

A Nutritional Analysis of the Trussell Trust Emergency Food Parcel



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Summary

A nutritional analysis of the Trust's 3-day emergency food parcels, in 5 different London foodbanks, revealed that they met the nutritional requirements for adults over three days. Indeed, given the generosity of public donations and food bank volunteers, these food parcels often exceeded the nutrient requirements for calories, protein, minerals, trace elements and vitamins (with the exception of Vitamins D and E), allowing them to last beyond 3 days.

The sugar content of the parcels was particularly high, relative to UK Government recommendations, partly due to their large size. It is recommended that efforts are made to reduce the parcels' sugar content by simply not providing raw sugar, and/or jams, whilst replacing fruit juices with low sugar options. Some recommendations on further work to enhance the nutrition content, building in aspects of user feedback and meal planning are also made. These changes should only be made if they: do not significantly increase the cost of donations; do not negatively impact the volume of public donations; account for preferences expressed by people accessing foodbanks; and include environmental factors (e.g. food waste and plastic bottle use).

Whilst it is recommended that improvements in sugar, salt, Vitamin D (and possibly Vitamin E) could be made to the food parcels, this must be put in context that the food parcels are for people in severe food crisis. As such any concerns over excess sugar and salt, or low levels of Vitamin D are outweighed by the negative physical and psychological impacts of lacking food and being nutrient and calorie deficient. Food options are also dependent on the kind donations from the UK public.

Background

The Trussell Trust runs a network of over 400 foodbanks, giving emergency food and support to people in crisis across the UK. In 2016/17 financial year, the Trust gave 1,182,954 three-day emergency food supplies to people in food crisis. In the first half of this financial year 586,907 people were given emergency food supplies, a 13% increase on the same period last year. 208,956 of these parcels were for children.

An adequate and healthy diet is essential to preventing malnutrition in all its forms, whether it be diet-related diseases (e.g. cardiovascular disease, diabetes or stroke), obesity, undernutrition or vitamin and mineral deficiencies. The latest science has shown that “poor diet” now represents a greater threat to health than the combined effects of air pollution, alcohol, drug and tobacco useⁱ. Food insecurity can also negatively affect mental wellbeing through depression, worries about debt, anxiety about food supply, social isolation, and lack of self-worth^{ii, xiv}.

Much of the public health and media attention focusses on the 58% of women, 68% of men and 33% of year 6 children who are currently overweight or obeseⁱⁱⁱ. However, the increasing numbers of people in severe food crisis, requiring emergency food parcels, present a worrying trend that could see increasing numbers of people in the UK experiencing nutrient deficiencies through a lack of food. It should therefore be of concern to public health policymakers that the UK could conceivably start experiencing a ‘triple burden’ of malnutrition, seen in many low and middle-income countries, where people concurrently lack enough basic calories, lack sufficient micronutrients, or suffer from being overweight or obese with associated diet-related diseases.

Charity organisations, such as the Trussell Trust, have stepped in to fill this policy gap, by providing food, in the form of 3-day emergency food parcels, to people across the UK in severe food crisis. Volunteers at foodbanks use food donated by the public and a standard food ‘pick list’, together with feedback from people accessing foodbanks to make up these parcels. These food lists have been carefully designed to ensure they cover basic nutritional needs. As part of their continued review of best practice, the Trust asked scientists at University College London to analyse these food lists and a selection of food parcels from food banks to ensure they continue to maintain a high standard, and to offer any suggestions of how they could be further refined and developed.

This Report therefore provides a nutritional analysis of the Trust’s 3-day emergency food parcels, in 5 different London foodbanks, and provides some evidence-based recommendations and suggestions to further enhance them.

Methodology

Scientists from University College London examined the content of 71 food parcels collected from foodbanks in the Greater London areas of Hammersmith and Fulham, Norwood and Brixton, Wandsworth, Brent and Waterloo.

Using a standardised protocol, photographs were taken of food parcels after they had been prepared, including extra food items given at the local foodbank's discretion. Using these photographs, the weight and variety of products from each parcel were entered into DietPlan 7™ software^{iv}. The analysis was conducted to ascertain the major macronutrients (protein, fats and carbohydrates) and micronutrients (vitamins, minerals and trace elements), with a focus on key health-related variables such as sugar, salt, Vitamin D, Iron, saturated fats and transfats.

The analysis makes the assumption that all the food in the parcels was eaten over a three-day period, with the exception of raw sugar, jams and preserves where the assumption is made that 20% of the entire product was consumed over this period. It also assumes that food was consumed relative to the dietary requirements for healthy, normal weight adults with a sedentary lifestyle. Only single person food parcels were analysed to ensure a more accurate determination of individual intakes, and the analysis did not take into account any extra food items taken from the 'help yourself' table of some foodbanks.

For this analysis sugar content was equated to Non-Milk Extrinsic Sugars (NMES). In addition, a hypothetical food parcel was also constructed from the standard Trussell Trust national list using foods from a supermarket website. This hypothetical food parcel was analysed, as above, and compared against the data collected in the London foodbanks.

Findings

3-day Emergency Food Parcel nutrient content as a percentage of UK Government recommendations*

Figure 1 shows that the current food parcels meet the nutritional requirements for healthy adults over three days, for calories, protein, minerals, trace elements and vitamins (with the exception of Vitamin D). They also have acceptable levels of fat and saturated fat, as well as low levels of transfats. The parcels did, however, contain levels of sugar and salt that exceed UK Government and international recommendations, and levels of Vitamin D below these recommendations^{v vi}.

The high levels of sugar and salt is, in part, explained by the large size of the food parcels (**Figure 3**), which reflects the generosity of public donations and food bank volunteers. However, even accounting for this the levels of sugar were particularly high.

There was a discrepancy between the food parcels provided by the London foodbanks and the hypothetical food parcel created from the standard Trussell Trust national pick list (**Figure 1**). The measured parcels provided greater levels of calories from protein, fats and carbohydrates. They also had greater levels of saturated fat, sugar, salt and many micronutrients. The notable exceptions were zinc, Selenium, Iodine and Vitamins A and E which were comparable and adequate, as well as lower levels of Vitamin D and some of the B vitamins in the measured food parcels. Whilst the hypothetical parcel provided a nutrient content more in line with UK Government and International recommendations, the salt content was still higher than recommended^{vii, viii}.

Possible options to reduce sugar content of the parcels

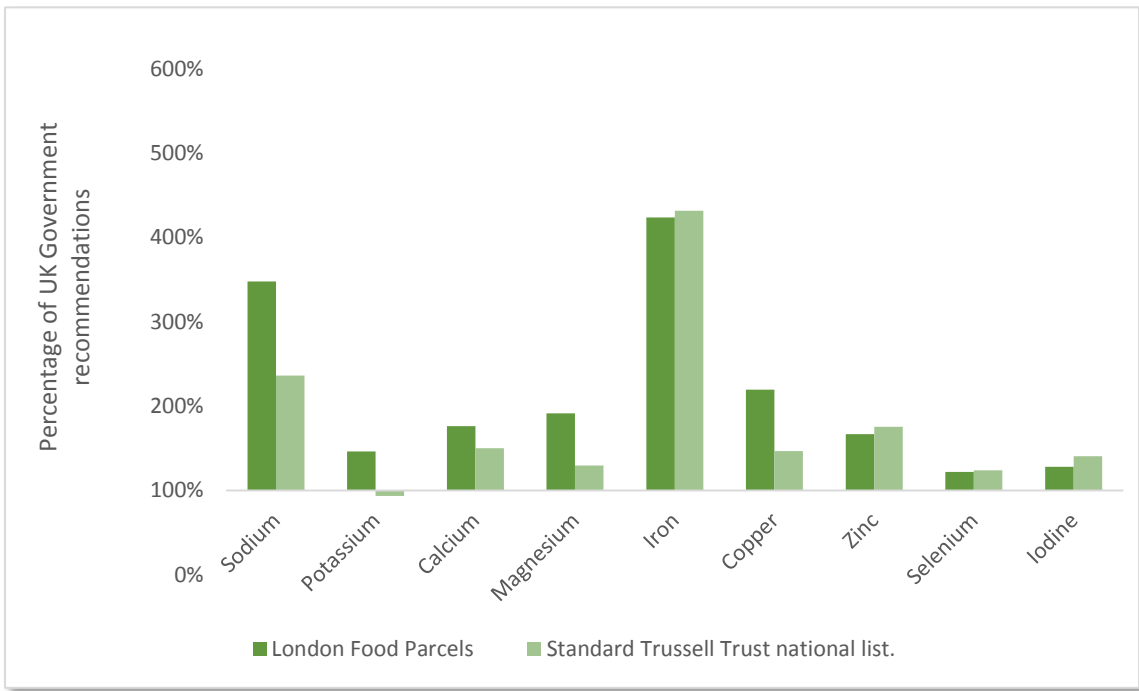
By removing certain foods from the food parcels, the sugar content can be considerably reduced, whilst having a negligible impact on protein, fat and the 19 vitamins, minerals and trace elements analysed (**Figure 2**). The exception being the removal of sweet biscuits, where there was a concurrent drop of 6% of the calcium and 11% of the Vitamin E content of the parcels. Likewise, removal of orange juice results in a drop of 26% of the Vitamin C content of the parcels.

Figure 3 shows that omitting raw sugar, jam and preserves, has a substantial effect on overall sugar levels, particularly when adjusted for the large size of the food parcels. The additional removal of apple and orange juice, would bring the parcels in line with Government recommendations. Removal of sweet biscuits and treat foods (confectionery) would further reduce the sugar content of the parcels below Government recommendations, although this would also reduce calcium and Vitamin E levels as described above.

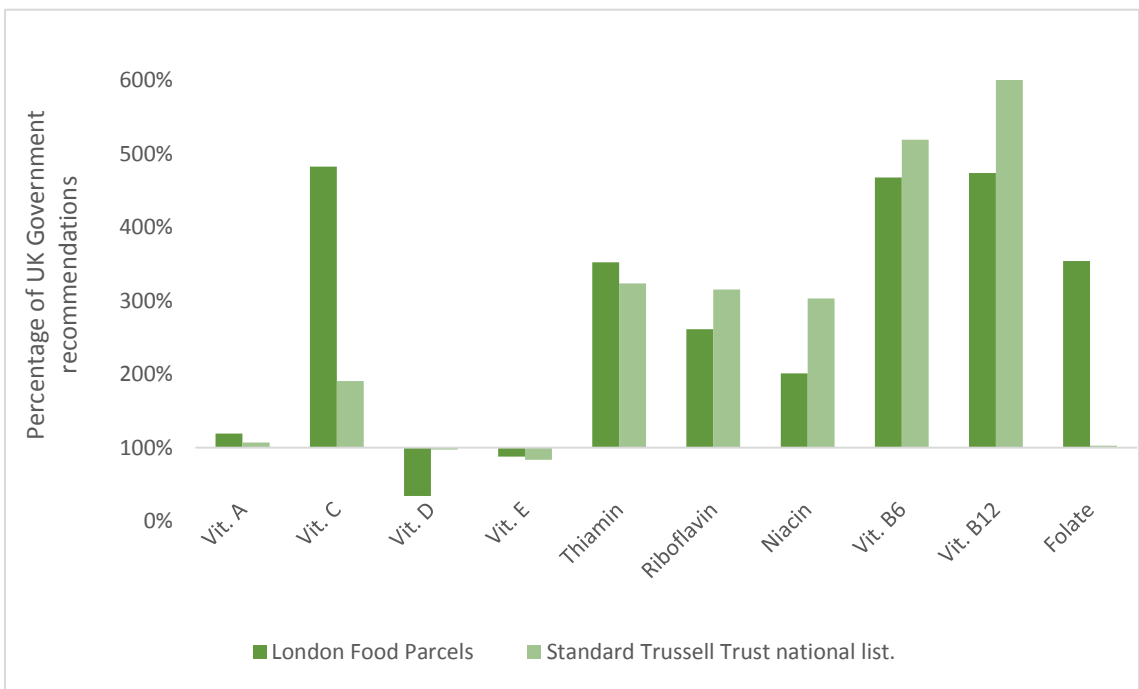
Figure 1: *Comparison of food parcel nutrient content with UK Government recommendations*

(a)

* UK Government recommendations as Reference Nutrient Intake (RNI)



(b)



(c)

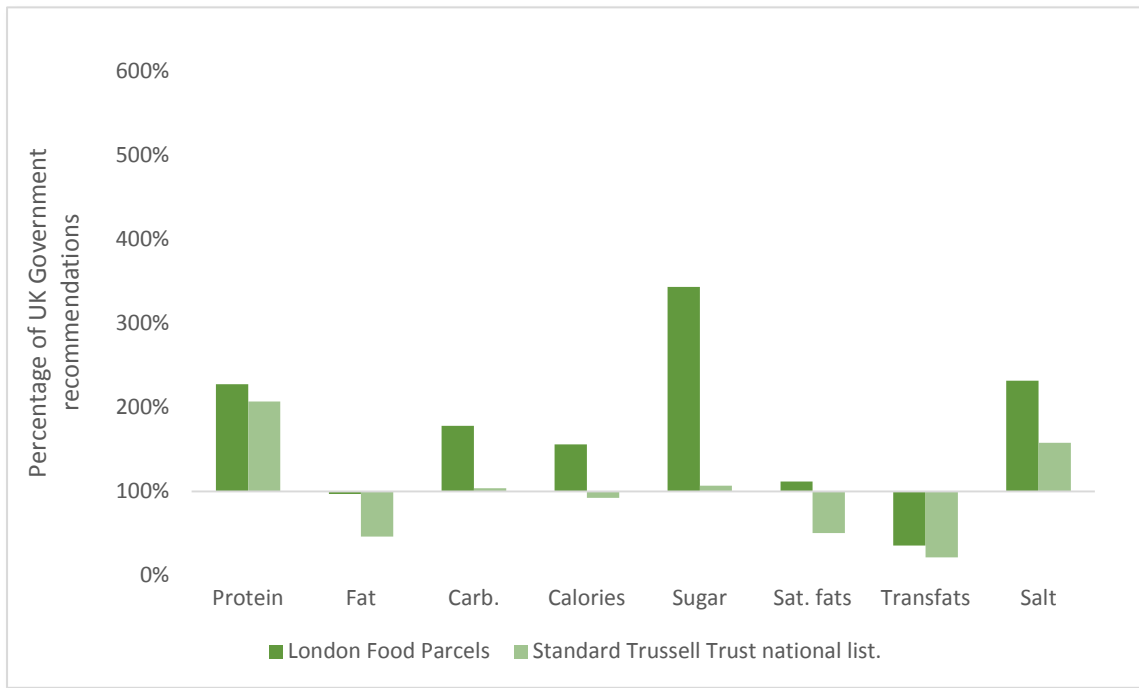
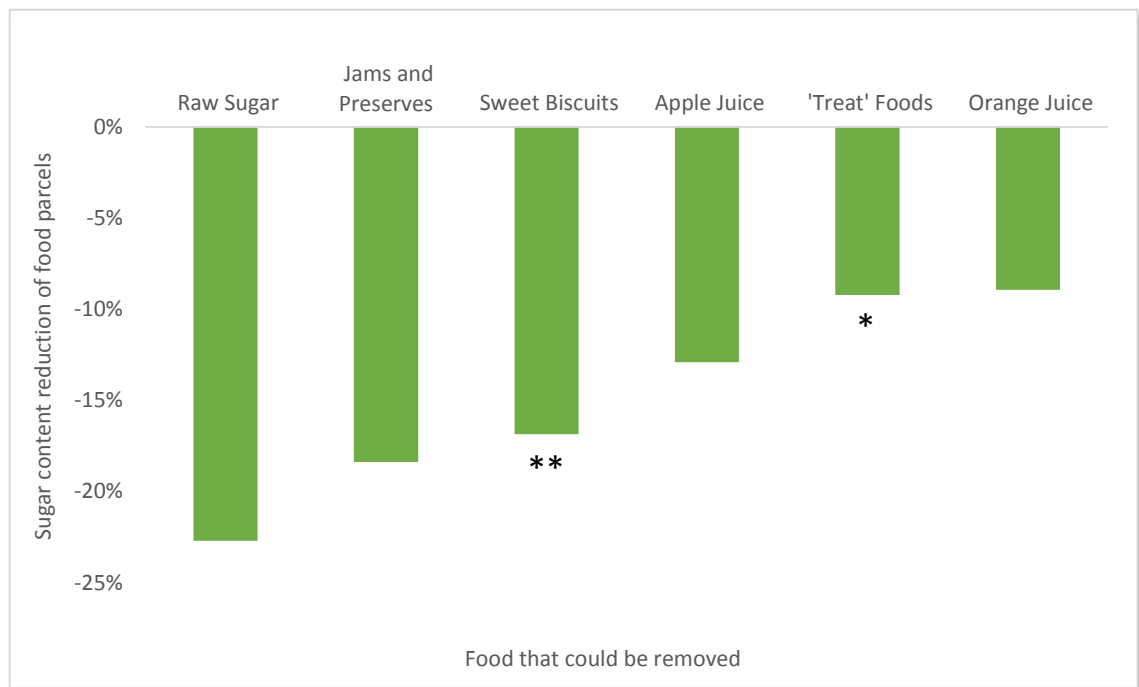


Figure 2: *The impact of removing certain foods on the food parcels' sugar content*



* as well as sugar reduction, the removal of sweet biscuits results in a drop of 6% of the calcium and 11% of the Vitamin E content of the parcels.

** as well as sugar reduction, the removal of orange juice results in a drop of 26% of the Vitamin C content of the parcels.

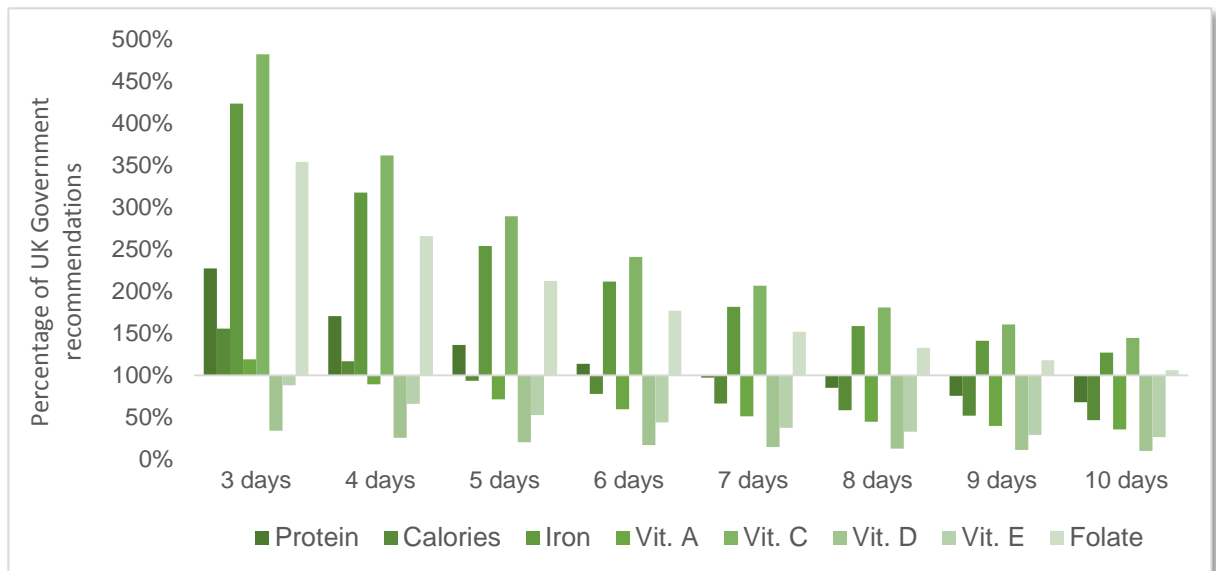
Figure 3: Reducing the food parcel sugar content to meet UK Government recommendations by food omission and substitution



Potential for food parcels to extend beyond 3 days

The parcels are of sufficient calorie and nutrient content that they could be extended beyond 3 days (**Figure 4**). The data suggests that the parcels could provide sufficient protein and calories to last 5 or 6 days, although vitamin levels during this period may fall below UK Government recommendations.

Figure 4: Daily intakes of specific nutrients, as percentage of the UK Government recommendations, when 3-day food parcels are consumed over a longer period



Conclusions and recommendations

The Trussell Trust 3-day emergency food parcels meet all of the nutritional requirements for adults over three days, with the exception of Vitamin D (which is mainly obtained from sunlight, rather than diet). The results were in accordance with other similar studies^{ix x}, whilst being more nutritious than others^{xi, xii}. When compared to a large systematic review of similar food bank interventions, the Trust's food parcels did not suffer from the low levels of Vitamins A, C and Calcium that is typically seen^{xiii}. Indeed, the Trusts parcels were particularly rich in Vitamin C, which largely came from fruit juices, canned tomatoes and sweetcorn.

Given the generosity of public donations and food bank volunteers, these food parcels often exceeded the nutrient requirements of protein, calories, vitamins, minerals and trace elements, allowing them to last beyond 3 days. The notable exceptions to this being Vitamins D and E.

However, there is room for improvement by reducing the sugar and salt content, as well as increasing the Vitamin D content of the parcels. Levels of sugar and salt exceeding Government recommendations is seen in another similar UK study^{ix}. Of particular note was the sugar content, the reduction of which should be a priority for further action, given its association with excess calorie intake and tooth decay.

Recommendation 1: In order of priority, reduce the sugar content of the parcels by:

- a) **Not adding raw sugar to the parcels.** This is already part of Trust policy, so it will be a matter of reissuing guidance to foodbank volunteers and identifying any barriers to this policy.
- b) **Not adding jams and conserves to the parcels.** Other than sugar, these do not add any significant nutritional benefits to the parcels.
- c) **Replacing fruit juices with low sugar options.** Many of these low sugar options are rich in Vitamin C, so parcels would not see concurrent reductions in this important nutrient.

Recommendations 1 a, b or c could be implemented step by step in order of priority, assessing the impact of each change before moving on to the next. Or they could be implemented all at once. It should be noted that sugar, jams and preserves are not standard items, but are provided at a foodbanks' discretion.

It is not recommended that sweet biscuits and treats are removed, given that it will unacceptably reduce the calorie, calcium and Vitamin E levels of the parcels. These 'comfort' or 'treat' foods may also provide some short-term emotional benefits, which may be particularly advantageous to people in food crisis. The effects of eating do not just fulfil human biophysical needs, but also have an emotional and social context^{xiv}. More research is needed to fully understand this emotional impact for foodbank clients.

Recommendation 2: Conduct an analysis to identify ways to reduce the salt content of the parcels

The elevated salt content of the parcels was not as a result of any specific foods, but instead covered a wide range of foods. Even the salt content of the hypothetical parcels created from the Trusts national food 'pick list' was higher than recommended^{vii, viii}. It is possible that the salt content of the parcels may reduce naturally over time, since the salt content of commercial products will continue to decrease through ongoing initiatives in Government and the private sector. The UK salt reduction campaign reduced the average salt intake of the UK population between 2003 and 2007 by approximately 10%^{xv}.

An analysis of potential food substitutes to lower the overall salt content of the parcels could be conducted. For example, there are now low salt versions of many commercial products, such as canned beans which feature frequently in the food parcels.

Public donors could be encouraged to donate more of the low fat, low sugar and low salt options whenever possible.

Recommendation 3: Consider options to boost the Vitamin D and E levels of the parcels.

Most people get Vitamin D through sunlight, but during the winter months and in some individuals who avoid sunlight, or cover their skin all year round, dietary Vitamin D becomes the most important source. An analysis of food substitutes to increase Vitamin D levels, e.g. through canned fish and fortified cereals, could be conducted. A further examination of the hypothetical food parcel created from the standard Trussell Trust national list would be a good starting point, given it had a more adequate level of Vitamin D.

Whilst Vitamin E levels were not critically low, an analysis of food substitutes to increase Vitamin E levels could also be conducted.

If changes are to be made to the parcels, it is recommended these are not made until an analysis is conducted to determine if any changes:

- do not significantly increase the cost of donations;
- do not negatively impact the volume of public donations;
- do not negatively affect stock availability;
- fit with clients' constraints on food preparation (e.g. lack of utensils, refrigeration or cooking facilities);
- do not increase food waste or plastic bottle use;
- do not adversely influence the mental wellbeing of people already in severe food crisis; and
- account for preferences expressed by people accessing foodbanks.

Recommendation 4: Assess the potential impacts on cost, donations, user acceptability and food waste prior to making changes to the food parcels.

Although comparisons to the '5 a day' campaign were not specifically made, the food parcels had plenty of '5 a day' fruits and vegetable candidates, through tinned fruit, vegetables, beans and pasta sauces. Increasing the provision of fresh fruits and vegetables, or fresh meats and fish, might be desirable, but will also increase the risk of waste, spoilage and food-borne pathogens. Likewise, there may be an increase in costs and practical issues related to refrigeration requirements for both the client and the food bank. That said, a way to deliver a usable mix of fresh fruit and vegetables to foodbanks, in quantities matched to expected client numbers with minimal waste, should be encouraged. It is hoped that the Trussell Trust partnership with Fareshare will look to deliver this ^{xvi}.

The discrepancy between the food parcels provided by the London foodbanks and the hypothetical food parcel created from the standard Trussell Trust national 'pick list' (**Figure 1**) suggests that changes could be made to reduce the volume of food parcels, but with the current socio-political climate in the UK, e.g. welfare reform, it may be advantageous to have these larger food parcels. This is especially important given that people accessing foodbanks are in severe food crisis. Around 60% of people accessing foodbanks had reported not eating for whole days, compared to only 2% nationally. 75-85% of people accessing foodbanks also reported skipping meals, not eating when hungry, or forcibly eating less compared to 5% nationally ^{xvii}.

Whilst the sum of the food items in the parcels were nutritionally adequate (with the exception of sugar, salt and Vitamin D), there is a question as to whether more could be done to provide ingredients for nutritionally balanced meal options, for example through the addition of packet sauce mixes and crackers. People do, after all, eat meals rather than individual food items. Some research could be conducted to examine the value of meal planning, so parcels not only meet client nutrient requirements but also provide ingredients for nutritionally balanced meals. Some foodbanks already provide menu suggestions with their parcels ^{xviii}, and this best practice could be built on and shared more widely. This could be coupled with Trust programmes, such as *Eat Well, Spend Less* or UK Government initiatives, such as *Change For Life* and the use of *Healthy Start* vouchers.

Recommendation 5: Conduct research to investigate the impact of meal plans and more meal-focussed food parcel items.

Many commercial food provision organisations rely heavily on consumer and supplier feedback, for example through consumer focus groups, so they develop a shared understanding of each other's needs, ambitions and limitations, as well as drive demand for specific foods. As such, the Trust could consider promoting the use of local focus groups made up of clients, foodbank staff and public donors, to understand if food parcels could be developed to better meet the needs of clients, whilst being pragmatic and nutritious (e.g. reduced sugar and salt, higher levels of Vitamins D and E). Essentially enabling a two-way dialogue between users and providers, it may also have the secondary advantage of empowering foodbank clients and staff.

These groups should operate at local level, to reflect local needs, with knowledge being shared at a national level to identify trends and share best practice. Alternatively, other,

more simple methods, such as conducting short surveys to capture demographic and dietary needs, could help to understand any specific needs within a local community.

Recommendation 6: Establish local client and donor feedback mechanisms.

Whilst feedback continually happens informally across many foodbanks, a more formal process may help spread knowledge and best practice across foodbanks nationally. This feedback will also be crucial in delivering and evaluating recommendations 1-5, for example identifying whether high sugar items or large food parcels were due to foodbank local policy, or a response to stock surplus, or due to clients exercising choice.

Whilst the recommendations above try to provide some pragmatic approaches to refining the nutritional quality of food parcels, it is recognised that the foods available are dependent on the kind donations from the UK public. As such, the recommendations above will require messages to get through to donors and volunteers through existing channels if they are to be implemented.

It is also imperative that food is not wasted, so people accessing foodbanks will inevitably receive items that may adversely influence the nutritional content of the parcels, e.g. elevating the sugar or salt content.

Recommendation 7: The Trussell Trust to continue to use their communications channels to promote the specific food items outlined in this report, and to share best practice.

Finally, whilst it is recommended that improvements in sugar, salt, Vitamin D and Vitamin E could be made to the food parcels, this must be put in context that the food parcels are for people in severe food crisis which will help prevent:

- the known detrimental effects of restricted food and nutrient intake on growth, cell function, health and ultimately increased risks of premature death^{xix};
- the negative mental and physical wellbeing effects of lacking food, such as depression, worry about debt, anxiety about food supply, social isolation, and lack of self-worth^{xx}; and
- the vicious cycle of poverty leading to hunger, leading to decreased productivity (in schools and work), resulting in a reduced likelihood of increasing prosperity^{xxi}.

About the authors

Dr. Darren Hughes is an expert in food, nutrition, agriculture and health, with over 20 years of experience in the field. With a PhD in human energy metabolism and appetite regulation, he has worked in the Food Standards Agency; the Department of Health; Cancer Research UK; Rothamsted Research (the longest running agricultural research institute in the world); and worked directly to the Government's Chief Scientific Adviser (who reports directly to the Prime Minister). He currently provides consultancy to the Global Panel on Agriculture and Food Systems for Nutrition.

Edwina Prayogo is a PhD student at UCL. Her PhD aims to understand the dietary quality and health of people accessing foodbanks, and the impact of social and environmental factors on influencing their dietary quality. She started her research in foodbank in 2012, where she explored the impact and feasibility of giving fresh fruit and vegetable vouchers to the attendees of East London foodbank. The project was undertaken as part of her MSc in Clinical and Public Health Nutrition (UCL). She has advised Department of Health and trained volunteers at local foodbanks to increase the uptake of Healthy Start scheme amongst people accessing foodbanks. She is also volunteer at Brixton and Wandsworth foodbank.

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References

- The Global Panel on Agriculture and Food Systems for Nutrition 2016ⁱ Food systems and diets: Facing the challenges of the 21st century. www.glopan.org/foresight
- ⁱⁱ Connell et al (2005). Children's Experiences of Food Insecurity Can Assist in Understanding Its Effect on Their Well-Being, *The Journal of Nutrition*, Volume 135, (7), 1683–1690.
- ⁱⁱⁱ Statistics on Obesity, Physical Activity and Diet England: 2017. Office of National Statistics and NHS.
- ^{iv} DietPlan 7. Forestfield Software Ltd, 14 Warnham Road, Horsham West Sussex RH12 2QU, UK
- ^v Scientific Advisory Committee on Nutrition (SACN) 2015. Carbohydrates and Health. www.sacn.gov.uk
- ^{vi} World Health Organisation (2015). Sugars intake for adults and children. ISBN: 978 92 4 154902 8
WHO reference number: WHO/NMH/NHD/15.2.
- ^{vii} World Health Organisation. Salt reduction Fact sheet, June 2016. <http://bit.ly/1BTBqmu>
- ^{viii} UK National Health Service. Salt: the facts. <https://www.nhs.uk/Livewell/Goodfood/Pages/salt.aspx>
- ^{ix} Preston and Burley (2015). What's in a food bag? Analysis of the content of food bags provided by the Bradford Metropolitan Food Bank Proceedings of the Nutrition Society (2015), 74, E136
- ^x Sirona Health (2014). "Officially" Nourished – Analysis of a Foodbank Parcel. <http://sirona-health.com/sironablog/?p=23>
- ^{xi} Turnbull and Bhakta (2016). Is UK emergency food nutritionally adequate? A critical evaluation of the nutritional content of UK food bank parcels. Proceedings of the Nutrition Society 75, E8.
- ^{xii} Neter et al (2016) Dutch food bank parcels do not meet nutritional guidelines for a healthy diet. *British Journal of Nutrition* (2016), 116, 526–533
- ^{xiii} Simmet, et al (2017). The Nutritional Quality of Food Provided from Food Pantries: A Systematic Review of Existing Literature. *Journal of the Academy of Nutrition and Dietetics* 4, 577-588.
- ^{xiv} Wei-ting Chen (2016). From "Junk Food " to "Treats" Food, *Culture & Society* Vol. 19. 1.
- ^{xv} Wyness L.A, Butriss J.L., and Stanner S.A. (2012). Reducing the population's sodium intake: the UK Food Standards Agency's salt reduction programme. *Public Health Nutrition*, 2012. 15:254-61.
- ^{xvi} 8 Feb 18 Asda, The Trussell Trust and Fareshare launch £20 million partnership to help a million people out of food poverty. <https://bit.ly/2GZzWQv>
- ^{xvii} Prayogo (2018). Unpublished data from PhD Theses.
- ^{xviii} Eat Well Spend Less, Top tips, recipes and weekly meal planners to make your money go further. Cornwall Community Foundation Booklet (Feb 2014) <https://bit.ly/2JkYEvM>
- ^{xix} Ralph, A., Garrow, J. S., & James, W. P. T. (2000). *Human nutrition and dietetics*. Churchill Livingstone.
- ^{xx} Connell et al (2005). Children's Experiences of Food Insecurity Can Assist in Understanding Its Effect on Their Well-Being, *The Journal of Nutrition*, Volume 135, Issue 7, Pages 1683–1690, <https://doi.org/10.1093/jn/135.7.1683>
- ^{xxi} The Global Panel on Agriculture and Food Systems for Nutrition (2017). Healthy diets for all: A key to meeting the SDGs. <https://www.glopan.org/SDG>