate-free and does not guarantee a particular glucose response. If shoppers repeatedly misunderstand the label, the business should revise the packaging and educational material before expanding distribution.

IV. Limitations

This paper is based on secondary sources and a proposed marketing framework. It does not establish that a particular rice brand or variety has a low GI, does not provide clinical advice, and does not measure consumer demand or actual sales. Published studies may use different rice varieties, cooking protocols, participant groups, and study designs, so results cannot automatically be generalised to every product or consumer. Product-specific testing and local market research are essential before making claims or investing in a large-scale launch.

V. Conclusion

Low-GI rice may offer a meaningful product opportunity in India because rice is a familiar staple and diabetes creates demand for reliable nutrition information. Scientific literature shows that rice variety, milling, processing, and cooking can influence glycaemic response, but the evidence does not justify presenting all brown rice or all specialised rice as a guaranteed solution for diabetes. To increase sales sustainably, a business should prioritise verified product quality, accurate and legally compliant labels, acceptable taste, affordable trial packs, familiar recipes, credible educational partnerships, and convenient retail and online access. A controlled pilot that measures both first purchases and repeat purchases is the best next step. In this market, consumer trust is not merely a promotional advantage; it is central to responsible product development.

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