

Nutrition and Health: The availability, affordability and consumption of fruits and vegetables in 18 countries across income levels: Findings from the prospective urban rural epidemiology (PURE) study- Andrew Mente-Hamilton Health Sciences and McMaster University

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Abstract

Most nutritional guidelines mention the consumption of at least two servings of fruits and 3 servings of vegetables per day. However, a large quantity of individuals do not meet these targets. An improved understanding of the factors that affect fruit and vegetable consumption is important to improving the diet quality of populations.

Determining the affordability of the ability to obtain important foods such as fruits and vegetables in countries with the different stages of economic development is important. In this study, we aimed to file the availability cost of the fruits and vegetables in community grocery stores and market places, and the affordability of the meeting dietary guidelines for fruits and vegetables consumption in 18 countries with different income levels. We also aimed to relate the affordability of fruits and vegetables to their feeding.

Methods

Study design and sample selection

For analyses of food the availability and the affordability, we collected the information on the cost of at smallest one fruit and one vegetable in each PURE community in between Jan 1, 2009, and Dec 31, 2013. A 1 km observation walk was done by the research staff in a centrally located area within each and every community. Additional grocery foods or market places in the 1 km area was visited if research staff were unable to collect the cost of the all fruits and vegetables. The total number of types of fruit and vegetable available for sale in each community was calculated to assess diversity (see add on p 7 for methods used to estimate fruits and vegetables availability and affordability). Additionally, we collected household income data from the participants in these communities.

Statistical analysis: The affordability of 2 portions of fruits and 3 portions of vegetables per day was assessed using the least expensive fruit and vegetable available for the sale within each community. Moreover, the affordability of purchasing 5 portions of the inexpensive fruit or vegetable was assessed to estimate the most positive situation of affordability that is reflective of substituting the either type of produce to reach five daily servings.

We used Spearman association coefficient to test

the strength of the association between the country gross national income and the mean percentage of household income spent on food. At the community level, we did an analysis of alteration, with tests for linear trend, to compare the mean number of different types of fruits and vegetables and their mean cost, to adjust by buying the price equality of one serving of fruits and vegetables in each economic region.

Role of the funding source: The funder of this study is no role in the study project data collection, statistics analysis, data interpretation, or writing of the report. All the authors had full access to all the facts in the study and had last responsibility for the choice to submit for publication.

Discussion: These study of 18 countries with a range of all income level and we found that individuals in countries with low uncultured national income consume rarer fruits and vegetables and spend a greater amount of their income was purchasing food than those in high income countries. Absolute fruit price was the highest in societies of LICs, while the vegetable cost was lowest in these communities used to by purchasing price parity. Households in the LICs and LMICs spend a considerable proportion (roughly half) of their income on food (compared with 13% in HICs), with households in some countries. These findings are reliable with previous work showing that food spending ranges from 35% to 65% in MICs²³ and from 55% to 77% in LICs.^{23, 24} However, our findings of the qualified costs of fruits and vegetables could not be compared with the previous work in LICs or MICs because few of countries systematically monitor to the cost of food and disclose national data.²⁵ Furthermore, the national estimates of the cost of major food supplies available from the World Bank²⁶ and the UN Food and Agriculture Society²⁷ do not include fruits and vegetables.

The ingesting of a variety of fruits and vegetables are important to a high-quality diet. In the PURE study, most of

the members consumed rarer than the recommended five daily portions of fruits and vegetables, and mean vegetable intake was lower than the recommended 3 daily servings in all economics regions except HICs. In 2015, worldwide fruit and vegetable intake was assessed to be lower than the average observed in our study. Earlier estimates were mainly based on the qualitative surveys, smaller then the dietary tools, or household surveys. These dietary tools are short lived questionnaires in which an structured list of food items is absent and as few as one question might be used to estimate the ingesting of a particular food type.

Hunger and under-nutrition remain highly prevalent in many LICs and MICs,³⁵ and nutrition plans in these countries often prioritise meeting was minimum energy intake over diet quality. The unaffordability of fruits and vegetables might be a large fence to achieving these nutritional targets. World-wide, 1.7 million yearly deaths are projected to be related with the low fruit and vegetables intake, ³⁶ and many populations are incapable to the meet the dietary recommendations.

Our results show that increasing the cost of the fruits and vegetables virtual to household income was associated with the reduced consumption, highlighting the needed for the rules that they expand afford ability and availability of these foods, which might be improve the diet quality of many populations, especially in LICs and LMICs. All other authors corresponding the study, collected data in their individual countries, and provided comments on drafts of the report.

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