

Research Article

A Study on Understanding Consumer Behavior towards Sugar Free Biscuits in the Area of Navi Mumbai

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Abstract: A low glycemic index (GI) diet is crucial for managing diabetes. Such diets emphasize whole foods, fresh vegetables, and reduced sugar and refined products, helping to maintain balanced blood sugar levels. Foods rich in fiber and non-nutritive sweeteners are recommended to stabilize glucose levels and improve overall health. Low glycemic index foods, high in fiber and containing non-nutritive sweeteners, are recommended for diabetics to help regulate blood glucose levels (Gray & Threlkeld 2000). Fiber not only aids in better glucose tolerance but also reduces insulin needs, promotes feelings of fullness, and can lower cholesterol and triglyceride levels (Augustin et al. 2015). Fiber enhances glucose control, reduces insulin needs, promotes satiety, and lowers cholesterol and triglycerides. Sugar-free biscuits, like digestive and Patanjali varieties, offer diabetics a sweet alternative without raising blood sugar, making them a beneficial addition to their diet. This paper explores the benefits of sugar-free biscuits and highlights popular brands in India, helping diabetics make informed dietary choices and also understanding the customer consumer behaviour towards sugar-free biscuits.

Keywords: • Diabetes Management • Fiber-Rich Foods • Healthy Snacks for Diabetics • Consumer Behaviour

INTRODUCTION

Diabetes mellitus represents a significant global health challenge, affecting an estimated 537 million adults worldwide in 2021 (International Diabetes Federation, 2021). This chronic condition, characterized by persistent hyperglycemia, results from impairments in insulin secretion, action, or both (American Diabetes Association, 2020). Effective management of diabetes necessitates maintaining blood glucose levels within a target range to prevent complications such as neuropathy, nephropathy, and cardiovascular diseases. Dietary interventions, particularly the consumption of low-sugar or sugar-free foods, are crucial in achieving optimal glycemic control. The glycemic index (GI) serves as a critical metric for assessing how rapidly foods elevate blood glucose levels, with low-GI foods being preferred for diabetes management (Wolever et al., 2008). Among such interventions, sugar-free biscuits may offer a beneficial alternative for individuals with diabetes, potentially aiding in blood sugar regulation, glycemic control, and adherence to dietary guidelines. This study investigates the potential role of sugar-free biscuits in diabetes management, with a focus on their impact on blood glucose levels, glycemic index, and overall dietary compliance.

Biscuits are the most widely consumed category of snack foods across diverse demographic groups (Chauhan et al., 2016), owing to their convenience, nutritional value, and affordability (Misra et al., 2014). However, the high content of simple sugars and fats, combined with their low fiber content, renders traditional biscuits unsuitable for individuals with diabetes, who are particularly vulnerable

to the glycemic effects of such foods (Hauner et al., 2012). Consequently, there is a growing need for the development of biscuits incorporating low-glycemic ingredients, fiber, and non-nutritive sweeteners, which are recommended to stabilize blood glucose levels in diabetic individuals (Gray & Threlkeld, 2000). Dietary fibers have been shown to enhance glucose tolerance, reduce insulin dependency, promote satiety, and lower serum cholesterol and triglyceride levels, all of which are beneficial for individuals with diabetes (Augustin et al., 2015). Ingredients such as unripe bananas and okra, which possess anti-diabetic properties, have shown promise as viable components for formulating diabetic-friendly snacks (Vijay et al., 2022; Kumar et al., 2021). Additionally, natural sweeteners like stevia and jujube fruit, which do not induce rapid blood glucose spikes, have gained popularity as sugar substitutes in snack formulations (Gasmalla et al., 2014). This research explores the potential of these ingredients in creating sugar-free biscuits that could serve as an effective snack for diabetes management.

Sugar-free biscuits, such as Diabliss Millet Cookies, represent an innovative approach to offering low-GI alternatives in the snack category. These biscuits, made from Kodo and Barnyard millets, provide beneficial dietary fiber, support digestion, and contribute to the regulation of blood glucose levels. They are also rich in essential micronutrients, such as calcium, phosphorus, and various vitamins, which contribute to overall health. The inclusion of herbal sweeteners in these biscuits has been clinically proven to aid in maintaining blood glucose levels, making them a suitable option for both diabetics and individuals

seeking to manage their health more effectively incorporating fiber-rich, low-GI foods with non-nutritive sweeteners is a recommended strategy for managing blood glucose in diabetic individuals. Sugar-free biscuits offer an alternative to traditional high-sugar snacks, enabling individuals with diabetes to maintain blood sugar control while enjoying a sweet indulgence. As the prevalence of diabetes and obesity continues to rise, the demand for such sugar-free alternatives is expected to increase, providing consumers with more opportunities to make healthier dietary choices. This paper aims to highlight the benefits of sugar-free biscuits and showcase some popular brands and varieties available in India, empowering type II diabetic patients to make informed dietary choices and also understanding the customer consumer behaviour towards sugar-free biscuits.

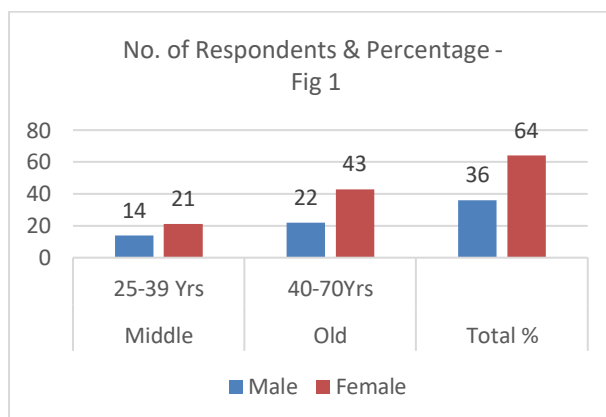
METHODOLOGY:

The current study adopts a descriptive and analytical approach, primarily employing the survey method. Both

primary and secondary data are utilized in the research. A systematic methodology is followed to analyse the identified research problem, with the results presented accordingly. The initial sample size consisted of 126 respondents; however, after excluding incomplete responses and outliers, the final sample size was reduced to 100. Data collection was carried out through a structured questionnaire, which included demographic variables as well as items assessing respondents' opinions regarding the consumption of sugar-free biscuits, utilizing closed-ended questions. Primary data were obtained through a well-structured interview schedule and questionnaire, while secondary data were gathered from a variety of sources, including websites, academic journals, magazines, newspapers, and other published materials, which are referenced in the Bibliography. For data analysis, the following tools were employed: a) the simple percentage method, and b) visual representations such as tables, charts, bar diagrams, and pie charts.

ANALYSIS: Age is an important factor in decision making. For the purpose of this study age has been studied under two heads viz., Middle (25-39years) and old (above 40-70years). The sample consist of 35 middle aged respondents and 65 old aged respondents. This distribution of sample respondents -according to age is shown in the above table. Gender is identified from the Figure No.1 it is clear that 36% of the male respondents and 64% of the female respondents.

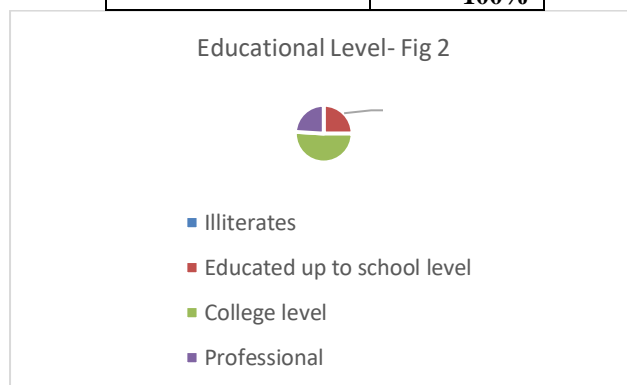
Table -1				
		No. of Respondents		
Category	Age Group	Male	Female	Total
Middle	25-39 Yrs	14	21	35
Old	40-70Yrs	22	43	65
Total %		36	64	100



Education is acquiring an imparting skills, values and knowledge. Education also means preparing people to develop new ideas and to adjust to a changing environment. An attempt is made to analyse the educational level of the respondents. For this, the respondents have been classified into four categories such as illiterates, educated up to school level, college level, and professional. The following table reflects the educational qualification of the respondents. The Figure No.2 shows that the status of the respondents with school level education is 25%. The status of the respondents with college level is 51% and the status of the respondents with the professional 24%.

Table-2	
Educational Level	% of Respondents
Illitrates	0%
Educated up to school level	25%

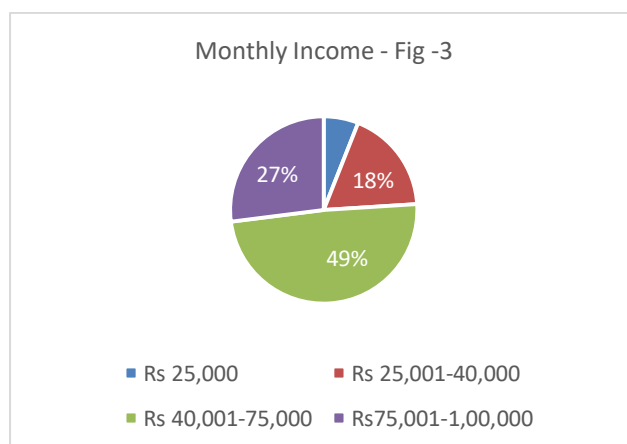
College level	51%
Professional	24%
	100%



The idea of satisfaction based on present status of the respondents. majority (78%) of the respondents who prefer Sugar free biscuits and among them, 56% are female.

Income of the respondents Income means any money earned for having done any kind of work or for rendering any kind of service. When the income level increases it has a strong influence on the behavioural pattern of the family. An attempt is made to analyse the monthly income of the respondents. (Refer table -3)

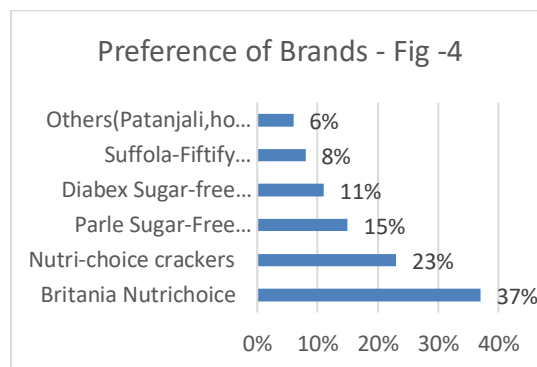
Table -3	
Monthly Income	
Income Range (In Rs)	% of Respondents
Rs 25,000	6%
Rs 25,001-40,000	18%
Rs 40,001-75,000	49%
Rs75,001-1,00,000	27%
Total	100%



The following table gives an idea of satisfaction based on monthly income of the respondents. Table .4 shows that, among various brands, 37% respondents prefer Britannia Nutri choice as it is coming under diabetic-friendly biscuits, packed with high dietary fiber. It provides a healthy food for Diabetics. Made with zero added sugar, these Oats biscuits have Low Glycemic Index. These cookies for diabetics also have complex carbohydrates and are high on fiber. 23% respondents prefer Nutri-choice crackers. 20% and 12% of respondents prefer Parle Sugar-Free Monaco and Diabex Sugar-free multigrain biscuits respectively. It is also revealed that 8% and 6% of respondents preferred to buy Suffola-Fiftify Gourmet HI-protein meal Biscuits and Others (Patanjali, home -made etc. respectively.

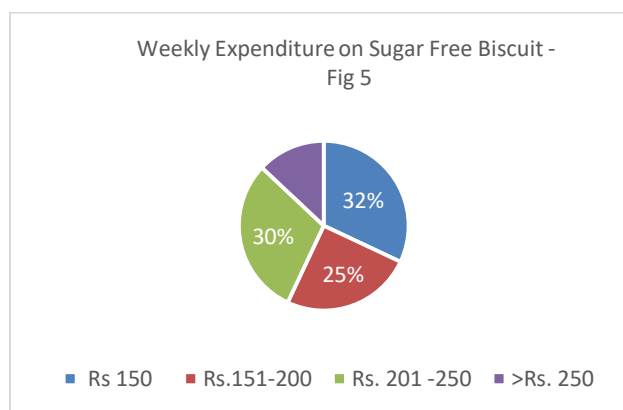
Table -4	
Preference of Brands	% of Respondents
Britannia Nutri choice	37%
Nutri-choice crackers	23%

Parle Sugar-Free Monaco	15%
Diabex Sugar-free multigrain biscuits	11%
Suffola-Fiftify Gourmet HI-protein meal Biscuits	8%
Others(Patanjali,home made etc)	6%
	100%



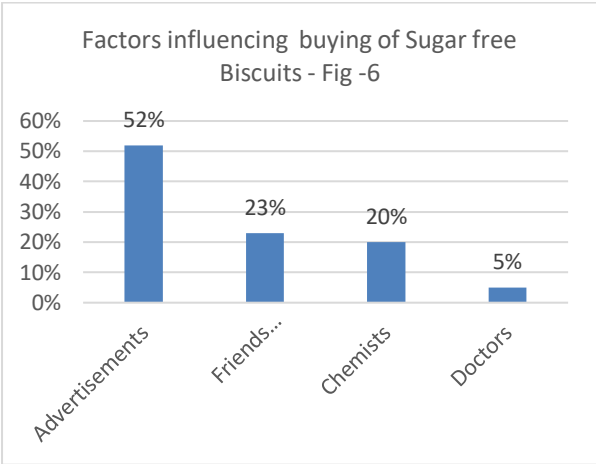
The study also revealed that in their weekly expenditure. The Following table -5 shows monthly expenditure on Sugar Free Biscuit.

Table -5	
Weekly Expenditure on Sugar Free Biscuit	
Amount Range	% of Respondents
Rs 150	32%
Rs.151-200	25%
Rs. 201 -250	30%
>Rs. 250	13%
Total	100%



Research study also explored to identify the influencing factors in buying sugar free biscuits (Table:6) and revealed that 52% of the respondents getting the knowledge, perceptions, and responsiveness from advertisements, 23% of respondents from friends and 20% and 5% of respondents influenced from chemists and doctors respectively.

Table -6	
Factors influencing buying of Sugar free Biscuits	
Factors	% of Respondents
Advertisements	52%
Friends Recommendations	23%
Chemists	20%
Doctors	5%
Total	100%



From the study, it is understood from the respondents that reason for consuming sugar-free diabetic biscuits is due to diabetic control (45%), diet awareness (43%) and special reference to Obesity (12%) (Table:7).

Table -7	
Reason-Consumption of Sugar Free Biscuits	
Reasons	% of Respondents
Diabetic control	45%
Diet awareness	43%
Special reference to Obesity	12%
	100%



LIMITATIONS AND FURTHER SCOPE FOR RESEARCH:

The study has certain limitations that it was restricted to 126 sample size and restricted to Navi Mumbai region. The study is been confined to Sugar free biscuits preference; the research can be further extended to know the consumption pattern of other products and brands.

CONCLUSION:

A low glycemic index diet is essential for individuals with diabetes, as it supports the maintenance of balanced blood glucose levels, which is crucial for their overall health. Such diets typically include whole foods, fresh vegetables, and reduced intake of sugar and refined products. Sugar-free biscuits offer a viable alternative by providing a sweet indulgence without causing significant spikes in blood sugar levels, thus serving as a healthier option compared to

traditional biscuits. With the availability of products such as Digestive and Patanjali sugar-free biscuits, diabetic patients can access a variety of choices that cater to their specific dietary needs. Incorporating sugar-free biscuits into their diet can facilitate better blood sugar management and mitigate the risk of diabetes-related complications. Furthermore, advertisements and recommendations from friends play a significant role in promoting the consumption of sugar-free biscuits, suggesting an opportunity for marketers to enhance product quality and taste in order to increase market share. Both diabetic patients and health-conscious individuals demonstrate a preference for branded sugar-free biscuits, consuming them regardless of emotional states. These biscuits also constitute a prominent gift choice for diabetic patients and health-conscious individuals. This underscores a considerable interest in sugar-free biscuits, with consumers allocating a portion of their expenditure to these products.

Additionally, medical professionals increasingly advocate for the consumption of sugar-free biscuits to help maintain optimal sugar levels and promote physical and mental vitality.

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