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## Evaluation of the Motivational Factors Promoting the Consumption Nutraceuticals sold at Health Food Stores in Trinidad

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### **Abstract**

This research investigated the underlying factors which motivated consumers to purchase and consume nutraceuticals or health products health food stores in Trinidad. The study was conducted among 245 adult residents of Trinidad via consumer surveys. The questionnaire was divided into sections of purchase at health food stores, health food products, awareness of health foods/nutraceuticals and demographics. The data collected was coded and analysed with the aid of IBM SPSS to identify trends, frequencies and relationships between variables. Statistical analysis of the data revealed the strongest motivational factor which influenced consumer investment in nutraceuticals was general long-term health. Most (75.5%) respondents were consumers of nutraceuticals/health foods. The age group with the highest influence ( $P < 0.05$ ) on nutraceutical recognition was 18-25yrs. Consumers perceived nutraceuticals as positive (94.6%) and were ranked for their affordability (52.4%), effectiveness (78.4%) and quality (85.9%). The factor which impacted on non-spending on nutraceuticals by non-consumers (31.3%) was the lack of affordability of the products. Respondents were motivated to use nutraceuticals towards long term health (88.7%), healthy eating or diet (86%), physical appearance (77.9%), natural alternatives (67%), detoxing (64.8%), weight management (63.9%), and disease treatment (45.5%). Consumers demanded the following categories of food products: gluten-free (17.2%), specific classes (organic vegetables: 10.4%) and dietary classes (vitamins: 24.6%). Among the consumers with non-communicable diseases, digestive-related problem was ranked the highest among the diseases treated using nutraceuticals.

**Keywords:** Nutraceuticals, Health, Purchase, Disease- treatment, Dietary-supplements



## **Introduction**

For the health-conscious consumer in pursuing the goals of health promotion and/or the prevention of disease, nutraceuticals and functional foods may play a crucial role (Shahidi 2012). Nutraceuticals and functional foods have the attributed claims of being able to promote health and decrease the risk of non-communicable diseases (Hussain et al 2015). Nutraceuticals and functional foods are terms within the food industry which have been used interchangeably and incorporate many subgroups, however, there has been no consensus on any universally accepted definition for these terms or the products which are to be classified under these broad titles (Nagy 2010).

The term nutraceuticals have been defined as “any substance that may be considered a food or part of a food and provides medical or health benefits including the prevention and treatment of a disease” (Nagy 2010). In 2009, Health Canada defined functional foods as “*similar in appearance to, or may be, a conventional food that is consumed as part of a usual diet, and is demonstrated to have physiological benefits and/or to reduce the risk of chronic disease beyond basic nutritional functions.*” With reference to the products which bestow positive effects upon human health are termed ‘nutraceuticals’ but can also be referred to as nutritional foods, pharma foods (or medical foods), super foods (or designer foods) and functional foods (Childs and Poryzees,1998). Nutraceutical and functional foods markets are highly diversified with a host of different products and as a result, consumers do not perceive them as extensions of a single homogenous group (Urala and Lahteenmaki 2007).

The nutraceutical market, like all other markets worldwide, affords consumers innumerable ways to buy which makes it a prominent driver (Ratneshwar and Mick 2005). Consuming ‘hope’ from the nutraceutical market is derived from its product availability which makes it conceivable for these goal-congruent outcomes to be attained. (Ratneshwar and Mick 2005). Consumers may be led by an approach motive as well as a promotion focus. The key factors which influence consumer purchase intention towards nutraceuticals and functional foods comprised of combinations of price, quality, taste, value, convenience and the attributed health effects of the products (Urala and Lahteenmaki 2007).

For the year 2008, the total annual health expenditure for Trinidad and Tobago amounted to TT\$7,611 million (\$TT 6.8 = \$US 1), an estimated 1,179.7 million US dollars. The total annual health expenditure was 5.7% of the GDP and the total annual expenditure on health per capita was TT\$ 5,775.9 (US\$ 895.26) (Trinidad and Tobago MOH, 2012). The Ministry of Health Statistical Report 2009-2011 (2016) reported that the for 2009, heart disease (2215) malignant neoplasm (1472) and diabetes mellitus (1344) were ranked amongst the top three causes of death. These mortalities are all lifestyle oriented.

The objectives of this investigation were to determine the awareness, perception and motivational factors which drive the purchase and consumption of nutraceuticals purchased from health stores by consumers

## **Methodology**

### *Sample population*

The sample comprised of 245 adult residents (over 18 years) of Trinidad, who had the potential to be consumers of the nutraceutical market segment in Trinidad. Participants were approached within the vicinity and inside health food stores located at North-West (35.1%), Central (24.9%), North-Central (22.1%), South-Central (15.7%), North-East (1.1%) and South-West (1.1%). to be availed of a balance of consumers and non-consumers and provide equal perspectives into this research. A health food store was defined as a store that sells natural, organic or herbal foods, products and supplements which can help promote health naturally and prevent disease.

### *Consumer survey*

The questionnaire was divided into sections of health food stores, health food products, awareness of health foods/nutraceuticals and demographics and comprised of close -ended questions inclusive of open-ended questions and Likert rating scales. The instrument was pre-tested and pilot tested before final launch to the target sample. During the initial stages of testing the questionnaire, it was noted that the respondents were unfamiliar with the term 'nutraceuticals' and related more to the phrase 'health food products'. Hence both terms were applied.

The method of distribution included online surveys as well as administration of hardcopies. The online survey was constructed using Survey Planet, an online survey creation software. The online surveys were completed by giving potential consumers direct web-links to the online survey. An incentive for survey participation was the opportunity to win a ticket voucher to Movietowne (\$TT80 value) from a draw once the sample size was met. The identity of respondents was kept anonymous with the provision of a contact number for the purposes of the draw upon their participation.

### *Statistical Analysis*

The data was analysed using IBM SPSS software and reported as frequencies and percentages. The association between variables, Pearson's correlation (r values) was used to identify the significance of the relationship and to ascertain the strength of association from the slope (positive or negative). The factors of awareness and recognition of nutraceuticals among consumers were tested for association to consumer status and consumer demographics (age, income, gender, ethnicity and education) by chi-square tests. To determine the significant relationships between pairs of categorical variables, the Likelihood Ratio Tests and Multinomial Logistic Regression were used.

## **Results and Discussion**

### *Demographics*

Table 1 shows that the respondents were predominantly female (n=59.6%), ages 26-35yrs (n=42%), with tertiary level education (n=44.1%), of Indian ethnicity (n=60%) and earning an income per month exceeding \$TT8000 (n=21.6%). There was quite a high level of unemployment (19.6%).

### *Consumer awareness and recognition*

Consumers related the term 'nutraceuticals' more to 'health foods' when provided with a definition of 'nutraceuticals'. Most (75.5%) respondents visited health stores and were purchasers of nutraceuticals. Only 15.5% of respondents recognised that many health food products on the market were under the nutraceutical category. In a study which investigated the exercise

enthusiasts' perceptions and beliefs of functional foods in Trinidad, West Indies, only 50.5% had heard of at least one term, either 'functional' or 'nutraceutical' or 'designer' with the most familiar term ( $P < 0.05$ ; 34.03%) being 'functional.' (Badrie et al. 2007). The odds of being aware of the term nutraceuticals as a consumer was significantly ( $P < 0.05$ ) higher than the odds of being as a non-consumer, despite the facts that the majority (75.5%) of consumers were unaware of nutraceuticals

There were no significant ( $P > 0.05$ ) associations between consumer awareness of nutraceuticals to all demographics except educational level ( $P < 0.05$ ). Conceivably, higher education levels assisted consumers in analysis and evaluation of the concepts and mechanism of actions within which many nutraceuticals function as well as how the products contributed to a consumers' promotion of health

Consumer recognition was significantly ( $P < 0.01$ ) related to higher odds of being a predisposition to consumers of nutraceuticals over the non-consumers. The only significant ( $P < 0.01$ ) demographic factor which was related to consumer recognition of nutraceuticals was age, indicating a decrease in the likelihood of nutraceutical awareness with increase in consumer age. The age group with the highest influence on nutraceutical recognition was 18-25yrs.

#### *Frequency of visits to health food stores & purchase frequency*

About 62.4 % of respondents visited health stores for nutraceuticals in Trinidad. The frequency of visits by respondents to health food stores was 'once per month' (28.1%) followed by 'once per 2-3 months' (20.3%), 'once every per 4-6 months' (19.6%), 'once per year' (17%), 'once every 2 weeks' (7.2%), 'once per week' (5.2%) 'and 'never' (2%). The frequency of purchase of nutraceuticals was 'once per month' by 24.9% of consumers, '1-2 times per month' (21.1%) and every 1-2 weeks (21.1%), 'once per 2-3months' (20.5%), and 'once per 3-6 months' (20.5%).

Fig 1 shows the factors which dissuaded respondents from visiting health stores. These were the lack of awareness of location (50%), product knowledge (17%) and lack of interest in product market (7.5%). In respect to the length of time consumers have been purchasing nutraceuticals, the most extensive time period was exceeding one year by 73% of respondents.

Most (75.5%) respondents visited health food stores in order to source nutraceuticals. In respect to consumer rating for the frequency of availability of nutraceutical products being sought at the health food stores, almost half of the consumers (45.8%) reported that they ‘occasionally’ found the items required, 34.6% ‘frequently’, 16.3% ‘always’, 2.6% ‘rarely’ and 0.7% ‘never’ found the products being sought. Most (75.5%) respondents were consumers of nutraceuticals/health foods in Trinidad. This result is similar to a CRN Consumer Survey on Dietary Supplements which found 76% of U.S. adults reported consuming dietary supplements (Council for Responsible Nutrition, 2017). In terms of the types of supplements being taken, the survey found that vitamins/minerals are the most commonly consumed supplement category, consistent with the previous surveys, with 75% of U.S. adults saying they have taken these in the past twelve months.

None of the socio - demographic characteristics of respondents influenced ( $P > 0.05$ ) the purchase frequency of nutraceuticals/health foods. The frequencies of purchase of ‘once per week’ and ‘once per 2 wks.’ were significantly ( $P < 0.01$ ) associated to consumer motivation of health. Diet as a motivational factor was significantly associated ( $P < 0.01$ ) to the frequency of purchase of ‘once per week’ and ‘once per month’.

#### *Consumption of nutraceuticals*

Almost half of all of purchasing consumers reported that they bought nutraceuticals for their own use (47%), for their family members (23%), for their spouse (12%) and for their children (10%), for friends (6%) and or other persons whom they knew (2%).

The highest consumption frequency of nutraceuticals by consumers occurred ‘once per day’ (26.3%), ‘1-2 times per day’ (18.2%), ‘once every 2-3 days’ (17.6%), ‘once every 2-3 months’ (11.2%), ‘once in every 3+ months’ (8.6%), ‘once per week’ (6.4%), ‘once per month’ (5.3%), ‘once per 2 weeks’ (4.8%) and the lowest but most frequent consumption: ‘at every meal’ (1.6%). There were no significant associations ( $P > 0.05$ ) between nutraceutical consumption frequency and demographical characteristics of respondents.



Figure 2 shows the general grouping of nutraceuticals consumers sought. The choices were for as follows gluten free products (17.2%), healthy snacks (12.6%), organic foods (11.3%), healthy beverages (8.6%) and healthy flours (6.6%). The other groupings sought by consumers each was ranked under 5%.

In respect to the range of specific grouping of nutraceuticals sought by consumers, the highest groups were for organic vegetables (10.4%), wholegrains (9.3%), nuts (7.1%), coconut oil (6.6%); organic/green teas (6.6%), organic fruits (6%) and multivitamins (5.5%). The other groupings sought by consumers were ranked under 5%.

Table 2 shows in respect to the dietary classification of nutraceuticals by the frequency percentage of consumers. The classification with the highest percentage of consumers was vitamins (24.6%), followed by carotenoids (18.1%), minerals (18%) and dietary fibre (14.4%). Lower rankings included classifications of probiotics and prebiotics (7.2%), protein based (5.7%), isoflavonones (5.1%), flavanoids (2.8%), stanols (2.6%) and fatty acids (1.5%).

#### *Money spent on nutraceuticals*

Approximately half (52.4%) of consumers 'agreed' that nutraceuticals were affordable to them, while 14.6% were 'indifferent' as to the cost and 33% 'disagreed' with the statement.

Table 2 shows that from the chi-squared tests, that income was the only demographic variable which was significantly ( $P < 0.05$ ) associated to the consumption frequency of nutraceuticals by consumers. This trend that can be anticipated given that higher levels of income can allow for larger financial investments in nutraceuticals. The highest percentage (25.3%) of consumers spent 'less than TT\$100 per month' on nutraceuticals, followed by 'TT\$100-\$200 per month' (19.5%), 'TT\$300-\$400 per month' (15.7%), TT\$400-\$500 per month' (15.7%), 'TT\$200-\$300 per month' (11.9%) and exceeded 'TT\$500 per month' (11.9%).

The influence on consumer spending on nutraceuticals was a significantly ( $P < 0.05$ ) associated to the consumer motivations such as general long term health ( $r: -0.25$ ), healthy eating/diet ( $r: -0.15$ ), weight management ( $r: -0.08$ ), detoxing ( $r: -0.30$ ), disease treatment ( $r: -0.18$ ), physical

appearance (r: -0.15) and natural alternatives (-0.19). However, there was no significant ( $P < 0.05$ ) association to any demographic variable on the influence on the money spent by consumers on nutraceuticals.

The factor which impacted on non-spending on nutraceuticals by non-consumers (31.3%) was the lack of affordability of the products. Functional foods were considered as expensive (47.4%) among exercise enthusiasts in Trinidad and Tobago (Badrie et al. 2007).

### *Consumer perception*

In respect to the general perception of nutraceuticals among consumers, only 5.4% of consumers reported of having negative experience with nutraceuticals. Consumer perception of nutraceuticals was influenced by the parameters of quality (85.9%), effectiveness (78.4%) and affordability (52.4%). The ranks of effectiveness and quality overshadowed the factor of affordability by 26% and 33% respectively signifying that consumers perceived nutraceuticals with high quality and effectiveness as attributes which outweighed the cost of the product provided that the benefits of the product work in tandem with consumer aspirations.

In respect to the effectiveness of nutraceutical use, most consumers (78.4%) agreed that the nutraceuticals used in the past had successfully worked for them, while 17.3% of consumers took a 'neutral' stance and 4.3% of consumers disagreed. The Council for Responsible Nutrition (CRN, 2017) survey found that nearly nine in ten (87%) U.S. adults have confidence in the safety, quality, and effectiveness of dietary supplements overall. Additionally, 76% of U.S. adults perceive the dietary supplement industry as trustworthy, up three percentage points from last year.

### *Consumer motivational factors for nutraceutical use*

Table 3 shows the percentage consumers by motivations to the use of nutraceuticals. The major motivational factors were for general long term health (88.7%), healthier eating or diet (86%) and physical appearance (77.9%), use of nutraceuticals as natural alternatives (67%), detoxing (64.8), weight management (63.9%) and in the treatment of non-communicable diseases (45.5%).

Table 4 shows the multinomial logistic regression showing parameter estimates for consumer motivation and consumer demographics. All demographical parameters were significant to all consumer motivations for nutraceuticals except for health. Diet (or healthy eating) and weight management were significantly ( $P < 0.05$ ) associated to income of TT\$4000-\$5000. For the health-conscious consumer, pursuing goals of health promotion and/or the prevention of disease, nutraceuticals and functional foods play a crucial role (Shahidi 2012, 226) the significant associations of demographics to consumer motivation for nutraceuticals. Diet (or healthy eating) and weight management were significantly ( $P < 0.05$ ) associated to income of TT\$4000-\$5000. For the health-conscious consumer, pursuing goals of health promotion and/or the prevention of disease, nutraceuticals and functional foods play a crucial role (Shahidi 2012, 226)

Motivational factors of health, diet and detoxification were significantly ( $P < 0.01$ ) associated to purchase frequency of nutraceuticals. Health was associated with consumer purchases of once/week and once/2wks. Diet as a motivation factor for the use of nutraceuticals was positively as associated for once/week and once/month. Detox was also positively associated for once/week and once/month as well as once/2-3mths. Natural alternatives tested positive association for purchase frequencies of once/week, once/2wks, once/month and once/2-3mths. Weight, disease and physical appearance had no significant ( $P > 0.05$ ) associations to purchase frequencies by consumers

Detoxification, physical appearance and natural alternatives were significantly ( $P < 0.05$ ) associated to consumers who had some University and tertiary levels of education. Disease treatment was significantly ( $P < 0.05$ ) associated to all age categories (yrs). Physical appearance was significantly ( $P < 0.05$ ) associated with consumers who had tertiary education levels. Natural alternatives category was significantly ( $P < 0.05$ ) associated to consumers of a secondary level of education. There was no significant ( $P > 0.05$ ) association of motivation for good health to any of the demographic factors.

The factors which demotivated consumers from the purchase and consumption of nutraceuticals in Trinidad were the lack of affordability of the products (31.3%) lack of awareness of any health food products or nutraceuticals (27.3%), low consumer confidence in the effect of the products on

health (18.2%), a higher preference for pharmaceutical medicine (12.1%) and a lack of interest in health products (11.1%).

Table 5 shows multinomial logistic regression showing parameter estimates for nutraceutical consumption frequency and consumer motivations. In the relationships between consumer motivations to nutraceutical consumption frequency of nutraceuticals, they were positive and significant and positive for health, diet, detox, disease, physical appearance and natural alternatives. Weight was not significantly ( $P>0.05$ ) associated to the levels of nutraceutical consumption frequency by consumers. Health was significantly ( $P<0.01$ ) associated to consumption frequencies of once/day, once/2-3days and once/month. Diet and detox tested positive positively for frequencies of 1-2times/day and once/day. Disease was significant ( $P>0.05$ ) for a frequency of every meal. Physical appearance was positive for once/day and once/2-3days with natural alternatives significant for frequencies of every meal and once/day.

Motivational factors of health ( $P<0.01$ ), diet ( $P<0.01$ ), detox ( $P<0.001$ ) and disease treatment ( $P<0.05$ ) were significantly related to the amount of money spent on nutraceuticals per month by consumers. Health as a motivational factor showed significant relationship against the expenditure bracket of “less than TT\$100” per month. Detoxing showed significant associations with expenditure brackets of “less than TT\$100” and “TT\$400-\$500” per month. Diet and disease treatment were overall significant against the money spent by consumers on nutraceuticals but did not show significant relationships to any specific expenditure bracket. There was no significant relationship ( $P>0.05$ ) between weight management, physical appearance or natural alternatives as motivating factors for nutraceutical consumption when tested against money spent on nutraceuticals.

Long term health as a possible motivating factor for the consumption of nutraceutical was significantly associated ( $P<0.05$ ) to consumption frequencies of ‘once per day’, ‘once per 2-3 days’, ‘once per 2 weeks’ ( $<0.001$ ) and ‘once per month’ ( $<0.001$ ). It is shown that the highest value (in terms of odds ratio) relates to the frequency of ‘once per 2 week’s followed by’ ‘once per month’, ‘once per 2-3 days’ and ‘once per day’.

The range of the major motivational factors which propelled consumers to invest their time and money into nutraceutical products were for long term health ranked (88.7%) and disease treatment (45.5%) of all respondents. The motivating factors of consumption of nutraceuticals for long term health ( $P < 0.01$ ;  $r = 0.286$ ), healthy eating or diet ( $P < 0.01$ ;  $r = 0.275$ ), physical appearance ( $P < 0.05$ ;  $r = 0.142$ ), disease treatment ( $P < 0.01$ ;  $r = 0.200$ ), detoxing ( $P < 0.01$ ;  $r = 0.336$ ) were statistically correlated ( $P < 0.01$ ) to nutraceutical consumption frequency. Health showed a significant ( $P < 0.05$ ) association with the expenditure bracket of “less than \$100” per month on nutraceuticals. In a study which investigated the determinants of acceptance of functional food in Montenegro, individuals’ education, standard of the household and level of knowledge on products with health claims and perception of some products attributes affect the frequency of functional food consumption (Stojanovic et al. 2013). In a study conducted among exercise enthusiasts in Trinidad, functional foods were perceived as being expensive (47.4%) and prevented diseases (46.3%) (Badrie et al. 2007).

In the treatment of non-communicable disease consumers related the consumption of nutraceuticals for the digestive system (Fig 4). This was not anticipated since the leading non-communicable diseases in Trinidad and Tobago as reported in The Ministry of Health of Trinidad and Tobago Annual Statistical Report of 2009-2011 were heart diseases (22.9%) diabetes mellitus (15.2%), malignant neoplasm or cancer (13.9%) for 2009 (The Ministry of Health of Trinidad and Tobago Annual Statistical Report, 2016) The relationship between nutraceutical consumption frequency and the treatment of non-communicable diseases and/or disorders was significant ( $P < 0.05$ ).

## **CONCLUSION**

Nutraceutical is the term used as a reference to foods and food products that confer health benefits to the consumer which aid in health promotion and disease prevention beyond their standard nutritional value. Despite the fact that the majority of the consumer population in Trinidad had invested in nutraceuticals exceeding a year, there was limited awareness of the term ‘nutraceuticals’ but relatedness to ‘health food products’. Most consumers (94.6%) and in particular tertiary –educated consumers showed positive experiences from nutraceuticals. They

were motivated towards the promotion of general long-term health consumer health. Health problem related to digestion was cited as the major reason given by those affected by non-communicable diseases.

Manufacturers and marketers should be taking into consideration the factors which demotivated the purchase and consumption of nutraceuticals. These were lack of affordability of products, lack of awareness of any health food products or nutraceuticals followed by low consumer confidence in the effect of the products on health, a higher preference for pharmaceutical medicine and a lack of interest in health products.

Consumer perceptions of nutraceuticals were highly positive and demonstrated selectivity of nutraceutical products based on the attributes of quality (highest ranked) followed by effectiveness and lastly affordability, giving an indication of consumer's willingness to pay for nutraceutical products that were perceived to be capable of providing the desired beneficial value to the consumer. The highest ranked purchased nutraceutical categories were gluten-free foods, organic vegetables and vitamins.

The consumption of nutraceuticals is usually without a medical prescription and/or supervision. Hence, there needs to be regulatory oversight in monitoring the products at various stages of manufacturing for quality and integrity.



## Tables and Charts

Table 1. The Frequency Distribution of Selected Socio-Demographic Characteristics of Respondents

Variable	n	%
<b>GENDER</b>		
Males	99	40.4
Females	146	59.6
<b>AGE</b>		
Under 25	56	22.9
26-35	103	42.0
36-45	46	18.8
46-55	17	6.9
56-65	21	8.6
66-75	2	0.8
<b>EDUCATION</b>		
Primary	3	1.2
Secondary	30	12.2
Some college	32	12.7
Trade/Technical	16	6.5
Tertiary	165	67.4
<b>ETHNICITY</b>		
African	30	12.2
Indian	147	60
Chinese	1	0.4
Caucasian	3	1.2
Mixed	59	24.1
Other	5	2.0
<b>INCOME \$TT</b>		
Unemployed	48	19.6
Less than \$3000	17	6.9
\$3000-\$4000	13	5.3
\$4000-\$5000	24	9.8
\$5000-\$6000	22	9.0
\$6000-\$7000	28	11.4
\$7000-\$8000	40	16.3
More than \$8000	53	21.6

Table 2 Test of Associations between Consumer Demographics to Consumption Frequency of Nutraceuticals per Month by Consumers

Consumer Demographic	$X^2$	<i>df</i>	<i>p-value</i>
Age	49.05	40	0.15
Ethnicity	24.49	40	0.89
Gender	12.04	8	0.15
Education	42.75	40	0.35
Income	77.55	56	0.03

Table 3 Influential Motivational Factors for Nutraceutical Use by Consumers

Motivational Factors	n	Frequency of Consumers
General Long-Term Health	218	88.8
Healthy Eating	211	86.0
Physical Appearance	189	77.0
Natural Alternatives	164	67.0
Detoxing	158	64.8
Weight Management	157	63.9
Disease Treatment	111	45.5
Avoidance of Chemicals	24	9.7
Preference for Organic Foods	18	7.5
Taste	11	4.8
Sheer Curiosity	7	2.7
Avoidance of Food Allergies	5	2.1
Required Dietary Supplements	5	2.1

Table 4a Dietary Classification of Nutraceuticals by Frequency of Consumption by Consumers

Dietary Classification of Nutraceuticals	n	Frequency of Consumption by Consumers (%)
Vitamin	61	24.6
Carotenoids	44	18.1
Minerals	44	18.0
Dietary Fibre	34	14.4
Probiotics and Prebiotics	17	7.2
Protein-based	14	5.7
Isoflavonones	12	5.1
Flavonoids	7	2.8
Stanols	6	2.6
Fatty Acids	5	1.5

Table 4b Test of Associations between Consumer Motivations to Consumer Demographics

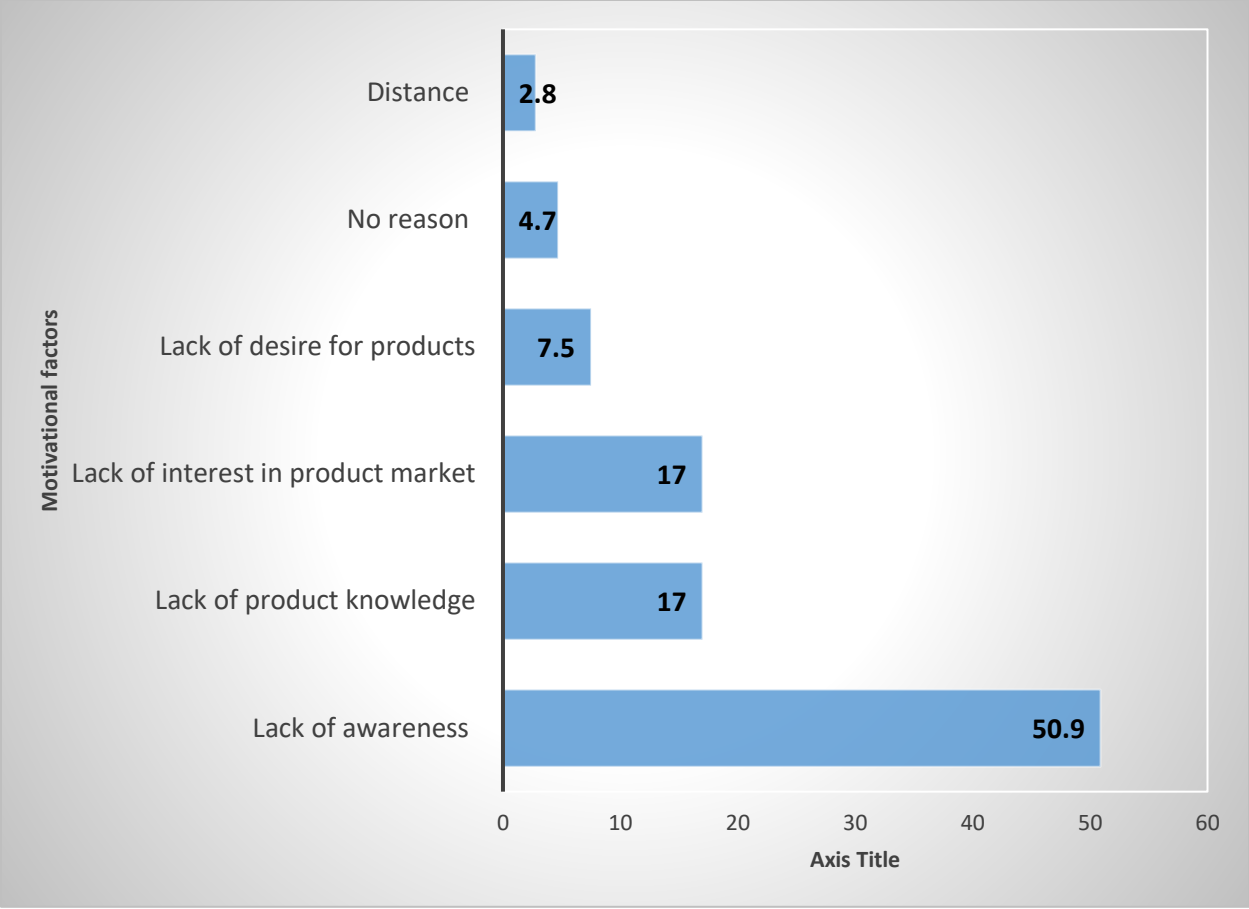
Dependent – Variables Consumer Motivations	Independent Variables -Demographical Parameters	$X^2$	<i>df</i>	<i>p-value</i>
Health	<i>No significant relationships</i>	--	--	--
Diet	Income	26.99	14	0.019
Weight management	Income	35.39	14	0.001
Detox	Education	30.45	10	0.001
Disease treatment	Age	23.17	10	0.010
Physical appearance	Education	24.15	10	0.007
Natural alternatives	Education	23.71	10	0.008

Table 4c Multinomial Logistic Regression showing Parameter Estimates for Consumer Demographics to Dependant Variables of Consumer Motivations

Dependant Variables - Consumer Motivations	Demographical Parameters	<i>B</i>	<i>SE</i>	<i>Sig</i>	<i>Exp(B)</i>
Health	<i>No significant demographics</i>	--	--	--	--
Diet	Income: \$4000-\$5000	17.36	0.782	<0.001	3.47E7
Weight management	Income: \$4000-\$5000	19.11	0.617	<0.001	199E8
	Income: \$7000-\$8000	1.39	0.056	0.035	4.00
Detox	Education: Some college credit (no degree)	3.49	1.24	0.005	32.67
	Education: Tertiary level	1.59	0.721	0.027	4.94
Disease treatment	Age: under 25yrs	17.73	0.627	<0.001	4.9E7
	Age: 26-35yrs	17.57	0.574	<0.001	4.3E7
	Age: 36-45yrs	19.52	0.748	<0.001	2.9E8
	Age: 46-55yrs	18.83	0.967	<0.001	1.5E8
Physical Appearance	Education: Tertiary level	2.28	1.15	0.048	9.78
Natural Alternatives	Education: Secondary level	2.16	1.083	0.046	8.64

Table 5 Multinomial Logistic Regression Parameter Estimates and Distribution of Consumer Motivational Factors to Dependant Variable Consumer Nutraceutical Consumption Frequency

Consumer Motivational Factors	<i>B</i>	<i>SE</i>	<i>Sig</i>	<i>Exp(B)</i>
<b>Health</b>				
Once per day	2.49	1.01	0.014	12.0
Once per 2-3 days	2.67	1.24	0.031	14.5
Once per 2weeks	20.36	1.28	<0.001	6.9E8
Once per month	19.48	1.06	<0.001	2.9E8
<b>Diet</b>				
1-2 times per day	2.05	1.02	0.044	7.75
Once per day	3.20	1.23	0.009	24.5
<b>Weight management</b>	<i>No significant parameter estimates</i>			
<b>Detox</b>				
1-2 times per day	2.42	0.951	0.011	11.25
Once per day	2.30	0.853	0.007	10.0
<b>Disease treatment</b>				
Every meal	19.36	1.48	<0.001	2.6E8
<b>Physical Appearance</b>				
Once per day	3.53	1.18	0.003	34.17
Once per 2-3 days	3.25	1.18	0.006	25.83
<b>Natural Alternatives</b>				
Every meal	19.61	1.48	<0.001	3.26E8
Once per day	2.28	0.82	0.006	9.75



Responses (%)

Fig 1 Factors which dissuaded respondents from purchase of nutraceuticals



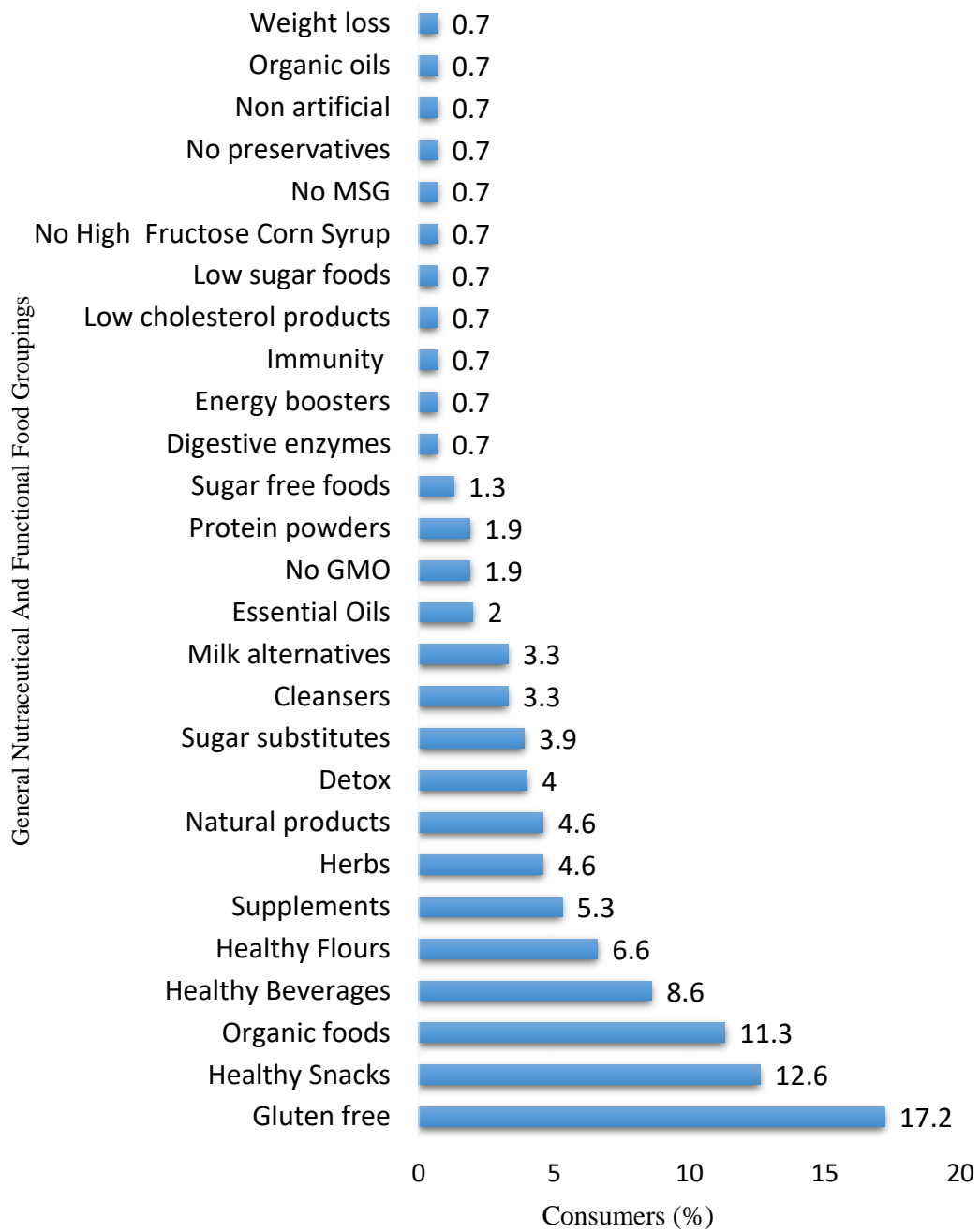


Fig 2 The general categories of nutraceuticals purchased

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