

Research Paper

Food insufficiency and food insecurity as risk factors for physical disability among Palestinian refugees in Lebanon: Evidence from an observational study

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Abstract

Background: Potential interactions between malnutrition and disability are increasingly recognized, and both are important global health issues. Causal effects working from nutrition to disability and from disability back to nutrition present an empirical challenge to measuring either of these effects. However, disability affects nutrition whatever the cause of disability, whereas nutrition is likelier to affect disease-related disability than war- or work-related disability.

Objective: This paper investigates the association of food insufficiency with the risk of physical disability. Data on disability by cause allow us to address the difficulty of reverse causality.

Methods: Multinomial logit regressions of disability by cause on food insufficiency are run using survey data from 2010 on 2575 Palestinian refugee households in Lebanon. Controls include household sociodemographic, health and economic characteristics. Regressions of food insufficiency on disability by cause are also run.

Results: Disability has a significant coefficient in regressions of food insufficiency, whatever the cause of disability; but in regressions of disability on food insufficiency, food insufficiency is significant only for disease-related disability (log odds of disease-related disability .78 higher, $p = .008$). The difference in the results by cause of disability is evidence of a significant association between food insufficiency and disease-related disability, net of any reverse effect from disability to food access.

Conclusions: The association between disease-related disability and food insufficiency is statistically significant suggesting that even taking into account feedback from disability to nutrition, nutrition is an effective level of intervention to avert the poverty-disability trap resulting from the impoverishing effect of disability. © 2016 Elsevier Inc. All rights reserved.

Keywords: Physical disability; Food insufficiency; Food insecurity

This paper investigates the association of food insecurity and food insufficiency with the risk of physical disability. We identify two broad strands in the literature linking food

security and disability: studies that attempt to identify the effect of physical disability on food insecurity and nutrition more generally, and studies that focus on the reverse causal effect from poor nutrition to disability. Our study contributes to the latter strand by focusing on food insecurity and food insufficiency, and attempting to identify their effect on physical disability while taking into account the presence of a reverse causal effect from disability to food security and insufficiency. This two-way relationship between nutrition and disability is part of the larger health-wealth causal nexus and can contribute to pushing people vulnerable to food insufficiency/insecurity into a poverty-disability trap.

Both under-nutrition and overweight are global health problems that have implications on disease incidence, survival, and the healthy growth, development and productivity of individuals and populations.¹ The links between

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malnutrition and disability are increasingly recognized, and recent frameworks have analyzed the pathways by which these conditions are linked.²

The first strand in this literature focuses on the causal link from disability to nutrition, and identifies three channels of effect,³ namely income, competing demands and coping ability. These channels are at work regardless of the cause of disability. There is evidence that income is lower and the poverty rate higher for the disabled.⁴ This is often attributed to lower labor market participation of the disabled person and possibly other members in their household.^{5,6}

The presence of a disability may create demand for competing goods and services that households with disabled members may trade-off essential food consumption in order to secure.⁷ In addition, the special health care needs of people with disability places them at increased risk of nutritional problems including poor feeding skills, nutrient malabsorption, metabolic disorders and growth alterations.²

Finally, disability may compromise a household's ability to cope with food insecurity.^{8,9} Using panel data, Ribar and Hamrick¹⁰ find that disability is associated with a greater likelihood of entering food insecurity. Various barriers to eating well have been identified in the physically disabled and include the cost of food and difficulties in shopping for and cooking food.¹¹

The literature focusing on the effect of nutrition on disability notes that this effect is greater at the two extremes of age (in children and the elderly); in older adults, up to 85% of the excess odds of disability can be explained by obesity and related cardio-metabolic risk factors.^{12,13} Low protein intake, extremes of BMI, vitamin D status and low B-vitamin intakes have been found to be associated with disability and its risk factors in older adults.¹⁴ In childhood, disability is more likely in children not breastfed, not receiving vitamin A supplements, and in those stunted or underweight.¹⁵ One study which attempts to examine the relationship between disability, food security and health outcomes highlights the complex inter-relationships between these variables and finds health and food security to be significant in models of child disability but no effect of child disability in models of health or poverty.¹⁶

That food insecurity is associated with poor health outcomes, such as chronic conditions and poor self-rated health has been widely documented in various settings, including in refugee populations living in the Middle East region.^{17–22}

This study hopes to identify the role of food insecurity and food insufficiency as a risk factor for disability by looking at the disability status and food insufficiency and insecurity indicators for a sample of Palestinian refugees in Lebanon. Palestinian refugees in Lebanon are protracted refugees that remain, until today, socially, politically and economically marginalized. They are a population that is at especially high risk of poverty, food insecurity and disability of various

causes, compared to their Lebanese counterparts.²³ Food insecure Palestinian refugees were found to have reduced diet quality, and to resort to eating less and cheaper food and borrowing or receiving money or food.¹⁸ The right to food, and the rights of people with disabilities are both key human rights issues, and establishing causal links between the two could contribute to establishing an evidence base that can inform future programs and policies to reduce avoidable nutrition-related disability,² particularly in vulnerable populations such as refugees.

The difficulty in quantifying the disability risk associated with food insecurity and insufficiency in cross-sectional data is that food insecurity or poor nutrition are not only risk factors for disability; but may also be the result of disability, through the channels identified above of income, competing goods and coping mechanisms. Our study hopes to overcome this problem of reverse causality by looking at any differences across causes of disability in the partial effects of disability on food insecurity.

Methods

Study design and covariates

A socio-economic survey was conducted by the American University of Beirut (AUB) and the United Nations Relief and Works Agency (UNRWA) in July–August 2010 on the living conditions of Palestinian refugees residing in Lebanon. This paper uses data from this survey and STATA 9.0 for Mac to run the statistical analyses. Table 1 lists the variables used with some summary statistics.

The survey covered 2575 eligible households living in 12 camps and 20 gatherings in five different areas: Central Lebanon Area, North, Saida, Tyre, and Bekaa. The survey used a clustered multi-stage sampling approach and households within clusters were then randomly selected by probability according to population size. Data collectors conducted a face-to-face interview with a proxy adult respondent from the household, most often a senior female member responsible for food preparation. The questionnaire included modules on demographics, education, employment, health status, food, housing, household assets and household expenditure. Some of the data on household durables were collected in an assets index.

Questions on food were used to assess household food security. Questions were derived from the 18-item U.S. Department of Agriculture (USDA) food security survey module and the Yemeni Food Security Questionnaire and were modified to the context of Palestinian refugees living in Lebanon. A food security scale was developed based on 6 questions and was internally validated using statistical methods based on the Rasch measurement model. The development and validation of this scale has been published elsewhere,²⁴ and the six questions included in the food

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