Vegetable Buying Behavior in Kurunegala District

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ABSTRACT

Dietary patterns rich in high vegetable intake are associated with a myriad of health benefits. The objective of this study was to explore the vegetable consumption behavior of consumers within the Kurunegala District. The specific objectives were to identify vegetable consumption rate among the cohort, to identify the barriers over vegetable consumption and to establish a relationship between factors affecting vegetable consumption. The results of descriptive analysis showed that females were making purchasing decisions in urban and semi urban areas except rural areas. Fair is the most popular place where rural (52%), semi urban (50%) and urban (42%) respondents purchased vegetables. The highest percentage of semi urban respondents (28%) used to purchase vegetables from groceries, while most of the respondents of rural area cultivated their own vegetables. Daily vegetable intake of majority of the respondents from rural and semi urban areas were below the World Health Organization (WHO) recommended amount of 260 grams of vegetables per day. However, low income level households consume vegetables below the standard rate while, the high income level households intake vegetables above (336.2 g/day) the recommended rate. The results of the Binary Logistic Regression indicated that consumers in the urban sector have higher probability of consuming required rate of vegetables.

KEYWORDS: Consumption, Kurunegala district, Vegetable intake

Introduction

In culinary terms, a vegetable is an edible plant or its part, intended for cooking or eating raw. In biological terms, "vegetable" designates members of the plant kingdom. Vegetables are consumed in fresh, cooked, tempered, fried, boiled and Salad forms, as part of main meals and as snacks. The nutritional content of vegetables varies considerably, though generally they contain little protein or fat. Vegetables are rich sources of many essential micronutrients, including vitamin C and K, folate, thiamine, carotenes, several minerals, and dietary fiber (Clay *et al.*, 2004). Vegetables are the most sustainable and affordable dietary source of micronutrients (AVRDC, 2004). The fiber content of vegetables have been reported to have beneficial effects on blood cholesterol and aids in the prevention of large bowel diseases, while in diabetic subjects, they improve glucose tolerance (IFT, 1990). Vegetables also play a key role in neutralizing the acids produced during food digestion because of the fiber content and

roughages which promote digestion and helps in preventing constipation (Rai and Yadav, 2005).

There is mounting evidence to the effect that bioactives present in fruits and vegetables help protecting against a number of diseases such as coronary heart diseases, hypertension and cancers (British Dietetic Association, 2011). Thus, the general advice is to consume significant proportions of fruits and vegetables to ensure the protection from Non Communicable Diseases (NCDs). In this context, World Health Organization (WHO) has set standards with respect to consumption of fruits and vegetables by recommending a minimum of 400g per day. Currently, NCDs have overtaken communicable diseases and are now the leading causes of mortality, morbidity, and disability. In 2001 NCDs accounted for 71% of all deaths in Sri Lanka (WHO, 2011). In 1995, more than 20% of cancers in Sri Lanka were attributable to inadequate fruit and vegetable intake and it has predicted that this value will further increase in the future. It has been reported that two billion people suffer from malnutrition due to inadequate consumption of vegetables (AVRDC, 2004). World Health Organization (WHO) places low intake of fruit and vegetables, sixth among 20 risk factors for global human mortality, just behind such better known killers as tobacco use and high cholesterol (FAO, 2006). According to the FAO food balance sheets in 2004, the per capita vegetable consumption was 70g, which is much lower than the recommended quantities by WHO (FAO, 2004).

Although vegetables are essential for human health, most people in developing countries do not have affordable access to this food. Though vegetable production is increasing at a higher rate in Asia, compared to other major food crops, post-harvest losses and inadequate income contribute to widespread malnutrition. Many persons in Asia, especially in South Asia, consume less than half of the vegetables they need to live a healthy life (AVRDC, 2004).

Worldwide production of vegetables has risen at an impressive rate of 4.97% per year (FAO, 2004). The top five vegetable producers are China, India, Vietnam, Nigeria and Philippines. Sri Lanka is ranked 38th in the vegetable production worldwide (FAO, 2012). According to Weinberger and Lumpkin (2007), a strong vegetable sector is an engine for economic growth. Fruit and vegetable consumers are influenced by the availability, desirability and accessibility of the products (Clay *et al.,* 2004). Vegetable is the most important cultivation in the Sri Lankan agricultural sector after paddy. An average consumer spends nearly 6% of his expenditure only on vegetables (Central Bank of Sri Lanka, 1986/87).

Consumer preference is an indicator of how much of a product consumers are willing to purchase, and is a function of income, relative prices and consumer priorities, preferences and choices. Identification of customer needs and desires constitute a critical aspect of marketing. Taste and perception have varying degrees of importance to different consumers. Convenience, that is the time and ease of preparation and consumption, is a significant factor as consumers want products that fit into busy lifestyles. Producing the same horticultural products will not necessarily contribute to increased consumption or to improving nutrition unless people want to purchase the products and can afford to do so (Clay *et al.,* 2004).

The objective of this study was to explore the vegetable consumption behavior of consumers in Kurunegala District. Urban, semi urban and rural people can be easily found in the Kurunegala area, further the vegetable sellers, producers and distributers are available within Kurunegala area. The specific objectives were to identify vegetable consumption rate among the cohort, identify the barriers over vegetable consumption, to establish a relationship between different factors influencing consumption behavior of vegetable.

Methodology
Data Collection and Analysis
The study was conducted within the Kurunegala District during the period from April to June 2013. The data were collected from a sample of households (n=150), selected randomly from Urban, Semi urban and Rural areas of Kurunegala District. The Kurunegala municipal area was considered as urban area, suburbs of urban area up to 5 kilometers was considered as semi urban area and remote areas were considered as rural areas. A pre-tested structured questionnaire was administered to gather the data from the respondents via face-to face interviews. The questionnaire was consisted of five main question categories including; general information of the consumers, amount of vegetable consumption per week, perception on vegetable consumption, vegetables purchasing location and barriers for vegetable consumption. Barriers for vegetable consumption were investigated through simple-dichotomous statements.

Data were analyzed using descriptive analysis and inferential statistics. Data were analyzed with statistical package Minitab 15. Binary Logistic Regression (BLR) was used to investigate significant factors that influence the vegetable consumption rate of the respondents. Consumption rate was calculated by dividing the total grams of vegetables purchased by the number of family members. The WHO recommended vegetable consumption rate for an individual per day is 260 grams. Consumption rate above the recommended rate was considered as one and consumption rate below recommended rate was considered as zero. These values were used in logistic regression as dependent variables. Further, households were categorized into two different groups by considering their level of income as low level of income (below 25,000 monthly income) and high (above 25,000 monthly income). One sample t-test was carried out using Minitab 16 software to detect weather the households consume vegetables below or above the standard rate when their level of income varied.

Results and Discussion
Descriptive Statistics
Socio economic characteristics of respondents are shown in Table 1. Most of the respondents of rural area were males (58%) while majority of respondents in Urban and Semi Urban area were females (54%, 56%) respectively. This is attributed to the fact that males dominate the decision making due to the cultural factor that encourage males to go out to purchase materials needed for the family in rural areas.

Table 1: Socioeconomic Characteristics of the Respondent

Parameter	Rural	Percentage	Semi urban	Percentage	Urban	Percentage
Gender						
Male	29	58%	22	44%	23	46%
Female	21	42%	28	56%	27	54%
Level of Education						
No Schooling	3	6%	0	0%	0	0%
Primary	15	30%	19	38%	12	24%
Secondary	23	46%	15	30%	17	34%
Tertiary	8	16%	5	10%	13	26%
Higher	1	2%	11	22%	8	16%
Marital status						
Married	44	88%	45	90%	46	92%
Un married	6	12%	5	10%	4	8%
Occupation						
Government Servant	9	18%	28	56%	15	30%
Own	13	26%	15	30%	4	8%
Private company	19	38%	4	8%	30	60%
No job	9	18%	3	6%	1	2%
Income Level						
<15000	1	2%	12	24%	1	2%
15000 -25000	36	72%	18	36%	9	18%
25000 - 35000	11	22%	11	22%	24	48%
35000 - 45000	2	4%	8	16%	11	22%
>45000	0	0%	1	2%	5	10%

When considering level of education, considerable number of respondents from urban and semi urban areas 22% and 16% respectively have completed higher education. It's due to easy access to higher education. Majority of the respondents from all three areas were married. This indicates that parents make the purchasing decisions in the majority of the households in all three areas. Majority of the income level of respondents of rural area were in the range of Rs.15,000 – 25,000. Income level of respondents of urban area mainly lies within the range of Rs.25,000 – 35,000.

Consumer Purchasing Habit

Respondents' vegetable purchasing markets are shown in Figure 1. The majority (52%) of respondents in rural areas purchased their vegetables from the fair, 26% from groceries and 22% got vegetables from their own cultivation. Majority (50%) of the respondents from semi urban areas purchased their vegetables from the fair, 28% from the grocery and 8% from the hawkers and 4% from own cultivation. Forty two percent of the respondents from urban area purchased vegetables from fair and 22% from super markets. It's attributed to the facts of close proximity and the time availability for the purchasing of the vegetables. Fair and grocery are most popular forms of vegetable markets in Kurunegala District. Fair is the leading vegetable market in Sri Lanka.

People are of the view that vegetables can be bought for cheap price from fairs. Also, the fact that vegetables are bought for fairs directly from main markets contribute to this factor. Another factor is vegetable fairs are widely spread in the district.
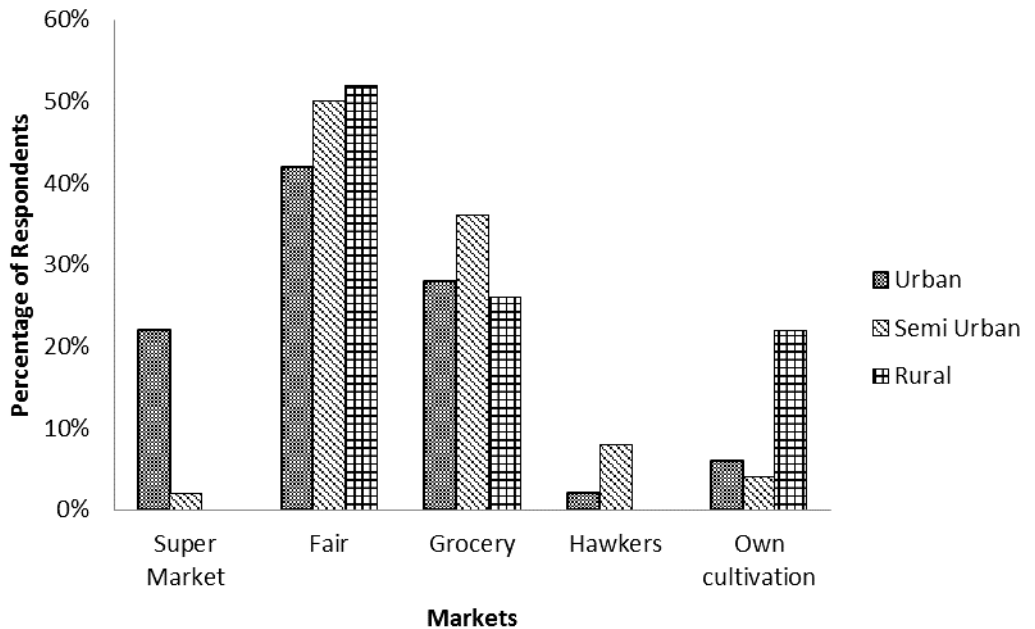

Figure 1. Vegetable Purchasing Market

Vegetable Consumption Rate

According to WHO recommendation it is important for an individual to consume 260 grams of vegetables per day. According to the respondents rural area only 46% (Figure 2) of respondents consumed more than 260g of vegetable per day and in semi urban area 50% of the respondents consumed more than the standard amount. Only in the urban area majority of the respondents consumed 62% more than the standard rate.
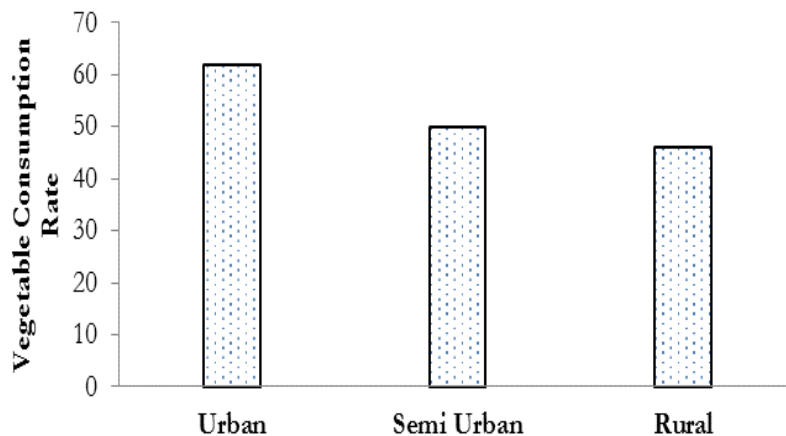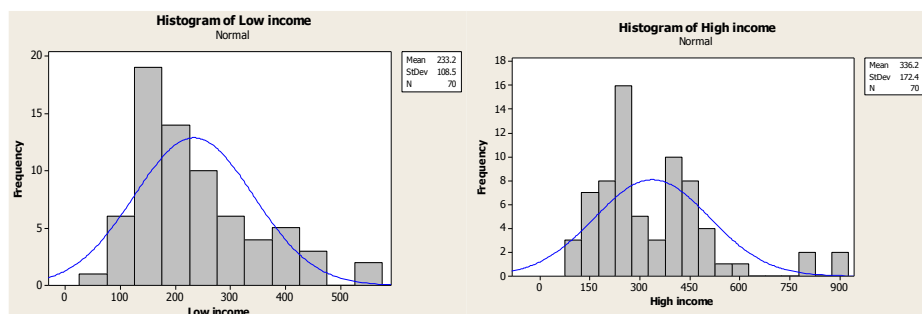

Figure 2. Vegetable Consumption Rate

Table 2: Vegetable Consumption Rate with Level of Income of Households

Variables	Mean	P value
Low income	233.2	0.021
High income	336.2	1.000

Figure 3. Vegetable Consumption Rate with Level of Income of People

Further, households were categorized into two different groups by considering their level of income as low income (monthly income is less than 25,000) and high income (monthly income is above 25,000). According to the Table 2, there is a significant difference of vegetable consumption among the low income level people while there were no significant differences of vegetable consumption among the high income level households within the Kurunegala District. However, the low income households consume vegetable (233.2 g/day) below the standard rate (<260g/day) while, the high income level people consume vegetables (336.2 g/day) above the standard rate (Figure 3).

Factors Affecting the Vegetable Consumption Rate: The Binary Logistic Regression

The results of BLR analysis are shown in the Table 3. The model showed p-value of 0.075 indicating model is marginally statistically significant ($a = 0.1$). Logistic regression results indicated that rural and semi urban areas have same impact on the vegetable consumption rate whereas consumption rate of urban area significantly differ from other two areas. According to the results there wasn't significant difference between male and female vegetable consumption rates. Results didn't show any significant difference in vegetable consumption rate between different education levels. Also results didn't show significant difference in consumption rate due to diseases. There is significant difference in vegetable consumption rate between respondents of income level '<Rs.15,000' and 'Rs.15,000-25,000'. There is also significant difference in the vegetable consumption rate between income level category of '<Rs.15,000' and '25,000-35,000'. However, there was no significant difference in vegetable consumption rate for further higher income earning respondents as they were not aware about the nutritional value of vegetables.

According to coefficients most of the factors have positive relationship. However, Level of education has negative relationship with the consumption rate. It's attributed to the fact changing lifestyle of the people.

Table 3: Results of Logistic Regression

Variable	Coefficients	Probability
Area		
Semi Urban	0.209	0.672
Urban	1.239	0.015
Gender		
Female	-0.503	0.175
Level of education		
Primary	-1.526	0.249
Secondary	-1.489	0.254
Tertiary	-0.359	0.791
Higher	-1.224	0.384
Disease		
Yes	-0.132	0.765
Income		
15000-25000	1.179	0.097
25000-35000	1.769	0.02
35000-45000	0.706	0.393

Barriers to Vegetable Consumption

Barriers for vegetable consumption are listed in Table 4. Out of the barriers listed, the highest frequency recorded was 145, therefore it can be mentioned that the most important barrier for vegetable consumption was the unstable prices of vegetables. Further, the frequency was more than 100 (Table 4) in high vegetable prices, unavailability of fresh and superior vegetables in the market. Therefore, these barriers were concerned as the other reasonable barriers for the vegetable consumption within Kurunegala District.

Table 4: Barriers to Vegetable Consumption

Factors	Frequency
Clean vegetables are not available in the Market	86
Vegetable prices are high	112
Fresh vegetables are not available in the Market	102
Low quality vegetables are available in the market	108
Vegetable damaged during transportation are mostly available in market	119
Most of the vegetables don't have stable price	145
Most vegetables available in the market are smaller in size	72

Conclusions

This study examines the behavior of respondents towards vegetables. According to the study, other than in rural area majority of females were making purchasing decisions. Majority of the respondents usually purchase vegetables from fair. Considerable amount of respondents cultivated their own vegetables. The daily intake of vegetable of majority of the respondents from rural and semi urban areas were below the WHO recommended amount of 260g per day. Many factors influenced on the consumption rate of vegetables. Households with higher income consume vegetables above the standard amount. Vegetable consumption and education level has a negative relationship.

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