Consumption & Satisfaction Level of Sugar Free Sweeteners among Diabetic Patients: An Emprical Analysis

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Abstract: Purpose: The purpose of the research is to explore the "Consumption & Satisfaction of Sugar Free Sweeteners among Diabetes in Chennai**.**

Consumption pattern & Sweeteners: After the announcement of our prime minister Narendra Modi Demonetization the pattern of consumption changed in a drastic way. Diabetes who is interested to intake tasty foods, searched to find alternative remedy, these search gives the innovative artificial sugar free sweetener. The purpose of using sugar free sweeteners is generally to replace sugar and reduce calories.

Research Methods / Design / Approach: The objectives of the study is to examine the pattern of sugar – sweetened beverage (SSB) consumption among diabetes in Chennai. We have used the primary data collection method to collect the date from samples at Hospitals, Medial Shops etc. The statistical Techniques used for the study are Percentage Analysis, Correlation, regression etc.

Findings: It is found that that the majority of the diabetes patients are male and the sweeteners are consumed for the taste and keep the diabetic level in control. In purchasing SFS from a retail store, exploratory factor analysis revealed three principal

Constructs which were most influential in the consumer's decision to purchase: Influence by doctor, Diabetes itself and brand reputation.

Originality / Value: Consumption of Sugar free sweeteners are high among diabetes who looks for taste in the food that they consume and particularly among male gender.

Paper: Research Paper

Keywords: Diabetes, Consumption Pattern and Sugar Free Sweeteners etc.

INTRODUCTION: CONSUMPTION PATTERN IN INIDA

For a consumer demand-driven economy such as India, understanding consumption patterns is key to predicting economic growth. In recent years, the linkages between slow economic growth, high inflation and consumer demand have been more than evident. While demand for products can be measured in both volume and value terms, it is difficult to quantify demand for public goods and services such as education, health, etc. So as to understand consumer demand across the entire spectrum of consumption categories, the value of spending emerges as a more reliable measure. Indian households have a large and diverse consumption basket, and high income inequality and regional diversity makes the exercise of analysing consumption behaviour even more complex. In an ever-changing socio-economic environment, there is a need to understand the current dynamics of the Indian consumer market to be able to reliably predict future consumption patterns.

Annual growth in household spending

(%, at 2004–05 prices)

Consumption categories	FY94 to FY05	FY05 to FY15	FY15 to FY21
Food	3.0	4.2	5.3
Apparel & Footwear	3.3	6.1	6.2
Health Care	7.1	8.2	8.3
Education	11.5	8.9	8.9
Conveyance	8.7	9.1	9.1
Non-food FMCG	4.9	4.1	5.0
Durable goods	9.8	10.1	10.3
Consumer services	10.6	6.8	6.9
Others	8.4	5.8	6.8
Total consumer market	5.0	5.8	6.7

Source: Indian Consumer Market 2020: Structure, Size, Growth and Intensity, Rajesh Shukla & Mridusmita Bordolol, 2015, PRICE

The analysis also reveals that there is a high level of inequality in household spending in India. Apart from the rural-urban differences in spending power, there is inequality within rural areas and similarly within urban pockets as well. Therefore, spending pattern in rural India as a whole does not completely reveal the huge differences in spending intensity across rural households. The average spending of a household from the top decile in rural India is three times higher than that of a household from the bottom decile. However, the inequality is much greater among the bottom and top deciles in urban India. An average household from the top decile in urban spent around six times more than that spent by a household from the bottom decile. The propensity to spend is almost identical for bottom 10% households in rural and urban areas. But considerable differences in spending power are observed for top 10% rural and urban households. The latter spends more than twice the amount spent by the top 10% rural households.

Rural and urban consumers behave differently in terms of their spending behaviour and socio-economic characteristics. Policy-makers as well as business enterprises would be well advised to keep these differences in mind while formalising their plans, as a one-policy-fits-all strategy is bound to fail.

Artificial Sweetener Industry

The emergence of diabetes is turning out to be globally debilitating. India has about 65 million diabetics. Apart from nearly 65 million diabetics, India also has 77 million pre-diabetics. This will see the number grow to a whopping 100 million plus, confirmed diabetics by 2030. Nowadays, even children at age of 13-14 are diabetics due to the change in lifestyles – consumption of junk food, fast food, lack of physical activity and growing obesity.

High-intensity sweeteners currently represent 9% of the global sweetener market. The category of high-intensity sweeteners has traditionally referred to artificial substitutes, which are synthesized by chemical processes and have a higher degree of sweetness compared to typical natural alternatives. High-intensity sweeteners have an estimated market in excess of US$5 billion annually and are expected to increase their amount of the global sweetener market annually. According to the 2007 report by Global Industry Analysts Artificial Sweeteners, the global artificial sweetener market is growing at an annual rate of 5.5%.

Global Market for Artificial Sweeteners
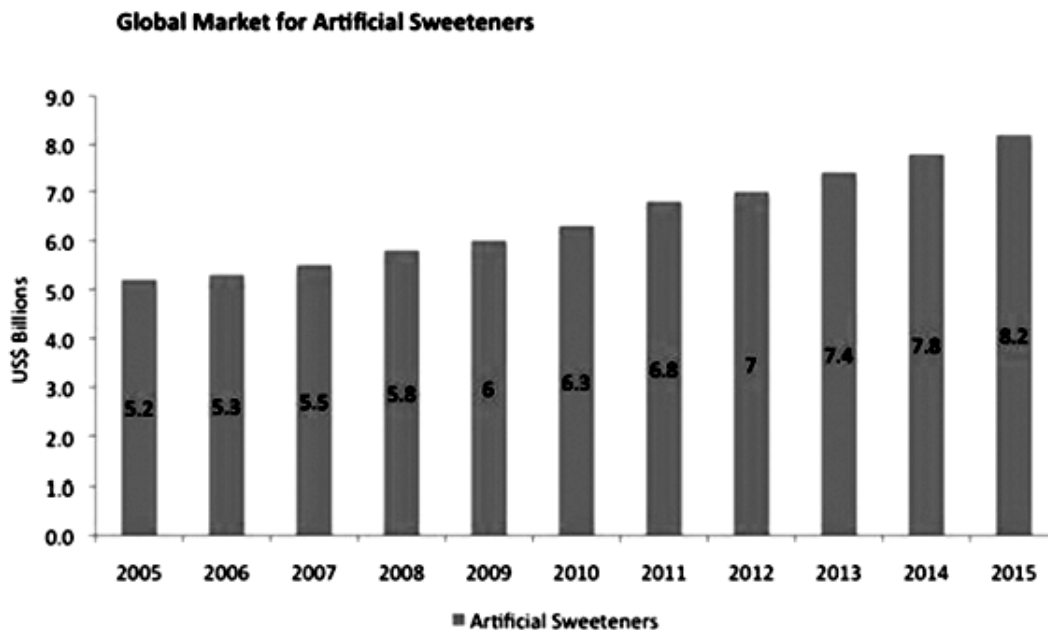
Source: Global Industry Analysts, Artificial Sweeteners, July 2007.

Applications of high-intensity sweeteners range from tabletop sweeteners, to confectionary, food and pharmaceuticals, with the beverage industry dominating the high-intensity sweetener market. Frost and Sullivan estimates as much as 65% of all artificial sweeteners consumed are in beverages. For example, The Coca Cola Company and PepsiCo are major purchasers and users of aspartame, a popular high-intensity sweetener, often used in diet sodas.

Artificial high intensity sweeteners are used extensively in food and beverages to help reduce calories. According to the Calorie Control Council, 200 million Americans consume sugar-free or low-calorie products and half are frequent users, consuming an average of four products every day. Much of this is accounted for by diet soft drinks, which make up 39% of the US soft drink market and according to Beverage Digest, the percentage is rising.

BRIEF REVIEW OF LITERATURE:

A literature review is a text of a scholarly paper, which includes the current knowledge including substantive findings, as well as theoretical and methodological contributions to a particular topic. This research discusses the customer preference in sugar free sweeteners, so this part of the study discusses the review of previous studies.

Hampton (2008) reviews the sugar free sweeteners usefulness for weight loss. The author reviews many studies and give suggestions for the consumers who taking sugar free sweetener are get awareness for caloric sweetener and non-caloric sweetener. It also gives artificial sweetener not for weight loss and any other beliefs. Author suggested that diabetes or preventing diabetic consumers may aware of the caloric or non-caloric sweeteners and their purposes

Legg, Kari M., M.S., (2014) investigate how one's perception of a child's behavior is affected when the individual believes in the sugar-hyperactivity myth and is provided information regarding the child's sugar consumption prior to observing behavior. Findings indicated that participants who were informed that the children ingested sugar prior to the observation rated the male child's and the female child's hyperactivity significantly higher than participants who were told that the children had ingested a sugar-free product

Melanie Wallendorf (2001) reviews several recent books on literacy, and suggests some profound theoretical issues about consumer behavior inspired by a socio cultural perspective on literacy. In particular, ties between literacy and six diverse research programs on consumer behavior are highlighted: responses to persuasion; affect and decision making; the meanings of products and brands; social marketing of health behaviors; consumption, identity, and resistance; and the impact of the internet on consumer behavior.

Wolraich, Wilson, and White (1995) conducted a meta-analysis of 16 studies that implemented double-blind procedures and a placebo controlled condition to determine if diets with and without sugar resulted in behavioral effects. These studies included participants who were considered to be normally developing and hyperactive. The authors acknowledge that diet modification might possibly be helpful for select individuals with hyperactive behavior, but does not have an effect on behavior or cognitive performance for the majority of children. Overall, the researchers found that the presence of sugar in one's diet had no behavioral or cognitive effects on children

Vijayudu Gnanamkonda and Satya Prasad (2014) focus on analyzing the Awareness and consumption pattern of Probiotic and Sugar Free Ice Creams among the consumers in Hyderabad & Secunderabad of Andhra Pradesh. This study is primarily based on primary data, which was collected by administering Questionnaire to the 100 respondents in the twin cities of Hyderabad and Secunderabad. The results revealed that awareness levels among consumers with regard to probiotic and sugar free ice-creams are low and there is need for marketers to increase awareness about these products.

Vijayabaskar and Sundaram (2012) study the purchasing attitude towards Ready-to eat/cook products by health conscious consumers in Southern India. The consumers are in the age group of "between 20 to 40" are given questionnaire to get the feedback and some of the interviewed personally. Based on their input the analyses are done and results arrived. The results have shown the health conscious consumers buying these products mainly due to ingredients, brand awareness, calories content and package styling.
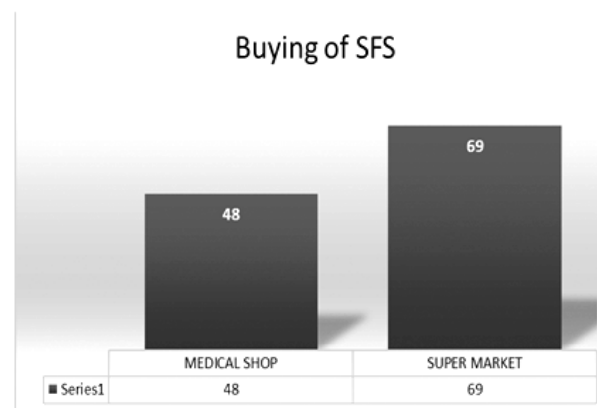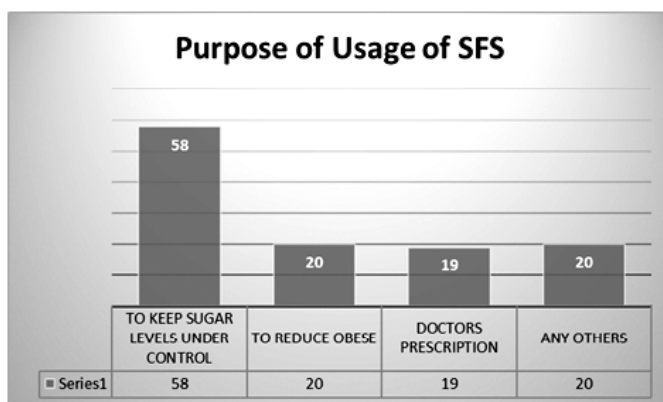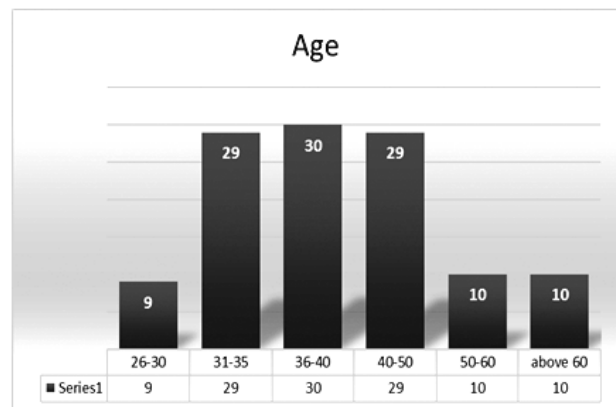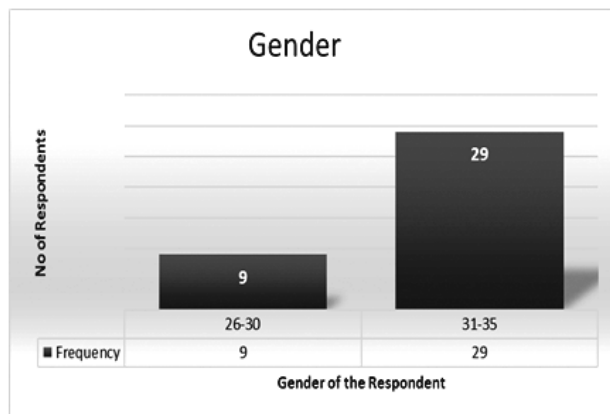
The researcher focused on niche consumers ie; health conscious consumers in the Tier I cities across southern India.
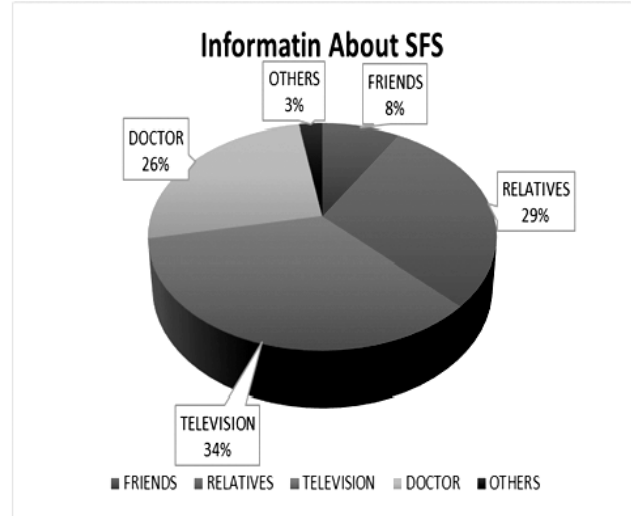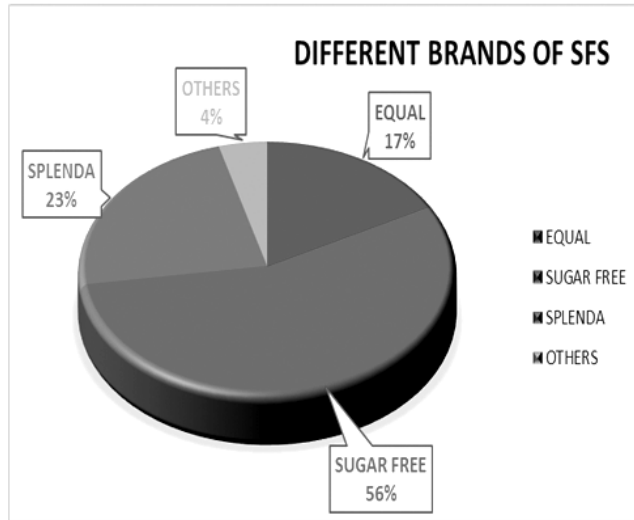
Chao-Chan Wu (2011) examine the relationship among hospital brand image, service quality, patient satisfaction, and loyalty. Survey data gathered from large private hospitals in Taiwan are used to test the relationship. The results reveal that hospital brand image has both direct and indirect effects on patient loyalty. It means that a positive hospital brand image not only increases patient loyalty directly, but it also improves patient satisfaction through the enhancing of perceived service quality, which in turn increases the re-visit intention of patients. Hospital brand image indeed serves as a lead factor in enhancing service quality, patient satisfaction, and patient loyalty.

RESEARCH METHODOLOGY

The researcher has chosen the Diabetic clinics as sample unit. The sample size determined is 125, but after discarding the missing values and extreme cases, the size is 117. The study was administered using a structured questionnaire, the first 5 questions contains demographic factors and the rest contains questions related to satisfaction and consumption pattern of the respondent on Sugar Free Sweeteners. SPSS 14.00 was used to analyze ANOVA, One-sample test and Correlation.

CHARTS & TABLES

Gender

	26-30	31-35
Frequency	9	29

Gender of the Respondent

Age

	26-30	31-35	36-40	40-50	50-60	above 60
Series1	9	29	30	29	10	10

Purpose of Usage of SFS

	TO KEEP SUGAR LEVELS UNDER CONTROL	TO REDUCE OBESE	DOCTORS PRESCRIPTION	ANY OTHERS
Series1	58	20	19	20

Buying of SFS

	MEDICAL SHOP	SUPER MARKET
Series1	48	69

DIFFERENT BRANDS OF SFS

Informatin About SFS

ANALYSIS

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	7.950[a]	1	.005		
Continuity Correction[b]	6.427	1	.011		
Likelihood Ratio	12.697	1	.000		
Fisher's Exact Test				.003	.002
Linear-by-Linear Association	7.882	1	.005		
N of Valid Cases	117				

Inference

Since the calculated chi-square value is greater than the table value we reject the null hypothesis and we conclude that both the gender and consumption of SFS are not independent to each other at 5% level of significance.

Brand of Sugar Free Sweeteners

		Brand of SFS				
		Equal	Sugar Free	Splenda	Others	Total
Gender Of The Respondent	Male	10	56	17	5	88
	Female	10	9	10	0	29
Total		20	65	27	5	117

Chi-Square Tests

	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	14.814[a]	3	.002
Likelihood Ratio	15.433	3	.001
Linear-by-Linear Association	1.800	1	.180
N of Valid Cases	117		

Inference

Since the calculated chi-square value is greater than the table value we reject the null hypothesis and we conclude that the gender of the respondent is not independent to their Brand selection for the usage of SFS 5% level of significance.

Chi-Square Tests			
	Value	*df*	*Asymp. Sig. (2-sided)*
Pearson Chi-Square	69.959[a]	5	.000
Likelihood Ratio	68.835	5	.000
Linear-by-Linear Association	.973	1	.324
N of Valid Cases	117		

Inference

Since the calculated chi-square value is greater than the table value we reject the null hypothesis and we conclude that there is a relationship between Age and the Consumption at 5% level of significance and there is a relationship between age and consumption.

Satisfaction Level

ANOVA						
		Sum of Squares	*df*	*Mean Square*	*F*	*Sig.*
Hygienic cover	Between Groups	12.514	1	12.514	15.208	.000
	Within Groups	94.631	115	.823		
	Total	107.145	116			
Price of Sugar are reasonable	Between Groups	4.067	1	4.067	5.877	.017
	Within Groups	79.591	115	.692		
	Total	83.658	116			
Usage Methods	Between Groups	.008	1	.008	.014	.906
	Within Groups	65.650	115	.571		
	Total	65.658	116			
No side effects will happen	Between Groups	40.899	1	40.899	73.546	.000
	Within Groups	58.391	105	.556		
	Total	99.290	106			
Availability	Between Groups	11.689	1	11.689	10.874	.001
	Within Groups	112.872	105	1.075		
	Total	124.561	106			

Inference

The above table clearly shows the Importance given to the brand has significance level with its satisfaction.

Reason for Consumption

ANOVA

		Sum of Squares	df	Mean Square	F	Sig.
Sugar Level under control	Between Groups	4.429	1	4.429	13.968	.003
	Within Groups	258.870	115	2.251		
	Total	263.299	116			
Precautionary Measure	Between Groups	3.339	1	3.339	11.783	.001
	Within Groups	196.679	105	1.873		
	Total	200.019	106			
Keep my Weight Under Maintenance	Between Groups	.429	1	.429	.489	.486
	Within Groups	100.870	115	.877		
	Total	101.299	116			
Prevent Blood Pressure	Between Groups	1.756	1	1.756	1.030	.312
	Within Groups	196.056	115	1.705		
	Total	197.812	116			
Reducing Calories	Between Groups	1.321	1	1.321	69.745	.000
	Within Groups	203.824	115	1.772		
	Total	205.145	116			

Inference

The above table shows that the reason for the consumption of sugar free sweeteners are mainly because of the following reasons like keeping sugar under control , As a precautionary measure and To reduce calories.

MAJOR FINDINGS:

From the above table we found that 75.2% of the respondents are male and 24.8% of respondents are female gender.

- From the above table the majority of the respondents belong to the age group 31-35, 36-40 and 40 – 50 with 24.8%, 25.6% and 24.8 % respectively.

- It is found that the 76.1%of the population of the respondent are diabetic.

- It is found that the Type –I diabetes are 21.4%, Type – II Diabetes are 47% and 68.4% of respondents doesn't respond for the options given.

- It is found that the 83% of the respondent has the awareness about the Sugar Free Sweeteners.

- It is identified that 82.9% of the respondents consume SFS .

- It is found that majority of the respondents consume SFS to keep the sugar level in control.

- It is found that majority of the respondents prefer to buy SFS from Medical shops and super market.

- It is also identified that 17.1% of the respondents use Equal , 55.6% of the respondent use Sugar Free , 23.1% of the respondent use Splenda .

- It is found that nearly 35% of the respondents are getting information by TV advertisements.

LIMITATIONS AND FURTHER SCOPE FOR RESEARCH

This study would help the industry to know the satisfaction and consumption pattern of SFS by the Chennai consumers, so that they can adopt proper marketing and distribution strategies. The study has certain limitations that it was restricted to Chennai city. The study is been confined to consumption and satisfaction of SFS; the research can be further extended to know the perception and effect of the same.

SUGGESTIONS AND CONCLUSION

- The majority of the respondents are in the age group of 31 – 50 yrs, so the marketers are expected to do marketing programmes suiting these age groups.

- Marketers should educate the consumers about Type –I and Type – II diabetes, because 68.4% of the sample doesn't aware about SFS.

- Since majority of the respondents are preferred to buy SFS from Medical shops, Marketers can concentrate medical shops for selling the products and also have to educate about the availability of SFS products in other places like Kirana shops, Super markets etc .

- Marketers can concentrate on TV advertisements for promoting the SFS products because most of the samples were buying SFS by seeing Television.

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