แก่นเกษตร 47 (6) : 1315-1322 (2562). KHON KAEN AGR. J. 47 (6) : 1315-1322(2019). /doi:10.14456/kaj.2019.119.

Relationship of household characteristics and vegetables consumption behavior with the proportion of income spent on vegetables in Ratnapura district, Sri Lanka

Godakande Arachchilage Shanika Anuradhi Tennakoon[1] and Satit Aditto[1*]

ABSTRACT: Presently, vegetables consumption of Sri Lanka is reporting a lower value. The socioeconomic conditions of the families were identified as reasons for this circumstance by several recent researches. Therefore, this study was conducted to study regarding how does consumer's socioeconomic characteristics and their behaviors related to vegetables purchase. Ratnapura district was designated to conduct the study. The data were obtained from a face-to-face survey of 400 respondents using accidental sampling method with a structured questionnaire. Multiple regression analysis was employed to investigate the relationship between consumer's socioeconomic characteristics and their vegetables purchasing habits on the percentage of income spent for vegetables. The results showed that arising monthly income spent less percentage of income on vegetables. The lengthening of distance to the market place, rising the frequency of visits to the market per week also increased this percentage. Moreover, the habit of preparing a list of vegetables to buy decreases this percentage.

Keywords: Vegetables, Consumption behavior

Received January 3, 2019
Accepted June 25, 2019

[1] Department of Agricultural Economics, Faculty of Agriculture, Khon Kaen University.
[*] Corresponding Author: asatit@kku.ac.th

Introduction

Vegetables provide a diversified, flavored and low caloric diet that is rich in micro-nutrients (Sachdeva et al., 2013). It was the second largest component of the Sri Lankan diet (Wijesekaere, 2015). Although in current society vegetable consumption is getting lesser. In 2012 vegetable consumption of Sri Lanka was 94 grams per day per person which was necessary to be improved at least up to 225 grams per day per person (Dharmasena and Sarananda, 2012). There can be different reasons for this. The eventful schedule of the life style primarily in women may be the major reason for this (Jayasooriya, 2016). Nimanthika and Edirisinghe (2014) stated that according to income level of the consumers, the proportion of budget they allocated for various food items was different. As example the higher income groups spent a larger amount of their monthly income to processed foods and animal origin products and a lesser portion to vegetables and grains than in lower income groups. Vaidya et al. (2013) mentioned at their study on peri-urban community in Nepal, the intake of vegetables is influenced by gender, ethnicity, education and occupation.

The study of Nimanthika and Edirisinghe (2014) pointed out a variance on the proportions of money spend for each food item is created by gender, education level and the type of employment of the household head and the family income. Jayatillake and Mahaliyanarachchi (2007) has mentioned that family size, education level and types of occupations have a direct effect with vegetables consumption. In their research about the vegetable purchase from selected native fairs in Monaragala district, Sri Lanka they stated the majority of the consumers of those particular market type, have finished their secondary school (Ordinary Level) and have families with 3-5 members. One hundred percent of the teachers and 94.1 percent of business man in their selected sample visited native markets for their vegetable purchase.

Therefore, this research has conducted to explore how does socioeconomic background of the consumers' family and their consumer behavior related to their vegetables purchase.

Materials and Methods

This research was conducted in Ratnapura district of Sri Lanka. The selected district has been surrounded by nine other districts. From them vegetables are being grown in six districts in commercial level. Therefore, Ratnapura district has been consisted with an established source of vegetables. The other three bordering districts are belonged to the major commercialized zones of the country. Due to that Ratnapura is also being demanded to upgrade to that economical position within previous few decades. Accordingly, the life style of Ratnapura residents has been become much busier due to this exposure to commercial culture. Also, a good variation of household establishment from urban to rural areas is existed with a significant diversification of socio economic background.

The data has been collected from the adult population of the district. According to age of majority the age of

adulthood is started from 18 years of age. Population in this district was 1,140,000 and from this 843,834 were above 18 years of age (Department of Census and Statistics Sri Lanka, 2017). By Yamane formula the sample size was 399.81 and taken as almost 400 (Israel, 1992). These respondents, each from a single household were selected by using accidental sampling or convenience sampling technique. A structured type self-administered questionnaire was used for this survey and the respondents have completed it by themselves with the assistance of an interviewer.

Multiple regression was used to analyze the influence of the socioeconomic characteristics of the respondent's family and vegetables purchasing habits on the percentage of income spent for vegetables, the model specification is given as follows:

$$Y = a_0 + a_1MI + a_2FM + a_3EDU + a_4AGE + a_5STS + a_6SEL + a_7LIST + a_8DIS + a_9FRQ + e$$

Where:

Y is percentage of income spent for vegetable purchase per month;

a_i is regression coefficient;

MI is monthly income;

FM is family size;

EDU is 1, if the highest education of the respondent is up or below to Advanced Level, 0 otherwise;

AGE is age;

STS is 1, if married, 0 if otherwise;

SEL is 1, if the respondent purchase vegetables from a selected place, 0 otherwise;

$LIST$ is 1, if the respondent preparing a list of vegetables before going to purchase, 0 otherwise;

DIS is distance from the location of residence to market;

FRQ is the frequency of purchase vegetable per week;

e is error term.

Results and Discussion

Table 1 summarized the results of household characteristics and the main vegetable purchaser characteristics from the respondents in the study area. The results showed that 58.5 percent of households had 1- 4 members in their families (small family size) though other 41.5 percent got 5 or more members (big family size). The average number of members per family was 4.28 (SD = 1.20). Monthly income was grouped in to several categories depending on the household income expenditure survey in 2016 (Department of Cencus and Statistics, 2018). With respect to monthly income of these families a clear demarcation of 50 percent from the sample were belonged to the group in between 145.32 to 298.72 USD. The average monthly income of the selected sample was 278.01 USD (SD = 174.83). According to the statistical figure definitions in household income and expenditure survey in 2016, this particular segment of income can be named as middle level income group and only 0.5 percent was fitted to richest group of income and 4.5 percent had its place as the poorest monthly income group.

Moreover, the results of the socioeconomic characteristics of main vegetable purchaser in the family showed that male was dominant over female

with 51.5 percent and as a number in 218 families. Most of them were represented by the age group of 25 to 54 which has called as prime working age. That amount was used to be 70 percent of the whole sample and as a number 280 people. The average age of the vegetable purchaser was 41.1 years (SD = 12.87). Also, 77 percent of them were married while 22.3 percent were single. With regard to the highest education level 41.8 percent had highest education up to secondary school or ordinary level and another 44.8 percent has followed up to tertiary school or advanced level education. In addition, 86.6 percent of

Table 1 Household characteristics and the main vegetable purchaser characteristics

Attribute	Number	Percentage
Household characteristics		
Family size		
Small family	234	58.5
Big family	166	41.5
Monthly Income[1]		
Lower than 96.19 USD	18	4.5
96.20-145.31 USD	56	14.0
145.32-298.72 USD	200	50.0
298.73-1,024.37 USD	124	31.0
Over 1,024.38 USD	2	0.5
Socioeconomic characteristics of main vegetable purchaser		
Gender		
Male	218	54.5
Female	182	45.5
Age group		
15-24 years old	42	10.5
25-54 years old	280	70.0
55-64 years old	63	15.8
Over 65 years old	15	3.8
Marital status		
Single/Never married	89	22.3
Married	308	77.0
Divorced	3	0.8
Highest education		
Ordinary Level (O/L)	167	41.8
Advanced Level (A/L)	179	44.8
Diploma level	23	5.8
Degree	27	6.8
Postgraduate	4	1.0
Profession		
Government sector	78	19.5
Private sector	106	26.5
Business	49	12.3
Agriculture related activities	103	25.8
Other activities	64	16.0

[1] 1 USD = 154.31 Sri Lankan Rupees (Central Bank of Sri Lanka, 2018).

these vegetables purchasers had studied up or below to Advanced Level (13 years in the school) whereas 5.8 percent had followed a particular diploma related to their careers, 6.8 percent with a basic degree and 1 percent with post graduate qualifications. In occupations their major profession was either in private sector or in agriculture related activities with only a slightly difference in percentages.

Weekly purchase was the leading habit of buying vegetables with a 45.75 percent and second has come purchase twice a week with 32.5 percent. The habit of purchasing vegetables for 1-2 times per week was presented around 78.3 percent of the respondent's families. However, the average for this was 1.91 times a week (SD = 1.13). Correspondingly most of the families never had a proper decision about which types of vegetables to purchase or which market place to visit for vegetables acquisition. About 33.8 percent of these purchasers preferred to visit the market place for vegetables in the morning time in-between 8 A.M. to 12 noon, but on the other hand around 31.8 percent of the purchaser made visits whenever possible to them within the day.

Table 2 Vegetable consumption information in respondent households

Attribute	Number	Percentage
Frequency of purchasing per week		
Daily	5	1.3
3-6 times per week	82	20.5
Twice a week	130	32.5
Once a week	183	45.8
Time of purchasing		
8-12 A. M.	135	33.8
1-4 P. M.	62	15.5
5-8 P. M.	77	19.3
No specific time	127	31.8
Purchase from a selected place		
Yes	113	28.2
No	287	71.8
Make a list before going to market		
Yes	141	35.3
No	359	64.7
Distance travel to market		
Less than 5.0 Kilometers	262	65.5
5.1-15.0 Kilometers	122	30.5
15.1-25.0 Kilometers	12	3.0
Over 25.1 Kilometers	4	1.0
Amount spent for vegetables as a percentage of monthly income		
Below 10.00	107	26.8
10.01-20.00	130	32.5
20.01-30.00	68	17.0
30.01-40.00	43	10.8
40.01-50.00	17	4.3
Over 50.01	35	8.8

The distance to their typically visited market place has an average value as 5.42 km (SD = 5.39). A convenient market place that established within 5 km to their households was selected by 65.5 percent of the respondent's families already for their vegetables requirement. Another 30.5 percent of the respondent's families also had their common vegetables market within a distance of 5.1 km to 15 km. The results showed that most of the respondent's families residence located close to vegetable markets. The amount of monthly total income they spent for vegetable purchasing had a considerable variance. Nonetheless the average value was 23.09 percent from the monthly income (SD = 18.0). As shown in results, 59.3 percent of the respondent's families spent 1 to 20 percent amount of their monthly income on vegetables **(Table 2).**

Multiple regression analysis was employed to investigate the relationship of the percentage of income spent for vegetables per month and socioeconomic characteristics of respondent's family and vegetables purchasing habits. Before performing multiple regression analysis, the model was assessed for normality, linearity, multicollinearity and homoscedasticity and the results have undergone to be satisfied with the data set. The model is statistically significant ($P<0.01$), this indicated that the combination of these independent variables were significantly associated together to predict the dependent variable. The coefficient of determination (R^2) of the model is 0.374, this is indicated that a 37.4 percent of the variance can be predicted from the independent variables those applied. This value is acceptable because an as low as 10 percent is generally accepted for studies in social sciences because human behavior cannot be accurately predicted (Ozil, 2016). The summary results based on β values can be illustrated as below **(Table 3)**.

The variance of independent and dependent variables was specified by standardized coefficients (β values) in both positive and negative variances (Hair et al., 2006). The monthly income (*MI*) coefficient had a significantly negative related to the percentage of income spent for vegetables per month. This implies that the households that have lower monthly income are likely to spend more to purchase vegetables. This results can be illustrated that vegetables are the major favorite meals for the lower income family.

Distance from the residence to the market (*DIS*) had a significantly positive related to the percentage of income spent for vegetables per month. This implies that the lengthening of distance to the market place increased the main vegetable purchaser are likely to spend more to purchase vegetables. Similarly, the frequency of purchase vegetable per week (*FRQ*) had a significantly positive related to the percentage of income spent for vegetables per month. This implies that risen frequency of visits to the market of the main vegetable purchaser are likely to spend more to purchase vegetables.

Making a list of vegetables to buy before visiting the market (*LIST*) had a significantly negative related to the percentage of income spent for vegetables per month. This implies that if the main vegetable purchaser prepares a list of vegetables that want to buy before visiting the market are likely to spend less to purchase vegetables.

Table 3 Multivariate regression of the percentage of income spent for vegetables per month and socioeconomic characteristics of respondent's family and vegetables purchasing habits

Variable	Unstandardized Coefficients		Standardized Coefficients	Significance
	B	SEB[1]	β	
Constant	33.058	5.658		0.000
MI	-0.040	0.005	-0.384	0.000
FM	0.194	0.623	0.013	0.755
EDU	-3.125	2.264	-0.059	0.168
AGE	-0.123	0.065	-0.088	0.060
STS	-2.128	1.979	-0.050	0.283
SEL	-0.609	1.634	-0.015	0.710
LIST	-4.012	1.549	-0.107	0.010
DIS	0.566	0.135	0.170	0.000
FRQ	7.413	0.657	0.465	0.000

[1]SEB is standard error beta values

Conclusion and recommendations

The percentage of monthly income spent for vegetables has taken as the consumer behavior in this study. Accordingly, percentage of monthly income spent for vegetables had significantly affected by household monthly income (*MI*), distance to the market from respondent's households (*DIS*), frequency of visiting the vegetables market per week (*FRQ*) and preparing a list of vegetables to buy before visiting the market (*LIST*).

It was probably suggested that if a household has lower monthly income, they allocate a higher proportion of household income for vegetables. This illustrated that vegetables are main favorite meals for the lower income household. Moreover, if a family has a habit of preparing a list of vegetables to buy before visiting the market, then the percentage of income they spent for vegetables become lesser. As the frequency of visits of consumers to the market increases the proportion of money spend on vegetables rises. Therefore, the marketers should attract and encourage the purchasers to stopover more often in particular market places by promotional offers and other necessary facilities.

In addition, identify the different requirements for vegetables consumption behavior and the degree of necessity of each of them depending on the different sub sections of the society such as younger and elder generations, economical levels, education levels, professions, etc., are very crucial. Further studies can be conducted on each of these social divisions separately captivating them as discrete marketing segments. Then that will be caused to gain an effective way of understanding consumer's purchasing behavior.

References

Department of Census and Statistics Sri Lanka. 2017. District Statistical Hand Book Ratnapura. Available: http://www.statistics.gov.lk/DistrictStatHBook.asp?District=Ratna. Accessed Oct. 23, 2017.

Dharmasena, D.A.M., and Sarananda, K.H. 2012. Present Status, Issues and Future Trends in Fruit and Vegetable Handling, Distribution and Marketing in Sri Lanka. Available: http://www.fruits.soton.ac.uk/files/2011/12/Srilanka-6-Slides-.pdf. Accessed Mar. 20, 2017.

Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E., and Tatham, R.L. 2006. Multivariate Data Analysis. Pearson International Publishing, NJ.

Israel, G. D. 1992. Determining sample size. http://www.psycholosphere.com/Determining %20sample% 20size%20by%20Glen%20Israel.pdf. Accessed Oct. 18, 2017.

Jayasooriya, N.A. 2016. Sri Lankan consumer attitudes towards healthy meals. J. Market. Consum. Res. 24: 69-79.

Jayatillake, P. J., and Mahalianarachchi, R. P. 2007. Behavioral pattern of fruit & vegetable consumers in the 'pola' (fair) system in Monaragala district in Sri Lanka. J. Agr. Sci. 3: 33-43.

Nimanthika, L. D. M., and Edirisinghe, J. C. 2014. Assessing the demand for a healthy diet in Sri Lanka: the almost ideal demand system with infrequency of purchase. Sri Lanka J. Econ. Res. 2:23-41.

Ozil, P.K. 2016. What is the acceptable r-squared value? https://www.researchgate.net/post/what is the acceptable r- squared value. Accessed Nov. 25, 2018.

Sachdeva, S., Sachdev, T. R., and Sachdeva, R. 2013. Increasing fruit and vegetable consumption: challenges and opportunities. Indian J. Commun. Med. 38:192-197.

Vaidya, A., Oli, N., Aryal, U.R., Karki, D.B., and Krettek, A. 2013. Disparities in fruit and vegetable intake by socio-demographic characteristics in peri-urban Nepalese adults: findings from the Heart-Health Associated Research and Dissemination in the Community (HARDIC) study, Bhaktapur, Nepal. J. Kathmandu Med. Coll. 2:3-11.

Wijesekere, G. 2015. Changing patterns of food consumption in Sri Lanka: 1985-2009. https://EconPapers.repec.org/RePEc:pas:asarcc:2015-02. Accessed Nov. 25, 2018.