

A Study on Dietary Diversity and its Determinants in Dry Zone Households in Sri Lanka

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INTRODUCTION

As a lower-middle-income country in transition, one of the biggest challenges that Sri Lanka faces in its journey towards development is combating the double burden of malnutrition. Undernutrition coexists with obesity and diet-related non-communicable diseases, micronutrient deficiencies (iron, zinc, calcium, folate and vitamin A). Diet, nutritional status and physical activity are recognized as major determinants of health and particularly of non-communicable diseases (NCDs).

Lack of diversity and low nutritional quality of the food resulting from household food insecurity and poverty, are the major causes for the prevalence of undernutrition in Sri Lanka (Rajapaksa *et al.*, 2011). An adequate and diverse diet plays an important role in reducing micronutrient deficiency which otherwise, has adverse impacts on the intellectual development of children, the immunity of both children and adults, physical activities and economic productivity as well.

The association between household dietary diversity and socioeconomic factors was assessed in several studies. Liu *et al.* (2014) studied the importance of age, marital status, education level, gender of the household head and the household size on the household dietary diversity in China. Their findings indicated significant relationships between gender, marital status, education level and household size and dietary diversity. Similarly, in the case of Tanzania, years of education level and the household head being a female had a significant positive effect and age of head had a negative effect on household dietary diversity while the household size was observed as insignificant. The same study found a positive significant association in the agricultural land owned and the involvement in vegetable cultivation to the household dietary diversity.

The role of home gardening on dietary diversity is widely discussed in the literature. Cabalda *et al* (2011) provide evidence that the

households engaged in home gardening are likely to have a higher dietary diversity than the households not engaged in home gardening. A recent study on mid-country home gardens in Sri Lanka observed that the households with organized home gardens having higher dietary diversity compared to the households with non-organized home gardens (Thamilini *et al*, 2019).

It has been identified that the daily intake of fruits, vegetables and dairy portions is below national recommendations in Sri Lanka (Jayawardena *et al*, 2013). Nearly 70% of the population exceeds the upper limit of the recommendations for starch intakes. In a recent study, Abeywickrama *et al*. (2019) investigated the level of dietary diversity and the nutritional status of the Dry Zone of Sri Lanka and concluded that dietary diversity levels did not meet the optimum and the mean daily intake of protein, fruits, vegetables and dairy were well below the national recommendations. It is vital to understand the level of dietary diversity along with the factors affecting dietary diversity for formulating policy recommendations. Therefore, the objective of this study is to describe the dietary diversity and underlying factors in Dry Zone of Sri Lanka.

METHODOLOGY

Dietary diversity is the number of different foods or food groups consumed over a given reference period. Dietary diversity is usually measured by summing the number of foods or food groups consumed over a reference period. Dietary Diversity Score (DDS) and the Food Variety Score (FVS) are the widely used indicators to measure dietary diversity.

In this study, we used Household Dietary Diversity Score (HDDS) proposed by Swindale and Bilinsky (2006) which consists of 12 food groups which are cereals; white tubers and roots; vegetables; fruits; meat; eggs; fish and other seafood; legumes; nuts and seeds; milk and milk products; oils and fats; sweets; and spices, condiments and beverages and the FVS which is the simple count of food items consumed within the reference period. The food consumed by one of the household members within a day is counted.

Based on the previous literature, the outcome variable of interest, dietary diversity is regressed against the explanatory variables identified, which are age, gender, education level of the household head, income level, household size, extent cultivated, involvement in

animal husbandry and a number of hours spent for home gardening in a week by household members, using the ordinary least squares estimator.

The study site is the Mahakanumulla village tank cascade system in Dry Zone consisting of 13 Grama Niladhari divisions located in North Central Province. Data is collected through a primary household survey using a pretested questionnaire. Cluster random sampling is done within the GN divisions and the sample size is 100.

FINDINGS

The descriptive statistics of the sample are presented in table 1. The mean age of the household head in the sample is 48 years and the average household size is 4. Households in the sample cultivate an average area of 2.5 acres and the mean number of hours spent for home gardening is around 6 hours per week. Ninety percent of the households have a male household head. The mean number of years of education of the household head is 11 years which indicates the GCE Ordinary Level and the mean household income is LKR 56 145. Only 16 percent of households are involved in animal husbandry. The average HDDS is 6.90 which ranged from 4-9 and FVS is 9.77 which ranged from 5-14 which is below their theoretical maximum.

Table 1: Descriptive Statistics

Variable	Mean	Standard Deviation
HDDS	6.90	1.20
FVS	9.77	2.08
Age of household head	48.05	11.12
Level of education of household head (number of years)	11.20	2.06
Income of the household (Rs. thousand)	56.14	22.59
Household size	4.01	0.96
Extent cultivated (ac)	2.56	2.19
Number of hours spent for home gardening in a week	5.80	9.34

Figure 1 indicates the percentage of the households which consumed the 12 food groups at least once within a week. All the households consumed cereals, vegetables, legumes and fat and oils. Only around 50% of the households consumed fruits, 65% consumed eggs and around 75% consumed milk and milk products. The highest consumption was observed for fish among the non-plant-based food products which may be influenced by the high availability of fish in the nearby tanks.

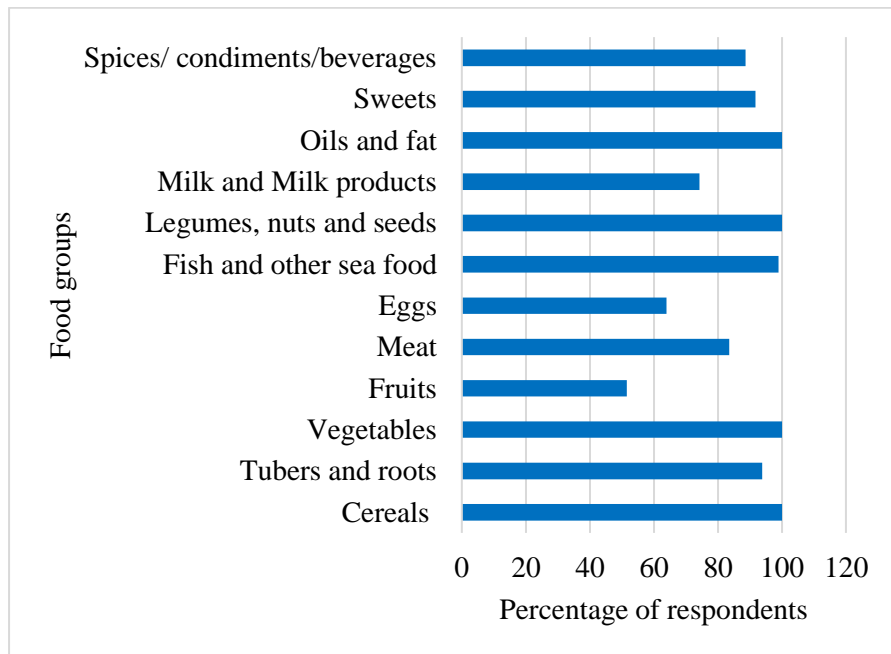


Figure 1: Consumption of food groups at least once in a week

The regression results are presented in Table 2. In the model in which the dietary diversity indicator is HDDS, the education level of the household head, household income, household size, extent cultivated and the involvement in animal husbandry are identified as the factors affecting the HDDS which are statistically significant. Similar results are observed in the model with the FVS as the dietary diversity indicator except, the involvement in animal husbandry has become statistically insignificant while the number of hours spent in home gardening indicated a positive and statistically significant relationship with the dietary diversity. According to the results, households with a more educated household head tend to have a higher dietary diversity. The higher the income of the household, the higher the dietary diversity. Household size and dietary diversity indicated a negative

relationship. Extent cultivated by the households and raising livestock have positive and statistically significant effects on dietary diversity.

Table 2: Regression results

	HDDS		FVS	
Age of household head	0.005	(0.011)	-0.002	(0.019)
Gender of household head (male=1)	0.100	(0.426)	0.209	(0.746)
Education level of household head (Number of years)	0.152**	(0.593)	0.238**	(0.104)
Income (Rs. Thousand)	0.123**	(0.006)	0.018*	(0.010)
Household size	-0.250*	(0.134)	-0.468*	(0.260)
Extent cultivated (ac)	0.144**	(0.057)	0.247**	(0.100)
Involvement in animal husbandry (yes=1)	0.601*	(0.323)	0.722	(0.565)
Number of hours spent for home gardening in a week	0.017	(0.014)	0.042*	(0.024)
Constant	4.579***	(1.132)	6.815***	(2.006)
R ²	0.2369		0.2055	
F statistic	2.83		2.33	
Prob >F	0.0085		0.0278	
Mean VIF	1.10		1.10	

Standard Errors are given in parentheses. *,**,*** indicate the significance levels of 10%, 5% and 1% respectively

CONCLUSIONS

Level of education, income, household size, extent cultivated, involvement in animal husbandry and home gardening were identified as the factors affecting dietary diversity in the Dry Zone. The level of education suggests the role of awareness and income levels suggests the importance of affordability on improving dietary diversity. Extent cultivated, involvement in animal husbandry and home-gardening may point to an association between agriculture and dietary diversity,

however, further research is recommended to investigate the exact relationship.

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