Meat Science 109 (2015) 112–116

Contents lists available at ScienceDirect

Meat Science

journal homepage: www.elsevier.com/locate/meatsci

Exploring future patterns of meat consumption

Erik Mathijs

Division of Bioeconomics, University of Leuven, Celestijnenlaan 300 E-2411, 3001 Leuven, Belgium

ARTICLE INFO

Article history:
Received 2 March 2015
Received in revised form 11 May 2015
Accepted 12 May 2015
Available online 16 May 2015

Keywords:
Meat consumption
Nutrition transition

ABSTRACT

The nutrition transition encompasses a set of major shifts in human diet and nutritional status, throughout history and that is influenced by a wide range of factors such as income, technical change, urbanisation and culture. High-income societies are witnessing a shift towards diets with more fat, sugar, processed foods and less fibre, leading to a sharp increase in non-communicable diseases, such as obesity. This trend can also be observed among the middle classes of emerging countries. However, increasing evidence suggests that a final shift is occurring, following behavioural change towards consuming higher-quality fats, more whole grains, fruit and vegetables, and particularly less meat. The purpose of this paper is twofold. First, an assessment is made of where different countries are located in the different phases of the nutrition transition. Second, a qualitative investigation is made into the factors enhancing and hindering the latest phase of the transition—particularly towards less meat consumption—taking into account cultural differences between consumer groups across countries. The analysis of both objectives generates insights into possible future scenarios of meat consumption.

© 2015 Elsevier Ltd. All rights reserved.

1. Introduction

The role of meat, and more generally animal-based foodstuffs, in human consumption has changed over time and still differs across geographies. While meat consumption tends to increase with economic development, it is increasingly contested in affluent societies due to the environmental and human health implications of too high meat consumption (Tilman & Clark, 2014). These shifts in diets have been described and explained by Popkin (1993, 2006) as nutrition transitions.

Nutrition transitions encompass a set of major shifts in human diet and nutritional status throughout history and are influenced by a wide range of factors such as income, technical change, urbanisation and culture. High-income societies are witnessing a shift towards diets with more fat, sugar, processed foods and less fibre, leading to a sharp increase in non-communicable diseases, such as obesity. This trend can also be observed among the middle classes of emerging countries. However, increasing evidence suggests that a next shift is occurring, following behavioural change towards consuming higher-quality fats, more whole grains, fruit and vegetables, and particularly less meat.

The purpose of this paper is twofold. First, an assessment is made of where different countries are located in the different phases of the nutrition transition. Second, a qualitative investigation is made into the factors enhancing and hindering the latest phase of the transition—particularly towards less meat consumption—taking into account cultural differences between consumer groups across countries. The analysis of both objectives generates insights into possible future scenarios of meat consumption. This paper is organised as follows. Section 2 discusses and explores the various patterns of nutrition transition theory. Section 3 provides an overview of factors influencing reduced meat consumption, while Section 4 concludes.

2. Nutrition transition patterns

2.1. The nutrition transition theory

Throughout time, populations go through a set of nutrition transitions. While the literature tends to focus on the westernisation of diets involving the increased intake of meat, fat, processed foods, sugar and salt (Kearney, 2010), Popkin (1993, 2006) described five patterns:

1. The collecting food pattern occurs in the hunter-gatherer society. The diet is high in carbohydrates and fibre and low in fat. It is a primitive society with low fertility, high mortality, low life expectancy and many infectious diseases.
2. The famine pattern occurs in agricultural societies. Diets are predominantly based on diets that are much less varied and subject to large variations. Food production is still mainly subsistence based. Natural fertility is high, but life expectancy is still low with high infant and maternal mortality. Endemic diseases prevail, as do diseases based on deficiencies.
3. The receding famine pattern occurs when societies shift from being agricultural to being industrial. Technology advances, but diets still display low variety, as they are based on fewer starchy staples and more fruit and vegetables and also animal protein. Entails a shift towards diets with more consumption of fruits, vegetables and animal

E-mail address: erik.mathijs@kuleuven.be.

http://dx.doi.org/10.1016/j.meatsci.2015.05.007
0309-1740/© 2015 Elsevier Ltd. All rights reserved.

protein. Mortality declines, while fertility starts to decrease.
4. The degenerative diseases pattern emerges when physical activity decreases following the growth of the service sector. Sedentary diets are characterised by high levels of total fat, cholesterol, sugar and refined carbohydrates and low levels of polyunsaturated fatty acids and fibre. While life expectancy is high, obesity and chronic diseases related to diet increase.
5. The behavioural change pattern entails consuming less fat and more fruit and vegetables, following increased awareness of the implications of dietary choices. Physical activity increase during leisure time. Body fat levels and obesity decrease, while bone health increases.

Literature focuses mainly on the second and third patterns, that is, first the increased consumption of animal protein followed by the westernisation of diets characterised by high fat and sugar intake, because of the effects these patterns have on food demand and thus resource use, particularly in emerging countries such as China (Kearney, 2010). The combination of these two patterns is called the nutrition transition—a term also introduced by Popkin (1993). So the question rises whether a convergence of diets is actually occurring on a global scale. Vranken, Avermaete, Petalios, and Mathijs (2014) refer to the transition to the fifth pattern—behavioural change involving, among others, a reduction in meat consumption—as the second nutrition transition.

Further, food consumption in general (and nutrition transitions in particular) is influenced by many economic, social, cultural and other factors, but income is an important driving force that motivates or enables people to change their consumption patterns. In other words, the progression through the various nutrition patterns is highly correlated with development patterns, which in turn is highly correlated with income. This is particularly relevant in the first nutrition transition, as meat is a relatively expensive commodity, but also in the second nutrition transition, as richer consumers start to value health and environmental concerns (Vranken et al., 2014).

2.2. Empirical evidence

To explore patterns in the nutrition transition in general and meat consumption in particular, we characterise diets based on the FAOSTAT food balances and express them in energy units (kcal/capita/day), following da Silva et al. (2009) and Oggioni, Lara, Wells, Soroka, and Siervo (2014). The FAO food balance sheets are an often used data source for consumption data, as more accurate data from individual dietary surveys or household budget surveys are only available for a limited number of countries and a limited number of years. Using food balance sheets, food availability in a country is estimated as the food produced and imported in that country minus the food exported and used for feed or otherwise not available for human consumption (Kearney, 2010).

First, we focus on broad consumption patterns only, by aggregating data into the following four food categories that are based on FAO categories: (1) sugar (sweeteners, honey and sugar); (2) vegetal sources (vegetable oils, fruits, starchy roots, cereals, pulses and vegetables); (3) animal sources (meat, animal fat, eggs, milk and fish & seafood) and (4) alcoholic beverages. Using these definitions it can be established that sugar represents between 1.6 and 20.7%, vegetal sources between 34.4 and 89.1% and animal sources between 3.4 and 44% (Table 1).

Table 1
Extreme values in sugar, vegetal and animal based food sources.

	Sugar	Vegetal	Animal
Lowest	1.6% (Nepal)	34.4% (Iceland)	3.4% (Rwanda)
Highest	20.7% (Guatemala)	89.1% (Bangladesh)	44.0% (Iceland)

Source: own calculations based on FAOSTAT.

The variation in these numbers highlights a very diverse composition in diets worldwide at this aggregate level.

Fig. 1 shows the relationship between consumption based on sugar, vegetal and animal sources as defined earlier as a function of income (GDP per capita) for 2011. Clear trends can be observed: food consumption from animal and sugar sources is increasing with income, while food consumption from vegetal sources is decreasing with income. These results clearly support the third and fourth patterns of nutrition transition theory, while there seems to be no evidence for the final nutrition transition pattern entailing behavioural change.

Second, we focus on meat consumption specifically, as that is the focus of this paper. Fig. 2 expresses the absolute energy intake from meat as a function of total energy intake. It shows a clear positive relationship, that is, meat consumption increases when total calorie consumption increases. However, a decreasing rate in the positive trend supporting behavioural change cannot be observed. This suggests that behavioural change not only implies a reduction in meat consumption, but also of absolute energy intake.

Fig. 3 depicts the relationship between income and meat consumption. It shows no clear relation between meat consumption and income, but reveals the existence of a set of high-income countries in which meat consumption is relatively low.

When we decompose Fig. 3 into four extreme quadrants looking at low meat consumption (arbitrarily set at less than 5% of total energy intake) versus high meat consumption (arbitrarily set at more than 10% of total energy intake) on the one hand and poor versus rich countries on the other. Following Kharas (2010), we consider poor countries those countries where consumers spend on average less than 10 $ per day, while in rich countries consumers spend on average more than 100 $ per day. Table 2 lists the countries in each of these four quadrants. Only countries in which meat consumption is lower than 5% or higher than 10% are reported. Analysing Table 2 in more detail reveals that in some cases the relationship between income and meat consumption is not as expected by nutrition transition theory.

Quadrant II encompasses a set of countries that have higher meat consumption than countries with similar income levels, which may be explained by the presence of a herding culture and/or low fish consumption as these countries are landlocked (e.g., Tanzania and Uzbekistan). Quadrant I lists countries with relatively high fish consumption (e.g., Cambodia and Indonesia). A similar mechanism can be seen in Quadrant III with some countries with high fish consumption (e.g., Japan and Norway), but there is no straightforward explanation why some rich countries are in Quadrant III (e.g., Belgium), while very similar countries are in Quadrant IV (e.g., Netherlands). This does suggest that behavioural change is taking place, a result also suggested by Vranken et al. (2014) who have shown a non-linear, U-shaped relationship between meat consumption and income: initially, meat consumption increases with income, but from a certain point onwards higher levels of income lead to lower levels of meat consumption.

To conclude, the evidence for a convergence of diets worldwide towards higher meat consumption does not seem be confirmed by empirical evidence. This suggests that other factors play a role in dietary choices, as will be explored in the next section.

3. Factors influencing the second nutrition transition

3.1. The basic economic model

Two universal economic principles determine consumer behaviour: (1) consumers maximize utility and (2) the additional utility consumers enjoy from consuming an additional unit diminishes. Consumers are forced to make choices when their income is limited. As a result, relative prices allocate scarce resources to maximize utility.

The demand curve reflects the amount of money consumers are willing and able to pay for products at various prices. Of course, price and quantity demanded have a negative relationship (law of demand).

Download English Version:

https://daneshyari.com/en/article/2449666

Download Persian Version:

https://daneshyari.com/article/2449666

Daneshyari.com