



International Conference of Sabaragamuwa University of Sri Lanka 2015 (ICSUSL 2015)

Economic origins of dietary diseases: Is Obesity becoming a middle income problem?

DVP Prasada*

Department of Agricultural Economics and Business Mgt, University of Peradeniya, Sri Lanka

Abstract

Obesity resembles a typical negative economic externality to the public health system. Previous literature identifies a positive connection between national income levels and incidence of obesity. Due to changes in globalization of food culture and media, food habits are spreading rapidly over the country borders from high into middle income countries. Due to these developments, association of obesity with high income is questionable. We pursue this research question using cross-country data from 2013 by modeling obesity-related dietary health outcomes in terms of linear and nonlinear income effects. Additional control variables include within-country income inequality and region fixed effects. Departing from the linear trends in the literature, the model results show statistically significant nonlinear effects of income. However, these effects are small in magnitude.

© 2016 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Peer-review under responsibility of International Conference of Sabaragamuwa University of Sri Lanka 2015 (ICSUSL 2015).

Keywords: Dietary diseases; Income effect; nonlinearity; cross-sectional study

1. Introduction

Obesity is becoming a pandemic that plagues countries of different income levels¹. Historically, obesity was associated with high income but the relationship is fast evolving due to globalization of food culture and mass media connected to food industry². Recent literature attempts to pin down the relationship between income level and obesity. Egger and coauthors show that Gross Domestic Product (GDP), the standard measure

* Corresponding author. Tel.: 94-812-395507
E-mail address: pahan1@gmail.com

of country income level, is positively related to Body Mass Index (BMI) up to approximately USD 3000 per capita, with no significant relationship beyond this level³. Neumann and coauthors find a positive but non-significant association of GDP and mean BMI using national survey data from 38 countries⁴. What is topical about the connection between income and obesity is that it is potentially influenced by other socio-economic variables and, as such, linear relationships may not exist. We perform an analysis that enables testing an existence of a non-linear relationship. In the same spirit as the famous (environment) Kuznet's curve relationship between pollution and income, our general hypothesis is that current incidence of obesity peaks in middle income range.

In this paper, we estimate the relationship between national income and dietary disease incidence related to obesity using cross-country data from the year 2012/2013. Based on the data availability, we use a sample of 75 countries representative of all regions of the world.

2. Methodology

We estimate a regression specification with a non-linear term for national income level to explain several outcome variables representing dietary disease conditions associated with obesity. The generic specification is outlined in equation (1) below. The four models use the rate of overweight (Body Mass Index 25-30 kg/m²), rate of obesity (BMI above 30 kg/m²), rate of high (clinical) blood glucose (i.e. Diabetes), rate of high (clinical) blood pressure (i.e. Hypertension) respectively as outcome variables. We use WHO guidelines for incidence of clinical levels of glucose and pressure.

$$DietD = \beta_1 + \beta_2 GDP + \beta_3 GDP^2 + \beta_k regionFE + \beta_l Gini + \varepsilon \quad (1)$$

Where,

<i>DietD</i> :	Dietary Disease indicator (overweight / obesity / blood glucose / blood pressure)
<i>GDP</i> :	level of national income (measured by Gross Domestic Product, 2012)
<i>Gini</i> :	income inequality index
<i>regionFE</i> :	fixed effects of geographical region (identifying, Asia, Africa, Europe, North America, Latin America, Oceania)

The comparative statics of this specification yields the following partial effect for income, which is what we are interested in. Thus, the partial or marginal effect of income in this model is dependent on the level of GDP.

$$\partial DietD / \partial GDP = \beta_2 + 2\beta_3 GDP$$

Holding GDP at different levels of the distribution, we are able to calculate the marginal effect of income on each dietary disease indicator. This calculation provides evidence of nonlinearity of income effect if it exists in the data.

The above specification (equation 1) is estimated using data from 75 countries and heteroskedasticity corrected standard errors are calculated in order to determine the statistical significance of each parameter.

3. Results, discussion, conclusion and recommendations

The results of the two models are listed in Table 1. From left to right (columns numbered 1 to 4), overweight rate, obesity rate, diabetes and hypertension incidence is modeled in terms of income and other covariates. The linear term and the nonlinear term of income provide evidence to validate the hypothesized 'inverted U shaped' relationship.

Download English Version:

<https://daneshyari.com/en/article/1266188>

Download Persian Version:

<https://daneshyari.com/article/1266188>

[Daneshyari.com](https://daneshyari.com)