Basic needs: Food Insecurity & Mental Health.

Richard Hall

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University College London
UCL Doctorate in Clinical Psychology

Thesis declaration form

I confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

Signature:

Name: Richard Hall

Date: 26/6/21
Overview

This thesis investigates the association between Food Insecurity and mental health. Part one is a systematic review of research into Food Insecurity and mental health amongst adults in the UK. Due to the heterogenous nature of research methodologies, a scoping review was used to provide an overview of the evidence. The review describes research into how stigma, shame, uncertainty, stress and ‘disordered’ eating behaviours are dominant features of mental health difficulties connected to FI.

Part two is an original mixed methods study investigating the proposed association between Food Insecurity and Eating Disorder symptoms as measured by the Eating Disorder Diagnostic Scale (EDDS), an adapted version of the Eating Disorder Examination Questionnaire Dietary Restraint (DR) subscale and the Food Insecurity Experience Scale Questionnaire. Data was collected via an online survey from a sample of 355 UK adults during the Covid-19 pandemic. Results are consistent with previous research conducted in the USA and indicate for the first time how Food Insecurity is a likely risk factor for increased risk of ED symptoms amongst the general population in the UK.

Part three is a critical appraisal providing a reflection on the context in which the research came about. Further discussion focuses on the possible significance of the findings and their limitations. Indications for future studies and clinical recommendations are apprised alongside a consideration of the relevance of the
findings to the role of Clinical Psychology in addressing social inequalities such as Food Insecurity.

**Impact statement**

Food Insecurity (FI) is a ‘deeply scary human experience’ (Connors, 2021) that has been shown to undermine and perpetuate both mental and physical health problems. It has been on the rise in the UK for the last decade and, due to various factors relating to the Covid-19 pandemic, has risen to alarming levels. FI is also disproportionality experienced amongst some groups and these inequalities have been further highlighted over the pandemic. From a social justice perspective, it is important to understand both the psychological responses to FI along with how they exist within a wider context in-order to conceptualise and address a powerful social determinant of mental and physical wellbeing.

Due to the heterogenous nature of this emerging research area, a scoping review was used to provide an overview of the evidence. To the author’s knowledge this is the first review of this type to take stock of research into the impact of FI on mental health within the UK. Taken as a whole the research strongly indicated how key psychological responses were shame due to the impact of societal stigma and stress and anxiety due to uncertainty about not being able to put food on the table. The
majority of the studies reviewed conducted qualitative research with Food Bank users providing in-depth insights into the experience of severe FI. Importantly, much of this evidence stands in sharp contrast to a dominant and pernicious narrative that the rise in Food Banks is inevitable due to it offering a ‘free good’ alongside food scarcity being the result of individual rather than systemic failings. Grouping these findings together provides a strong rebuttal of these erroneous neo-liberal stereotypes.

Concerningly, there is also a growing body of evidence to suggest how various factors related to FI may create an especially pathogenic context for the development of Eating Disorders. Novel research conducted in the USA argues how the combination of intermittent access to food followed by periods of relative plenty alongside the stressful context of managing on limited financial resources and reduced options in terms of fresh food creates a novel pathway by which Bulimic spectrum Eating Disorders can develop. Responding to the researchers calls to contribute to the knowledge base and investigate how FI may be a risk factor outside of the USA context, this empirical paper presents research findings that contribute to this evidence about the worrying consequences of FI and indicate for the first time how FI may be a risk factor for developing an Eating Disorder within the UK context.
A key recommendation from this study is the importance of clinicians routinely consider risk of FI when assessing and formulating in Eating Disorder services. Taken as a whole this thesis attempts to contribute knowledge to an area that has seen limited attention from psychologists in the UK and aims to make wider recommendations into the importance of ‘looking upstream’ and advocating for changes in the social determinants of mental health.
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Dedicated to Uncle Jem.
Part 1: Literature Review

What is the association between Food Insecurity and Mental Health? A systematic scoping review of qualitative and quantitative evidence in the UK.
Abstract

International research suggests a bi-directional link between Food Insecurity and psychological wellbeing, however, research into the role of Food Insecurity and mental health has yet to be conducted in a UK context. Due to the heterogenous nature of research methodologies, a scoping review was used to provide an overview of the evidence. 16 studies met eligibility criteria and were categorised into 4 areas of ‘study focus’; these were, Food Banks (11 studies), clinical perspectives, families and demographic/prevalence. Qualitative methodology was the predominant methodology allowing for a rich understanding of the issues. Quantitative and mixed methods were also used but to a much lesser extent resulting in limited generalisability. In terms of psychological responses to food insecurity, four main themes emerge from the studies. These were stigma and shame, uncertainty and stress, disordered eating, and resilient responses. Discussion focuses on potential next steps in developing research efforts.
Introduction

Food as a basic need is recognised within the Universal Declaration of Human Rights in which; "everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing..." (Article 25[1]). The term Food Insecurity (FI) applies in circumstances when this human right is compromised and is defined as ‘when people do not have the economic, social and physical resources to shop, cook and eat in order to ensure a sufficient supply of nutritionally appropriate food’ (Purdam et al., 2016) or that it is acquired in socially unacceptable ways (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2017). FI also applies if people experience uncertainty about whether they will be able to obtain sufficient food in the future (Radimer, 2002) and exists on a spectrum from worry about being able to obtain food, having food that is insufficient in quantity, quality or suitability and, at its extreme, having to go without.

There is a growing body of evidence that links the experience of FI with mental health problems. Pourmotabbed et al (2020) conducted a recent systematic review and meta-analysis of FI and mental health. The review analysed 19 studies from Asia, North America and Europe and identified FI as a reliable risk factor for psychological distress; specifically, depression, self-reported stress and anxiety. The review indicated how the association between depression and FI was most pronounced for
older adults and speculates how this is likely due to a composite of factors such as reduced mobility, limited financial resources alongside a greater risk of social isolation. In terms of all demographic groups studied, the pervasive experience of FI is thought to be characterised by the uncertainty of not having predictable/reliable access to food for oneself and family which is likely to enhance stress and anxiety. Furthermore, accessing foods in ‘socially unacceptable ways’ such as theft or through Food Banks likely increases feelings of ‘alienation, powerlessness, shame and guilt that are associated with depression’.

International research into the psychological impact of FI has been growing in recent years. In a recent narrative review, Myers (2020) considers research from the last 5 years. Across a wide range of countries, FI has been shown to be associated with various markers of mental health difficulties in diverse cultural and socio-economic contexts including amongst young people and college students (Men, Elgar, Tarasuk, 2021) older adults (Jung, Kim, Bishop, & Hermann, 2019), those with chronic disease such as diabetes (Montgomery, Lu, Ratliff, & Mezuk, 2017) and postnatal women (Maynard et al, 2018). Furthermore, a review of longitudinal research into FI and mental health suggest that associations are likely bi-directional with pre-existing mental health difficulties being part of the cause by increasing the risk of FI as well as a consequence (Bruening, Dinour, & Chavez, 2017).
Further studies have expanded knowledge on associations between FI and mental wellbeing to consider how these associations intersect with various socio-economic and demographic inequalities. For instance, in being unable to work and thus often reliant on Food Banks, refugee and asylum seeker people are also acutely vulnerable (Dexter, 2020). Likewise, amongst young sexual and gender minority groups (and particularly trans men), in the USA, research has indicated alarmingly elevated rates FI compared to the general population and how amongst these populations FI is associated with an increased risk of developing Eating Disorders (ED) (Arikawa, Ross, Wright, Elmore, Gonzalez, & Wallace, 2020).

Relatedly, in a study of people accessing food pantries in the USA (Becker, Middlemass, Taylor, Johnson & Gomez, 2017) Becker et al interviewed participants using measures of ED symptomology alongside a standardised measure of FI and found a positive association between higher levels of FI and greater ED symptoms. When the sample was stratified into levels of FI it was found that, consistent with their hypothesis, those with the highest level of FI had the highest occurrence of untreated clinically significant ED symptoms, the highest anxiety and the highest level of dietary restraint for any reason (not solely shape and weight concerns). Furthermore, insecure and unpredictable patterns of food availability has been
associated with increased incidence of Bulimia Nervosa (Lydecker & Grilo, 2019) and Binge Eating Disorder (Rasmusson, Lydecker, Coffino, White, & Grilo, 2019).

There is a growing body of evidence suggesting that the risk of FI is also disproportionately experienced amongst ethnic minorities. For instance, reporting on their analysis of a large scale nationally representative data set (the National Health and Nutrition Examination Survey), Myers & Painter (2017) found that Black and Latino adults in the USA were more likely than White people to be food insecure. Furthermore, more recent research has sought to understand these racialised health discrepancies within their wider systemic contexts. For instance, Bowen, Elliott & Hardison-Moody (2021) argue how the well reported disproportionate experience of FI amongst people of colour in the USA is itself a consequence of structural racism because it has been shown to underpin lower socio-economic status (SES) in multiple ways and thus increase FI.

Despite the majority of this research being conducted outside of the UK, there has been growing awareness of the domestic impact and extent of FI within the UK. Much of this awareness is driven by the recent rise of Food Bank use since the 2008 financial crash and subsequent austerity policies. In the last five years, Food Bank use has increased by 74%: between 1 April 2019 - 31 March 2020, the Trussell Trust’s
Food Bank network distributed 1.9 million three-day emergency food supplies to people in crisis, an 18% increase on the previous year of which more than 700,000 of these went to children. There are also around 1000 Independent Food Banks outside of the Trussell Trust network. Key drivers of Food Bank use are welfare reforms and difficulties with benefits (e.g. sanctions) alongside other life events such as redundancy (Loopstra, et al 2015). Outside of Food Banks the Food Standard Agency’s Food and You Survey showed that 21% of adults in England were mildly food insecure in 2016 and 3.8% severely food insecure (2021). Furthermore, following concerted pressure from campaign groups and a private members bill, FI is now measured in the Family Resources Survey, 2019-2020. While poverty is a crucial factor that is strongly related to FI it can, as the economist Gundersen et al (2011) has argued, also exist independently of poverty. For example, it is possible for those above the poverty line to experience FI due a range of dynamic factors such as fixed payments such as mortgages along with lack of access to government assistance (e.g. Supplementary Nutrition Assistance Program [SNAP] in the USA) while on the other hand, many below the poverty line do not experience FI due to, for example, having access to social capital through informal networks of community support and/or families living with grandparents who can provide child care.
Over the initial Covid-19 pandemic in 2020 FI was estimated to have quadrupled (Loopstra, 2020). Firstly, an initial driving factor for this upsurge was the stress placed on the complex system of food supply in which ‘just in time’ (JIT) stocking of supermarkets was overwhelmed by demand. During the early weeks of the first lockdown in the UK many people experienced and saw reports of empty supermarket shelves or heard emotional social media appeals from exhausted key workers asking the public not to panic buy. Secondly, due to the lockdown, food security was further impacted by difficulties in access and especially by those having to shield due to being extremely clinically vulnerable and eligible to receive government food packages. As reported in the Environment, Food and Rural Affairs Parliamentary hearing into the impact of Covid-19 on food supply (June 2020, reviewed April 2021), an estimated 5.9 million adults were classified as either having moderate (uncertainty about ability to obtain sufficient food) or severe (running out completely) FI between August 2020 to February 2021.

Further drivers of FI over the Covid-19 pandemic are related to its damaging economic impact which has caused widespread loss of income and a surge in claims for Universal Credit (Mackley & McInnes, 2021) and for support through the furlough scheme. As highlighted by the high-profile campaign spearheaded by footballer Marcus Rashford, the problem of child holiday hunger has also been exacerbated by
the pandemic. Concerningly, a recent Food Foundation and Child Poverty Action group report into the impact of coronavirus on children’s food found that 14% of adults living with children (approximately 4 million adults and 2.3 million children) reported experiencing moderate or severe FI in the last 6 months, up from 11% pre-Covid-19 levels (The Food Foundation, 2021). While the government has made moves to address this issue in providing free school lunches during holidays, the poor quality and quantity of the provision has made national headlines. The same report also documents how the pandemic has exacerbated other social inequalities in terms of who is more likely to experience FI with minority ethnic groups being twice as likely and disabled people being five times as likely to experience food insecurity.

**Aims of the review**

Despite international growth in research efforts and evidence of worsening levels of FI in the UK, there has yet to be a review of research into the association between FI and mental health in a UK context. Accordingly, this review aims to address the following questions;

- What is the state of research on FI and mental health in a UK context?
• What does this research tell us about the association(s) between FI and mental health?
• What are the emerging themes?
• What are gaps in research that could inform future intervention and policy?
• What is the role of Clinical Psychology in addressing social inequalities such as FI?

Methods

The research into FI in the UK is extremely heterogeneous and is therefore not appropriate for systematic review. Accordingly, a scoping review is best suited to consider research that is new and diverse in method and scope (Peters, et al 2015). Scoping reviews are becoming increasingly utilised and a systematic protocol has been developed by The Joanna Briggs Institute (Peters et al, 2017) detailing how scoping reviews enable mapping of the methods and findings of an emerging research area in order to identify research gaps and suggest future work and identify implications for clinical practice and public policy. The use of scoping reviews are also not uncommon in Clinical Psychology which commonly needs to evaluate diverse research output. For instance, in their recent review of research into Eating Disorders amongst ‘emerging adults’ Potterton, Richards, Allen, & Schmidt (2020)
used a scoping review in order to provide a coherent narrative synthesis of a nascent and heterogenous topic of research.

**Protocol**

The Prisma guidelines were extended to scoping reviews (Prisma-ScR) in 2018 (Tricco, et al. 2018) and guide the approach and structure of this review. This review is not registered.

**Eligibility criteria**

Research was included in the review if it was conducted in the UK and had an explicit focus on FI and mental health in the UK. Publication types that were eligible for this review were peer reviewed journal articles, book chapters, unpublished dissertations, conference abstracts and reports from charitable organisations. The search spanned from the earliest published work to most recent. The search also included methodologically diverse studies using qualitative, quantitative and mixed methods approaches. Likewise, studies were not excluded for their study design or sample participants (e.g. age). Research was excluded however if it did not focus on
FI and mental health, was not conducted in the UK or was not available in English.

**Information sources**

Searches were conducted on 21/11/2020 using the following information sources; Psychinfo, Medline, Embase, Psych Extra, Ethos, Web of Science from inception. Additional internet searches were conducted for Grey Literature.

**Search**

Search terms were as follows;

“TS=(FIOR food poverty OR hunger) AND TS=(mental health OR mental illness OR depression OR anxiety) AND TS=(UK)”.

During the selection of sources of evidence duplicates were first removed, records were then screened and removed if they did not meet eligibility criteria (see figure 1). Content was then charted and sorted by publication type and study focus (see table 1).
Results

Figure 1. Prisma-ScR flow diagram of systematic literature search.
Table I. Characteristics of research included in the scoping review organised by study focus.

### Characteristics of sources of evidence

See table 1 for characteristics of research included in the scoping review organised by study focus. 16 studies met the eligibility criteria. The earliest published study was in 2009 with over one third being published in 2020. The majority were cross-sectional with only one adopting a longitudinal design. Qualitative approaches were the most common method with a mixture of semi-structured interviews and ethnographic approaches used. Quantitative and mixed-method approaches were also used.
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<td>Adults, health professionals in North East Scotland</td>
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<td>2020</td>
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Table II. Summary of research included in the scoping review

Synthesis of results – detailed study focus and critical appraisal

Research into Food Banks represented the largest proportion of relevant literature with 11 cross-sectional studies employed a range of methodologies. While overlapping greatly in terms of themes, the studies are organised below by their dominant findings and area of focus. These were: research related to the prevalence and demographic aspects of Food Bank use; research that highlights the emotional and mental health impact of using Food Banks and experiences of FI; research that seeks to understand the intersection of physical and mental health in the context of FI and lastly, research that highlights adaptive and resourceful reactions to FI and inequality. Results relating to Food Bank use are discussed first. This is followed by a
synthesis of the other non-Food Bank related research and is categorised into Demographic factors of FI, Families and Clinical Perspectives.

**Foodbanks - Prevalence:** Loopstra and Lalor’s (2017) report for the Trussell Trust investigates ‘The Profile of People Receiving Emergency Food Assistance from the Trussell Trust Foodbank Network and provides much needed data on various aspects of Food Bank use in the UK. Of the 413 people sampled, three quarters of people lived in a household with at least one or more members who had a physical disability or mental health condition and around one third lived in a household with someone with a mental health condition. Within the sample itself, depression (24.3%) was the most prevalent mental health condition, followed by anxiety (11.2%) and unspecified (5%). Users often reported having limited social support including single men, lone mothers with children and people with disabilities. A limitation of this study is that there is no control group from which to compare the prevalence of these findings relative to the general population. However, more recent research from Loh, Knight & Loopstra (2020) addresses this limitation by comparing Food Bank users with the general population across a range of self-reported demographic and health factors. To do this Loh et al conducted a cross-sectional quantitative study comparing results from a survey of Food Bank users (n 598) with data from 2016 Health Survey for England (HSE). As with the 2017 report, they found that
working-age adults using Food Banks in England had high rates of mental health conditions. Importantly, they found that these mental health disorders were elevated compared to the general population and that these persisted even after controlling for socio-economic status. They attribute this to aspects that are reported to be particular to FI such as uncertainty alongside pervasive feelings of shame and experiences of social exclusion and stigma that have been shown to commonly accompany having to access Food Banks.

The finding of elevated rates of mental health conditions amongst Food Bank users is supported by MacLeod, Curl & Kearns’ (2019) research into the prevalence and drivers of Food Bank use in deprived communities in Glasgow. Analysing cross-sectional survey data from 3,614 respondents to the Glasgow Community Health and Wellbeing Study (GoWell) they found that 4.2% of respondents used a Food Bank in the last year. As with Loopstra’s report, young single men were the most likely to access a Food Bank. They suggest that this is because that single people are more vulnerable to financial difficulties and life events as they may have less access to social support from family coupled with evidence that young men specifically are more likely to be impacted by benefit sanctions. Additionally, the study recorded elevated rates (67%) of mental health problems amongst those accessing Food Banks. Researchers described related links between ‘life events’ and Food Bank use
and emphasised how mental health problems were only one intersecting factor within complex and precarious circumstances such as Food Bank users being four times more likely to be a victim of crime, three times more likely to have been made unemployed and twice as likely to be disabled or have a serious health condition and had a relationship breakdown in comparison to survey respondents who did not report accessing a Food Bank.

**Food Banks - Stigma and Shame:** As mentioned above, the impact of stigma and shame are important considerations in understanding the mental health consequences of food security. Accordingly, it is an important recurrent theme in the UK FI literature and has been documented and explored in depth by several of the studies included in this review.

Douglas, Sapko, Kiezebrink & Kyle (2015) employed a cross sectional design using in-depth qualitative interviews alongside participant observation to understand common themes emerging from a study of Food Bank use in north-east Scotland. They found that Food Bank use as a last resort was a consistent theme with respondents describing how accessing Food Banks was driven by desperation after periods of not eating but also not wanting to have to access the support. Many reported feelings of shame and embarrassment. Interviews also documented
‘effusive statements of gratitude’ to the foodbank but also revealed a common theme of feeling powerlessness as recipients of charity with respondents emphasising how they felt disempowered and unable to ask for the food they would normally like. The impact of this powerlessness in relying on others for food is discussed as being likely experienced as infantilising. Researchers reflect on how lacking control in a broadly individualistic culture is likely to be especially degrading and disempowering and highlight how inculcated ideas of an ‘individual deficit’ rather than structural factors serve to further contribute to poor mental wellbeing. Experiences of disempowerment and shame are also central to research conducted by Purdam, Garratt & Esmail (2016). They also conducted research with a cross sectional sample of Food Bank users. In their study thirty-four interviews were conducted with foodbank users across four sites in the North West of England. The interviews documented further evidence of the ‘hidden costs’ of extreme FI such as shame and embarrassment at using Food Bank and has a detrimental impact on self-worth; ‘it throws your pride out the window’. They argue that problem of FI was more far reaching than simply nutrition and impacted aspects of identity.

Further research by Purdam et al (2019) sought to identify ways in which embarrassment at experiencing FI is linked to a possible care gap amongst older adults and in turn the exacerbation of mental health problems. Their study
presented secondary analysis of the English Longitudinal Study of Ageing ELSA (a biannual survey which collects data on various measures of wellbeing including mental health, financial information and social attitudes amongst adults over 50). Their study revealed substantial FI amongst older people and found how affordability and living alone were identified as a key drivers of this with people aged 50 and older who were living alone being more likely to report that: “too little money can stop … buying their first choice of food items” (26% compared with 12% amongst those people who were living with another adult). Reduced social care support was another key aspect especially after the majority of Meals on Wheels provision was phased out nationwide from 2011 and ceased entirely in 2018. Purdam et al identified a worrying care gap in which 20% of over 75s needed help with getting food, cooking and eating but only 6% received help. The impact on mental health and help seeking is described to be further exacerbated by ‘loneliness, stigma, embarrassment and anxiety’ with one respondent explaining how ‘I was anxious, I didn’t want to go out in case people asked me how I was and I would have to say I had nothing to eat’.

Food Banks – Cycles of Plenty and Want: Puddephatt et al (2020) conducted face to face interviews with 24 adults accessing Food Banks in Liverpool in order to better understand factors influencing food choice and eating behaviours. Data was
analysed using thematic analysis, yielding 6 interlinked themes. The association between Income (the theme most consistently linked to food access and eating behaviour) and Worsened Health Outcomes were identified as the dominant themes. Analysis of four further sub-themes identified ways in which the cost of food, its accessibility, underlying health issues and food rationing strategies determined the link between Income and Worsened Health Outcomes. Within the main theme of Income, participants commonly reported how accessing Food Banks was a shameful experience but often necessary because they had often run out of money before their next salary/benefit payment was due. The findings also showed how these difficulties existed in the context of pre-existing health conditions. Again, the sample had a high prevalence of physical (71%) and mental health (54%) difficulties. Another sub-theme of the Cost of Food was identified in which the stress and frustration of struggling to afford healthy foods and having to eat worse quality foods left some participants feeling as though they were only ‘eating to survive’. Commonly parents reported having skipped meals so that their children had enough to eat or simply not eating in the days leading up to their next payment. Participants reported that after a period of scarcity they engaged in impulsive overeating during times of relative plenty. Overall the research points to a vicious cycle in which difficulties obtaining reliable, healthy food increased stress and
feelings of shame, which serve to worsen existing physical and mental health problems.

Barker, Halliday, Mak, Wottge, & Russell (2019) have also identified the deleterious effect of FI on problematic eating behaviour with food-insecure populations. They conducted cross sectional research into food security, nutrition and health of Food Bank attendees in an English city. They found that a quarter of the sample had a mental health condition alongside a high prevalence of obesity and mental health problems amongst female users. They also found that diet quality was typically poor with inadequate intake of protein, fibre, iron and calcium. Similar to the Puddephatt et al’s (2020) Liverpool study, they also recorded instances of how experience of ‘cycles of plenty and want’ led to overeating of energy dense food of poor nutritional value in times of plenty. Relatedly, as mentioned in the introduction, international researchers have begun to develop evidence of an association between the experience of FI on ‘disordered’ eating behaviour and the risk of developing Eating Disorders (Becker 2017 et al). While these studies reviewed here do not investigate whether respondents in the UK were also at risk of experiencing clinically significant Eating Disorders, their reports of impulsive eating suggest a similar risk.
Food Banks – Health: Garthwaite, Collins, & Bambra (2015) undertook an ethnographic study of ‘negotiating ill health and FI in a UK Food Bank in Stockton-on-Tees’. As is common in ethnographic studies, part of the data was generated by their primary researcher who volunteered at the Food Bank. Alongside this, the same researcher conducted 50 semi-structured interviews with Food Bank users and staff/volunteers. They describe how pre-existing complex mental health problems experienced by many of the Food Bank’s users were exacerbated due to wider socio-economic stressors such as benefit delays, debt and unemployment. Added to this they described how the health needs of Food Bank users were often cofounded by the supply driven nature of the service. For example, Food Bank users with IBS may end up eating unsuitable foods such as white wheat in bread and pasta which worsen their condition. The research suggests how, for people with pre-existing health conditions, Food Bank provision can be unsuitable, even in the short term and how this unsuitability can further contribute to distress as people are aware of its unsuitability but “when you’re hungry you’ll eat anything and suffer the consequences afterwards” (2015:42). Despite these stresses, interviews also recorded a strong appreciation of volunteers’ efforts in providing a non-judgemental ‘listening ear’. This finding is inconsistent with previous studies reporting on the negative psychological consequences of accessing Food Banks such as shame and
disempowerment and suggests a way in which the volunteers at Food Banks may play an important role in offering psychological support.

More recently, support for Garthwaite et al’s findings has been shown in Douglas, Maclver & Yuill’s (2020) qualitative investigation into the lived experiences of long-term health condition management with people who are food insecure. They conducted 20 in-depth interviews with Food Bank users in North East Scotland. Similarly, findings demonstrated a high comorbidity of pre-existing physical and mental health conditions, and how health condition management was undermined by FI. For example, researchers provided further evidence consistent with previous findings of elevated rates of type-2 diabetes amongst low income groups and describe how difficult it was to manage this condition while food insecure. The limited choice in what foods were given by the Food Bank further contributed to feelings of powerlessness and alienation and, in examples of diet relating to optimum health condition management, the stress of being unable to eat a recommended diet. Respondents reported anxiety caused by the uncertainty of obtaining food alongside low mood and reduced motivation to eat limited and unappetising meals. The in-depth interviews also describe a wider context to the burden of living with FI and ill health. Firstly, they give space to stories of the invisible labour of those who were coping with FI and ill health alongside the
stresses of caring and providing for others. Additionally, the researchers asked specifically about respondent’s experiences of accessing health support from GPs and how their socio-economic situation was handled. They found that FI was not addressed in consultations with health professionals. Respondents highlighted how this economic invisibility contributed to stigma and feelings of shame and embarrassment in raising the issue of financial difficulties.

**Food Banks - Resourcefulness and resistance:** As mentioned previously, Douglas, Sapko, Kiezebrink & Kyle (2015) conducted a qualitative study of Food Bank users in North East Scotland. Alongside documenting the mental health challenges of shame, embarrassment and uncertainty, the research also serves to highlight resourcefulness and skill amongst respondents in making limited resources last and cooking in ways that use little fuel and waste as little food as possible. Similarly, Garthwaite, Collins, & Bambra’s (2015) research challenges a ‘neo-liberal’ discourse that blames foodbank users for being unable to budget and claims they do not understand how to eat healthily. Food Bank users interviewed were aware how to eat healthily but could not do so due to affordability and how that many Food Banks only accept donations of long life foods which means that Food Bank users don’t regularly have access to fresh fruit and vegetables as well as them being more expensive so less likely to be able to afford them with limited resources. Such
research challenges the stigmatising narrative of benefit claimants and Food Bank users lacking cooking and budgeting skills and the linked implication of them being in some way responsible for their individual difficulties. Their findings serve to challenge the empirical basis of this narrative.

Wczasek’s (2017) doctoral thesis also contributes to challenging this dominant account. The thesis reported on in-depth interviews with four respondents who had or were currently experiencing FI in the UK. Critical narrative analysis was used to describe and conceptualise individual participant’s psychological responses to various inter-linked structural forces of poverty and disadvantage. In order to preserve the unique context of each participants narratives, the research explicitly eschews formal analysis of how individual’s experiences fitted into wider patterns. However, some broad similarities are still identified. For instance, a recurrent ‘voice of worthlessness’ in the face of shaming and ‘punitive systems’ was recorded. As with aforementioned studies in this review, the themes of shame and embarrassment were strongly voiced in this analysis alongside how these experiences contributed to a hiding of the problem and further social isolation. The interviews also highlighted the complexity of FI in that participants did not describe it in isolation but acting synergistically with other aspects of struggle such as fuel poverty, insecure housing and memories of childhood neglect and poor education about life skills. Further,
another theme strongly shared across participants was their attempts to ‘resist the structural forces acting against them’. Here the interviews recorded how pervasive themes of survival, individual strength and celebrating personal victories contributed to psychological resilience. Furthermore, all respondents linked these strengths to stories of benefiting from and contributing to collective action and resistance.

**Demographics**

While the majority of studies investigated Food Bank use, this is not an accurate proxy for estimating the extent of food insecurity. As Food Banks are a last resort, estimates of uptake are likely an underestimate of actual rates of FI in a population. The review revealed two pieces of research that sought to understand the broader prevalence of FI and its association with mental health.

Yau, White, Hammond, White, & Adams, (2020) analysed data from 2551 respondents of the International Food Policy Study (IFPS) survey with the aim of estimating the prevalence of FI amongst UK adults. Additionally, they sought to investigate associations with various socio-demographic aspects including mental health. Within the sample recruited from several nationally representative consumer insight panels, 24.3% had some degree of FI while 15.5% were classified as having
very low food security. Their analysis revealed how those who reported ‘struggling to make ends meet’ were 20 times more likely to be food insecure than those who did not struggle financially. Further, their analysis showed how the odds of being food insecure were greater for men living alone, single women with children and students. Those who experienced FI also consumed fewer fruits and vegetables and were more likely to be overweight. The study revealed higher odds of mental and physical health conditions for those with FI. However, following sensitivity analysis which controlled for socio-economic factors (employment status, ability to make ends meet, student status) these associations lost statistical significance suggesting the association were partly driven by these other co-occurring socio-economic factors. However, the association between self-reported stress and FI remained robust after controlling for socio-economic factors and is suggestive of a particular experience of FI that is distinct from other aspects of material deprivation.

While FI is extremely serious for children of any age, the pre, peri and post-natal periods have been shown to be especially vulnerable times with far reaching implications for wellbeing of both children and parents. Accordingly, it represents an important area for public health intervention. Power, Uphoff, Kelly, Pickett (2017) sought to understand the trajectory and correlates of mental health problems for food secure and food insecure women across these periods. The researchers also wanted to
understand the impact of FI amongst a majority British-Pakistani population in Bradford and contribute to the dearth of UK research into the role of ethnicity in food insecurity. This is particularly warranted given concerning international evidence suggesting that Black and other ethnic minority groups are more vulnerable to FI (Bowen, Elliott & Hardison-Moody, 2021). In the study, 1593 women within the Born in Bradford (BiB) cohort were assessed for FI. The sample was stratified as either food secure or insecure and compared across 10 six-month periods (18 months prior to birth – 40 months after birth) by incidence of ‘common mental disorders’ (CMD) taken from GP records. 14% of the sample were classified as food insecure. Across the time span, food insecure women had a significantly increased risk of anxiety and/or depression than food secure women. Analysis also suggested that food insecure White British women were more at risk of CMD than British-Pakistani women. Researchers speculate here that this was potentially a result of British-Pakistani women having stronger social networks that acted as a ‘buffer’ to food scarcity and CMD. However, as acknowledged in the limitations section, the authors caution that this is potentially also driven by differences in intake and recording given evidence that identification of CMD amongst minority ethnic women are twice as likely to be missed in primary care compared to White women.
Stretesky, Defeyter, Long, Ritchie & Gill (2020) conducted cross sectional research into summertime ‘Holiday Hunger and Parental Stress’ in the North East of England. 252 parents in the North East filled in an electronic questionnaires distributed by the local authority. A measure of overall subjective psychological stress was collected using an amended Impact of Events Scale which asked respondents to focus on, in this instance, stress of summer holidays due to “extra financial obligations, limited access to food, increased caregiver responsibilities and/or added constraints on time”. Respondents also completed a household food security scale modified to ask about holiday FI specifically (e.g. ‘You were hungry during the school holidays because there was not enough money for food’). Researchers were informed by the Family Stress Model (FSM) (Conger et al, 2002) which explains how economic hardships influence child development via aspects of household strain such as food insecurity. In turn the model predicts that this will have a negative impact on parent’s mental health leading to increased stress alongside depression, feelings of inadequacy and of being a failure. The study found that FI did increase over the long summer holiday and in turn this was a recurrent household strain. Consistent with hypothesis, Stretesky et al also found that the problem of holiday hunger partially mediated the association between economic hardship (i.e. unemployment and
poverty) and overall parental stress alongside intrusive thoughts and avoidance.

Their findings also suggest that children may struggle further as a result of parenting that is under strain and lend support to interventions (such as the provision of free school meals over the holidays) to prevent holiday hunger which would likely have far reaching benefits for health and social care systems.

Research by Melchior et al (2009) also investigated the complex intersecting issues of socio-economic status, parental mental health and FI. A strength of this study was the use of a longitudinal approach, which is unusual amongst the other studies considered for this review. The authors examined whether FI and other demographic variables (including child behavioural problems, experience of domestic violence and illicit drug use) predicted health outcomes over time. The research team examined data from the Environmental Risk (E-Risk) study which recorded in-depth interview data from 1116 families of twins at regular time points from 1994-5 onwards. Overall, they found that 10% of families experienced FI at one or more time points and that FI was most prevalent among low socio-economic status families. Additionally, the risk of FI was further elevated in families where there was a mother with mental health diagnosis (depression, psychosis spectrum disorder) and experience of domestic violence and substance use. In addition, FI was shown to predict elevated rates of children’s behaviour problems. Furthermore,
statistical analysis which controlled for other factors that could have accounted for some of the association (maternal reading age, partnership status, ethnicity, employment status, number living in the household) showed FI to be the strongest predictor of childhood behavioural problems. Melchior et al discussed potential ways in which maternal mental health may impact food security e.g. depression leading to reduced motivation to cook or impaired attention amongst mothers with psychotic disorders. They acknowledge how FI itself may also influence mental health but unlike Stretesky et al’s (2020) study, conclude that there is a need to test whether maternal mental health interventions could reduce food insecurity. They justify this approach through consideration of research to suggest how in some instances food interventions can be stigmatising and fail to meet the needs of beneficiaries and may not improve levels of food insecurity.

Clinical perspectives

One study by Douglas, Machray & Entwistle (2020) considered FI from the perspective of health care professionals specifically. The research builds on what is known about associations between FI and serious health conditions (including cancer and diabetes) and furthermore how ill-health and disability are linked through increased reliance on Food Banks.
In a sample of 20 health care professionals in North East Scotland the researchers conducted nine semi structured interviews and two focus groups to understand how FI was understood and responded to by health care professionals. They evaluated findings using thematic analysis and identified wide variation in levels of understanding about FI and its negative effects on condition-management. While some clinicians reported awareness of FI and its impact on the management of conditions influenced by diet (e.g. diabetes and respiratory disease) and treatment that required medication to be taken with food, other clinicians reported how the focus group had expanded their awareness of the issues. Many were also uncertain about how to ethically address FI amongst clients and especially in case where clients were unlikely to volunteer information themselves about ‘a very sensitive topic’. There was also awareness of the mental health impact of FI amongst the professionals. They described specific examples of their patient’s feelings of ‘worthlessness, embarrassment and frustration’. Douglas et al reflect on how poverty, and especially not being able to obtain sufficient food, were socially stigmatised and how respondents reported feeling uncertain and anxious about asking their patients about FI due to not wanting to embarrass or offend them.
Discussion

Given indicators from international research suggesting a bi-directional link between FI and psychological wellbeing a systematic scoping review was conducted to examine the state of research knowledge in the UK context. Due to the heterogenous nature of research methodologies, a scoping review was used to provide an overview of the evidence. To the author’s knowledge this is the first review of this type.

16 studies met eligibility criteria and were categorised into 4 areas of ‘study focus’, these were; Food Banks (11 studies), Demographics (2), Families (2) and Clinical Experiences (1). Qualitative approaches were the predominant methodology allowing for a rich understanding of the issues. However, quantitative and mixed methods were also used but to a much lesser extent resulting in limited generalisability.

Research related to the prevalence and demographic aspects of Food Bank use was the most intensively studied area. These studies were considered in terms of their main sub-themes which were; research that highlighted the emotional and mental health impact of using Food Banks and experiences of FI; research that sought to
understand the intersection of physical and mental health in the context of FI and lastly, research that highlighted adaptive and resourceful reactions to FI and inequality.

Overall the studies help identify the drivers of FI alongside who may be most at risk. While poverty and FI have been shown to be distinct; not having sufficient financial resources remains a significant driver of FI due to poorer people having to spend proportionally more on food and having to make extremely challenging financial choices such as having to decide whether to ‘heat or eat’ (Yau et al., 2020). Furthermore, FI is often not a static state and is often characterised by inconsistency in access to food. As several of the reviewed studies have shown, these periods of scarcity are often driven by unpredictable life events such as redundancy or benefit sanctions. Demographic analysis suggested that single people were more at risk due to a likely lack of social support (Loopstra & Lalor, 2017; MacLeod, Curl & Kearns, 2019). However, family stress due to FI was also a factor and especially so during school holidays (Stretesky et al., 2020). Furthermore, women and especially single women with children (Power, Uphoff, Kelly & Pickett, 2017) were also at a higher risk along with people aged 50 and older who were living alone (Purdam et al., 2016). Also, people with disabilities and those living with physical health difficulties were
shown to be at risk and that these were shown to intersect with and exacerbate mental health difficulties (Douglas et al, 2015).

In terms of psychological responses to food insecurity, four main themes emerge from across the studies. These were stigma and shame, uncertainty and stress, disordered eating, and resilient responses. Experiences of stigma and resultant shame and low mood were the most commonly reported mental health consequences of the experience of FI in the studies reviewed. The feeling of powerlessness associated with FI was consistently linked to a detrimental impact on self-worth; ‘it throws your pride out the window’ (Purdam et al, 2016). The detrimental psychological impact evidenced in these studies shows how FI can be a deeply shameful and depressing experience and, in turn, how accessing Food Banks is a last resort. Indeed, as MacLeod et al also make clear in their research, many respondents decided not to use Food Banks despite being food insecure. In their sample 1 in 6 of those who had difficulty affording food actually used a Food Bank and alarmingly 57% of those who reported being food insecure but not wanting to use Food Banks reported a mental health problem. Also, evidence to suggest that the impact on pride and associated shame was also perpetuated by professionals not asking about the ‘sensitive topic’ (Douglas et al,
Several studies also emphasised the broader impact of stigma. These studies provided valuable empirical evidence to counter a dominant narrative that blames the need to use Food Banks on individual failures and the rise in use being due to it being a free good and thus having ‘infinite demand’ (Purdam, Garratt & Esmail, 2016). Given the powerful impact of stigma, feelings of shame and associated mental health problems, there is a clear need for further research and campaign work to target the powerful weight of social and internalised stigma.

Many of the studies documented ways in which the uncertainty and stress of struggling to obtain sufficient food led to significant anxiety. In Yau et al’s (2020) study the association between self-reported stress and FI remained robust after controlling statistically for socio-economic factors while depression lost significance. Scarcity and possibility of scarcity was also linked to pervasive anxiety and worry about being able to provide for self and family (Mullainathan & Shafir, 2013). This impact was felt for individuals but also for families in which the stress of preventing holiday hunger impacted on the broader mental wellbeing of the family. Participants described the anxiety of ‘eating to survive’ (Puddephatt et al, 2020) in the knowledge that food was not of good quality or healthy and especially in instances in which food was important for the management of chronic physical health conditions such as diabetes (Douglas, Maclver & Yuill’s (2020). Anxiety was also linked to stigma of FI
with concerns described about being seen accessing Food Banks (Purdam et al, 2016).

Two studies provided insight into possible psychological and behavioural consequences of unpredictable access to sufficient food. Research by Puddephatt et al (2020) and Barker, Halliday, Mak, Wottge, & Russell (2019) described how cycles of ‘plenty and want’ were likely to arise when accessing state benefits in which means to access food can be inconsistent. A pernicious result of this is that periods of overeating of energy-dense but often nutritionally poor food can be followed by enforced restriction and anxiety due to scarcity. More widely this phenomenon has been linked to the emergence of Eating Disorders, with a growing body of evidence identifying FI as a risk factor for Bulimia Nervosa and Binge Eating Disorder in the USA (Hazzard, Loth, Hooper & Becker, 2020). Considering the UK findings reported in this review alongside emerging evidence (author’s empirical thesis research) a similar worrying association is likely evident in the UK. Accordingly, more research is needed to guide clinical assessment and inform policy.

Lastly, pervasive examples of individual and community resourcefulness and resilience were also reported in many of the studies (Wczasek, 2017). Douglas,
Sapko, Kiezebrink & Kyle (2015) documented how their respondents demonstrated resourcefulness and skill in making limited resources last and cooking in ways that use little fuel and wasting as little food as possible. This was explicitly contrasted to the prevalent narrative that seeks to blame those experiencing FI on their supposed inability to budget.

**Strengths**

Research interest in FI is a growing field, with the majority of studies from 2020. It is likely that this interest will be been given further impetus by growing public awareness of the impact of Covid-19 (alongside Brexit and climate change) on food supplies (Lang, 2020). The evidence gathered here provides clear convergent evidence of the harmful impact of FI on anxiety, depression and likely disordered eating. A strength is the consideration of qualitative methods as well as ethnographic studies that explore and thicken narratives of the experience of living with FI. An additional strength of the research is how the majority of the studies serve to address the stigma of FI by locating the problem outside the individual and by highlighting the impact of multiple interactive effects of distal factors (unemployment, caring responsibilities, poverty etc). Considering the systemic causes and consequences of FI the research reviewed contributes to a ‘rights’ rather
than a ‘needs’-based approach (Douglas, 2015, Lambie-Mumford, 2019) and clearly illustrates the importance of addressing FI on both a clinical and policy level.

**Limitations**

A significant limitation of the research reviewed is the shortage of longitudinal research which limits conclusions about the extent to which prolonged FI impacts on mental health conditions. Likewise, a lack of qualit
gative studies limits the extent to which findings can be generalised. Relatedly, despite making recommendations for intervention studies, none of the research reviewed included attempts to examine the psychological and material impact of either attempts to reduce FI and/or treating mental health conditions. Work outside of this context shows some promise for interventions that reduce FI. For example, trials of universal basic income (UBI) have consistently shown how UBI leads to an increase in food security (Psychologists for Social Change, 2017).

Another limitation of the studies reviewed was that certain groups known to be more vulnerable to FI have yet to receive sufficient research attention in the UK. For instance, Arikawa et al (2020) have demonstrated how young LGBTQ+ adults in the USA are more at risk of ED due in part to FI. Elevated FI has also been shown amongst Black, Asian and minority ethnic groups (Food Foundation, 2021) amongst
whom the impact of the pandemic on FI has been disproportionately felt.

Furthermore, there is a research gap in the studies of the experience of FI amongst undocumented and asylum seeker people as having no recourse to public funds or having to subsist on extremely limited asylum support often face additional challenges in accessing food. Here there is a great deal of work to be done on understanding and combating these disparities on a policy level.

An additional limitation was in the depth of assessment and measurement of mental health conditions. Often investigating mental health was not the primary focus of the studies and was included as a correlate of FI alongside other demographic and situational factors such as income and health status. Relatedly, while not a limitation of the studies per se, it was notable that not a single article is from a psychology journal. Given how well-placed clinical psychology is in the assessment and formulation of mental health future studies would likely benefit from the inclusion of validated outcome measures alongside in-depth psychological formulation. The lack of contribution from psychology in this area seems surprising given the tradition of research and models that seek to understand mental health in social and material context.
Conclusions

The worrying rise in FI in the UK has been mirrored by a rise in research into its association with mental health problems for individuals and within families. The reviewed research has shown how stigma and shame, uncertainty and stress and disordered eating are dominant features of mental health difficulties connected to FI. Research has also documented some of the resilience and power of individual and community responses to food insecurity. The review also identifies clear clinical implications of the need to accurately and sensitively assess FI in physical and mental health services and especially within ED services given the emerging links between FI and disordered eating.

Despite these research efforts there are many gaps in the literature. Some suggestions for future research are included below;

1. Diversify research: Research with minoritized groups who have higher prevalence of FI is needed to better understand the impact of FI on their mental and physical health.

2. Co-production: The use of co-produced research with experts by experience would likely also be a powerful tool in guiding ethical research efforts and
3. contribute to challenging the stigma of being food insecure and creating further avenues for changing the narrative.

4. Mixed methods: The experience of FI has been shown in this review to intersect with other various and interlinked indices of deprivation (life events, poverty etc) and demographic risk factors (disability, gender, sexuality, ethnicity). Given this complexity, there is clear need for a research approach to understand and thoroughly formulate individual experiences through qualitative methodology such as participant observation. However, given this complexity, the inclusion of quantitative approaches that employ well validated measures with large sample sizes would also generate data that has a powerful role in shaping arguments for policy change.

5. Research design: Longitudinal approaches would also be especially valuable as they would help clarify the long-term impact of FI and to test the impact of interventions such as UBI to meet basic needs on the mental health of individuals and families.

References


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**Reports from agencies:**


Part 2: Empirical Paper

Investigating the impact of Food Insecurity on eating behaviour during the Covid-19 Pandemic.
Abstract

Food insecurity (FI) has been increasingly identified as a risk factor for both psychological and physical health problems. Recent research in the USA has shown that FI also likely increases the risk of developing Eating Disorders (ED). The Covid-19 pandemic has further exacerbated FI and is linked to a rise mental health problems for some. The purpose of this study is to explore potential association between the level of FI and ED symptomology alongside specific ED behaviours including dietary restraint (DR), overeating and compensatory behaviours within the UK context. The study also aimed to investigate the complex impact of the pandemic on access to food and on eating behaviour. Using a cross sectional mixed methods design, data was gathered over 5 months via an online questionnaire (n=355). Alongside demographic information, outcome measures were the Eating Disorder Diagnostic Scale (EDDS), an adapted version of the Eating Disorder Examination Questionnaire Dietary Restraint (DR) subscale and the Food Insecurity Experience Scale Questionnaire. Data were analysed statistically using correlations and analysis of variance. Results were partially consistent with existing research in the USA. This study found evidence of a positive association between level of covid related FI and ED symptomology and for an association between DR ‘for any reason’ and EDDS. However, these associations were not found when analysed using the standard FI measure. Thematic analysis was also used to investigate qualitative self-
report data which reflected the various ways in which the pandemic had impacted on FI and eating behaviour/mental health. Overall, these data indicate for the first time how FI is a potential risk factor for increased Eating Disorder symptoms amongst the general population in the UK. Clinicians should routinely consider risk of FI when assessing those accessing ED services.
Introduction

Food insecurity (FI) is defined as ‘when an individual or household are unable to acquire nutritionally adequate, safe, and culturally appropriate foods in socially acceptable ways’ (Coleman-Jensen, Rabbitt, Gregory, & Singh, 2017) and exists on a continuum from anxiety about the risk of running out of food to hunger and complete lack of food. The United Nations estimate that as many as 2 billion people globally experience some degree of FI due to irregular access to safe and nutritious food. While disproportionately experienced within low and middle-income countries, severe FI is a growing international problem. Currently, 8.9% of the world’s population are estimated to experience severe FI and, if trends continue, this is set to reach 9.8% (840 million) by 2030. The various physical health consequences of malnutrition for adults and children and how they contribute to diseases such as diabetes are well understood and remain a target of intervention within the UN’s sustainable development goals (World Health Organisation, April 2020).

FI itself ‘is a very formal phrase for a deeply scary human experience: not having the funds to ensure a steady supply of healthy food’ (Connors et al, 2020) and as such it is unsurprising that there are also significant implications for mental health. In a recent systematic review, (Pourmotabbed, 2020) FI has been reliably associated with psychological distress, depression and stress. Drawing from mainly cross-sectional research across Asia, North America and Europe the review found that FI was
associated with depression and stress in adults and that this was most pronounced for older adults. The authors consider a potential mechanism by which experience of FI contributes to stress and depression due to the uncertainty of not having predictable/reliable access to food for self and family. Stress and low mood are then thought to be compounded by the necessity of accessing foods in ‘socially unacceptable ways’ (food bank use, theft) which increases feeling of ‘alienation, powerlessness, shame and guilt that are associated with depression’.

Likewise, in a recent narrative review (Myers, 2020) focusing on research from the last five years, FI has also been shown to be associated with various markers of psychological distress in different countries with varying income levels amongst diverse populations including; working age adults, young people and college students, older adults and those with chronic disease. Myers also highlights studies which suggest a bi-directional association between FI and mental health problems. For example, Noonan, Corman & Reichman (2016) identified via longitudinal analysis of Birth Cohort data from the ‘Early Childhood Longitudinal Study’ how maternal depression can itself lead to later risk of food insecurity in children. Likewise, Bruening, Dinour & Chavez (2017) conducted a systematic narrative review of research highlighting how food insecurity can be both cause and consequence of mental health problems in which a vicious cycle of mental health difficulties and
difficulty accessing food mutually reinforce each other to the detriment of individuals and their families.

FI has also been growing in the UK. Estimates of the extent of FI in the UK have been derived from the ‘Food and You Survey’ conducted by Food Standards Agency (FSA) which revealed the prevalence of adults in UK categorised as having low or very low food security at 9.76% in 2021, up from 8.15% in 2016. One alarming marker of this growth is the rise of Food Banks which at time of writing stand at just over 2000 with the majority (1,200) run by the Trussell Trust and 822 represented by the Independent Food Aid Network. Within the Trussell Trust alone, Food Bank use has been shown to increase annually with a 33% increase from year 2019-20 to 2020-21 representing 2.5 million emergency food parcels distributed including around 980,000 going to children in the year 2020-21. Having to access emergency food through a Food Bank is an indicator of severe FI and unsurprisingly, a risk factor for physical and mental ill-health compared to the general, food secure, population (Loh, Knight & Loopstra, 2020).

FI has also increased alarmingly during the Covid-19 pandemic with an estimated fourfold upsurge since March 2020 which saw more than three million people in the UK going hungry in the first weeks of lockdown (Loopstra, 2020). A significant and
well reported aspect of this rise was due to difficulties in accessing food due to ‘Just-in-time’ (JIT) supply chains being unable to cope with surge in demand leading to empty shelves and supermarkets unable to meet need for key items. While supply chains soon stabilised, the rise in FI has unfortunately persisted; according to the Environment, Food and Rural Affairs Parliamentary report into the impact of Covid-19 on food supply (June 2020, reviewed April 2021), an estimated 5.9 million adults were classified as food insecure between August 2020 to February 2021. The surge in FI was not limited to adults however. A recent Food Foundation and Child Poverty Action group report into the impact of Covid-19 on children’s food found that 14% of adults living with children (approximately 4 million adults and 2.3 million children) reported experiencing moderate or severe food insecurity in the last 6 months. A key driver of worsening FI is thought to be the distal impact of a rise in unemployment and resultant increase in poverty which has exposed existing inequalities for those in precarious employment (Power, Doherty, Pybus & Pickett, 2020).

In the UK, research has indicated that the pandemic has been linked to an upsurge in anxiety and depression (Jia et al., 2020). These increasing levels of mental health problems since the start of the pandemic are thought to be underpinned by a wide range of interlocking factors that include, health anxiety, loneliness and loss of support mechanisms, grief, increasing strain on mental health services and difficulty accessing support during lock down (O’Connor et al., 2020). Further research has shown however that the pandemic has disproportionally affected some groups in
ways that have served to widen pre-existing health inequalities. These include those from ethnic minority backgrounds and those already living in poverty (Allwood & Bell 2020). However, research attempts have sought to understand this heterogenous impact of the pandemic on mental health and refute the impression of a ‘tsunami’ of pandemic related mental health problems. Analysing data from a large-scale longitudinal survey of UK adults over the course of the pandemic, Shevlin et al (2021) present data suggesting that the majority of people have not experienced clinically significant mental health problems. Furthermore, the study suggests that social groups who have retained secure employment and been insulated from some of the negative distal factors have reported an increase in wellbeing alongside improved financial security and, for some families, more time for childcare (Shevlin, et al 2021).

The pandemic may have been a particularly challenging time for those experiencing or at risk of developing an Eating Disorder (ED). The nature of the challenges has been multifaceted and: ‘difficult to think of a scenario that could have promoted so many risk factors for ED at a societal level as much as the current situation’ (Solmi, Downs, & Nicholls, 2021). Firstly, for those newly in need of treatment, both child and adult specialist ED services have seen a rise in referrals and an increase in waiting times for treatment (Solmi et al., 2021). Moreover, individuals were often presenting to services later (when more unwell) because they were less likely to be identified by GPs/schools because of the lack of access to these services during
lockdown. Those within services have also had to adapt to the challenge of change and disruption in delivery of support (Weissman, Bauer & Thomas, 2020). Further research points to an upsurge in symptomology and referrals due to the increased difficulty of accessing safe foods and/or more ready access to foods alongside increased difficulty of engaging in any usual exercise activities, separation from normal sources of support and enjoyment leading to boredom and emotional eating; changes in living situation with potentially less control over meals, weight/shape concerns also extending to appearance over online meetings and increased health anxiety and attempts to manage contagion through diet choices (Phillipou., et al 2020; Touyz, Lacey, & Hay, 2020; Vuillier, et al, 2021).

Recent research also suggest how FI may also contribute to ‘disordered’ eating behaviour. Motivated by a call to diversify research efforts to encompass and understand the mental health of minoritized groups, Becker, Middlemass, Taylor, Johnson & Gomez (2017) studied those accessing Food Pantries in the USA. In their study, Becker et al interviewed participants using measures of ED symptomology alongside a standardised measure of FI and found a positive association between higher levels of FI and greater ED symptoms. When the sample was stratified into levels of FI it was found that, consistent with their hypothesis, those with the highest level of FI had the highest occurrence of untreated clinically significant ED symptoms, the highest anxiety and the highest level of dietary restraint for any reason (not solely shape and weight concerns). These findings were then successfully
replicated with a larger sample accessing Food Pantries (Becker, Middlemass, Gomez & Martinez-Abrego, 2019).

Contrary to their hypothesis, it was also found that elevated compensatory behaviour (purging, over exercise and laxative use) was also positively associated with elevated FI. Becker et al account for this in various ways; firstly, the food context is especially suited to increased binge eating as a commonly experienced pattern of relative food plenty followed by insufficiency is thought to create a ‘feast famine cycle’ in which overeating occurs to compensate after periods of scarcity. This ‘cyclic phenomenon’ is compounded by the nature of the food itself with ready access to energy dense, high calorie, high fat food (food swamps) and less access to expensive fresh nutritious food (food deserts) in some neighbourhoods. In a related study, Rasmusson, Lydecker, Coffino, White & Grilo (2019) have added further support to this understanding by showing that household food insecurity is associated with Binge Eating Disorder (BED) and obesity.

Stinson’s (2018) study lends further support to this finding using a novel methodological approach. In this study the eating behaviour of American’s using the Supplemental Nutrition Assistance Program (SNAP) were compared with non FI participants on their use of an automated food vending machine while in hospital. To control for differing baseline levels of immediate hunger, data collection using the vending machine did not begin until participants from both groups had been in
hospital for three days and had the opportunity to have a sufficient diet. Once participants were switched to the vending machine, Stinson found that FI participants consumed more calories and demonstrated a greater preference for energy dense, high calorie, high fat food compared to food secure participants. This objective measurement of consumption helps to address a potential limitation of self-report studies that over-eating behaviour may be underreported due to desirability effects. Researchers concluded that, as these results were found despite starting from a weight stable baseline, the preference was an ‘engrained construct’ amongst FI participants who overate despite food being readily available. Animal research lends convergent validity to this finding in which rats subject to a feast famine cycle gain weight gain and show a preference for highly palatable foods and especially when under stress (Boggiano, et al, 2007). These findings suggest that overeating is likely to be an evolutionary adaptive response to periods of food scarcity.

Given this context, it is understandable how compensatory behaviours might develop in the context of FI. As Becker et al have hypothesised, these behaviours likely emerge from wanting to relieve discomfort from overeating and are maintained as a way of coping through the temporary relief of psychological distress. Additional factors are suggested to arise from the perennial presence of body dissatisfaction in which the pressures of weight stigma have been shown to be
elevated in those with FI (Hazzard, Loth, Hooper & Becker 2020). Convergent evidence for this comes from a study by Lydecker & Grilo (2019) who measured self-reported food insecurity and Bulimia type eating behaviour amongst a racially diverse sample of American adults using a cross-sectional internet survey. Similarly, their data supported the pattern of moderate and severe FI being positively associated with both BN and Binge Eating Disorder.

The idea that the experience of FI is linked to ED symptomology is based in part on findings from the Minnesota Starvation Experiment (Keys, Brožek, Henschel, Mickelsen, & Taylor, 1950) in which healthy adult male participants, when deprived of food, developed cognitions and behaviour similar to those observed in people with eating disorders, such as becoming fixated with food, collecting recipes, and maximising behaviours. These findings have informed longstanding cognitive conceptualisations of the development of ED (Polivy & Herman, 1985) in which severe restriction is thought to lead to extreme hunger followed by binge eating and compensatory behaviours, as well as enhanced efforts at restriction. Building on this, and the knowledge that living with FI often requires dietary restriction (i.e. having to stretch food to make it last, running out of food completely or adults having to prioritise children’s food over themselves), Becker et al have sought to expand the diagnostic definition of dietary restriction (DR) to include factors of FI alongside weight and shape concerns. Perhaps unsurprisingly, dietary restraint ‘for any reason’ has been consistently found to be positively associated with heightened food
insecurity (Becker, Middlemass, Gomez, & Martinez-Abrego, 2019). In its original form the Eating Disorder Examination Questionnaire (EDEQ) DR subscale specifies that restricting/trying to restrict food intake be for reasons of influencing shape and weight. However, in adapting the EDEQ DR subscale by changing the caveat of DR ‘for any reason’, Becker et al present evidence suggesting that FI might create the context by which intentional restriction, ‘regardless of the reason it was undertaken’, might lead to increased risk of developing an Eating Disorder.

Middlemass and colleagues’ (2020) research lends further support to this view by replicating previous findings that DR for ‘any reason’ was positively associated with ED symptomology. Undertaken with a sample of people accessing a Food Pantry in San Antonio in the USA, Middlemass used a mixed methodology to understand the experience of a lack of financial resources and insufficient food provision on eating behaviour. Firstly, they found a strong association between ED symptoms and DR for any reason (as measured by the Eating Disorder Diagnostic Scale and the EDEQ-DR subscale respectively). They explored this finding further with a thematic analysis of participants views on why they engaged in DR which included lack of resources and food stamps being insufficient. Interestingly, only a small minority (14) of respondents acknowledged weight and shape concerns as a reason for DR. The researchers do not report frequencies for the other 9 reasons for DR preventing an understanding of their distribution. However, the extent and range of reasons
themselves - which include religious, family and medical - are informative in terms of the diverse ways in which people reported restricting their food intake. For instance, research has suggested that the restrictive dietary requirements of recovering from bariatric surgery is also linked to development of problematic restrictive eating behaviour (Watson, Riazi & Ratcliffe, 2020).

Alongside noting the aforementioned cognitive conceptualization of food restriction leading to Eating Disorder symptoms, Middlemass et al also directly address a potential criticism of the inclusion of DR for any reason being non-pathological and thus not truly relevant to ED. They critique this distinction between ‘rational’ (having to restrict intake to ensure survival in case of FI) and ‘irrational’ as superficial given how attempts to influence weight and shape could themselves also be seen as rational due to the well reported social implications of weight stigma and discrimination (Puhl & Heuer, 2009). They thus advocate for clinical services to consider the existence of multiple pathways to developing an ED which include a range of socio-economic and psychological factors.

A further contextual factor relates to the extent to which research and in turn, clinical approaches, appropriately represent and serve diverse populations. The above researchers suggest that DR for reasons other than weight and shape may not be included in research and clinical treatment/formulation due to an inaccurate stereotype of those who are most likely to have an ED. Becker et al argue that
research and treatment with ‘SWAG (skinny, white, affluent, girls)’ serves to perpetuate a stereotype and lead to insufficient consideration of problems like FI. Through their approach to recruitment (in this instance, surveying participants accessing food pantries) the above research also engages with intersectional issues of ‘race’ and poverty by actively seeking to diversity the stereotypical ED patient and research participant. This is particularly important given the concerning evidence of the treatment gap within both generic mental health services and within specialist UK ED services in which minority groups have been shown to be underrepresented in clinical services relative to local populations despite showing a high prevalence of disordered eating (Solmi et al, 2014). Furthermore, such problems arising from health inequalities are likely to be compounded by the impact of the pandemic which has disproportionately affected minoritized groups in terms of higher mortality rates, more restrictive policing and through other social determinates of mental and physical health (Allwood & Bell 2020). Indeed, evidence from large scale survey research is now emerging to suggest that Black, Asian and Minority Ethnic people are twice as likely to have experienced FI over the pandemic in the UK (The Food Foundation, 2021).

Research has only recently begun to explore and understand potential links between FI and Eds and ED symptoms and, as yet the associations are far from clear. Moreover, given that the pandemic has caused an upsurge in FI and mental health difficulties it is important to develop our understanding of these potentially less
considered pathways to developing an ED. Furthermore, given the potential for continued austerity and a further financial downturn due to the pandemic, this issue will likely remain a research priority and be relevant to the provision of clinical support going forward. This paper seeks to contribute to calls to broaden the nascent research into this area and especially in a context outside of the USA. To the best of the author’s knowledge, no research in UK has sought to investigate the association between FI and Eating Disorders.

Hypotheses are as follows;

1. Regardless of differing food and welfare environments it is predicted that there will be a significant positive association between the extent of ED symptomatology as measured by the Eating Disorder Diagnostic Scale, (EDDS) and FI as measured by the Food Insecurity Experience Scale (FIES).

2. In line with previous research, it is expected that Dietary Restraint for any reason (as measured by the EDEQ-DR subscale) will be positively associated with FI.

3. Compared to those with no reported Food Insecurity, compensatory behaviour (as measured by the EDDS) will be elevated amongst those with severe FI.
Methods

Participants

In order to recruit a diverse sample, eligibility for the study was made deliberately broad by encompassing English speaking adults with internet access living in UK from at least January 2020. Participation was on a voluntary basis and no compensation was offered for participation. Table I below shows details of participant characteristics.

Procedure

The study was approved by the University College London research ethics committee (18473.001). Data was collected using Jisc, an online survey platform. The survey was open for 5 months from August to December 2020 (14/08/2020-31/12/2020). During this time data collection was conducted across the varying context of national Covid-19 restrictions. Earlier respondents in August 2020 were living under less severe restrictions. However, September saw the beginning of the ‘second wave’ of infections along with the introduction of further restrictions including the ‘rule of six’ and the tier system which determined restrictions based on the level of infections and risk within the geographical area. On October 31st the second national lockdown was imposed and lasted until the until 2nd December. These increased restrictions continued until the end of data collection during which time 44 million people (78%) of the population were in the most restrictive tier 4.
Despite being unable to directly recruit in person from people likely to have current experiences of FI (e.g. those using food banks) this study sought to remain as close as possible to the approach used by Becker et al in seeking to purposively recruit online from a diverse sample with likely experiences of FI. To do this contact was made with local Food Banks and charities by email and social media. While these lead to some positive responses (including various recruitment requests on Twitter from local charities, see appendix) recruitment was low (n 30). Due to the initially low uptake a decision was then made to run an advert on Facebook from October onwards which included a poster and information about the study including some context to the study (presenting information about a rise in Food Insecurity and the intention to try and understand how this may impact on mental health and eating behaviour) alongside a request for participants to be aware that that ‘being asked about food security and eating habits can be emotional and know that it is absolutely ok to skip any questions if you do not want to answer’ (see appendix). This opportunity sample had a wider reach and significantly increased responses.
Figure 1. Bar chart showing number of survey responses per month.

Participants who clicked the online link were then presented with information about the intention of the study (i.e. to understand the impact of FI on eating behaviour amongst the general population in the context of Covid-19 pandemic) and what to expect. They were informed that their data was anonymous and that they were under no obligation to complete the questions and/or they could skip questions if they wanted to and then asked to affirm that they understood and consented to participate in the study. They were also signposted to the Trussell Trust for help with accessing food and Beat, the Eating Disorder charity, for support with issues relating to eating difficulties (see appendix for the poster advertising the study and the complete survey).
Measures

The survey collected information about factors that have been shown to intersect with the effects of the pandemic such as physical health and any economic impact. These included health status (e.g. if they were extremely clinically vulnerable, receiving food parcels from the government or had no recourse to public funds) and whether participants had ever accessed a Food Bank and if so, the number of times in the past year. However, due to considerations of reducing the burden of filling in the survey it was decided not to collect information about household income in favour of more simply asking whether the pandemic had led to a reduction in income.

Experience of Food Insecurity was measured using the Food Insecurity Experience Scale (FIES). The FIES was developed by ‘Voices of the Hungry’, an initiative developed by the Food and Agriculture Organisation of the United Nations to measure access to food at an individual/household level and compare prevalence reliably across counties in order to guide intervention and policy as part of their Sustainable Development Goal to end hunger and food insecurity by 2030. It has been used via the Gallup World Poll since 2014 and translated into more than 200 languages and dialects (Cafiero, Viviani, & Nord, 2018) and has been shown to be a valid measure cross culturally (Smith, Rabbitt, & Coleman-Jensen, 2017). After years
of campaigning from both grass roots organisations and members of parliament, this measure of FI was incorporated into the Department for Work and Pensions (DWP) 2019 Family Resources annual Survey. Given its strong psychometric properties and its use in the local UK context, the FIES was selected over the Radimer Cornell Food Insecurity Measure (RCFIM) used by the Becker et al research team.

The FIES produces a raw score (sum of answers) and categorical data in which respondents can be categorised as experiencing severe FI if in the last 12 months due to ‘lack of money or other resources, they were hungry but did not eat and/or went without eating for a whole day’. Respondents were classified as being moderately food insecure if in the last 12 months due to ‘lack of money or other resources’ they had to skip a meal ‘ate less than you thought you should and/or their household ran out of food’. Mild FI was determined if in the last 12 months due to ‘lack of money or other resources’ they selected yes to any or all of the following; ‘being worried they would not have enough food to eat, being unable to eat healthy and nutritious food and only eating a few kinds of foods’.

In the online survey the FIES was first administered in its original form. Secondly, in order to specifically look at impact of the pandemic the additional caveat was added, ‘During the last 12 months, because of a direct consequence of the Covid-19
pandemic (e.g. not being able to leave the house or food shortages) was there a time when...’. The decision to include an additional adapted Covid-19 specific version was to avoid the possibility that the descriptor ‘lack of money or other resources’ might not tap into the unique experience of FI during lockdown or quarantine/self-isolation.

Following Becker et al, the Eating Disorder Diagnostic Scale, (EDDS) (Stice & Ragan, 2002) was used to assess overall ED symptomology based on DSM-V criteria. The EDDS asks about experiences of weight and shape stigma over the last 3 months alongside frequency data about overeating (e.g. ‘How many DAYS per week on average over the past 6 months have you eaten an unusually large amount of food and experienced a loss of control?’) followed by further yes/no questions about experiences of overeating e.g. did you ‘Feel disgusted with yourself, depressed, or very guilty after overeating? Yes/no’. Additionally, the EDDS also asks for frequency data on ‘How many times per week on average over the past 3 months have you…’ engaged in compensatory behaviour (vomiting, laxative use, excessive exercise) and fasting to prevent weight gain and/or counteract the effects of overeating. Again, items asking about weight and height were omitted to increase likelihood of response rates and in consideration of ethical issues around acknowledging that being asked to weigh oneself or record weight can be triggering of weight stigma. A
composite score is calculated by summing the responses (Stice et al 2004). The EDDS has shown strong evidence of reliability and validity (Stice, Fischer Martinez, 2004). In this sample the EDDS showed excellent internal consistency ($\alpha=.815$).

Also following Becker et al (2017; 2019), three items concerning DR were included from the Eating Disorder Examination Questionnaire (EDEQ) (Fairburn, 2008) and adapted to include DR ‘for any reason whether or not succeeded’ over the last month, rather than shape and weight concerns specifically (following Becker et al). Presented on 7-point Likert scale, questions asked about attempts to limit food, whether respondents had gone more than 8 waking hours without food and if they had intentionally excluded preferred foods. Given these data were to be collected online rather than via face to face research assistants, an additional adaption was made in order to reduce responding burden and increase data collection. Thus, rather than allowing for an open response to the three questions, a range of ordinal answer boxes were presented. These answers were informed by qualitative thematic analysis research by Middlemas et al (2020) which identified some consistent motivations alongside weight and shape concerns. These were; health reasons, medical reasons, food is scarce due to financial reasons, food is scarce due to difficulty accessing it (e.g. no nearby shops, can’t leave the house), cultural or religious reasons, family reasons. An ‘other reasons’ was included with an additional
Lastly, respondents were encouraged to record any further ‘thoughts about difficulties accessing food and eating behaviour’ in a free text box.

**Statistical Analysis**

Descriptive statistics are used to present the data found and are shown in Tables I, II and III and have been organised to show overall frequencies and percentages within their relative level of FI. Chi squared analyses were used to compare groups of those with different levels of FI. A Pearson correlation was used to test the hypothesised association between restricted eating and overall ED symptomology.

A standard multiple regression was used to test the hypothesis that the extent of DR was greater in instances of higher FI. The same analysis was used to test the hypothesis that overall Eating Disorder symptomology would be significantly higher for those with higher FI. In both models Age was included as a variable. Again, following Becker et al, the association between self-reported compensatory behaviours and level of FI was described with descriptive statistics (percentages).

**Results**

The survey had 355 respondents after 4 responses were removed as they did not consent to being used in research. The majority of the sample described themselves as female, White, Heterosexual and either Christian or Atheist and there was a relatively even distribution of age (see Table 1). The majority were classified as not FI
for both the original and Covid-19 adapted versions of the FIES. However, there were some key differences between these measures across the whole sample with proportionally more participants having no FI as measured by the standard version (63.1%) of the FIES compared to the Covid-19 adapted version (43.5%). Differences were also evident between the iterations of the FIES on both mild (10.9% vs 29.4) and moderate FI (8% vs 12.4%) but not on severe FI which were roughly equivalent (18% vs 18.6%). Amongst those having some level of FI the highest proportion (48.8% of those reporting FI) was in the severe food insecure bracket.
Table 1.

*Participant demographics (age, gender, ethnicity) of total sample and by level of Fl.*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Sample (355)</th>
<th>No Fl (N=221, 63.1%)</th>
<th>Mild Fl (N=38, 10.9%)</th>
<th>Moderate Fl (N=28, 8%)</th>
<th>Severe Fl (N=63, 18%)</th>
</tr>
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<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%*</td>
<td>n</td>
</tr>
<tr>
<td><strong>Age</strong></td>
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<td></td>
<td></td>
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<td></td>
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<tr>
<td>18-24</td>
<td>53</td>
<td>2.8</td>
<td>36</td>
<td>68.0</td>
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<td>25-34</td>
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<td>14.9</td>
<td>29</td>
<td>60.4</td>
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<tr>
<td>35-44</td>
<td>70</td>
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<td>38</td>
<td>54.3</td>
<td>8</td>
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<tr>
<td>45-54</td>
<td>84</td>
<td>19.7</td>
<td>44</td>
<td>52.4</td>
<td>15</td>
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<td>55-64</td>
<td>76</td>
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<td>57</td>
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<td>65-74</td>
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<td>8</td>
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<td>43.3</td>
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*FI percentages are a percentage of the specific variable total not the overall total.
Table 2.

Participant demographics (sexuality, religion, disability) of total sample and by level of FI.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total Sample (N= 221, 63.1%)</th>
<th>No FI (N=38, 10.9%)</th>
<th>Mild FI (N=28, 8%)</th>
<th>Moderate FI (N=63, 18%)</th>
<th>Severe FI (N=63, 18%)</th>
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<td>n</td>
<td>%</td>
<td>n</td>
<td>%*</td>
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<td><strong>Sexuality</strong></td>
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<td>156.0</td>
<td>66.7</td>
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<td>Has a disability</td>
<td>110.0</td>
<td>31.3</td>
<td>58.0</td>
<td>52.7</td>
<td>8.0</td>
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*FI percentages are a percentage of the specific variable total not the overall total.
Table 3.

Frequency and percentages for health and economic variables for total sample and by level of FI.

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<th>Mild FI (N=38, 10.9%)</th>
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<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Employed</td>
<td>176</td>
<td>49.7</td>
<td>115</td>
<td>65.3</td>
<td>19</td>
</tr>
<tr>
<td>In Education</td>
<td>23</td>
<td>6.6</td>
<td>15</td>
<td>65.2</td>
<td>3</td>
</tr>
<tr>
<td>Receiving state benefits</td>
<td>68</td>
<td>19.2</td>
<td>20</td>
<td>29.4</td>
<td>9</td>
</tr>
<tr>
<td>Income reduction due to pandemic</td>
<td>118</td>
<td>33.2</td>
<td>55</td>
<td>46.6</td>
<td>12</td>
</tr>
<tr>
<td>Has dependents</td>
<td>62</td>
<td>17.5</td>
<td>36</td>
<td>58.1</td>
<td>5</td>
</tr>
<tr>
<td>Extremely Clinically vulnerable</td>
<td>76</td>
<td>21.4</td>
<td>34</td>
<td>44.7</td>
<td>10</td>
</tr>
<tr>
<td>Accessed food bank</td>
<td>18</td>
<td>5.1</td>
<td>0</td>
<td>0.0</td>
<td>1</td>
</tr>
</tbody>
</table>

*FI percentages are a percentage of the specific variable total not the overall total.

Nearly a third of participants self-identified as having a disability (see table II). A greater proportion of those with a disability were classified as being either moderately food insecure or severely food insecure compared to those without a disability. These differences were statistically significant $\chi^2 (3, N = 339), = 12.28, p = .006$. Of the 76 (21.5%) who were ‘Clinically Extremely Vulnerable’ (see table III), 20 had received government scheme food parcels and were more likely to be severely food insecure compared to those who had described themselves as not ‘Clinically Extremely Vulnerable’. Of the 18 respondents in the sample who accessed a Food Bank in the last 12 months, the average number of times was 5.2 (SD 12.4) and were significantly more likely to be severely food insecure ($\chi^2 (3, N = 349), = 47.52, p =$
Furthermore, of the 17.5% (62) of the sample with dependents, 7 accessed government free school meals.

Table 4.

EDEQ DR subscale and EDDS by level of FI.

<table>
<thead>
<tr>
<th>Variable</th>
<th>No Fi (N=221, 63.1%)</th>
<th>Mild Fi (N=138, 10.9%)</th>
<th>Moderate Fi (N=28, 8%)</th>
<th>Severe Fi (N=63, 18%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>EDDS</td>
<td>-1.05</td>
<td>4.97</td>
<td>-0.36</td>
<td>9.75</td>
</tr>
<tr>
<td>EDEQ-DR</td>
<td>1.29</td>
<td>1.50</td>
<td>1.14</td>
<td>1.06</td>
</tr>
</tbody>
</table>

* FI level from amended FIES scale asking about impact of pandemic on access to food.

Table IV shows both measures of disordered eating (both overall and DR) relative to both general and Covid-19 specific measure of FI. Overall, 7 respondents returned a score greater than the ‘clinical’ cut off of 16.5 on the EDDS and would likely be given a diagnosis of an ED. Of the 6 that also provided responses to questions about their level of FI, 5 were classified as being severely food insecure and 1 was classified as moderately food insecure.
A multiple regression using the standard method was conducted to assess the impact of age and FI (as measured using the adapted Covid-19 specific version of the FIES) on overall ED symptoms as measured by the EDDS. A significant model emerged: \( F(2,331)=4.848, p=.008 \). The model explained 2% of variance in Eating Disorder symptomology (Adjusted R\(^2\) =.023). In the model age was not a significant predictor of level of ED but FI was a significant predictor (\( \beta=.120, p=.029 \)). The same analysis was conducted to assess the impact of age and FI using the standard measure of FI on overall ED symptoms as measured by the EDDS, this model was not significant.

There was a significant positive correlation between DR for any reason and overall ED symptomology (\( r=.296, n = 355, p = <.0005 \)), however the size of the effect was weak only explaining 8% of the shared variance between the two variables.

A multiple regression using the standard method was also conducted to assess the impact of age and FI (as measured using the adapted Covid-19 specific version of the FIES) on the extent of DR as measured by the EDEQ DR subscale. A significant model emerged: \( F(2,331)=3.959, p=.007 \). The model explained 1.7% of variance in DR (Adjusted R\(^2\) =.023). As with overall ED symptoms, age was not a significant predictor of level of ED but FI was a significant predictor of variance in DR in the model (\( \beta=.143, p=.009 \)). The same analysis was conducted to assess the impact of age and FI using the standard measure of FI on DR, this model was not significant.
Responses to the specific questions from the EDEQ-DR subscale are shown in Table V. On each question the majority of respondents did not report engaging in the behaviour. Respondents who did report engaging in the behaviour in question (limiting intake, going for more than 8hrs without eating anything, excluding food they like) were then invited to indicate why by ticking any from a list of possible reasons for the behaviour. As a percentage of the total sample, shape and weight concerns were the most common reason for all three forms of DR followed by health reasons. Financial reasons were the third most common reason for limiting intake and excluding preferred foods while medical reasons was the third most common reason for going for more than 8hrs without eating.
Table 5.

Results from EDEQ-DR showing proportion of reasons for DR for all those who engaged in the behaviour at least 1 day a month.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Limit intake</th>
<th>&gt; 8hrs not eating</th>
<th>Exclude food likes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shape &amp; Weight</td>
<td>42.0</td>
<td>15.5</td>
<td>31.8</td>
</tr>
<tr>
<td>Health</td>
<td>29.6</td>
<td>15.5</td>
<td>26.8</td>
</tr>
<tr>
<td>Medical</td>
<td>10.4</td>
<td>11.3</td>
<td>11.0</td>
</tr>
<tr>
<td>Financial</td>
<td>14.4</td>
<td>5.6</td>
<td>11.8</td>
</tr>
<tr>
<td>Access</td>
<td>9.6</td>
<td>7.6</td>
<td>7.3</td>
</tr>
<tr>
<td>Cultural &amp; religious</td>
<td>0.3</td>
<td>7.9</td>
<td>0.6</td>
</tr>
<tr>
<td>Family</td>
<td>2.0</td>
<td>0.3</td>
<td>0.8</td>
</tr>
<tr>
<td>Other</td>
<td>5.9</td>
<td>1.4</td>
<td>3.1</td>
</tr>
</tbody>
</table>
Table 6.

Results from EDDS showing percentages of Eating Disorder symptoms as measured by the EDDS.

<table>
<thead>
<tr>
<th>Eating disorder symptoms</th>
<th>Totals</th>
<th>No FI</th>
<th>Mild FI</th>
<th>Moderate FI</th>
<th>Severe FI</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>%</td>
<td>n</td>
<td>%</td>
<td>n</td>
</tr>
<tr>
<td>Objective binge eating</td>
<td>62</td>
<td>24.30</td>
<td>24</td>
<td>24.0</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>29.0</td>
<td>14.7</td>
<td>13</td>
</tr>
<tr>
<td>Laxative use (at least one instance of)</td>
<td>14</td>
<td>4.50</td>
<td>4</td>
<td>28.6</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>14.3</td>
<td>7.1</td>
<td>7</td>
</tr>
<tr>
<td>Vomiting (at least one instance of)</td>
<td>11</td>
<td>3.54</td>
<td>2</td>
<td>18.1</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>9.1</td>
<td>27.3</td>
<td>5</td>
</tr>
<tr>
<td>Over exercise</td>
<td>45</td>
<td>13.20</td>
<td>17</td>
<td>37.7</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>13.3</td>
<td>13.3</td>
<td>16</td>
</tr>
<tr>
<td>Skipping 2 meals in a row</td>
<td>58</td>
<td>15.63</td>
<td>12</td>
<td>20.7</td>
<td>17</td>
</tr>
<tr>
<td></td>
<td></td>
<td>%</td>
<td>29.3</td>
<td>12.1</td>
<td>22</td>
</tr>
</tbody>
</table>

* of those engaging in specific ED behaviour

Lastly, amongst those who reported engaging in specific compensatory strategies (see Table VI), the use of Vomiting (18% vs 45%), Laxative use (28% vs 50%), skipping more than 2 meals in a row (20% vs 37%) proportionally higher for those experiencing the highest level of FI and over exercise was high for both those with no FI (37%) and those with severe FI (35%).

Thematic analysis

Qualitative data was gathered in the final question of the survey inviting respondents to record ‘further thoughts about difficulties accessing food and eating behaviour’.
96 out of the 355 participants responded (27%). Of these respondents the majority (78%) reported having some degree of FI (FI collapsed across, mild, medium and severe) compared to (26%) who reported being food secure despite being in the minority (38.5%) of the sample overall. Using an inductive approach to examine themes within the report, thematic analysis revealed two main themes each containing three categories. The first theme related to contextual factors that influenced behaviour; these were Access to Food, Limited Resources and Impact of Restrictions. The second theme related to the behavioural, psychological, social and physiological impact of these contextual factors and were categorised as Eating Behaviour, Mental and Physical Health Impact and Positive Outcomes.

**Theme 1 - Contextual factors**

1. **Access to Food:** respondents frequently highlighted the difficulties accessing food due to fresh food being less available and difficulties accessing delivery slots from supermarkets during lockdown. Of the 30 participants who mentioned access to food, 7 had no reported FI and 23 had some level of FI.

   “Accessing food is [the] main problem. Health reasons for isolation. Found no slots for deliveries and ventured out only a few times. Could not stand in queues so many times just drove back without foods”. 

Alongside reasons of self-isolation/quarantine and unavailability of preferred/safe foods, respondents also described having insufficient storage space to stock up on non-perishable foods:

“having a small flat and small fridge meant I had very limited storage for produce which made the bulk weekly shop very difficult and stressful”.

Two respondents also noted concern about impact of Brexit affecting food access.

### 2. Limited Resources:

Alongside the basic difficulty of access, the expense of obtaining fresh food and financial limitations were mentioned by 21 respondents. Of these respondents the majority (20) had some level of FI with the majority (11) were classified as having severe FI.

“Finances were tight before Covid-19. Now they’re tighter. I’m not able to afford as much fruit and veg as is healthy for me. I am often hungry”.

Several respondents described difficulties relating to financial impact (e.g. because furlough had been stopped, or their benefits were insufficient);

“Benefits do not cover what I would call decent foods i.e. good quality meat and fish and fresh fruit and veg, when you have to stretch an already very limited budget
that has to cover living costs also, sometimes to be able to pay a bill without getting into debt you have to love soup during the month!!”.

“Due to the pandemic, money is tight and often runs out before the end of the month. This makes it difficult to access fresh produce e.g. fruit and vegetables”.

3. Restrictions: while there is some overlap with access and resources, the importance of restrictions was selected as a separate category as it better reflected participants experiences (N 11) of the wider effects of the lockdown restrictions themselves. One respondent described the following:

“I was worried when the first lockdown began, and we could not get home delivery and [I] did not want to go to the local shops because of our age and being told by the Government to stay at home”.

Respondents also raised difficulties such as having less social support which was linked to restrictions of having to self-isolate (due to disability and/or age), for example:

“Having the support network I’m used to disappear overnight had a huge impact on what I could eat due to needing deliveries that were infrequent and unreliable”.
This reduction of social support also further impacted on carers:

“The most vulnerable can’t access food due to lack of money and mobility issues, and illness, meaning accessing healthy food regularly is beyond impossible for the average vulnerable person... Food is a luxury as bills still had to be paid and for carers who look after a family member this pushed them past their limit“.

One respondent also described having to make changes to living arrangements which placed new stress on their eating behaviour:

“I have had to relocate due to the pandemic which has meant I am now living with family that are quite conscious of weight and food. This means that I feel more self-conscious about how much I eat (I am not paying for it) but also because comments are made.“

Theme 2 - Behavioural, psychological, physiological and social impact

4. Eating Behaviour: 18 respondents wrote about eating more and ‘emotional eating’ due to boredom. “Boredom equals eating. It’s human nature in the West“
and due to a lack of distraction and easier access to food due to being at home in the day. 15 out of the 18 respondents had some level of FI with the majority (12) of respondents coming from the Mild FI category.

“Access to food has been easier than usual, particularly working from home because the fridge is always close by”.

Another frequently reported aspect was the use of food to help regulate feelings of anxiety; “comfort eating to assuage Covid anxiety” and how emotional eating to manage anxiety was facilitated more easily due to more ready access to food due to having to stay at home:

“Lockdown has made me anxious and very emotional with more ups and downs than usual. I used (and have always used) food to numb/self-soothe, so in lockdown I have done this a lot. Mindless eating has become even more usual (it’s not something you can do in the office but you can at home)”.

5. Mental and Physical Health impact: as well as respondents identifying how their eating behaviour had changed due to the pandemic, 31 respondents (of which 28 had some level of FI) emphasised the mental and physical health impact of pandemic related food scarcity itself. One frequently reported mental health impact was how the “Pandemic has caused anxiety & worries about food access”. Grief and
loss due to the Covid-19 was another factor with respondents also sadly recording their experiences of bereavement and grief due to Covid-19:

“Depression & grief make me overeat. But due to my disabilities I’m also on steroids, which make me want to eat everything in sight”.

Likewise, another respondent also described:

“constant anxiety about managing diabetes and other illnesses vis a vis the risk I am at exercising publicly. Not everyone can exercise at home. Food parcels were completely inappropriate. Grief from losing several family members and friends made this much worse and there is nowhere near enough support”.

These responses also illustrate the interconnection of physical and mental health in respondent’s experiences of the pandemic and associated effects on their eating behaviour. Connectedly, some respondents also described a new awareness about their weight in the context of the Government’s ‘Better Health Campaign’ which was introduced in summer 2020 (Talbot & Branley-Bell, 2020):

“I was obese and am now on the border between overweight and obese. I have learnt that obesity is linked with lower immunity and more severe Covid. I am keen
to reduce my weight further. I have not restricted my diet in range just portion size though we are not eating as many takeaway foods “.

6. Positive outcomes: 11 participants recorded outcomes perceived as positive such as a growing awareness of food insecurity and decision to donate to food banks. Respondents also emphasised more use and awareness of values and skills such as growing their own food and budgeting and planning for meals. Unlike the previous 5 categories, positive outcomes was the only category where respondents without any FI gave the most responses (8).

“During the quarantine I began growing vegetables in my backyard both for mental health and to have fresh/ pesticide-free vegetables as I could no longer afford buying all-organic food“.

A sense of pride was evident amongst some respondents also linked these skills to ‘old fashioned’ values of preparedness to cook from scratch;

“Eat sensibly, moderate intake, cook from scratch and keep a store cupboard, never use packet ingredients / ready meals are all sensible old-fashioned values that work“.
Discussion

The purpose of this study was to investigate whether the association between FI and Eating Disorders found in the USA by Becker et al (2017) and others was also the case in a UK population. Given the robustness of their findings and the overarching context of increased FI and stress caused by the pandemic, it was expected that ED symptomatology would be significantly higher for those with higher FI compared to those with less FI despite differing food and welfare environments. Furthermore, and also in line with previous research, it was anticipated that both compensatory behaviours and DR would be positively associated with FI.

In line with previous research, this study did find evidence of an association between the level of Covid related FI and ED symptomology as measured by the EDDS. To the best of the authors knowledge, this is the first study of its kind to show this in a ‘non-clinical’ UK sample.

Given the association within this sample, the findings do indicate the importance of considering FI as a risk factor for ED and highlight the need for its consideration in assessment and formulation within ED services irrespective of age. There are several barriers to this, however. Firstly, FI may not come to light easily as research has highlighted the experience of stigma and shame felt by those experiencing food insecurity (Purdam, Garratt & Esmail, 2016). While this research focuses on those accessing Food Banks, additional research suggests that there are similar barriers to
disclosing FI within a general health setting. Indeed, through interviews conducted with a range of health care professionals in Scotland, Douglas, Machray & Entwistle (2020) found a pervasive unwillingness amongst service users to disclose FI, alongside further clinical barriers including a variability of knowledge and preparedness to ask about FI from clinicians arising from a fear of embarrassing or offending their patients. Accordingly, it is easy to see how in a time limited setting, broaching potentially sensitive issues such as FI could be neglected, despite its mental and physical impact on immediate medical presentations. If these barriers are negotiated and FI is identified, it is important that clinicians consider whether additional support needs to be put in place in order to ensure a service users’ ability to follow meal plans due to affordability issues.

One applied approach to this challenge has been the introduction of a short ‘social determinants of health’ screening tool as advocated for by American psychiatrists Shim, & Compton (2020). Adapted from the U.S. Department of Agriculture [USDA] Census Bureau’s annual Current Population Survey, the measure asks whether, in the past 12 months, patients had worried their food would run out and whether the food bought didn’t last until there was money to buy more. Brief and practical interventions like these likely make sensitive conversations easier and allow for appropriate additional support in cases of FI.
The finding of a significant positive correlation between DR for any reason and ED symptomatology is consistent with previous studies and suggests that, alongside shape and weight concerns, additional factors including health, financial, access to food and medical considerations also contribute to reasons for restricting diet.

However, it is notable that the results of this study only showed significant associations between level of FI and both ED symptoms and DR when the adapted covid specific measure of FI was used. Moreover, these associations were weak only accounting for a small amount of variance. There are a number of possible reasons for this. Firstly, as these results were obtained from a sample of the general population rather than those accessing Food Banks specifically as in Becker’s study there were unsurprisingly, fewer people with moderate and severe FI in this study. This was especially so for the standard measure of FI which recorded proportionally fewer instances of overall FI compared to the adapted version. This likely meant the sub-sample of those with FI was underpowered to detect an effect of level of FI on a specific ED symptom cluster (DR). Secondly, differences in the measures of FI used may have further contributed to this divergent result. In their original and follow up studies, Becker et al use the Radimer Cornell Food Insecurity Measure (RCFIM) rather than the FIES. A key difference here is that the RCFIM asks specifically about the impact of FI on children in the household with the ‘presumption…that hungry children indicate even hungrier adults given the propensity of most caregivers to
prioritize feeding children’. However, given significant associations found when the adapted version of the FIES was used it is reasonable to predict that a more robust association would be found within a follow up study that sampled UK Food Bank users specifically. Moreover, it is already concerning to note the trend amongst this sample of the general population in which 7 people were above threshold on the EDDS.

Becker et al uses frequencies/percentages to compare specific ED behaviours across level of FI and by demographics (ethnicity and gender) in a subsample of those meeting threshold for ED. They found the highest level of objective binge eating amongst those experiencing the highest level of FI and no difference according to ethnic group and gender. Contrary to their prediction, the same pattern was found with compensatory behaviours. The reported sample here did not have a sufficient number of respondents passing threshold for a clinically significant ED to draw meaningful comparisons. However, considering the frequencies of specific ED behaviours within the overall sample, those reporting Severe FI had proportionally higher frequency of compensatory behaviours. This provides further evidence to support previous hypotheses that suggest how unpredictability and rounds of scarcity and relative plenty (of energy dense foods) may lead to overeating. This is consistent with the cognitive model of ED (Polivy & Herman, 1985) which suggests that dieting/food restriction often precedes bingeing. Qualitative responses
suggested a potential aggravating impact of Covid-19 on this association, for example, one respondent wrote; “I couldn’t always get to the shops so cut down quite drastically to make it last and when I did get to the shops tended to pig out”.

In the current sample, those with a disability were more likely to experience severe FI in the last year. The same was true for those classified as being extremely clinically vulnerable, those impacted financially by the pandemic, those on state benefits and those with other markers of poverty such as accessing Food Banks. Whilst it was not possible to show a causal direction in the current cross-sectional study, this link has been shown in previous studies to be bidirectional in nature. For instance, while FI has been shown to negatively impact emotional well-being and psychological distress it also impacts on ability to obtain food; ‘When both poor emotional health and food insecurity are experienced by the same individual, these effects on physical health may be interactive and multiplicative’ (Bruening, Dinour & Chavez, 2017). Furthermore, these interactive and multiplicative vulnerabilities have been exacerbated by the pandemic which has created additional financial difficulties, reduced social support and various psychological stressors for many.

Sadly, these demographic findings are consistent with what is known about risk factors for FI (Connors, et al, 2020). These various social determinants of mental and physical health are known to act synergistically in their contribution to FI and mental
wellbeing. Recent calls to consider and formulate these multiple factors have come from American psychiatrists Shim & Comptom (2020) who have presented a model for the social determinants of mental health. The model suggests that public policies and social norms determine unjust distribution of opportunity within a wide range of social determinants such as education, housing, exposure to pollution and FI. These are thought to lead to behavioural risk, reduced options (“‘poor’ choices”) and psychological and physiological stress which ultimately contribute to adverse mental health outcomes.

While each individual’s experience is unique, the below diagram (figure 2) attempts to model the adverse mental health outcomes reported in this study and to conceptualise the various interconnected factors that can contribute to an individual’s navigation of their unique circumstances. The below diagram borrows from Connors et al (2020) metaphor of ‘same storm different boats’ by considering how individual’s experiences are influenced by pre-existing health inequalities which have been exacerbated by the immediate Covid-19 situation (the storm) which in itself exists within the wider socio-economic context.
Lastly, it is heartening to consider findings that draw attention to positive adaptations and responses to the pandemic that emphasised resourcefulness and skills. For
instance, resourcefulness was an emergent theme in Douglas and colleagues’ study of 2015 food bank use (Douglas, Sapko, Kiezebrink & Kyle, 2015). Likewise, in this empirical paper, one respondent recorded their growing awareness of FI and their decision to donate to their local food bank. More widely, acts such as these can be seen within a growing cultural awareness of FI in the UK in which the widely reported empty supermarket shelves and emotive pleas from key workers for shoppers not to panic buy brought the importance of food supply, access and policy decisions into the public spotlight. Likewise, high profile figures like footballer and expert by experience, Marcus Rashford’s campaign have raised awareness and brought about real policy change and outcomes for children and families (Ham, 2021).

Limitations

There were a number of limitations with the study’s methodology. Firstly, cross-sectional designs are limited as they do not allow for an understanding of changes across time. Longitudinal research would usefully address the question of the trajectory of those who recorded an association between FI and raised ED symptomology and whether they developed an ED in time and also whether symptoms persisted despite any improvements in food security. Moreover, in studying behaviour across time it would allow a fuller understanding of the impact of Covid-19 on FI i.e. whether the elevated levels of mild and moderate but not severe FI as recorded by the Covid-19 specific FIES were a transient or more long-lasting
phenomenon and furthermore, the extent to which the observed association between ED symptoms and Covid-19 related FI was temporary. Relatedly, given the study design and use of correlational methods it is not possible to determine causality. As such, the study is limited in not being able to determine experimentally the extent to which ED symptoms may have also contributed to FI and vice-versa.

A further limitation was the decision not to include measures of anxiety and depression as Becker et al did in their studies. This decision was taken to make the questionnaire shorter and reduce the burden of filling it in. However, the inclusion of a standardised measure of anxiety and depression in the multiple regression analysis would have allowed for a more nuanced understanding of the relative impact of FI on ED and determine the extent to which FI may have mediated the association between Covid-19 stress as measured by level of anxiety, for instance, and ED symptomatology. Due to the relatively small sample size limiting any actual detailed analysis of the relative role of demographic subgroups (e.g. ethnicity, sexuality or religion) a potentially more useful approach would have been to prioritise a measure of anxiety to understand this important aspect of the experience of FI. Accordingly, future studies should also include a measure of clinical anxiety.

The approach of seeking qualitative feedback from respondents in the form of a free text box at the end of the survey allowed for some contextualisation of respondent’s
experiences. However, this approach was limited in terms of not facilitating the nuance and depth of responses that would have likely resulted from methods such as semi-structured interviews or ethnographic participant observation as conducted by Garthwaite, Collins, & Bambra (2015) in their study of Food Banks. Indeed, despite FI participants being in the minority of the sample overall, the majority of respondents to the qualitative aspect of this study had personal experience of some level of food insecurity. This is likely due to the survey holding more personal relevance to those respondents and moreover suggests the importance and viability of further qualitative research. A further limitation relates to the use of thematic analysis itself which has been argued to not adequately engage with the complex and potentially contradictory narratives recorded (Murray, 2015). These limitations were especially apparent in some responses which richly described the cumulative effects of multiple factors which exacerbate the bidirectional association between food insecurity and ill health.

As an example, the following response demonstrates the sheer range and complexity of some respondent’s situations and is quoted here in full;

“Having high bmi, high blood pressure, prediabetes, rheumatoid arthritis, being physically disabled and having the support network I’m used to disappear overnight had a huge impact on what I could eat due to needing deliveries that were
infrequent and unreliable, having foods I can either eat as is or require little to no cooking. It was often a case of existing on snack foods and high calorie processed foods which caused significant weight gain. Despite having several high risk conditions I did not fall in the clinically extremely vulnerable group so a lot of extra help was not available as I couldn’t get to food banks, I’ve had no social contact since February, and I am purely reliant on home delivery. To add insult to injury, my fridge freezer broke down and I can’t get anyone in to remove it and set up a new one, so I’m needing to manage without any way of keeping foods chilled/frozen which leads to limits on what food I can store at room temp”.

While this example clearly articulates some of the challenge of negotiating FI and ill health during the pandemic it also raises many more questions relating to its impact on mental health and the experience and understanding of multiple systemic factors that could have been usefully explored using a more in-depth qualitative approach.

Moreover, it is possible that the ‘problem saturated’ focus of the survey questions that preceded the text box may have primed respondents to highlight difficulties experienced. While some respondents did record some examples of their strengths and instances of resourcefulness, the chosen approach did not encourage narratives of strength and resilience. Fortunately, there are examples of excellent qualitative research in this area that provides a guide for a future qualitative study that would better avoid these limitations. For instance, Connors et al (2020) carefully interviewed
a diverse sample of people experiencing FI over Covid-19 and then conducted further in-depth interviews allowing time to sensitively explore respondent’s complex, multi-layered experiences. These responses were then formulated and contextualised within their cognitive, physical, nutritional, financial and social/cultural circumstances.

An additional limitation relates to the approach to sampling. While the self-report online sample was advantageous in facilitating the collection of a fairly substantial sample size in a safe and ‘socially distanced’ manner, it also had a number of important limitations that may have limited responses from people who have higher risk of FI. Firstly, the survey was limited to those who have access to and familiarity with online technology. Moreover, there may have been a potential bias towards younger people who are less likely to use Facebook compared to other social media platforms. Furthermore, the survey excludes non-English speakers. This would likely include many refugee and asylum seeker people who often do not speak English and are acutely at risk of FI being unable to work and thus often reliant on food banks (Dexter, 2020). Furthermore, despite disparities in health status and life expectancy in different regions in UK, to help preserve anonymity the survey did not collect information on region in which respondents lived. This information would have helped contextualise responses. Additionally, the opportunity sample returned a primarily White sample. Given that racial discrimination has been shown to be associated with FI and poor health (Myers & Painter 2017; Phojanakong, Brown
Weida, Grimaldi, Lê-Scherban, & Chilton, 2019) and considering the emerging evidence from the Trussell Trust about people from minoritized backgrounds being overly represented in Food Banks, future research should purposively be conducted within Food Banks and other community settings that provide food and support (e.g. Gurdwaras) in order to better understand and represent FI amongst groups that are less typically included in ED research.

Summary

Future research would be improved by the inclusion of baseline measures of mental health conditions such as anxiety alongside more in-depth qualitative methods to better understand the complexities of FI and other social determinants of wellbeing. However, despite these limitations, this study has identified preliminary evidence that FI presents a risk factor for psychological as well as physical wellbeing in a UK context and that these have been exacerbated by the varied impact of the pandemic. These findings contribute to the emerging evidence of the danger of FI for the development of ED and strongly indicate that clinicians should routinely consider risk of FI when assessing and formulating in ED services. Moreover, as apparent in the qualitative accounts recorded in this study, FI is inextricably linked to other social determinants of mental health. Thus, in order to best support the mental health of service users it is also essential for clinicians to consider the ‘causes of the causes’ of psychological distress and, in this case, commit to actions ‘both mitigating
the health consequences of food insecurity and advocating for policies that will lead to its reduction’ (Douglas et al, 2020).

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Reports from agencies:


Part 3: Critical Appraisal
‘There comes a point where we need to stop just pulling people out of the river. We need to go upstream and find out why they're falling in.’ (Desmond Tutu).

**Introduction**

This section provides a critical appraisal of my research ‘Basic needs: Investigating the Impact of food Insecurity on eating behaviour during the Covid-19 Pandemic’. Firstly, I provide a description of ways in which my personal and professional context and journey to training have informed my values and in turn, how these led to this research. Secondly, the impact of the global pandemic is considered in terms of shaping the focus of the work and decisions about the way in which it was undertaken. Following this the possible significance of the findings, their limitations and indications for future studies and clinical recommendations are apprised. Lastly, discussion examines theoretical implications in terms of the psychological impact of scarcity and asks what the role of clinical psychology might be in addressing social inequalities such as food insecurity.

**Personal/professional context**

In describing my research, I tend to start with how it considers one social determinant of mental health (food insecurity) and seeks to understand how
insufficient access to such a basic need impacts on an aspect of behaviour and mental health (Eating Disorders). There is of course the longer story of the research itself (the results, their potential practical and theoretical significance, the various limitations) which this section will attempt to appraise. Firstly however, it is also worthwhile to consider how it is that I have come to this research in the first place and reflect on some experiences that have shaped its direction (alongside my professional and personal journey more widely) and its emphasis on social justice and the wider systemic determinants of mental health.

Before studying Psychology, I worked as a support worker for a Housing Association in London for 5 years. The Housing Association was established in the 1960s by a local Quaker providing accommodation for men leaving prison. I began working there in 2011 as the then government’s austerity policies were being implemented. During this time Food Banks were opening up at an increasing rate and, after attending a talk by the Trussell Trust, I registered our association to make referrals and organised donation drives. Our local Food Bank quickly became vital in helping our tenants meet their basic needs of putting food on the table during periods of difficulty due to benefit delays and other life events including mental health crisis.
In my later years at the Housing Association I began an evening degree course in Psychology with the aim of gaining skills and knowledge to be able to better work with people in a mental health context and to qualify as a Clinical Psychologist. After this period of study, I worked for the NHS; firstly in a Psychiatric Intensive Care ward followed by a year in an Eating Disorder service for children and young people as a research assistant and assistant psychologist. This was my first experience working with people with Eating Disorders and I was fortunate to have various experiences that shaped my research interests. Firstly, spending time with young people who had difficulty with food, how they related to their bodies (and, commonly, their families) was a privilege and introduced me to an area of mental health I had no experience of previously. The role also exposed me to systemic thinking and ideas from family therapy which have informed my clinical and research interest in wider contexts. I was also involved in the delivery of a community psychology project to increase the number of referrals for Bulimia Nervosa (a diagnosis that was under treated and thus under researched due to issues of stigma and under recognition in primary care). During this time another part of my role was to observe intake assessments from behind a one-way mirror and write up assessment reports for the clinicians. While it did not occur to me at the time, issues of food insecurity were not raised during the assessments.
However, despite these formative experiences I began this project with very little knowledge of the experiences of the intersection of FI and Eating Disorders. Firstly, I am not an expert by experience in that I have not experienced food insecurity in any significant way and have never had to worry about where food is coming from. I have also never had an Eating Disorder or had difficulties with eating or worries about my shape and weight. In these respects, the research has made me increasingly aware that I hold a position of privilege and have thus wanted my research in some way to acknowledge and highlight the importance of, and right to meeting basic needs that I have often been able to take for granted in my own life.

**Food on the table - the pandemic**

I did not originally set out to investigate FI. Prior to the pandemic, I opted to join a proposed investigation into the use of Intuitive eating (IE) as an adjunct group treatment within a Child and Adolescent Eating Disorder service. However, due to the pandemic the delivery of the group became non-viable for safety reasons alongside staff not having capacity to deliver the group while they attempted to adjust to the myriad of changes in service provision. There was no alternative but to abandon the project and start again. This was a worrying time as I quickly needed to
generate ideas and energy for a new project after having lost over 6 months of preparation time (and an entire NHS ethics application).

While this was happening the first wave of the pandemic was hitting the UK necessitating the first national lockdown. One of my vivid memories from this period was of walking around my local supermarket seeing shelves that had been emptied by people stocking up for the lockdown. This acute period of FI made the news with reports of ‘panic buying’ contributing to just-in-time food supply being unable to keep up with demand. As later reported, there was a four-fold upsurge in food insecurity in March 2020 seeing more than three million people in the UK going hungry in the first weeks of lockdown (Loopstra, 2020).

During this already anxious time I remember a slight pang of worry and panic while walking around the supermarket considering how my partner and I might not have been able to get sufficient food over the lockdown. This is a somewhat uncomfortable reflection to write given my privilege of being comparatively well insulated from the impact of the pandemic i.e. having no pre-existing physical health problems and being employed in a role I could do from my secure accommodation. However, this experience made me reflect on the potential
psychological impact of FI on mental health and prompted me to see what research (if any) had come from psychology in this area.

Furthermore, I was also reminded of my previous work with Food Banks as a support worker and I began volunteering on weekends with my local Food Bank who needed people to help cope with their surge in demand and the necessity of delivering food parcels as recipients were prohibited from self-pick up due to Covid-19 health and safety precautions. During this time my experiences and the people I met further informed my thinking and motivated my decision to contribute research into FI from a psychological perspective.

At this time, I came across work from Becker et al who conducted the first substantive studies into the impact of FI on Eating Disorders noting “a hole in the literature big enough to drive a truck through” (Arnold, 2020). Her research group was also engaging with intersectional issues of race and class by attempting to diversify stereotypical research participants and Eating Disorder service users. Their approach was to conduct research in Food Pantries in the USA (specifically San Antonio, Texas). They found of a replicable strong positive association between FI and ED symptoms which led them to propose how the cyclical nature of access to food for those reliant on welfare might create another route to developing ED. They argued that these periods of plenty and want increased the chance of binge eating
and compensatory behaviour and how this was further exacerbated by the food context itself; i.e. ready access to highly palatable energy dense cheap foods like fast food (which has been linked to binge eating in animal models) and few options for expensive fresh foods. Their research made me consider whether the same stark findings were also evident in a UK context.

Methodology

The Covid-19 pandemic meant that the research had to be conducted in a physically distanced way using an online survey and recruitment strategies. On the one hand this approach had the advantage of allowing for the recruitment of a larger sample size than I would have likely achieved if I had, following Becker’s approach, been surveying individual Food Bank users in person when they were attending the Food Bank. Not having a team of researchers however, I was able to recruit a larger sample via online methods that, while not equivalent, was closer to the number or participants in Becker’s studies.

However, I did feel that there were several downsides to this approach. Firstly, when starting my DClinPsy training I did not envisage conducting online research and, coming from a background in Social Anthropology, looked forward to
the opportunity of speaking directly to participants (e.g. by evaluating the Intuitive Eating Group). Instead, the online approach felt disembodied and remote. Indeed, the decision to collect anonymised data (itself taken to speed the studies’ ethical approval due to having lost time with the original project) further contributed to the feeling of intangibility and removal from the participants and their experiences.

Difficulties with recruitment further contributed to this feeling. Initially, I was able to contact charities with which I had a personal connection for help with recruitment. For instance, the Housing Association I used to work for helped by contacting the National Housing Federation who shared it on their social media. Likewise, my local Food Bank where I was volunteering shared the post online. However, a month into data collection this approach began to lose momentum. The solution was to pay for a Facebook advert which I adjusted to target a broad demographic of adult men and women living in the UK. While this significantly increased the number of responses it also likely over-sampled White women over 55 years of age. Moreover, the use of Facebook also likely excluded younger respondents who are more likely to use alternative platforms.

An additional, and at the time unexpected, outcome was a small amount of critical feedback to the study that appeared on the Facebook page wall. For example,
Despite the Participant Information Sheet (PIS) including information about the purpose of the study and information about its ethical approval from UCL, a few people posted statements doubting the authenticity of the study with one response drawing attention to a typo in the PIS as evidence of this. Another respondent felt that the study was misleading in that they assumed the study would focus on access to food in the pandemic and not on disordered eating behaviour and wrote on the wall that they ‘smelled a rat’. My approach was to monitor the Facebook page and respond by politely answering questions and offering clarification where needed. I did not take these posts down as I felt that people were entitled to be sceptical and I wanted future respondents to see my personalised responses which, I hoped, conveyed the legitimacy of the study. However, I did remove a small number of posts that, in my view, crossed over from understandable scepticism to explicit hostility. For example, one respondent posted a comment containing expletives demanding I stop the research with the implication that the work was solely for my own ends. Reflecting on this I remember being quite upset at the time and feeling like an ‘evil scientist’. In response, I gave myself a break, paused the survey for the weekend and spoke to my supervisor. We reflected on how endeavouring to learn more about an understudied aspect of ED was entirely warranted and also that I was not compelling any respondent to participate against their will. Furthermore, while critical responses to asking people in perhaps distressing circumstances are
understandable and legitimate, my feeling was that the small number of hostile responses were further enabled by the disembodied and impersonal nature of the online environment itself.

**Results**

Other than how the data was collected, a primary difference between my study and Becker’s was the participants themselves. While her studies focused exclusively on Food Bank users, my sample included only a small proportion of people who had used a Food Bank in the past year. Given the differences in extent and severity of FI in Becker’s studies compared to my empirical study, it was initially slightly surprising to have recorded similar findings in my empirical study. There are various implications to draw from these findings. Firstly, it is possible, and concerning, that the association between FI and ED symptoms occurs in circumstances of less severe FI. However, as Food Bank use is not an accurate proxy for Food Insecurity it is possible that its level was higher than I originally expected. This is because there is evidence (from reading studies for my literature review and anecdotally from my own experiences) that people actively avoid accessing them despite high levels of FI due to feelings of shame and humiliation. Secondly, unlike Becker’s studies, these results were recorded during the pandemic, a period which further exacerbated FI.
Indeed, the recorded data converge with other emerging evidence about the contribution of Covid-19 to reduced Food Security over this time.

On a separate note, I was also surprised and pleased at the number of qualitative free text responses recorded. Furthermore, many of these responses documented aspects of strengths, skills and resilience in the face of difficulties. This was particularly surprising given the context of an arguably ‘problem saturated’ emphasis of the survey that preceded the last free text question. Taiwo Afuape’s (2012) writings on Liberation Psychology have also been especially helpful in considering these responses; while ‘there is no doubt that poverty creates inexplicable limitations...highlighting this reality is not to say that poverty can totally eradicate the ways in which stories are often used to live beyond expectations.’ Her work highlighted to me the importance of remaining receptive as a researcher (as well as a clinician) to stories of creative, often community orientated, responses that facilitated examples of living ‘beyond expectations’. However, despite adopting a mixed methods approach, my method was heavily weighted towards quantitative data which limited space for deeper understanding of the qualitative data I did collect.

**Possibilities for future research**
The above points raise questions for future research. Firstly, and quite simply, it would be informative to undertake a replication study using Becker’s face to face survey methodology exclusively with Food Bank users in the UK. While the findings in the empirical paper strongly suggest they would be replicated, this has yet to be undertaken and it would be informative to see if associations were stronger in this sample. Concerning research outside of Food Banks per se, due to the cross-sectional nature of the study, it also remains unanswered whether the reported association was due to a transitory increase in FI due to the pandemic, or a more entrenched risk factor. A longitudinal future study would help answer this question. Furthermore, longitudinal research would also fruitfully address the question of the trajectory of those who recorded an association between FI and raised ED symptomology and whether they developed an ED in time and also whether symptoms persisted despite any improvements in food security.

There is also a need for future studies to further understand some of the difficulties of living with an ED at the intersection with FI and especially during the Covid-19 pandemic. For instance, having to access Food Banks as a last resort likely invite extremely difficult choice between travelling to a Food Bank while unwell with an eating disorder and risking collapse and/or contagion or staying away and perpetuating further food scarcity. Another such difficulty is the likely choice
between buying an insufficient amount of expensive safe foods that can be eaten or a larger amount of unsafe foods that are harder to eat. Additionally, for those accessing clinical support and treatment for ED it is possible that these difficulties may not surface in assessment and formulation in services due to a service user not wanting to disclose and/or a clinician not wanting/thinking to ask. These are complex and important issues that warrant further research to better understand and respond to socio-economic factors that, at present, may be exacerbating symptoms and hindering treatment in services. Accordingly, a useful future study could seek to understand the prevalence and lived experience of FI amongst people accessing ED Services alongside learning about the barriers to, and potential merits of, routinely assessing FI at intake assessment. Additionally, future studies should also be attentive to understanding the ways in which people with ED employ a range of creative strategies (including self-organised community support) to negotiate the precarious and varied experience of the FI ED intersection.

**Psychological impact of systemic problems:** ‘Equality is the best therapy’

‘*Food insecurity is a very formal phrase for a deeply scary human experience: not having the funds to ensure a steady supply of healthy food*’ (Connors, et al., 2020).
FI is understood as a social determinant of mental health amongst many others including poverty, discrimination, environmental pollution, poor housing conditions etc (Compton, 2014). As already mentioned, one motivation in conducting this research was the conviction that Clinical Psychology should concern itself with understanding and seeking to reduce this particular socially determined basic need that if not meet leads to a ‘deeply scary human experience’ (Connors, 2020).

However, in conducting my literature review it was notable that none of the papers investigating FI and mental health in the UK were written by Psychologists or published in psychological journals. One response to this could be to question why it matters because, as long as the research is being done, what difference does it make if it is conducted by Sociologists or Anthropologists? More broadly this question invites reflection on the role of Clinical Psychology might in addressing social inequalities such as FI?

In order to address the question of the role of Clinical Psychology in addressing social inequalities such I will draw on some of the wider background reading over the course of the work. Firstly, and perhaps unsurprisingly, there is a well-established association between mental health and scarcity of food. One of the key proposed mechanisms of this robust association between FI and anxiety is the uncertainty of scarcity; as systemic family therapist Barry Mason writes, “In order
to cope with uncertainty, we need the certainty of nourishment”. Furthermore, there is evidence that scarcity impacts on cognitive capacity. For instance, research by Mullainathan & Shafir entitled ‘Scarcity: Why having too little means so much’ (2013) indicates how when people are short of basic needs such as food, money or time, these things become more salient and demand more attention. They conducted research with Indian sugar cane farmers and found better performance on tests of fluid intelligence and cognitive control after harvest compared to before when it’s outcome (and thus the risk of scarcity) were uncertain. Accordingly, it seems fairly uncontroversial to see how the cognitive and emotional impact of scarcity can be aligned within Clinical Psychologies area of interest and expertise. However, in my view, remaining interested and knowledgeable is insufficient without further action towards social justice.

My approach as a researcher and clinician has been increasingly informed by my reading into Liberation Psychology. Liberation Psychology is concerned explicitly with the goal of social justice (i.e. the equitable division of resources and the ideal that all members of society should be able to live safely and securely without systemic disadvantage) and the process of actively attempting to resist oppressive socio-political structures. Influenced by this standpoint I have, in speaking and writing about FI, been explicit in emphasising how access to food is a cross cultural
basic human right. However, learning more about ways in which FI impacts on people’s lives has been extremely frustrating and upsetting at times leading me to think how is it that it can be so prevalent within such a wealthy country. Indeed, while Food Banks are vital in plugging holes in the ‘safety-net’ it is worrying and a sign of systemic failure that we should have an increasingly institutionalised charity response to such a vital basic need. Thus, given what we know about the specific mental health impact and the likely therapeutic benefits of increasing security and equality (Wilkinson & Pickett, 2018) the question becomes why shouldn’t Psychologists channel their expertise into going upstream, researching these issues and, importantly, communicating these findings to promote systemic change that would reduce inequalities (Griffin, Zlotowitz, McLoughlin & Kagan 2017). Overall, in reflecting my own efforts I am aware of various ways in which I think my research could be very much improved. However, I am pleased to have conducted research that fits with my values and to have made efforts to understand an under-researched area and contribute, as a Psychologist, to the important work of both ‘going upstream’ and ‘simply’ pulling people out.
References


Appendix

05.08.2020

Dr Lucy Serpell
Department
UCL

q. Richard Hall

Dear Lucy Serpell

Notification of Ethics Approval

Project ID/Title: 18473.001 / Investigating the impact of food insecurity on disordered eating and behavior during the Covid-19 Pandemic.

Further to your satisfactory responses to the Committee’s comments, I am pleased to confirm in my capacity as Joint Chair of the UCL Research Ethics Committee (REC) that your study has been ethically approved by the UCL REC until 05.08.2021.

Ethical approval is subject to the following conditions:

Notification of Amendments to the Research

You must seek Chair’s approval for proposed amendments (to include extensions to the duration of the project) to the research for which this approval has been given. Each research project is reviewed separately and if there are significant changes to the research protocol you should seek confirmation of continued ethical approval by completing an ‘Amendment Approval Request Form’ http://ethics.grad.ucl.ac.uk/responsibilities.php

Adverse Event Reporting – Serious and Non-Serious

It is your responsibility to report to the Committee any unanticipated problems or adverse events involving risks to participants or others. The Ethics Committee should be notified of all serious adverse events via the Ethics Committee Administrator (ethics@ucl.ac.uk) immediately the incident occurs. Where the adverse incident is unexpected and serious, the Joint Chairs will decide whether the study should be terminated pending the opinion of an independent expert. For non-serious adverse events the Joint Chairs of the Ethics Committee should again be notified via the Ethics Committee Administrator within ten days of the incident occurring and provide a full written report that should include any amendments to the participant information sheet and study protocol. The Joint Chairs will confirm that the incident is non-serious and report to the Committee at the next meeting. The final view of the Committee will be communicated to you.

Covid-19

In view of the fast developments of the pandemic, the numerous projects being initiated and the constantly changing framework, please provide us with regular updates every 4 months regarding the ethical aspects of your project and the specific problems (if any) that you have encountered. At the end of the study, as part of the final report you have to submit to the UCL REC, please include
alongside a brief outline of the research outcomes, any experiences which would be valuable for informing the fast-track COVID review process, and in turn subsequent fast-tracked studies.

**Final Report**

At the end of the data collection element of your research we ask that you submit a very brief report (1-2 paragraphs will suffice) which includes in particular issues relating to the ethical implications of the research i.e. issues obtaining consent, participants withdrawing from the research, confidentiality, protection of participants from physical and mental harm etc.

In addition, please:

- ensure that you follow all relevant guidance as laid out in UCL’s Code of Conduct for Research: [www.ucl.ac.uk/srs/governance-and-committees/research-governance](http://www.ucl.ac.uk/srs/governance-and-committees/research-governance)
- note that you are required to adhere to all research data/records management and storage procedures agreed as part of your application. This will be expected even after completion of the study.

With best wishes for the research.

Yours sincerely

**Professor Michael Heinrich**

Joint Chair, UCL Research Ethics Committee
Study investigating eating and difficulties accessing food during the Covid-19 Pandemic

Are you an adult who has been living in the UK during the pandemic? If so please take part in our research by following the link below.

https://ucl.onlinesurveys.ac.uk/fi-study

Contact: Richard.Hall.09@ucl.ac.uk
Survey open between August and December 2020
UCL Research Ethics Committee Approval ID 18473.001
Studying the impact of food insecurity & the pandemic on eating behaviour
October 19, 2020

Food insecurity in the UK quadrupled over the lockdown and continues to affect many people with The Trussell Trust estimating a 61% rise in the need for food banks over the winter compared to the same period last year.

This study is trying to find out about how these difficulties accessing food impacts on our mental health and particularly our eating behaviour.

I’m doing this research as part of my clinical psychology training at University College London and hoping you can help by filling in the survey.

It takes around 15 minutes and has been approved by the UCL ethics committee. Click the ‘Learn More’ link at the top of the page to get started.

Please be mindful that being asked about food security and eating habits can be emotional and know that it is absolutely ok to skip any questions if you do not want to answer.

I really appreciate your time and participation!

Many thanks,

Rich

A former PBHA member of staff is looking at the impact of #foodinsecurity on #mentalhealth and eating habits in UK adults.

Please share this University College London survey to help this issue be understood better:

ucl.onlinesurveys.ac.uk/fi-study

@insidehousing @g320london @KateNHF

12:50 pm · 24 Sep 2020 · Hootsuite Inc.
One of our volunteers @richhallrichhall is conducting an important research project (see image below for details). It's anonymous & takes about 15 mins. Pls be aware that this can be an emotional topic so take care & feel free to skip questions. Pls RT bit.ly/2FDtylE

Study investigating eating and difficulties accessing food during the Covid-19 Pandemic
Study investigating the impact of difficulties accessing food on eating during the Covid-19 Pandemic

Page 1: Introduction

Hello, my name is Richard Hall and I am studying for a Doctorate in Clinical Psychology at University College London. As part of my training I am running this research study with my supervisor Dr Lucy Serpell. Please read the information sheet on the next page to help decide if you would like to take part or not. Please do contact me on the email address provided in the survey contact details below if you have any questions.

If I have any questions, who can I ask?

Ask the researchers:

Dr Lucy Serpell (Principal Researcher) l.serpell@ucl.ac.uk

Richard Hall (Trainee Clinical Psychologist) Richard.Hall.09@ucl.ac.uk

University College London Department of Clinical, Educational, and Health Psychology, 1-19 Torrington Place, London, WC1E 7HB.
If you are unhappy about the study at any stage, please contact Lucy on the email address above.

If you would like to complain further, you can email ethics@ucl.ac.uk. Data Protection privacy notice: UCL’s Data Protection Officer is Lee Shailer and he can be contacted at data-protection@ucl.ac.uk.

You can read UCL’s privacy notice at: https://www.ucl.ac.uk/legal-services/privacy/ucl-general-privacy-notice-participants-and-researchers-health-and-care-research-studies and details of your rights here.

Your survey response will be processed as described in this information sheet. The legal basis for this is that you provide your consent (by completing and signing the study consent form) for you to “perform a task in the public interest”.

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Who is this questionnaire for?

Adults living in the UK during the Covid-19 pandemic.

What is the study about?

This study seeks to understand the impact of food insecurity on eating behaviour amongst the general population in the context of Covid-19 pandemic.

Food insecurity is defined as ‘when an individual or household are unable to acquire nutritionally adequate, safe, and culturally appropriate foods in socially acceptable ways’.

The primary aim is to understand whether the Covid-19 pandemic and associated lockdown led to an increase in food insecurity and then to explore the relationship between self-reported food insecurity and eating behaviour.

What happens during the study?

The study involves filling in the following anonymous questionnaire which should take no more than 15 minutes. You will be asked to answer questions about...

- **Demographics** including your age bracket, gender, ethnicity, religion and occupation.
- Your **level of food security** and the impact, if any, of Covid-19 on this and on your income.
- Your **eating behaviour** including times when you might have restricted your food intake or eaten what you feel is an excessive amount of food. **You can still take part even if you would prefer not to complete this information.**
At the end of the interview you can download a copy of this participant information sheet, the consent form you signed and your answers. Please be aware that as your response is anonymous we would not be able to provide you with a copy of your questionnaire at a later date.

Do I have to take part?

No. You do not have to take part if you don’t want to. If you change your mind during the study and decide you no longer want to take part, that is fine too.

Questions are optional and it is also fine for you to only answer the questions you feel comfortable to.

Is what I say confidential?

Yes. The information we collect about you in the interview is confidential. Only people involved in the research will be able to read the information you give.

The information is anonymous (i.e. we are not recording data that could identify you as you).

What happens to the questionnaire responses?

Questionnaire responses will be stored securely for 10 years after the study has been published – this will contain no identifiable personal information. We will aim to delete these earlier if we have finished the study before then.

Are there any risks or benefits to taking part?

Risks: Being asked to think about financial difficulties related to the coronavirus and also to think about your relationship to food can be
upsetting. Please remember participation is voluntary and it is absolutely fine to not answer certain questions.

If you are worried about food issues the Beat eating disorder charity can provide support and signposting.

https://www.beateatingdisorders.org.uk

If you are experiencing food insecurity your local food bank can help, visit the Trussell Trust website to find details of your local branch and referral details.

https://www.trusselltrust.org

**Benefits:** There are no benefits to taking part, but some people can find research questionnaires an interesting experience. We will be asking you about your experiences of food insecurity and its relationship to eating behaviour over the Covid-19 pandemic which will help contribute to new research into an important aspect of eating disorders that has been under researched.
Page 3: Consent

I have read the Participant Information Sheet and consent to participate in the study.  * Required

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I confirm that I am over the age of 18 and have lived in the UK for all of 2020.  * Required

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I understand that anonymous data that cannot be traced back to me individually may be used in academic publications and shared in accordance with open science guidelines.  * Required

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<th>Please select exactly 1 answer(s).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Γ Yes</td>
</tr>
<tr>
<td>Γ No</td>
</tr>
</tbody>
</table>

I understand that the legal basis for processing any information about me is my ‘consent’.  * Required

<table>
<thead>
<tr>
<th>Please select exactly 1 answer(s).</th>
</tr>
</thead>
<tbody>
<tr>
<td>Γ Yes</td>
</tr>
<tr>
<td>Γ No</td>
</tr>
</tbody>
</table>

I understand that I can withdraw at any time from the study by closing my browser.  * Required

<table>
<thead>
<tr>
<th>Please select exactly 1 answer(s).</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 / 32</td>
</tr>
</tbody>
</table>
I understand that I can download a copy of my answers at the end of the study but I will not be able to access a copy at a later date due to my data being anonymous. *Required

Please select exactly 1 answer(s).
- Yes
- No
What is your age group?

- 19-24
- 25-34
- 35-44
- 45-54
- 55-64
- 65-74
- 75-84
- 84+
- Prefer not to say
What is your gender? *Optional*

- Female
- Male
- Non-binary
- Prefer not to disclose
- Prefer to self describe

Prefer to self describe:
Which of the following best describes your sexual orientation?

Optional

- Heterosexual
- Gay or Lesbian
- Bisexual
- Prefer to self describe
- Prefer not to say

If you selected Other, please specify:
Page 7: What is your ethnic group? Choose one option that best describes your ethnic group or background

White

Please select no more than 1 answer(s).

- White (Welsh / English / Scottish / Northern Irish / British)
- Irish
- Gypsy or Irish Traveller

Mixed/Multiple ethnic groups

Please select no more than 1 answer(s).

- White and Black Caribbean
- White and Black African
- White and Asian
- Any other Mixed/Multiple ethnic background, please describe

If you selected Other, please specify:


Asian/Asian British

Please select no more than 1 answer(s).

- Indian
- Pakistani
- Bangladeshi
- Chinese
- Any other Asian background, please describe

If you selected Other, please specify:


11 / 32
Black/African/Caribbean/Black British

Please select no more than 1 answer(s).

☐ African
☐ Caribbean
☐ Any other Black/African/Caribbean background, please describe

If you selected Other, please specify:


Other ethnic group

Please select no more than 1 answer(s).

☐ Arab
☐ Any other ethnic group, please describe

If you selected Other, please specify:


What is your religion? *Optional*

Please select exactly 1 answer(s).

- No religion
- Christian (including all Christian denominations)
- Buddhist
- Hindu
- Jewish
- Muslim
- Sikh
- Prefer not to say
- Any other religion
Are you employed?

- Yes
- No
- Prefer not to say

Are you in full-time education?

- Yes
- No
- Prefer not to say

Are you in receipt of any working age state benefits (e.g. Universal Credit)?

- Yes
- No
- Prefer not to say

Do you have any dependents?

- Yes
- No
- Prefer not to say

If you selected Yes do you access free school meals?  

[Blank space]
Do you have recourse to public funds? (having recourse to public funds means that you are eligible to claim most benefits paid by the state).

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Prefer not to say</td>
<td></td>
</tr>
</tbody>
</table>
Do you consider yourself to have a disability?  
- Yes
- No
- Prefer not to say

Do you have a medical condition which means you are classed as being ‘clinically extremely vulnerable to coronavirus’?  
- Yes
- No
- Prefer not to say

If you selected yes have you registered to receive food parcels from the UK government?


Have you had to access food from a food bank (or other food charity) in the last 12 months?

- Yes
- No
- Prefer not to say

If you selected Yes, approximately how many times have you used a food bank in the last year?

Has the Covid-19 pandemic lead to reduction in income for you?

- Yes
- No
- Prefer not to say

If you selected Yes please briefly describe the situation in your own words.

Your answer should be no more than 500 characters long.
During the last 12 months, because of a direct consequence of the Covid-19 pandemic (e.g. not being able to leave the house or food shortages) was there a time when...

<table>
<thead>
<tr>
<th>Question</th>
<th>Yes</th>
<th>No</th>
<th>Prefer not to say</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. You were worried you would not have enough food to eat?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. You were unable to eat healthy and nutritious food?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. You ate only a few kinds of foods?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. You had to skip a meal?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. You ate less than you thought you should?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Your household ran out of food?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. You were hungry but did not eat?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. You went without eating for a whole day?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
During the last 12 months was there a time when, because of lack of money or other resources...

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
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</tr>
</thead>
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<tr>
<td>1. You were worried you would not have enough food to eat?</td>
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<td>2. You were unable to eat healthy and nutritious food?</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>8. You went without eating for a whole day?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Over the past month have you been deliberately trying to limit the amount of food you eat for any reason (whether or not you have succeeded)? **Optional**

Please don't select more than 1 answer(s) per row.

Please select at least 1 answer(s).

Please don't select more than 1 answer(s) in any single column.

<table>
<thead>
<tr>
<th>Number of days</th>
<th>No days</th>
<th>1-5 days</th>
<th>6-12 days</th>
<th>13-15</th>
<th>16-22</th>
<th>23-27</th>
<th>Every day</th>
<th>Prefer not to say</th>
</tr>
</thead>
</table>

If yes, why was this, tick all that apply:

- [ ] To influence my shape and/or weight
- [ ] Health reasons
- [ ] Medical reasons
- [ ] Food is scarce due to financial reasons
- [ ] Food is scarce due to difficulty accessing it (e.g. no nearby shops, can’t leave the house)
- [ ] Cultural or religious reasons
- [ ] Family reasons
- [ ] Other

If you selected Other, please specify:

[ ]
Over the past month have you gone for long periods of time (e.g., 8 or more waking hours) without eating anything at all for any reason?  

<table>
<thead>
<tr>
<th>Number of days</th>
<th>No days</th>
<th>1-5 days</th>
<th>6-12 days</th>
<th>13-15</th>
<th>16-22</th>
<th>23-27</th>
<th>Every day</th>
<th>Prefer not to say</th>
</tr>
</thead>
</table>

If yes, why was this, tick all that apply:

- To influence my shape and/or weight
- Health reasons
- Medical reasons
- Food is scarce due to financial reasons
- Food is scarce due to difficulty accessing it (e.g. no nearby shops, can’t leave the house)
- Cultural or religious reasons
- Family reasons
- Other

If you selected Other, please specify:

[Blank]
Over the past month have you tried to exclude from your diet any foods that you like for any reason (whether or not you have succeeded)? Optional

Please don’t select more than 1 answer(s) per row.
Please don’t select more than 1 answer(s) in any single column.

<table>
<thead>
<tr>
<th>Number of days in the past month</th>
<th>No days</th>
<th>1-5 days</th>
<th>6-12 days</th>
<th>13-15</th>
<th>16-22</th>
<th>23-27</th>
<th>Every day</th>
<th>Prefer not to say</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

If yes, why was this, tick all that apply:
- □ To influence my shape and/or weight
- □ Health reasons
- □ Medical reasons
- □ Food is scarce due to financial reasons
- □ Food is scarce due to difficulty accessing it (e.g., no nearby shops, can’t leave the house)
- □ Cultural or religious reasons
- □ Family reasons
- □ Other

If you selected Other, please specify:

[Blank field]
Over the past 3 months have you...

Please don't select more than 1 answer(s) per row.

<table>
<thead>
<tr>
<th>Question</th>
<th>Not at all</th>
<th>Between not at all and slightly</th>
<th>Slightly</th>
<th>Between slightly and moderately</th>
<th>Moderately</th>
<th>Between moderately and extremely</th>
<th>Extremely</th>
<th>Prefer not to say</th>
</tr>
</thead>
</table>
During the past 6 months have there been times when you felt you have eaten what other people would regard as an unusually large amount of food given the circumstances?  

- Yes
- No
- Prefer not to say

During the times when you ate an unusually large amount of food, did you experience a loss of control?  

- Yes
- No
- Prefer not to say
How many DAYS per week on average over the past 6 MONTHS have you eaten an unusually large amount of food and experienced a loss of control? (if you would prefer not to answer please skip this question)  

Optional

Please enter a number.
Please make sure the number is between 0 and 7.
How many TIMES per week on average over the past 3 MONTHS have you eaten an unusually large amount of food and experienced a loss of control? (if you would prefer not to answer please skip this question)  Optional

Please enter a number.
Please make sure the number is between 0 and 14.
During these episodes of overeating and loss of control did you...

<table>
<thead>
<tr>
<th></th>
<th>Yes</th>
<th>No</th>
<th>Prefer not to say</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eat much more rapidly than normal?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Eat until you felt uncomfortably full?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Eat large amounts of food when you didn’t feel physically hungry?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Eat alone because you were embarrassed by how much you were eating?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Feel disgusted with yourself, depressed, or very guilty after overeating?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
<tr>
<td>Feel very upset about your uncontrollable overeating or resulting weight gain?</td>
<td>☐</td>
<td>☐</td>
<td>☐</td>
</tr>
</tbody>
</table>
How many times per week on average over the past 3 months have you made yourself vomit to prevent weight gain or counteract the effects of eating? (If you would prefer not to answer please skip this question)  Optional

Please enter a number.
Please make sure the number is between 0 and 14.

How many times per week on average over the past 3 months have you used laxatives or diuretics to prevent weight gain or counteract the effects of eating? (If you would prefer not to answer please skip this question)  Optional

Please enter a number.
Please make sure the number is between 0 and 14.
How many times per week on average over the past 3 months have you engaged in excessive exercise specifically to counteract the effects of overeating episodes? (if you would prefer not to answer please skip this question) Optional

Please enter a number.
Please make sure the number is between 0 and 14.

How many times per week on average over the past 3 months have you fasted (skipped at least 2 meals in a row) to prevent weight gain or counteract the effects of eating? (if you would prefer not to answer please skip this question) Optional

Please enter a number.
Please make sure the number is between 0 and 14.
Page 24: Your views

If you have any further thoughts about difficulties accessing food and eating behaviour please record them below. Optional

Your answer should be no more than 2000 characters long.
Page 25: Resources

If you are worried about food issues the Beat eating disorder charity can provide support and signposting.

https://www.beateatingdisorders.org.uk

If you are experiencing food insecurity your local food bank can help, visit the Trussell Trust website to find details of your local branch and referral details.

https://www.trusselltrust.org