Holiday Hunger and Family Stress: the experience of household food insecurity during the school summer holidays

Margaret A Abiodun-Adeniyi [1] Bethany Waterhouse [2] Dr Rachel Rundle (RNutr) [3]

[1] *Margaret A Abiodun-Adeniyi graduated with distinction from MSc Nutrition with Public Health Management at Sheffield Hallam University in 2022-23. She is currently working as an Infant Feeding Support at NHS Sheffield Children Hospital.*

[2] *Bethany Waterhouse graduated with distinction from MSc Nutrition with Public Health Management at Sheffield Hallam University in 2022-23.*

[3] *Dr Rachel Rundle (RNutr) is a Senior Lecturer in Public Health Nutrition, at Sheffield Hallam University. Her research interests are maternal and infant health, behaviour change and food insecurity; she was dissertation supervisor for Margaret and Bethany.*

Corresponding author: Rachel Rundle - r.rundle@shu.ac.uk

ABSTRACT

The school summer holidays can be a challenging period for many parents, as they are challenged with the pressures of covering household expenses and providing additional food for their children, when free school meals are unavailable. The purpose of this study was to explore the association between food insecurity during the summer months, and various stressors within households of UK parents residing in North-central England, who had school-age children. In this observational study, the perceptions and experiences of parents (n= 60) were explored pre and post summer holiday, via an online questionnaire. Among the sample, 60% of households reported experiencing some level of food insecurity (FI), with corresponding higher scores on the comprehensive 36-point stress scale. Furthermore, there was a strong correlation between irregular income and both household food insecurity (HFI) and parental stress. These findings underscore the significance of economic factors as substantial predictors of household food insecurity. Initiatives aimed at alleviating economic hardship would not only diminish food insecurity during the school summer holidays but also have the potential to enhance the physical and mental health and well-being of families.

KEYWORDS: Household food insecurity; free school meals; family health and well-being; stress; income

INTRODUCTION

Many low-income households in the United Kingdom (UK) experience food insecurity even though access to food is regarded as a fundamental right (Defeyter et al., 2015; Graham et al., 2016). The United Nations (UN) defines food insecurity as the inability to regularly obtain the financial, social, and physical resources required to purchase, prepare meals, and eat adequate nutrient-dense food (UN, 2023). Among the numerous facets of food insecurity are food poverty (the price of food) and the general aid and support needed to ensure adequate nutrition (Deeming, 2011). The increased need for food assistance across the United Kingdom has made it a subject of significant concern (Graham et al., 2016; Taylor & Loopstra, 2016). Moreover, 8.4 million people in the UK were thought to live in homes where there was not enough food security (UN, 2023; WHO, 2019). However, the full extent of this problem is typically hidden, and the government is unable to address it in the absence of an integrated national evaluation of food insecurity (Rai, 2015).

Recent studies indicate that families with low incomes encounter challenges during extended summer breaks, as their children lose access to free school meals, resulting in instances of hunger during the holidays (Graham et al., 2016; Stretesky et al., 2020); this coined the phrase 'holiday hunger' which described the increased experience of household food insecurity during the school holidays. Findings suggest that up to 3 million children in the UK are potentially at risk of hunger over the 6-week school summer holiday period (Forsey, 2017). While it is acknowledged that children qualifying for free school meals due to low income are especially vulnerable to holiday hunger (Forsey, 2017; Stretesky et al., 2020), families with employed parents are also now susceptible to poverty and food insecurity (Aceves-Martins, 2018; Stretesky et al., 2020). Moreover, recent studies have highlighted one of the primary difficulties families face during the summer is the added expense of providing meals for their children who typically receive free lunches during the school year (Shinwell & Defeyter, 2021; Stewart et al., 2018).

Therefore, in order to understand the intricate array of factors that give rise to food insecurity in households with children, this study explored family stressors as well as the resulting impact on health and well-being. Greater understanding may further enhance the formulation of strategies to tackle the factors contributing to food insecurity on a wider scale within households.

LITERATURE REVIEW

Prevalence and measure of Household food security in the UK

A food secure environment ensures unrestricted access to safe and nutritious food, promoting health (Grainger, 2010). Conversely, limited food intake due to resource constraints constitutes food insecurity (McGuire, 2011). Current data revealed that approximately 20% of the population in some developed nations experiences food insecurity (Bongaarts, 2021; Pollard & Booth, 2019).

Scholars connect the prevalence of food insecurity to socioeconomic gaps both within and across countries (D'Odorico et al., 2019; Elmes, 2018). Loopstra (2018) indicates a potential increase in food insecurity in the UK before COVID-19, supported by a surge in demand for emergency food supplies. However, using food banks as a measure of FI, faces criticism due to its potential to underestimate the true extent of food insecurity (Bazerghi et al., 2016; Coleman-Jensen et al., 2022; Riches & Silvasti, 2014; Loopstra & Tarasuk, 2015). These findings highlight the need for the UK government to independently assess food insecurity across the entire population, rather than solely relying on food bank usage as an indicator.

Impact of food insecurity

The effect of food insecurity on health outcomes in the UK is not well-documented due to the paucity of data (Sosenko et al., 2022). However, the Covid-19 pandemic and the cost-of-living dilemma has brought FI into the centre of attention (Loopstra, 2020). Few studies carried out in Britain revealed that people including children who live in the most disadvantaged conditions have a 60% greater frequency of long-term disease conditions than those who live in the most prosperous situations (Douglas et al., 2020; Heslop & Emerson, 2017). The prevalence of food insecurity is a serious concern since a shortage of nourishing food among children has been associated with behavioural or psychological issues, hospitalisation, and poor health outcomes in later life (Schmeer & Piperata, 2016; Shankar et al., 2017). Epidemiological studies also affirmed that food insecurity significantly affects diet quality, which in turn has a negative impact on health outcomes including cardiovascular disease, cancer, obesity, type 2 diabetes, and depressive episodes (Gundersen & Ziliak, 2015; Jebb et al., 2007; Rutter et al., 2017). However, the majority of these results were generated in the USA, where regular HFI data collection has been taking

place for decades (Booth & Pollard, 2019). As a result, preventing children from accessing nutritional food throughout certain crucial growth periods may have negative long-term effects on their general development (Dubois et al., 2014). Therefore, it is necessary to comprehend the prevalence of food insecurity in UK homes with children using a valid and accurate direct assessment.

There is also emerging evidence that food insecurity is linked to poorer mental health and specific psychosocial stresses in afflicted homes (Aceves-Martins, 2018; Jones, 2017). The Food Foundation (2023) reported that over 75 % of food insecure households worried about how their children's physical, social, and mental health will be affected by insufficient or lack of access to adequate food, coupled with the cost-of-living crisis (Stretesky et al., 2020a). This food shortage experience is more likely to trigger a stress response that worsens anxiety and sadness (Carter et al., 2011; Whitaker et al., 2006). Similarly, this psycho-emotional development was observed in a higher number of children who experience food insecurity compared to those that do not (Johnson & Markowitz, 2018; Kimbro & Denney,2015; Pickett et al.,2015). Consequently, experts advise that in addition to examining the impact of food poverty on health, it is crucial to evaluate non nutritional influence on individuals (Food Foundation, 2023; Joseph Rowntree Foundation, 2023).

METHODOLOGY

***Study Design*:** This study was a secondary analysis of data collected as part of an evaluation Healthy Hampers programme which was funded by the Holiday Activities and Food (HAF) programme in the Summer of 2020. The evaluation used an observational design with repeated measures before and after the school summer holidays. Previous studies have used a similar approach to explore changes in food security in relation to exposure (intervention or demographic situation) (Crilley et al., 2021; Pool & Dooris, 2021; Vargas & Penny, 2010; Yau et al.,2020).

Participants and recruitment: All families with school age children participating in the Healthy Hampers programme were invited to participate in the online survey. For the purpose of this study, a matched data set (n=60)) was used for quantitative analysis; data

that refer to the same household in July and September was used to reduce bias and ensure accuracy (Pallant, 2020).

Data Collection: Demographic data chosen for analysis in this study based on previous associations with food insecurity included age, gender, ethnicity, employment, household size and composition and eligibility for free school meal (FSM). To investigate parental stressors during the summer holiday, the survey used six items questions (quantitative) which included how worried respondents were about affordability of extra cost of the followings: childcare, activities for children, food for the family, being able to afford healthy nutritious food, child feeling lonely and being less physically active.

Data Analysis*:* The datasets were transferred from the online survey platforms to IBM SPSS Statistics for Windows, version 26.0 (IBM Corp., Armonk, NY, USA), where they underwent data cleaning, preparation, and matching in preparation for statistical analysis. The actual statistical analysis was conducted using Stata 14.2 (Statacorp, 2015). All accessible survey data were included in the analyses. A significance threshold of $p < 0.05$ was established for all statistical tests. Descriptive statistics were employed to outline the characteristics of the study's participants, with percentages used for categorical variables and means for continuous variables. Suitable univariate and bivariate statistical analysis were conducted. Missing data for categorical data was assigned a unique code while the means was inputted for interval values before recoding (if required), as this would help preserve the small sample size (Pallant, 2020; Verkasalo et al, 2001). Therefore, a paired sample t-test was used to compare means with actual missed data (Fraser et al., 2009), to avoid distortion of analysis result.

To measure experience of food poverty, affirmative responses to the five questions on household food security were assigned a score of 0-3. Summed raw scores (0 -15) were treated as both continuous and categorical. Respondents were categories as having either high (0), marginal (1-3), low (4–6) or very low food security (7-15). A binary variable was generated, categorising the high food security group as "food secure" and classifying the marginal, low, and very low food security groups as "food insecure." This classification aligns with suggestions from certain research teams that consider marginal food security as falling within the food insecure category (Honarvar et al., 2023; Kent et al., 2022; Tarasuk

et al., 2018). Cronbach's α for the HFI scale is 0.91, suggesting high internal consistency for this variable.

Furthermore, to address issues of low cell counts and to facilitate easier interpretation, certain socio-demographic variables of significance for this study were reclassified into a reduced number of categories. Recoded variables included coding occupational status from eight options to two so as to create a new variable income status coded (regular -1(employed full-time, part-time, self-employed, casual worker), Irregular income- 2(unemployed, not in employment: home caring responsibilities, disability/sick). Eligibility for FSM (yes-1, no-2) and household composition defined as total number of children in the household (two or less (1), 3 or more (2) and family size (3 or less (1), four above (2)). All three variables above (income status, FSM and household size) are treated as proxy measures of food insecurity given the plethora of evidence suggesting an important predictor of summer stress and holiday hunger (Bauer et al., 2012; Jernigan et al., 2017; Stretesky et al., 2020).

To measure the impact of evidence-based summer stressors for parents, the Impact of event scale (IES) score guidance was adopted for this analysis. The IES has been used to evaluate stress across a spectrum of life events including food hunger (Gill et al., 2014; Stretesky et al., 2020). The six item summer stressors questions (aforementioned) rates Parents/carers feelings, thoughts, and stress levels in the summer on a 5-point Likert scale. The total score was calculated by first summing the 6 items to create an overall subjective measure of worries and concerns that ranges from 6 to 36. Then standardised the sums as not worried (scores from 6-8) and worried (scores 9 and above) indicating high levels of stress. In the sample, the internal consistency of the subscale was good, with a Cronbach's alpha of 0.80.

Ethical Consideration:

The original proposal for data collection as part of the Sheffield Healthy Hampers evaluation, including online survey, was submitted to SHU Research Ethics Committee for ethical scrutiny (Ref: ER25414094) and was approved 29th July 2020. For the purpose of this research a SHUREC1 was completed for consideration of ethical issues related to analysis of the secondary data set, all data was anonymised prior to analysis and stored in line with the research ethics guidance.

RESULTS

Participants Characteristics

The sociodemographic characteristics (Table 1) demonstrated that the highest proportion of the study sample were females aged 35 to 54 years and identified as white or white British. About one third of respondents were classified as irregular income earners this included those disabled, long term sick, not in employment -home or care responsibilities and unemployed. While the remaining participants who had regular income included employed full time, employed part time, and those self-employed. Over half of the participants lived in a household of four or more and had one or two children. In this study, a minority of the children were not eligible for free school meal. Only three percent of the sample population claimed not to be worried about the summer holiday.

Table 1. Descriptive characteristics of participants(N=60)

Demographic characteristics	July N (%)	September N (%)
Sex		
Male	6 (10)	6 (10)
Female	54 (90)	53 (88.3)
Prefer not to say	0	1 (1.7)
Age		
18-34	17 (28.3)	16 (26.7)
35-54	40 (66.7)	39 (65)
55-74	3(5)	4 (6.7)
Prefer not to say	0	1 (1.7)
Ethnicity		
Asian or Asian British	5 (8.3)	7 (11.7)
Black or Black British	9 (15)	6 (10)
Mixed/Multiple Heritage	5 (8.3)	6 (10)
White or White British	41 (68.3)	40 (66.7)
Prefer not to say	0	1 (1.7)
Income status [b]		
Regular	20 (33.3)	20 (33.3)
Irregular	38 (63.3)	40 (66.7)
No response	2 (3.3)	-
Free School Meal (FSM)		
Yes	54 (90)	48 (80)
No	6 (10)	12 (20)

No of Children in household		
2 or less	37 (61.7)	39 (65)
3 above	23 (38.3)	21 (35)
Family size		
3 or less	21(35)	22 (36.7)
4 above	39 (65)	38 (63.3)
Parental worries [c]		
Not worried	3 (5)	2 (3.3)
Worried	57 (95)	58 (96.7)

Note: [a] n= number of total respondents; [b] Regular income category included full time and part time employment, self-employed; Irregular income included unemployed, home caring responsibilities, disable, sick; [c] parental level of worries is determined using parental stressors questions. Scale of 6 to 8 is not worried while 9 above means worried.

Prevalence of household food security in July and September

The figures for food security are shown in table 2. Over half of the participants reported high level of food insecurity ? in pre summer and post summer survey due to lack of money at least once or twice month. The corresponding figure for never having experienced these levels of food insecurity were 24% (n = 24) and 38% (n = 23) at the two time points.

Table 2. Frequency of household food shortage experiences in July and September

Food shortage indicators	**July**		**September**	
	Food insecure[b] n (%)	**Food secure [a] n (%)**	**Food insecure[b] n (%)**	**Food secure[a] n (%)**
Skipped and or reduce size of meal	36 (60%)	24 (40%)	37 (61.7%)	23 (38.3%)
Unable to eat healthy or nutritious food	36 (60%)	24 (40%)	37 (61.7%)	23 (38.3%)
Ate only few kinds of food	35 (59.3%)	24 (40%)	35 (60.35%)	23 (37.7%)
Eaten less than you felt you should	35 (59.3%)	24 (40%)	37 (61.7%)	23 (38.3%)
Hungry but didn't eat	36 (60%)	24 (40%)	37 (61.7%)	23 (38.3%)

Note: n = sample size; [a] Food secure = sum score of zero; [b] Food insecure= sum scores of 1 to 15.

Association between parental stress and food security

The relationship between parental stress and household food insecurity scores at the two time points was investigated using Pearson product-moment correlation coefficient. Preliminary analyses were performed to ensure no violation of the assumptions of normality,

linearity, and homoscedasticity (Figure 1 and 2). Analysis revealed that there was a strong, positive correlation between the two variables in July (r = .49, n =60, $p < .001$) which indicated that high levels of parental stresses are associated with higher household food security scores. A similar positive correlation (r = .50, n =60, $p < .001$) was also observed in September. Further analysis revealed that, irregular income has a significant association ($p < .01$) with food insecurity and parental stress levels.

Figure 1. Parental stress vs household food security level (PRE)

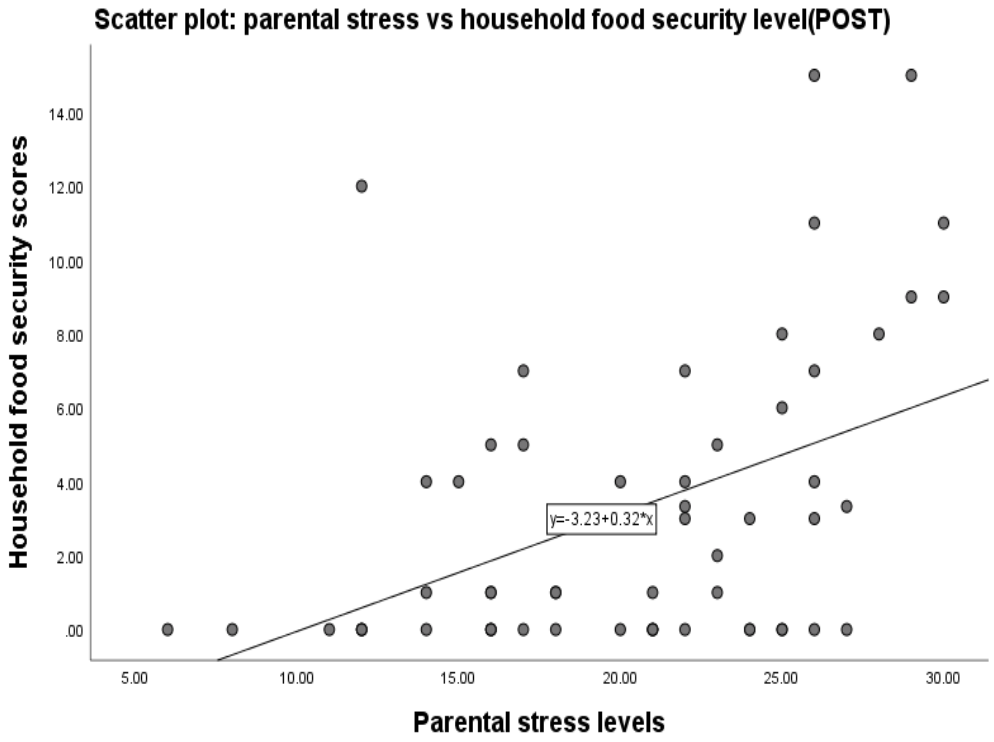
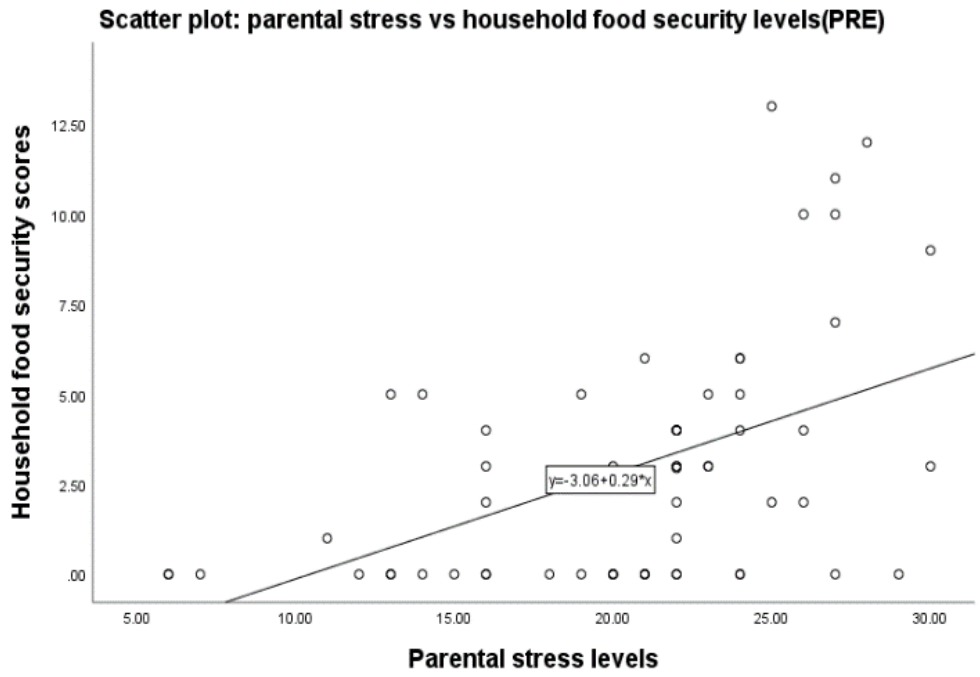


Figure 2. Parental stress vs household food security level (POST)



Discussion

In many industrialised nations, including the UK, the restricted or unpredictable availability of enough, safe, nourishing, and culturally appropriate food at all times is a complicated, enduring, and multifaceted phenomena. Research indicates that households may cycle between short-term or long-term episodes of food insecurity (Bickel et al., 2000; Kleve et al., 2018a). This current study's goal was to investigate household experience of hunger, with related stressors during summer break using a observational repeated measure design to capture parent's perception and concerns about schools' long summer holiday period, as well as elicit and synthesise their food experiences during this unavoidable period. Studies on how family's experiences and how they felt during the holidays were previously made public in the UK (Graham et al., 2016; Mann et al., 2018; Stretesky et al., 2020). Consequently, this study contributes to these existing literary works.

Prevalence of food insecurity among households (with school aged children)

Firstly, this study reveals that a substantial percentage of Sheffield households within the sample with children experience food insecurity, with over 60% reporting experiencing food hunger. Interestingly, this estimate is consistent with previous research from the UK that used the same HFSSM measuring scale as this investigation (Pool & Dooris, 2022). Also, similar frequency was observed in an English city wherein being hungry and not being able to eat was a recurrent experience (Barker et al., 2019). However, compared to Southampton cohort research (4.6%) and Gallup World Poll 2016–18 statistics (Bongaarts, 2021), the prevalence of food insecurity (60%) was greater within our study cohort. Direct comparisons are challenging due to variances in the methodologies used to measure food insecurity and the socio-demographic variables across the populations. Notably, households in our research were eligible for public benefits such as the free school lunch programme and/or a healthy hamper. However, prevalence found is comparable with prior research from Canada that found that 59.7% of households receiving social assistance experienced food insecurity (Willows et al., 2009). Other studies also suggest that disadvantaged families may find it more challenging to sustain themselves through the lengthy summer break since their children are no longer eligible for free school meals and could become hungry during the break (Graham et al., 2016; Gill and Sharma, 2004).

This finding is important for several reasons. The effects of holiday hunger on families with children are now the subject of a sizable body of research. International studies have shown that children in food insecure families are probable to have ill health, social and behavioural challenges (Temple & Russell, 2018; Whitaker et al., 2006; Yau et al., 2020). Additionally, according to various researchers controlling feeding patterns reduces children's capacity to self-regulate their eating habits which may lead to future obesogenic condition (Gross et al., 2018, Jebb et al., 2007, Innella et al., 2016). These findings indicate that food insecurity is a significant public concern in UK households with children receiving social assistance (Kleve et al., 2018a; Loopstra et al., 2019), and that growing up in an undernourished environment can have serious health and social repercussions that could persist into adulthood (UNICEF, 2017).

Relative association between Parental stress and food insecurity

Over half of the sample population in this study reported being worried over the summer holiday; these worries included extra cost of childcare and feeding as well as wellbeing. This finding is especially concerning given the strong association that was observed between parental stress and HFI before and after summer holiday. This may be explained by our cohort being recruited from a more vulnerable population (e,g, eligible for food assistance) but aligns with prior research indicating that the existence of hunger is a key factor in influencing the extent of psychological distress associated with food insecurity (Allen et al., 2018; Cain et al., 2022; Jacknowitz et al., 2015; Stretesky et al., 2020).

As posited by Deater-Deckard, (2004), parental stress is "the aversive psychological reaction to the demands of being a parent". This might explain why all caregivers in both food secure and insecure category always project stress. Similarly, Mistry et al. (2007) believed stress is eminent as a parent, but the lack of social and financial support exacerbates this stress. Consequently, further analysis to understand likely mediating factor for parents being stressed with regards to FI among our sample revealed that despite the social class of interest, there is disparity among regular income and those on irregular income. Meaning financial insecurity had the strongest association with holiday hunger and parent anxiety; while this may reflect the strength of association between financial induced stress and food poverty, it may also be attributable to the subjective nature of variables measured. Moreover, some scholars asserted that financial strain and food hunger diminishes as income levels increase among lower-income categories (Becerra et al., 2015; Chang et al., 2014; Stretesky et al., 2020).

LIMITATIONS & RECOMMENDATIONS

The limited sample size and demographic hinders uncovering more significant relationships, therefore, advocating for larger samples and a broader demographic across the income spectrum would be recommended in future research. Self-report bias and measuring food insecurity based on financial constraints alone also warrant attention, suggesting the need for more comprehensive assessments in future studies. Further investigating the demand on parents' income and how this plays out within the home during

stressful times such as the school holidays would be beneficial. Is the demand solely for the cost of food or activities or both, plus the cost of childcare? Evidence has shown that childcare is a major burden on household incomes and for those with limited earnings the holiday period might push them to their limits (Forsey 2017; Stretesky et al.,2020; Stewart et al., 2018). Therefore, understanding the regularity of family income and the demand on that income and how that contributes to parental stress and the factors that increase the risk of food poverty is essential.

CONCLUSION

This research presents interesting findings that highlight the challenges faced by many low-income families during the summer break. Our data suggests that children from financially struggling households may miss out on engaging activities during the summer holidays which other studies have highlighted as a potential risk to physical and mental health due to inadequate nutrition, isolation, and prolonged inactivity (Stewart et al., 2018). Moreover, the study found a bidirectional relationship between holiday hunger and parental stress, often influenced by the family's financial situation. The findings suggest that holiday hunger, increased food insecurity, is experienced more acutely where parental stress is higher, and especially so when household income is unpredictable. The direct of this association and contributing factors should be the focus of future research, especially to explore experiences where the safety net of free school meals is removed. The authors also recommend future exploration of interventions to assist families and vulnerable children to mitigate the risk of heightened household stress and food insecurity. These research insights could be instrumental in informing future policies aimed at preventing or alleviating the experience of household food insecurity during the school holidays.

REFERENCES

Aceves-Martins, M., Cruickshank, M., Fraser, C., & Brazzelli, M. (2018). Child food insecurity in the UK: a rapid review. Public Health Research (*Southampton, England), 6*(13), 1–162. https://doi.org/10.3310/phr06130

Allen, N.L., Becerra, B.J., & Becerra, M. B. (2018). Associations between food insecurity and the severity of psychological distress among African Americans. *Ethnicity & Health*, *3*(5), 511–520. https://doi.org/10.1080/13557858.2017.1280139

Barker, M. E., Halliday, V., Mak, D., Wottge, M., & Russell, J. M. (2019). Food security, nutrition, and health of food bank attendees in an English city: a cross-sectional study. *Journal of Hunger & Environmental Nutrition, 14*(1-2), 155–167. https://doi.org/10.1080/19320248.2018.1491365

Bauer, K. W., Widome, R., Himes, J. H., Smyth, M., Holy, B., Hannan, P. J., & Story, M. (2012). High Food Insecurity and Its Correlates Among Families Living on a Rural American Indian Reservation. *American Journal of Public Health (1971), 102*(7), 1346–1352. https://doi.org/10.2105/AJPH.2011.300522

Bazerghi, C., McKay, F.H., & Dunn, M. (2016). The Role of Food Banks in Addressing Food Insecurity: *A Systematic Review Journal of Community Health, 41*(4), 732–740. https://doi.org/10.1007/s10900-015-0147-5

Becerra, B. J., Sis-Medina, R. C., Reyes, A., & Becerra, M. B. (2015). Association Between Food Insecurity and Serious Psychological Distress among Hispanic Adults Living in Poverty. *Preventing Chronic Disease, 12*, E206–E206. https://doi.org/10.5888/pcd12.150334

Bickel, G., Nord, M.,Price, C., Hamilton, W., & Cook, J. (2000). Guide to Measuring Household Food Security, Revised 2000(2nded.).https://doi.org/10.22004/ag.econ.337157

Bongaarts, J. (2021). FAO, IFAD, UNICEF, WFP and WHO The State of Food Security and Nutrition in the World 020. Transforming food systems for affordable healthy diets FAO, 020, 320 p. *Population and Development Review, 47*(2), 558–558. https://doi.org/10.1111/padr.12418

Booth, S., & Pollard, C. (2019). Addressing Food and Nutrition Security in Developed Countries. *MDPI*. https://doi.org/10.3390/books978-3-03921-282-8

Cain, K. S., Meyer, S. C., Cummer, E., Patel, K. K., Casacchia, N. J., Montez, K., Palakshappa, D., & Brown, C. L. (2022). Association of Food Insecurity with Mental Health Outcomes in Parents and Children. *Academic Pediatrics, (7)*, 1105–1114. https://doi.org/10.1016/j.acap.2022.04.010

Carter, K. N., Kruse, K., Blakely, T., & Collings, S. (2011). The association of food security with psychological distress in New Zealand and any gender differences. *Social Science & Medicine 72*(9), 1463–1471. https://doi.org/10.1016/j.socscimed.2011.03.009

Chang, Y., Chatterjee, S., & Kim, J. (2014). Household Finance and Food Insecurity. *Journal of Family and Economic Issues, 35*(4), 499–515. https://doi.org/10.1007/s10834-013-9382-z

Coleman-Jensen, A., Rabbitt, M., Gregory, C., & Singh, A. (2022). Household Food Security in the United States in 021. *Amber Waves*.

Crilley, E., Brownlee, I., & Defeyter, M. A. (2021). The Diet of Children Attending a Holiday Programme in the UK: Adherence to UK Food-Based Dietary Guidelines and School Food Standards. *International journal of environmental research and public health,19*(1), 55. https://doi.org/10.3390/ijerph19010055

Deater-Deckard, K. (2004). Parenting Stress and the Child. In Parenting Stress (p.55–). *Yale University Press*. https://doi.org/10.12987/yale/9780300103939.003.0003

Deeming, C. (2011). Food and Nutrition Security at Risk in Later Life: Evidence from the United Kingdom Expenditure & Food Survey. *Journal of Social Policy,40*(3), 471–492. https://doi.org/10.1017/S004727941000070X

Defeyter, M.A., Graham, P. L., & Prince, K. (2015). A Qualitative Evaluation of Holiday Breakfast Clubs in the UK: Views of Adult Attendees, Children, and Staff. *Frontiers in Public Health, 3*,199–199. https://doi.org/10.3389/fpubh.2015.00199

D'Odorico, P., Carr, J. A., Davis, K. F., Dell'Angelo, J., & Seekell, D. A. (2019). Food inequality, injustice, and rights. *BioScience, 69*(3), 180-190.

Douglas, F., MacIver, E., & Yuill, C. (2020). A qualitative investigation of lived experiences of long-term health condition management with people who are food insecure. *BMC Public Health, 20*(1), 1309–1309. https://doi.org/10.1186/s12889-020-09299-9

Dubois, J., Dehaene-Lambertz, G., Kulikova, S., Poupon, C., Hüppi, P. S., & Hertz-Pannier, L. (2014). The early development of brain white matter: a review of imaging studies in fetuses, newborns and infants. *neuroscience*, *276*, 48-71.

Egal, F. (2019). Review of The State of Food Security and Nutrition in the World, 019. *World Nutrition, 10*(3), 95–97. https://doi.org/10.26596/wn.201910395-97

Elmes, M. B. (2018). Economic inequality, food insecurity, and the erosion of equality of capabilities in the United States. *Business & Society, 57*(6), 1045-1074.

Food Foundation. (2023). *Food Insecurity Tracking*. https://foodfoundation.org.uk

Forsey, A. (2017). *Hungry holidays: A report on hunger amongst children during school holidays*. Feeding Britain. https://feedingbritain.org/wp-content/uploads/2019/01/Ending_Hunger_in_the_Holiday_Report_Dec_2017-3.pdf

Fraser, G.E., Yan, R., Butler, T. L., Jaceldo-Siegl, K., Beeson, W.L., & Chan, J. (2009). Missing data in a long food frequency questionnaire: areimputedzeroes, correct? Epidemiology *(Cambridge, Mass.),20*(2),289–294.https://doi.org/10.1097/EDE.0b013e31819642c4

Gill, D. A., Ritchie, L. A., Picou, J. S., Langhinrichsen-Rohling, J., Long, M.A., & Shenesey, J. W. (2014). The Exxon and BP oil spills: a comparison of psychosocial impacts. *Natural Hazards (Dordrecht), 74*(3),1911–1932. https://doi.org/10.1007/s11069-014-1280-7

Gill, O., & Sharma, N. (2004). *Food poverty in the school holidays*. Barnardo's Southwest England.

Graham, P.L., Crilley, E., Stretesky, P. B., Long, M. A., Palmer, K. J., Steinbock, E., & Defeyter, M. A. (2016). School Holiday Food Provision in the UK: A Qualitative

Investigation of Needs, Benefits, and Potential for Development. *Frontiers in Public Health, 4*, 172–172. https://doi.org/10.3389/fpubh.2016.00172

Grainger, M. (2010). World Summit on Food Security (UN FAO, Rome, 16-18 November 009). *Development in Practice, 20*(6), 740–742. https://doi.org/10.1080/09614524.2010.491540

Gross, R.S., Mendelsohn, A. L., & Messito, M.J. (2018). Additive effects of household food insecurity during pregnancy and infancy on maternal infant feeding styles and practices. *Appetite,130*, 0–28. https://doi.org/10.1016/j.appet.2018.07.016

Gundersen, C., & Ziliak, J. P. (2015). Food Insecurity and Health Outcomes. *Health Affairs, 34*(11), 1830–1839. https://doi.org/10.1377/hlthaff.2015.0645

Heslop, P., & Emerson, E. (2017). A worsening picture: Poverty and Social Exclusion and disabled people. Poverty and Social Exclusion in the UK: Vol 1. https://doi.org/10.1332/policypress/9781447332152.003.0009

Honarvar, M. R., Gholami, M., Abdollahi, Z., Ghotbabadi, F. S., Lashkarboluki, F., Najafzadeh, M., & Behnampour, N. (2023). Household food insecurity and associated factors in the Northeast of Iran: a cross-sectional study: Household food security in Northern Iran. *BMC nutrition*, *9*(1), 5.

Innella, N., Breitenstein, S., Hamilton, R., Reed, M., & McNaughton, D. B. (2016). Determinants of Obesity in the Hispanic Preschool Population: An Integrative Review. *Public Health Nursing (Boston, Mass.), 33*(3), 189–199. https://doi.org/10.1111/phn.12215

Jacknowitz, A.,Morrissey., & Brannegan, A. (2015). Food insecurity across the first five years: Triggers of onset and exit. *Children and Youth Services Review, 53*, 4–33. https://doi.org/10.1016/j.childyouth.2015.03.012

Jebb, S. A., Kopelman,P., & Butland, B. (2007). Executive summary: Foresight -tackling obesities: Future choices project. *Obesity Reviews, 8*(s1), vi–ix. https://doi.org/10.1111/j.1467-789x.2007.00344.x

Jernigan, V. B. B., Huyser, K. R., Valdes, J., & Simonds, V. W. (2017). Food Insecurity Among American Indians and Alaska Natives: A National Profile Using the Current

Population Survey-*Food Security Supplement. Journal of Hunger & Environmental Nutrition, 12*(1), 1–10. https://doi.org/10.1080/19320248.2016.1227750

Johnson, A.D., & Markowitz, A. J.(2018). Associations Between Household Food Insecurity in Early Childhood and Children's Kindergarten Skills. *Child Development, 89*(2), e1–e17. https://doi.org/10.1111/cdev.12764

Joseph Rowntree Foundation. (2023). The essential guide to understanding poverty in the UK. https://www.jrf.org.uk/report/uk-poverty-2023

Jones, A. D. (2017). Food insecurity and mental health status: a global analysis of 149 countries. *American journal of preventive medicine*, *53*(2), 264-273

Kent,K.,Murray,S.,Penrose,B.,Auckland,S.,Horton,E.,Lester,E.,&Visentin,D.(2022).The new normal for food insecurity? A repeated cross-sectional survey over 1 year duringtheCOVID19pandemicinAustralia.*TheInternationalJournalofBehavioralNutritionandPhysicalActivity,19*(1),1–115.https://doi.org/10.1186/s12966-022013474.

Kimbro, R. T., & Denney, J.T.(2015). Transitions Into Food Insecurity Associated With Behavioral Problems And Worse Overall Health Among Children. *Health Affairs, 34*(11),1949–1955. https://doi.org/10.1377/hlthaff.2015.0626

Kleve, S., Booth, S.,Davidson, Z. E., & Palermo, C. 018a). Walking the Food Security Tightrope-Exploring the Experiences of Low-to-Middle Income Melbourne Households. *International Journal of Environmental Research and Public Health, 15*(10), 06–. https://doi.org/10.3390/ijerph15102206

Kleve, S., Gallegos, D., Ashby, S., Palermo, C.,& McKechnie,R.(2018b). Preliminary validation and piloting of a comprehensive measure of household food security in Australia. *Public Health Nutrition, 1*(3), 526–534. https://doi.org/10.1017/S1368980017003007

Mann,E.,Long,M.A.,Stretesky,P.B.,&Defeyter,M. A. (2018).A question of justice: are holidayclubsservingthemostdeprivedcommunitiesinEngland?*LocalEnvironment,23*(10),1008–1022.https://doi.org/10.1080/13549839.2018.1518415

Mistry,R.,Stevens, G. D., Sareen, H., De Vogli,R., & Halfon, N. (2007).Parenting-Related Stressors and Self-Reported Mental Health of Mothers With Young Children. American Journal of Public Health (1971), 97(7), 1261–1268. https://doi.org/10.2105/AJPH.2006.088161

Pickett, W.,Michaelson, V., & Davison,C.(2015).Beyond nutrition: hunger and its impact on the health of young Canadians. *International Journal of Public Health, 60*(5), 527–538. https://doi.org/10.1007/s00038-015-0673-z

Pool,U., & Dooris, M. (2022). Prevalence of food security in the UK measured by the Food Insecurity Experience Scale. *Journal of Public Health (Oxford,England), 44*(3), 634–641. https://doi.org/10.1093/pubmed/fdab120

Rai, S. (2015). Food Poverty. School holidays and wider impact, Northern Housing Consortium. http://neytco.co.uk/food-poverty-school-holidays-and-widerimpact

Rutter,H.,Bes-Rastrollo,M.,deHenauw,S.,Lahti-Koski,M.,Lehtinen-Jacks,S.,Mullerova, D., Rasmussen, F.,Rissanen, A.,Visscher,T.L.S., & Lissner,L.(2017).Balancing Upstream and Downstream Measures to Tackle the Obesity Epidemic: A Position Statement from the European Association for the Study of Obesity. *Obesity Facts, 10*(1), 61–63. https://doi.org/10.1159/000455960

StataCorp, L. P. (2015). *Stata statistical software*: release 14. College Station, TX

Loopstra,R., & Tarasuk, V. (2015).Food Bank Usage Is a Poor Indicator of Food Insecurity: Insights from Canada. Social Policy and Society: *Journal of the Social Policy Association, 14*(3), 443–455. https://doi.org/10.1017/S1474746415000184

Loopstra, R. (2018).Rising food bank use in the UK: Sign of a new public health emergency? *Nutrition Bulletin, 43*(1), 53–60. https://doi.org/10.1111/nbu.12306

Loopstra, R., Reeves, A.,& Tarasuk,V. (2019).The rise of hunger among low-income households: an analysis of the risks of food insecurity between 004 and 016 in a population-based study of UK adults. *Journal of Epidemiology and Community Health , 73*(7), 668–673. https://doi.org/10.1136/jech-2018-211194

Loopstra,R.(2020)*Vulnerability to food insecurity since the COVID-19* lockdown (preliminaryreport).https://foodfoundation.org.uk/sites/default/files/202110/Report_COVID19FoodInsecurityfinal.pdf).

McGuire, S. (2011). Nord, M., Coleman-Jensen A., Andrews M., Carlson S. Household Food Security in the United States, 009. EER-108, U.S. Dept. of Agriculture, Econ. Res. Serv. November 010. *Advances in Nutrition (Bethesda, Md.), 2*(2), 153–154. https://doi.org/10.3945/an.110.000216

Pollard, C. M., & Booth, S. (2019). Food insecurity and hunger in rich countries—it is time for action against inequality. *International journal of environmental research and public health, 16*(10), 1804.

Taylor A & Loopstra R.(2016). *Too poor to eat: Food insecurity in the UK*. The Food Foundation.http://foodfoundation.org.uk/wpcontent/uploads/2016/07/FoodInsecurityBriefingMay-2016-final.pdf.

Temple, J.B., & Russell, J. (2018). Food Insecurity among Older Aboriginal and Torres Strait Islanders. *International Journal of Environmental Research and Public Health, 15*(8), 1766–. https://doi.org/10.3390/ijerph15081766

Pallant,J. (2020). *SPSS survival manual a step by step guide to data analysis using* IBM SPSS (7th edition.). McGraw-Hill Education.

Riches,G., & Silvasti,T.(2014).*Hunger in the Rich World: Food Aid and Right to Food Perspectives. In First World Hunger Revisited*. Palgrave Macmillan UK.

Schmeer, K. K., & Piperata, B. A. (2016). Household food insecurity and child health. *Maternal & Child Nutrition, 13*(2). https://doi.org/10.1111/mcn.12301

Shankar, P., Chung, R., & Frank, D. A. (2017). Association of food insecurity with children's behavioral, emotional, and academic outcomes: A systematic review. *Journal of Developmental & Behavioral Pediatrics, 38*(2), 135–150. https://doi.org/10.1097/dbp.0000000000000383

Shinwell, J., & Defeyter, M. A. (2021). Food Insecurity: A Constant Factor in the Lives of Low-Income Families in Scotland and England. *Frontiers in public health, 9*, 588254. https://doi.org/10.3389/fpubh.2021.588254

Sosenko, F.,Bramley,G.,& Bhattacharjee, A.(2022).Understanding the post-2010 increase in food bank use in England: new quasi-experimental analysis of the role of welfare policy. *BMC Public Health, (1)*, 1–1363. https://doi.org/10.1186/s12889-022-13738-0

Stewart, H., Watson, N., & Campbell, M. (2018). The cost of school holidays for children from low-income families. *Childhood (Copenhagen, Denmark), 5*(4), 516–529. https://doi.org/10.1177/0907568218779130

Stretesky, P. B., Defeyter, M. A., Long, M. A., Ritchie, L. A., & Gill, D. A. (2020). Holiday hunger and parental stress: evidence from Northeast England. *Sustainability*, *12*(10), 4141.

Tarasuk,V.,Li,T.,Mitchell, A.,& Dachner,N. (2018). Commentary - The case for more comprehensive data on household food insecurity. *Health Promotion and Chronic Disease Prevention in Canada, 38*(5), 10–213. https://doi.org/10.24095/hpcdp.38.5.03

UN (United Nations). (2023). *Food Security and Nutrition*. https://www.un.org/en/global-issues/food

UNICEF (United Nations International Children's Fund). (2017). *Prevalence and correlates of food insecurity among children across the Globe*. https://www.unicef-irc.org/publications/900-prevalence-and-correlates-of-food-insecurity-among-children-across-the-globe.html

Vargas, S.,& Penny,M. E.(2010). Measuring food insecurity and hunger in Peru: a qualitative and quantitative analysis of an adapted version of the USDA's Food Insecurity and Hunger Module. *Public Health Nutrition, 13*(10),1488–1497. https://doi.org/10.1017/S136898000999214X

Verkasalo,P. K.,Appleby, P. N., Davey, G. K., & Key, T. J. (2001). Soymilk Intake and Plasma Sex Hormones: A Cross-Sectional Study in Pre- and Postmenopausal Women (EPIC-Oxford). *Nutrition and Cancer, 40*(2), 79–86. https://doi.org/10.1207/S15327914NC402_1

Whitaker, R. C., Phillips, S. M., & Orzol, S. M. (2006). Food insecurity and the risks of depression and anxiety in mothers and behavior problems in their preschool-aged children. (improper nutrition for mother). *Pediatrics (Evanston), 118*(3), 1242

Willows, N.D., Veugelers, P.,Raine,K.,&Kuhle,S.(2009).prevalenceandsociodemographic risk factors related to household food security in Aboriginal peoples in Canada. *Public health nutrition, 12(*8), 1150-1156.

WHO (World Health Organization). (2019). *The state of food security and nutrition in the world*: https://www.who.int/publications/m/item/state-of-food-security-and-nutrition-in-the-world

Yau, A., White, M., Hammond, D., White, C., & Adams, J. (2020). Socio-demographic characteristics, diet, and health among food insecure UK adults: cross-sectional analysis of the International Food Policy Study. *Public health nutrition, 3*(14), 602–2614. https://doi.org/10.1017/S1368980020000087