In this Issue

Food insecurity and its potential consequences

The third edition of The State of Food Security and Nutrition in the World reports that 2 billion people worldwide face moderate or severe food security, that is, the lack of regular access to nutritious and sufficient food[1]. In this issue of Public Health Nutrition, we have 7 papers that address food insecurity, mostly these are about the association with adverse outcomes. These studies include people living with HIV in Canada[2], women in Bangladesh[3], children in Mexico[4] and Brazil[5], Latinos in the US[6] and people in Brazil[7]. The papers reflect the widespread nature of food insecurity globally, across developing countries and vulnerable populations in developed countries. The seventh paper on food security in this issue reports on a government scheme of cash transfers to families, which aimed to reduce food insecurity[8].

Of 116 people living with HIV in Vancouver, 74% reported food insecurity in the previous 12 months, and this was associated with poorer adherence to combined antiretroviral therapy (cART), even after adjusting for potential confounders. Participants were part of an integrated care program that provided support, including two meals a day, and the authors hypothesised that this might attenuate the previously observed association between food insecurity and poor adherence to cART. This cross-sectional study cannot answer questions about the mechanism by which food insecurity could impact on cART adherence, but points to the need to continue to address food insecurity as well as treatment adherence[2].

Women of reproductive age in Bangladesh who were participating in the Food and Agricultural Approaches to Reducing Malnutrition (FAARM) trail, were studied to assess the relationship between food insecurity and depression. Food insecurity was associated with double the odds of depression in women who were classified as peripartum (pregnant or within 12 months of parturition) or non-peripartum (all other women)[3]. Better dietary diversity and higher intakes of some foods were associated with reduced risk of depression, but it was not possible from the study design to determine whether this was the mechanism for the observed association.

Children aged-2 to 6 years in Brazil, in families who received one litre of milk per day as part of a food assistance package were studied to assess the relationship between body weight status and food insecurity. Around 25% of the total sample fell into each of four food security classifications: food secure, mild food insecurity, moderate food insecurity and severe food insecurity, making 76% with some level of food insecurity. Overall there was no association between food insecurity and weight status, in contrast to other studies that found reduced/increased obesity in children from food insecure households receiving food assistance[5]. In 362 low-income pre-school age children residing in Pennsylvania, USA, child food insecurity was associated with poor child-sleep quality[4]. This association did not appear to be mediated by parent psychosocial factors. Given the associations identified between poor sleep and poor educational, emotional and behavioural outcomes, it is important to understand these observations.

In Massachusetts, USA, 580 Latinx adults were recruited from a community health centre for a study of the association between food insecurity and emotional eating. The authors hypothesised a positive association between food insecurity and emotional eating, mediated by perceived stress. The results were consistent with the hypothesis but the cross-sectional design limits the interpretation[6].

Based on data from two large national surveys in Brazil, Kubo et al used modelling to predict the risk of severe food insecurity in people with nutrient intake data (POF survey), based on findings from the other survey (PNAD survey), which included the Brazilian Food Insecurity Scale (EBIA). The risk prediction model included area, education, income, physical characteristics of the house and number of inhabitants[7]. After predicting risk, people with dietary intake data were divided into quarters and their intakes of energy, macro- and micronutrients compared. Intakes tended to be lower in the group at highest risk for severe food insecurity, but inadequate micronutrient intakes were common across groups. No adjustment for potential confounders was included[7].

All of these studies have identified adverse conditions associated with food insecurity, leading to the question of what should be done about it. The last of the studies on food insecurity included in this issue shows that in one very low socioeconomic status region of Brazil, cash transfers from the government improved the food security of families over 3 years[7]. Previous studies of cash transfers as part of social protection programs have had inconsistent outcomes and this study was designed to overcome some weaknesses of earlier studies using a prospective design with almost 6000 households[7], and the validated EBIA as a measure of food insecurity. Using population-

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attributable risk fraction it was calculated that that without the cash transfers 10 % of the households that switched from food insecure to food secure over the study would have remained food insecure[7]. The FAO food security reports also notes the importance of such social protection programs[1].

This collection of papers has identified several potential adverse consequences of food insecurity, pointing to the need to address this wherever it occurs. While cash transfer programs may work in the short term, a combination of other approaches will be required in the long term, and we look forward to reading more in the pages of PHN in the future.

1. FAO, IFAD, UNICEF *et al.* (2019). *The State of Food Security and Nutrition in the World 2019. Safeguarding against economic slowdowns and downturns.* FAO Rome

2. Koehn K, McLinden T, Collins AB *et al.* (2019). Assessing the impact of food insecurity on HIV medication adherence in the context of an integrated care programme for people living with HIV in Vancouver, Canada. *Public Health Nutr* 1–8. doi: 10.1017/S1368980019002532

3. Sparling TM, Waid JL, Wendt AS *et al.* (2020). Depression among women of reproductive age in rural Bangladesh is linked to food security, diets and nutrition. *Public Health Nutr* 1–14. doi: 10.1017/S1368980019003495

4. Na M, Eagleton SG, Jomaa L *et al.* (2019). Food insecurity is associated with suboptimal sleep quality, but not sleep duration, among low-income Head Start children of pre-school age. *Public Health Nutr* 1–10. doi: 10.1017/S136898001900332X

5. Lucena PN, Bueno NB, Vieira KA *et al.* (2019). Food insecurity and weight status of socially vulnerable child beneficiaries of a food assistance programme in Maceio, Northeast Brazil. *Public Health Nutr* 1–6. doi: 10.1017/S1368980019003380

6. Lopez-Cepero A, Frisard C, Bey G *et al.* (2019). Association between food insecurity and emotional eating in Latinos and the mediating role of perceived stress. *Public Health Nutr* 1–7. doi: 10.1017/S1368980019002878

7. Kubo S, da Costa THM, Gubert MB (2019). Intakes of energy, macronutrients and micronutrients of a population in severe food insecurity risk in Brazil. *Public Health Nutr* 1–11. doi: 10.1017/S1368980019003057

8. Palmeira PA, Salles-Costa R, Perez-Escamilla R (2019). Effects of family income and conditional cash transfers on household food insecurity: evidence from a longitudinal study in Northeast Brazil. *Public Health Nutr* 1–12. doi: 10.1017/S1368980019003136

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