Socio Economic Determinants of Household Dietary Patterns: A Case Study in Anuradhapura Municipal Council Area

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Abstract

Dietary patterns show a significant impact on non-communicable diseases while the socio economic factors shape dietary patterns differently based on the situation. This study attempted to analyze the socio economic determinants of household dietary patterns. A questionnaire survey was conducted in Anuradhapura Municipal council area to collect dietary and socio economic data from 60 households selected based on the cluster sampling. The Principle component analysis was applied to define the dietary patterns. Logistic analysis was conducted including the dietary patterns and the socio economic factors as dependent and independent variables, respectively to measure the association in between them. The study identified three dietary patterns with unique food behaviors. Healthy patterns were characterized by high consumption of rice, pulses, tubers, fish and fruits. The unhealthy pattern was rich with wheat, meats, dairy foods, oils and confectionaries. Moreover, 31.7% families followed the unhealthy pattern whereas 68.3% favored the other. Small families preferred unhealthy diets than the large families. With compared to Muslims, Sinhalese were less favor the unhealthy diets. Tamils had no consistent association with any pattern. Both government and self-employees favored the healthy diets compared to private sector employees. The education level had no significant association with diet patterns whereas income was inversely associated with the unhealthy pattern. The results concluded the unhealthy diet pattern is prominent among the families with more children, private employments, low incomes and the Muslim ethnicity while families with few children, self-employments, government jobs, high incomes and Sinhala ethnicity prefer healthy diets.

Key words: Dietary patterns, Household units, Socio economic determinants

Introduction

With the development of the world health sector, there is an impressive progress in the control and the prevention of communicable diseases. At the same time, there is a growing trend of increasing non-communicable diseases (NCD) and it represents the major disease burden in low and middle-income countries according to Popkin (1994). Common NCD are cardiovascular diseases, cancers, respiratory diseases, chronic obstructive pulmonary diseases and diabetics.

According to the World Heart Federation (2011), NCD kill 36 million people a year – more than all other causes combined. They are the most frequent cause of death in most countries and account for nearly two thirds of all deaths globally. Though diverse in symptoms, all prominent NCD share common risk factors. As revealed by Halpin *et al.* (2010) chronic diseases share four major risk factors; tobaccos use, physical inactivity, unhealthy diets and alcohol abuse. Among these, unhealthy dietary patterns have a significant place and related with prominent chronic diseases including cardiovascular diseases, diabetics, respiratory diseases, and cancers.

To prevent NCD should limit the consumption of total and saturated fats, sugars and salts according to Halpin *et al,* (2010). As revealed by Popkin (2002) diets that increases the risk of NCD are relatively high in total fat, saturated fat, sugar, salt, refined grains and foods of animal origin, where as diets that project against NCD are relatively high in minimally processed grains,

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legumes, fiber, vegetables, fruits. Further, according to Popkin (1994), a transition of dietary patterns towards the NCD promoting diets could identify in Asian countries, including Sri Lanka. Moreover, this is prominent among urbanized populations.

Past empirical studies have discovered that different socio economic factors are related with this transition. Economy, age, household production statuses are influenced on diets as revealed by Popkin (1994). Craig *et al.* (2009) identified age, education level and occupation of parents as the major determinants of diets. However, these determinants are varying with different consumer groups. Hence, the present study aimed at examines existing dietary patterns among urban households and analyze the effect of socio economic factors on these patterns.

Materials and Methods

The study was conducted in Anuradhapura Municipal Council (MC) area. Using Cluster sampling method, 60 households were selected. To derive dietary patterns, food frequency questionnaire (FFQ) was used. A structured questionnaire was used to gather data on socio economic status. Both questionnaires were pretested before used. The FFQ was designed to measure the frequency of food intake for a seven-day recall period under eleven food groups. Through the structured questionnaire, data on monthly household income, ethnicity, family size, education level and occupation were collected.

To identify the existing dietary patterns FFQs were analyzed using the Principle Component Analysis (PCA) in statistical software SPSS 16.0 version. Mean consumption frequencies of each food group were used as variables to derive dietary patterns. To measure the inter correlations among variables and the appropriateness of PCA, measure of sampling adequacy was tested. Significance of derived factors was measured based on communalities. Varimax rotation was applied to have theoretically meaningful factors. Based on factor loadings identified the factors (dietary patterns) to be retained.

Logistic analysis was applied to measure the association between identified dietary patterns and socio economic factors. Diet pattern was the dependent variable whereas socio economic factors were the predictor variables. Ethnicity, family size and occupation were coded as categorical variables while education level and income was entered as continuous variables. Family size was measured under two categories as number of children ≤ 3 and no of children >3. Three major ethnicities (Sinhala, Tamil, and Muslims) were considered. Occupation was categorized as primary, secondary and tertiary. Mean monthly income was measured. The Hosmer and Lemeshow test was done to test the fitness of data to model. According to the level of significance ($p = 0.05$) and the logistic coefficients in the estimated model, the association between diet patterns and each independent variable was identified.

Results and Discussion

Descriptive characteristics of the sample were Sinhalese (67%), Tamils (13%), Muslims (20%), and small families (63%), primary educated (20%), secondary educated (52%) while tertiary educated were (28%). Also 18% of households were self-employed, 33% had government jobs and 49% were in private sector.

Out of total 20% had an income $\leq$ Rs.20000.00, 73% had an income of Rs.20000.00 - 40000.00 whereas 4% had an income > Rs.40000.00.

Three dietary patterns were identified through the PCA analysis. The first diet pattern explained a 25.57 variance of the dietary data. The second factor explained 15.57% variance of dietary data while the third pattern explained a variance of 13.59%. The first diet pattern had high factor loading on wheat, meats, dairy foods, oil foods and confectionary. The second factor had high loadings on tubers and root crops, fish and fruits. Rice and pulses were highly loaded on the third diet pattern. Accordingly, families belongs to each pattern have high consumption of highly loaded food items.

Consequently, first dietary pattern was assigned as an unhealthy pattern and the Second and third patterns were as healthy based on the NCD related dietary data revealed by Popkin (2002) (1994). Out of total 68.3 %, families had shown a healthy dietary pattern. The unhealthy pattern had showed by 31.7 %. The logistic analysis measured variations in the outcomes explained by predictors at chi square value 41.536 ($p < 0.05$). According to the results, families with less number of children showed a strong negative relationship with the unhealthy dietary pattern compared to families with more children ($p<0.05$). Simply families with few children are more likely to healthy diets than others. Level of education showed a poor negative association with the unhealthy pattern ($p> 0.05$).

Households who engaged in self employments or government jobs showed a strong negative association and less likelihood with the unhealthy diets with compared to private sector employees ($p<0.05$). Simply self-employed people and government job-holding households are more likely to healthy patterns while private sector employees more likely to unhealthy diets. Monthly household income showed a negative association ($p< 0.05$) with the unhealthy pattern indicating when household's income is high they are less likely to have unhealthy diets. With compared to Muslims, Sinhalese were less likely to have unhealthy diets and showed a strong negative relationship ($p< 0.05$). Accordingly, Muslims were more favor the unhealthy pattern. Tamils had no significant preference for neither healthy nor unhealthy pattern ($p> 0.05$) though they showed a positive association with the unhealthy pattern.

The results conclude that there are two prominent dietary patterns among the urban households in

Table 1. Estimated coefficients of the Logistic Analysis

Variables	B Coefficients	Standard Errors	P Value
Small families (large families)	-2.60	1.13	0.02
Private sector			0.010
Self employment (private sector)	-3.98	1.67	0.02
Government sector (private sector)	-3.46	1.25	0.01
Income	-0.19	0.08	0.02
Education level	-0.07	0.17	0.67
Muslims			0.01
Sinhalese (Muslims)	-3.01	1.33	0.03
Tamils (Muslims)	0.80	1.77	0.65

Anuradhapura MC area, as unhealthy and healthy. Healthy patterns are richer with food groups, which reduce the risk of NCD while unhealthy pattern is richer with food groups that increase the risk of NCD. Families with small number of children, self-employment and government jobs, Sinhala ethnicity and high household incomes are more likely to the healthy patterns. In contrast, families with more children, private sector jobs, Muslims and low-income families are more likely to the unhealthy pattern.

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