

# Understanding the Indian Patients Diagnosed with Celiac Disease

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**Abstract:-**Celiac disease, also known as celiac sprue, produces chronic inflammation of the small intestine in susceptible individuals after consuming dietary gluten products. There are many factors responsible for this disease, including genetics and environment.[1] Currently, the only way to live with it without worsening its symptoms is to strictly adhere to a gluten-free diet.

This research focuses on why in the Indian market, generic and daily-use gluten free essentials are at least 50% more expensive than the usual commodities. The purpose of this paper is to formulate entrepreneurial strategies for Celiac patients that can help others and be helpful in their circumstances.

In order to conduct this study, a convenient-based sampling was conducted on 18 individuals suffering from Celiac Disease or their immediate family members.

**Keywords:-** Autoimmune Disease, Celiac Disease, Gluten Intolerance, Entrepreneurship.

## I. INTRODUCTION

Grains consumed worldwide include wheat, rice, and maize. Starch is an essential dietary element for the growing human population, and these products are rich sources of it. Gluten is found in wheat. The authors of a study published in 1953 by Dickie, van de Kamer, and Weyers confirmed celiac disease (CD) patients' malabsorption of wheat. GRDs (gluten-related disorders) are now believed to be triggered by gluten consumption.[2] Celiac disease remains one of the most controversial and complex autoimmune diseases of mankind.

Approximately 0.5 % to 1% of the general population suffers from celiac disease. There has been an increase in

detection and diagnosis over the past 10 to 20 years, as well as in true prevalence. Those with autoimmune disorders, such as type 1 diabetes, are more likely to experience it. A person affected by celiac disease has a one-in-ten chance of having a first-degree relative with the disease.[3]

There is currently no effective treatment for Celiac Disease or Gluten Intolerance, other than a strict Gluten Free Diet for life, which resolves intestinal symptoms and extra intestinal symptoms, negates auto antibodies, and restores intestinal villi. Additionally, the diet offers a partial protection against several complications.

## II. OBJECTIVES OF THE STUDY

- To identify the problems faced by Celiac Disease patients and their immediate family members.
- To examine the price tags of gluten free essentials.
- To provide recommendations on how to overcome the challenges.

## III. METHODOLOGY

In the research, 18 patients and their immediate families with Celiac Disease were studied. Respondents in the study were surveyed about their problems in both their regular and travel lives. As part of this study, the Brief Psychiatric Rating Scale (BPRS) was used to measure perceived severity of symptoms ranging from behavioral issues, mood swings and stress. The Global Assessment Scale (GAS) was used to rate a single 1-to-100 rating with each ten-point increment describing how well the individual is functioning (high scoring indicates better functioning). In addition, Rosenberg Self Esteem (RSE) Scale (Rosenberg, 1965) was utilized to measure responses ranging between "strongly disagree" and "strongly agree". [6,7,8]

Here is a sample of the same.

S No	Factors	Number of Respondents	Percentage
1	Gender		
	Male	7	38.8
	Female	11	61.11
	Transgender	0	0
	Prefer Not to Say	0	0
2	Age		
	5-10	1	5.55
	10-15	7	38.8
	15-20	2	11.11
	20-30	4	22.22
	30+	4	22.22
3	City Type		
	Metro	12	66.6
	Non Metro	6	33.33
4	When searching for gluten-free products, do you encounter difficulties?		
	Yes, most of the times	18	100
	No, I easily find the products at every grocery store	0	0
5	Do you find that gluten free essentials are more expensive than glutened versions?		
	Yes, a lot	18	100
	No, its similar to normal variants	0	0
6	Are you aware that just a simple contamination can cause your intestines to suffer?		
	Yes, am well aware	13	72.22
	No, I thought only Gluten Free Tag is enough on the packet	5	27.77
7	Do you find difficulty searching for Gluten Free Products while traveling?		
	Yes, a lot	18	100
	No, I can easily find gluten-free products off the shelf	0	0

#### IV. DISCUSSION AND FINDINGS

The study found that all respondents had difficulty finding Gluten Free Basic Essentials at their local grocery store. Furthermore, even though the products were found in some hypermarkets, they found them to be rather expensive in comparison with their counterparts in the glutened category.

For instance, one of the most common brands in India produces both wheat flour and gluten-free flour. For Wheat Flour, the maximum retail price is Rs. 59/Kg, while gluten-free flour from the same brand is available for Rs. 190/Kg. Clearly, Gluten Free flour costs 322.22% more. There was a high rate of anxiety, behavioral issues, and stress among the patients as they were unable to afford Gluten Free Flour.

Furthermore, patients mentioned about the use of glutened items in the Naturally Gluten Free Foods so that the food is more appealing and tasty.

As an example, when making Potato Fries, the major ingredient is Potato, which is naturally gluten-free. Nevertheless, refined all-purpose flour and low quality corn flour are brushed onto the fries to make them crispier, making the gluten-free fries glutened.

Another example cited by respondents is the popular North Indian curry called Dal Makhani and soups. It was examined how all purpose flour is added to them to make it more thick and creamier.

27% of respondents, however, were unaware of the methods in which gluten is added to naturally gluten free products. In addition to this, they were not even aware of how boiling milk on one stove while cooking chapati on another led to contamination of milk. Because of how flour particles fly in the air, they land on milk, and this causes it to be glutened.

## V. RECOMMENDATIONS

- Wheat is largely replaced with sorghum in gluten free affordable ranges. Sorghum and wheat are priced similarly. Manufacturers and innovators should collaborate to develop an affordable and competitive product. Economies of scale would result in profitability from tapping the market on a large scale.
- The patients or members of their immediate family must benefit from their in-house gluten free facility i.e. their kitchens by baking the hand-made gluten-free products so that others don't feel deprived of product variants.

In addition to high-end GF products such as Quinoa, marketers should broaden their offering of gluten-free products to make sure that patients and their families have access to affordable and readily available options.

## VI. LIMITATIONS OF THE STUDY AND FUTURE RESEARCH

The study is not free of limitations. One limitation is the small sample size, which is partly caused by limited time and resources. This study could have been improved with a larger sample size made up of a larger number of patients and their immediate family members. Secondly, this study surveyed only Indian respondents, and a broader study that surveyed people from other provinces might have yielded results. It requires extensive research and critical design thinking to understand the strategies to overcome the challenges and problems mentioned by the respondents. Due to the above limitations, results or inferences drawn from the study should be viewed with caution.

## VII. ACKNOWLEDGEMENT

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