



 Research

Food Security In Developed Countries (Europe and USA) – Is It Insecurity and Insufficiency or Hunger and Poverty in Developed Countries?

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Introduction

Over the past several decades, poverty and hunger have been identified in less-developed countries and a lot of international funding and projects have been focused on making efforts to eradicate hunger and poverty in these populations. Therefore, the World Food Summit has been setting goals and targets, for example World Food Summit in Rome in 1996 – where commitments were made to reduce the world hunger by 2015 (United Nations Department of Economics and Social Affairs, 2006) [1] by half. The first World hunger and poverty index (PHI) (Gentilini & Webb, 2008) [2], was meant to be used to track the progress of the target agreed at the 1996 world summit. However, the “World hunger and Poverty Index” was for populations in less-developed countries [1]. Most of the African, some Asian, and South American countries had low to medium hunger and poverty indices [2]. Each country’s performance was based on the proportion of population living on less than US\$1/day; poverty gap ratio; share to the poorest quintile in national income or consumption; prevalence of underweight children (< 5 years of age); proportion of population undernourished [2]. Whilst the indices gives data, the theory of change of hunger eradication was based on campaigns and information generating political will which is supposed to translate to policies and programmes [3] to reduce hunger and poverty and provide food security depending on the environment and availability of resources.

Food insecurity is defined as “a situation of limited or uncertain availability of nutritionally adequate and safe food or a situation of limited or uncertain ability to acquire acceptable food in socially acceptable way” [4]. On the other hand, food security at individual, household, national, regional and global level is when people at all times have physical and economic access to sufficient safe and nutritious food to meet their dietary needs and food preference for an active healthy life [5]. However, Jones *et al* (2013) defined food insufficiency as “inadequate amount of food intake due to a lack of money or resources”. According to Food and Agriculture Organization of United Nations (FAO, 2006) nutrition security is defined as “a situation that exists when secure access to an appropriately nutritious diet is coupled with a sanitary environment, adequate health services and care, in order to ensure a healthy and active life for all household members.

From the perspectives of policy makers and practitioners, food security plays a critical role in maintaining political stability [3]. Campaigns and political demands together with the press may urge governments to take leadership and ownership to fight food insecurity. The progress on meeting the target on fighting food insecurity was measured by the prevalence of underweight children and the proportion of population below a minimum level of energy consumption [6]. A combination of PHI and Global Hunger Index (GHI) (Masset, 2011) was used to assess hunger at world level as well as monitoring progress on target 3, one of the Millennium development goals (MDGs) set in Rome in 1996. The targets and policies were aimed at addressing hunger and poverty in less-developed countries. Whilst much of the attention was on less – developed countries, meanwhile hidden – hunger was emerging in developed countries.

There is evidence of food insufficiency (hidden hunger) in developed countries and severe food insufficiency (food poverty) in less- developed countries. Both situations, equally detrimental to nutritional status of the populations and have led to malnutrition over-nutrition and under – nutrition, respectively. Reports indicated that there is low dietary nutrient intake of families with food insufficiency when they compared the serum nutrient levels of food sufficiency and food insufficiency families in the American population [7] and nutrient inadequacies in Canadian adults and adolescents with food insecurity and food insufficiency [8]. There is no similar research done in UK and Europe, carrying out investigations to determine the real extent of food insecurity and food insufficiency and its long - term impact on nutritional status of populations in developed countries. This similar research will be beneficial in addressing malnutrition (over – nutrition) in UK and

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Europe. In addition to serum nutrient determination, exploring food - purchasing strategies linked to food insecurity would help to understand the barriers to healthy eating among food insecure and food insufficiency families for both European and American populations [9]. The use of Health Eating Index (HEI) to measure the diet quality [10] can be used to determine the long term of food insufficiency in developed countries.

So, now what is the world's status on hunger and malnutrition in 2015? This short article will aim to review the food insecurity and food insufficiency in developed countries. Is there hidden - hunger that is manifesting as obesity in developed countries? The information can be useful to nutritionist and public health professionals in understanding the breadth and depth of the problem of malnutrition in both developed and less -developed countries.

Food Insecurity in Developed Countries

Food insecurity is the 21st century hunger in developed countries. Food insufficiency is inadequate amount of food intake due to lack of resources including money [11]. According to a publication, worldwide economic downturn in 2008 triggered food insecurity [12] for a number of household families. In fact, the governments

of developed countries have aware of the scale of the problem of hidden hunger as well as realising the link between malnutrition (over – nutrition) and food insecurity. However, food insecurity pre - existed in developed countries such as USA and Canada [13] for decades earlier than 2008. The tools used to measure food security then, did not reflect the experience of the household's food security [11] hence lack of comprehensive data measuring food security in developed countries.

Prior to the year 2000, the food security was based on the country's GDP of which most of the developed countries had high GDP, which has since being affected by the economic downturn in 2008. A lot of the developed countries have high debt that subsequently impacted food security resulting in many of the households' food insufficiencies evidenced by the rise in number of food aid organisations. The GDP is also related to purchasing power parity (PPP) of individuals or households. When the GDP was low and national debt was increasing the PPP was affected and more populations in developed countries relied on food aid (Table 1) through food banks in Australia and Europe, and food stamps in USA and Canada. Food insecurity and food insufficiency was evident in the developed countries as there was an increase in the use of food aid by many of the population groups in developed countries.

Table 1: Food Aid usage in developed countries

Region	Country
Australia	Australia (Booth & Whelan, 2014; Lindberg, Lawrence, Gold, & Friel, 2014)
Canada	Canada (Cafiero, Melgar-Quinonez, Ballard, & Kepple, 2014; Tarasuk et al., 2014; Wilson, 2000)
Europe	France (Rambeloson, Darmon, & Ferguson, 2007)
	Ireland (Dowler & O'Connor, 2012)
	Italy (Garrone, Melacini, & Perego, 2014; Santini & Cavaccini, 2014)
	UK (Dowler & O'Connor, 2012; H. Lambie-Mumford et al., 2014; H. Lambie-Mumford & Dowler, 2014)
	Netherlands (Van der Horst, 2014)
USA	USA (Walker, Block, & Kawachi, 2012; Walker & Kawachi, 2012)

As the debt of the Eurozone and America increased the GDP and PPP decreased affecting the food security of the developed countries' population. In UK, the main factors contributing to accessing food aid by the UK population were sudden reduction in household income as a result of loss of job, pay cut, and changes in social security payments [12]. These led to continual low household income, households in high debts which was difficult to repay leading to legal lawsuits, and the households had to adjust their lifestyle by changing shopping and eating habits, cutting on expenditure, turning to money lenders or families for income, as well as food aid [12]. Unfortunately, these solutions were not addressing the underlying cause of food insecurity but just allowing households to have some food to eat at ad hoc.

Canada is one of the countries reported to enjoy high standard of living whilst hunger and poverty seemingly thought to be remote. Data published in 2000 by Wilson and Steinmann indicated that

a number of food banks have been increasing regularly and the huge number of food bank understandably linked to persistent food insecurity in Canada. The Canadian National Population Health Survey 1998/99 reported that 35 % of people in low-income households reported some form of food insecurity and 14 % of people in the middle-income households were food insecure at least once a month [14]. The food insecurity at middle and higher income had to do with the static income not sensitive to economic changes [15]. Data on food insecurity surveys from 1988 to 2004 were published and indicated a rise in food insecurity [15]. The responses from the Canadian and American households indicated some degree of food insecurity and/ or food insufficiency as summarised in Table 2 due to various factors associated with low standards of living. The NHANES III used specific questions on food insufficiency and 15 % of US households were food insecure [9].

Table 2: Food insecurity survey results from Canada and USA

	Food secure	Food insecure*	2004 data Food insecurity (Bush 2007)
Characteristics			
Age	65 +	0 - 64	
Household Income	Upper middle to High	Low to middle	Lowest, lower middle and Middle
Major source of income	Wages and self employed	Workers pension, Child tax benefit, social assistance, support	Social assistance, workers pension, Employment insurance, and Seniors' benefit
House type	Couple with children	Couple without children Lone parent with children	Lone parents, couple with and without children
Home ownership	Owner	tenants	tenants
Marital status	Married Widowed	With Partner Single Divorced/ Separated	With Partner Single Divorced/ Separated Widowed
Immigration status	Canadian born Immigrated 0 – 9 yrs	Immigrated 10 + years	ND
Health outcomes			
Poor/Fair health	~6 %	~17 %	ND
Multiple Chronic conditions	~14 %	20 %	ND
Obese BMI≥ 30	~11 %	14.9 %	ND
Distress	10 %	31 %	ND
Depression	~ 4 %	14 %	ND

Within the surveyed sample, about 20 % of food insecure or economically deprived people accessed food banks of which 60 % of the population accessed towards the month-end [16]. In 2004, a second survey was published indicating that 91% of the Canadians were food secure and 9% were food insecure as compared to 89.8 % and 10.2 during the 1998/99 (Chen and Chen 2000). The standard of living was increasing but not enough to reduce food insecurity within the wider Canadian community

Food Insecurity Experience Scale

Besides the efforts made by developing countries to measure, monitor and eradicate hunger and food insecurity, it is now a global issue affecting developed, developing and undeveloped countries. Food Agriculture Organization [11] has designed the Food insecurity experience scale (FEIS) to suite food and nutrition security indicators. FEIS is an experience-based metric of severity of food insecurity measured by the responses given by people on their ability to access adequate food. Household food security cannot be determined by anthropometric data as there is a complex relationship between household food security and underweight and/ overweight. Speculations are that the direct measure of

food insecurity, using FEIS, will complement anthropometric measurements and more importantly identify risk population groups prior to manifestation of malnutrition thereby saving lives and the health related costs for policy makers. The FEIS has been piloted by FAO [11] in sub-Saharan region in 2013 and then aim to extend the project to global data collection using 8 point – question questionnaire (Table 3b) to assess food security and food insufficiency. The tool is still to be validated and commissioned by FAO by end of 2015, as announced at 5th Leverhulme Centre for Integrative Research on Agriculture and Health (LCIRAH) conference at London School of Hygiene and Tropical Medicine beginning of June 2015 organised by Agriculture, Nutrition and Health community.

Food insufficiency of a household is when family sometimes or often do not get enough food to eat, therefore, historically food insufficiency has been assessed using responses to most or all of the questions in the Table 3 (a & b) to determine the scale of food insufficiency and categorised degree of food insufficiency as low food insufficiency, mild food insufficiency and severe food insufficiency.

Table 3a: Questions used for assessing food insufficiency NHANES III (1988 – 1994) (Alaimo et al., 1998)

Questions	Response
Describe food eaten by family	-Enough food eaten by family, -sometimes not enough -often not enough
No. of days in previous months with no food or money to buy food	0 1- 4 5- 9 10 – 14 more than 14 days
Reasons for no food or money to buy food	Lack of transportation No working appliances Not enough money, food stamps, or WIC vouchers Other reasons
Adults cut size of meals because of not enough money	
Children cut size of or skipped meals because of not enough money	

Table 3b: The Food Insecurity Experience Scale (Ballard et al., 2013)

1	You were worried you would run out of food because of a lack of money or other resources?	0 No 1 Yes	98 DK 99 Refused
2	You were unable to eat healthy and nutritious food because of a lack of money or other resources?	0 No 1 Yes	98 DK 99 Refused
3	You ate only a few kinds of foods because of a lack of money or other resources?	0 No 1 Yes	98 DK 99 Refused
4	You had to skip a meal because there was not enough money or other resources to get food?	0 No 1 Yes	98 DK 99 Refused
5	You ate less than you thought you should because of a lack of money or other resources?	0 No 1 Yes	98 DK 99 Refused
6	Your household ran out of food because of a lack of money or other resources?	0 No 1 Yes	98 DK 99 Refused
7	You were hungry but did not eat because there was not enough money or other resources for food?	0 No 1 Yes	98 DK 99 Refused
8	You went without eating for a whole day because of a lack of money or other resources?	0 No 1 Yes	98 DK 99 Refused

Some of these questions have been used in developed countries such as America [13] and Canada [16]; and developing countries - South Africa [17]; Latin America [11] and undeveloped countries -Nigeria [18] Malawi (FAO, in press) and from the data collated there is alarming evidence to support the emergency of food insecurity and food insufficiency in developed countries.

Ballard and co-workers (2013) summarised the response from the questions and composed a continuous scale to indicate household vulnerability, access to food and degree of food insecurity.

A paradox of food insecurity and obesity rates was explained

in US as most of the people who were food insecure were also overweight(Walker et al., 2012) [19] as determined by anthropometric measurements. In European countries there are high rates of obesity (Figure 2, and an increase in food bank use (Table 1). The countries with high debt (Camphausen, 2010) [20] also had a high rate of obesity, for example Greece has the highest debt 125 % of GDP in the Eurozone and also has highest rate of obesity with approximately 45 % of its population classified as overweight [21]. Food insecurity and overweight, therefore, need to be taken as conjoined public health issues. The paradox of food insecurity among the plenty might be due to a number of factors

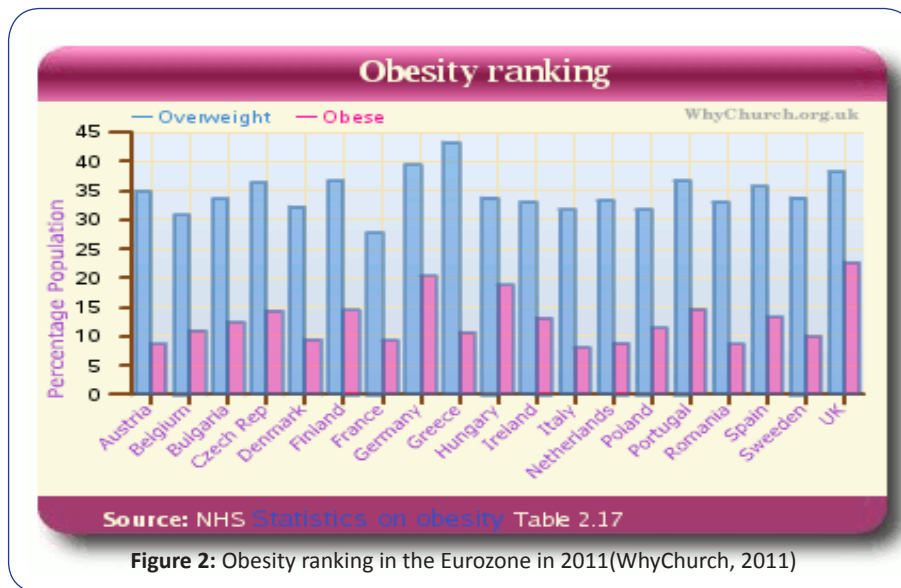


but not limited to: (i) uncertainty of food availability which can trigger overeating to stock up for future food scarcity, (ii) depressive symptoms – stress and uncertainty of lacking consistence may cause symptoms of depression and disordered eating patterns, (iii) families with food insecurity live in areas with low quality food shops, (iv) cheaper cost of energy-dense foods and due to less disposable income, family with food insecurity would not be able to consume the healthy foods such as fresh fruits and vegetables, thus end up gaining weight [22].

Since the UK’s economic downturn in 2008, there has been an increase in food and drink cost [23] and mirrored by trends in

population has also followed the increasing trends of obesity for men and women.

In UK, the increasing trends of obesity [23] and increase in use of food aid possibly due to food insufficiency could mean that there is hidden hunger within the UK population. It has been reported that there is a close link between consumption of high energy intakes and low micronutrient takes leading to weight gain and obesity [25]. Tanumihardjo and co-workers (2007) reported that, globally, low standards of living (poverty) predict overweight and obesity regardless of race and ethnicity .Tanumihardjo et al (2007) summarised the relationships of food insecurity and hidden



numbers of food banks to support 41,000 struggling people [24] that number rose to 1.1 million by April 2015. Over-nutrition (obesity) measured by BMI and waist-hip ratio has been increasing for both men and women since 1993 [23]. Obesity statistics in UK are measured in terms of a BMI above 25 kg/m² indicates that one is overweight and a BMI over 29 kg/m² indicates that one is obese. Sixty-six percent of men and 58 % of women [23] are classified as obese. Surveys done between 1993 and 2012 indicated that obesity prevalence is increasing. A waist-to-hip ratio taken to be greater than 102cm in men and greater than 88cm in women also indicates abdominal obesity, and the growth in this measurement in the

- hunger in developed countries to result in obesity (Figure 3) and that of severe food insecurity (hunger) and poverty in less - developed and/or developing countries to cause protein energy malnutrition, stunting and nutrient deficiency (Figure 4).

Poverty and hunger used to be determined by unavailability of food produce and the scarcity of food caused by bad weather and poor agricultural infrastructure in underdeveloped African, Asian and South American countries. Studies done in South Africa and Nigeria (less- developed countries) have since indicated that there are other causes of poverty and hunger. In South Africa, the

situation was different in the sense that poverty and unemployment which preceded global economic crisis left most of the communities with high food and fuel prices, increased interest rates inflicting severe pressure on struggling households to meet the basic food and clothing needs.

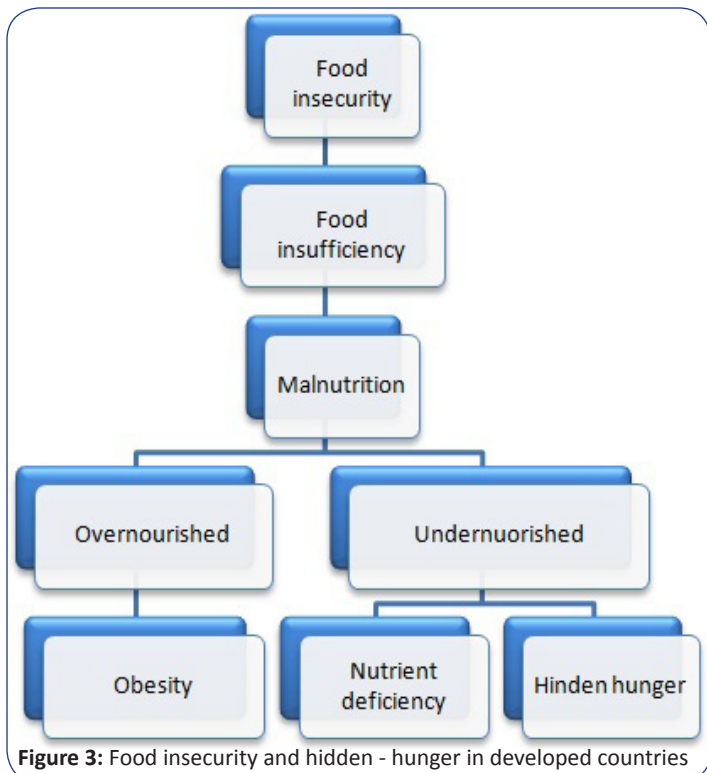


Figure 3: Food insecurity and hidden - hunger in developed countries

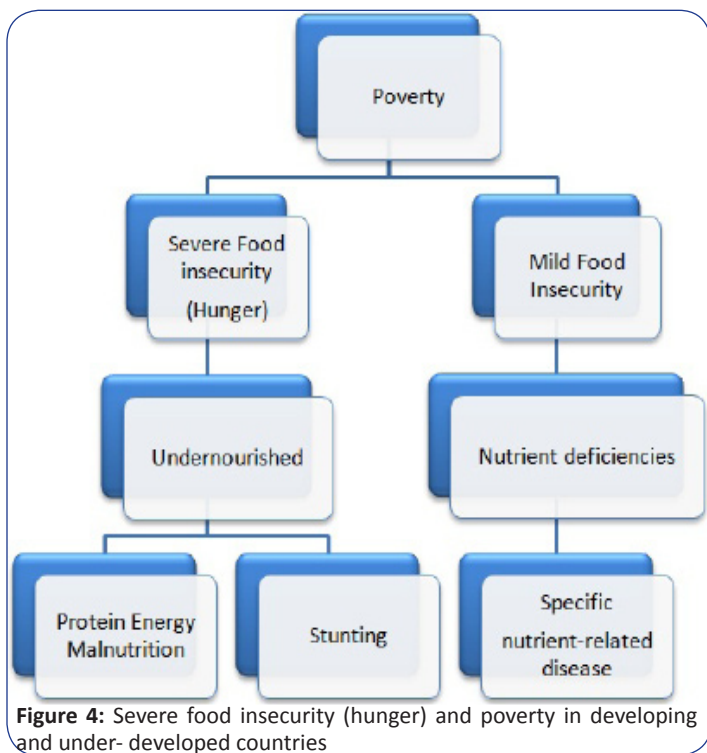


Figure 4: Severe food insecurity (hunger) and poverty in developing and under- developed countries

Three National Food Consumption Surveys were carried out in 1999, 2005 and 2008 investigating the levels of food security in communities of South Africa [17]. The survey questions were designed to assess household-level food insecurity, individual-level food insecurity and child hunger. In 1999, 52 % of the sample population was experiencing hunger, 23 % at risk of hunger giving a total of 75 % being food insecure and 25 % food secure for both urban and rural communities. There was a significant improvement on food security from 25 to 48 % of the households were food secure and 75 to 52 % of households were food insecure (Labadarios et al., 2011) [17] as the standards of living improved during the 9-year survey period. Spatial pattern of house food insecurity was carried out in both rural and urban communities of Nigeria. About 53 % of the households were food insecure with a higher degree of prevalence of food insecurity found in rural than urban Nigerian communities [18].

Conclusions

Research data and online media publications have reported on emerging hidden - hunger in developed countries and an association between food insufficiency and obesity. The most commonly reported factor has been lack of money or resources to access appropriate nutritious diet for the whole household. Further work still need to be done to determine the biomarkers of nutrient deficiency in populations accessing food aid. The nutrient content of the donated foods and potential impact on nutrient status still need to explored taking into consideration the limited availability and consumption of fresh fruits and vegetables and dairy products by the populations accessing food aid in developed countries.

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