



Monash University Bachelor of Nutrition & Dietetics

Food Service Management Placement Project

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Project outline:

Development of a definition of a 'standard meal' which is considered nutritionally adequate and consequently a method for determining the number of 'standard meals' provided from the food collected and redistributed by SecondBite.

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Food Service Management Placement SecondBite Project 2007

Introduction

SecondBite is a young charity operating in metropolitan Melbourne and was formally established in late 2005. The charity is involved with the collection of surplus perishable food from markets, restaurants, food wholesalers and retailers. The food collected is predominantly 'fresh produce', such as fruit and vegetables, meat, poultry and fish, nuts, milk and bread and bakery goods. However, SecondBite also collects 'prepared meals' from several restaurants in Melbourne, namely soups, stews and stir-frys. The food collected is transported free of charge to several recipient charities, including Sacred Heart, Prahran Mission, Salvation Army, Asylum Seeker Resource Centre, Brotherhood of St. Laurence and St Mary's House of Welcome. The donation of perishable goods to these agencies has made a significant contribution to reducing the food costs of these charities and many have stated that their 'fruit and vegetable bills have been eliminated' due to actions of SecondBite.

The donation of the food items to the recipient charities is relatively ad hoc and based on what the charities need at the time of delivery. There are no set criteria for what food is received by what charity. This means that the quantity and composition of deliveries alters each week and is dictated by what food the charities already have and what they need. The charities will often put in requests; which SecondBite may be able to source out or keep in mind for future food collection runs. The use of the donated food is similarly utilised by the recipient agencies. Typically the food is used in meals prepared by the charities. The charities all provide regular meals to disadvantaged groups, such as the homeless, asylum seekers and refugees. The meals provided generally include lunch and mid-morning and mid-afternoon snacks; some centres also provide breakfast whilst dinner meals are generally provided by several soup vans which operate nightly throughout the city and inner suburbs. Some of the charity organisations also operate 'food banks' which basically act as free supermarkets. The Asylum Seeker Resource Centre operates a food bank as such which involves individuals and families being allocated a certain number of points which they can reimburse for food products.

The idea of a 'food recycling program' is unique to Melbourne though not to Australia. OzHarvest is a Sydney based equivalent to the SecondBite charity. OzHarvest was established in late 2004 and describes itself as a 'food rescue charity' which provides the 'missing link between excess food and those in need' (1). OzHarvest collects surplus food from restaurants, shops, delis and corporate/private functions (1). The collection of prepared meals and snacks constitutes the majority of the food collected by OzHarvest whereas SecondBite is predominantly concerned with the collection of fresh 'whole' foods i.e. meat, fruit and vegetables.

The ability for SecondBite to operate such a food recycling program is attributed to relatively recent legislative changes by the State Government of Victoria in 2002. These changes involved the enactment of the 'Good Samaritan Legislation' which

provides 'food donors with immunity from common law liability for food donated in good condition and in good faith' (2). Recent estimates by SecondBite indicate that the food they collected over a three month period (January – March 2007) provided over 68,000 standard meals (2). OzHarvest and One Umbrella define a standard meal as 250g though whether this is a nutritionally adequate meal is unknown as the 250g definition does not take into account the composition of a 'standard meal'. Therefore the aim of this project was to define a 'standard meal' and provide a method of converting the food collected by SecondBite into correctly defined standard meals that would be nutritionally adequate for the average adult. The objectives and methodology of the project are outlined below.

Objectives

1) Familiarisation with SecondBite organisation

- Understanding of SecondBite food recycling program and other similar programs
- Description of legal aspects involved with recycling food

2) Understanding processes involved in distributing donated foods amongst the food relief agencies

- Understanding of recipient agencies and their utilisation of the food delivered
- Explanation of criteria used to determine the amount and types of food given to different agencies

3) Development of a methodology to convert overall food collected into nutritionally adequate meal equivalents

- Data collection of the amount and types of food collected (including proportions re-used and wasted)
- Conversion of overall food collected into food groups (breads & cereals, meat & meat products, fruit and vegetables, milk & dairy foods)
- Understanding background literature and utilising tools such as guidelines and nutrition standards in regard to meal compositions, portion sizes, food weights, cooking changes, nutritional requirements
- Description of 'standard meal equivalent' (explanation of portion sizes, weights of food, nutritional composition of standard meal, percentage of nutritional requirements met through standard meal)

4) Identification of areas for improvement or recommendations

- Analysis of proportions of food groups from food collected and determining possible inadequacies or excesses
- Potential alterations to food collection/delivery method to enable better analysis of overall food collected and subsequent meals provided

Background Literature Reviews

1. Dietary Patterns of the Homeless

In Australia approximately 99,900 individuals are estimated to be homeless each night; in Victoria alone this number is estimated to be more than 20,000 (1). There is no standard definition for the term 'homeless' and in general it refers to a heterogeneous group of individuals who share the common characteristic of an insecure accommodation status (2). Subsequently the homeless reside in a variety of different accommodation types which may include living permanently in a single room equipped with a bathroom and/or kitchen, moving between different forms of temporary and emergency shelters i.e. refuges, night shelters, drop-in centres, boarding houses and hostels or living without conventional accommodation i.e. living on the streets, under bridges, in public parks, in deserted buildings or squats etc (3).

Due to a restricted income homeless individuals commonly take advantage of free or heavily subsidised meals offered by charities and relief organisations and shelters (4). They may also depend on fast-food restaurants and garbage bins to acquire food (5). Food is a 'flexible budgeting item' and as such low income earners, such as the homeless, will often go without food and rely on day centres to provide their daily meals (2). The food which is provided by day centres, soup runs and charity agencies is usually filling and will satisfy hunger per se though also tends to be high in fat, sodium and sugar, low in fibre and often lacks variety (2). Several studies have investigated the nutritional status of the homeless and found it to be significantly worse than the general population (3). The homeless often simply eat what they can 'get their hands on' to avoid hunger without considering the nutritional implications; and as such may be described as being at 'nutritional risk' (2).

The poor and irregular dietary intake of the homeless is not solely due to a low financial status and there are a number of identified contributing factors (6). For example, homeless individuals may lack motivation to prepare and eat food due to health problems, poor appetite and low self esteem (6). An inability to budget for food costs may mean that regular dietary patterns cannot be achieved and poor food knowledge may further impair ones ability to buy, store and cook food (6). Limited access to adequate food storage and preparation equipment and facilities and lack of readily accessible nutritious and cheap local food stores often significantly hinder a homeless individual's ability to maintain nutritious and regular eating patterns (6).

Diet-related illnesses which commonly affect the homeless include vitamin and mineral deficiencies, diabetes, dental caries, gastrointestinal problems and obesity (3). A study of homeless individuals in London found that only 28% ate vegetables daily and 60% seldom ate fruit, salad, fruit juice or wholegrain cereal products (2). Analysis of these individuals' dietary patterns and serum blood results found that their diets were high in saturated fat, sodium and non-milk extrinsic sugar (2). On the other hand intakes of dietary fibre, vitamins A, C, E, selenium, potassium and zinc were lower than national recommendations for both men and women in the study (2). Women in this study appeared to be at even greater nutritional risk with (in

addition to above) sub-optimal intakes of protein, iron, folic acid, selenium, iodine and magnesium (2). Homeless women are also often found to have inadequate calcium intakes which can result in a reduced bone mineral density, increased risk of fractures and increased risk of developing osteoporosis (4). Furthermore several studies have shown that women are more likely to be both malnourished and obese than homeless men (5). Studies in the US that have looked at the body composition of the homeless have found decreased levels of lean body mass and increased levels of body fat (5). Obesity is highly prevalent in the homeless population with up to 65% of women and 44% of men with weights above normal weight ranges for a BMI 20-25 (5).

The poor nutritional status of the homeless is exacerbated by the high prevalence of alcoholism, smoking and drug-use within this population sub-group (3). A Melbourne homeless study found that more than 77% of their study population smoked compared with 28% of the general population and 28% of the study admitted to currently or previously using illicit drugs (3). Another Australian study found that 89% of homeless individuals consumed alcohol daily with a mean daily intake of 231g (4), significantly above national recommendations to limit alcohol intake to two standard drinks a day i.e. approximately 20g alcohol (7). Alcoholism is associated with several micronutrient deficiencies including thiamine, vitamin B6, folate and iron (8). Smoking is known to increase bodily requirements for vitamin C by up to 40% (4) and may also be associated with folate and vitamin B12 deficiencies (8). A high alcohol intake can also provide a significant proportion of an individual's daily energy intake and as such may mask obvious characteristics of malnutrition, such as body weight (5). Drug abuse has been identified as one of the major predictors of under nutrition in the homeless and is difficult if not impossible to treat while drug use continues (5).

2. Determination of standard meals

There are limited tools available that can be easily and readily applied to distinguish what is considered a 'standard meal' which is also nutritionally adequate. In the case of SecondBite, their food collection changes every week and their administration resources are limited so they require a very practical and easily applicable way to determine how many nutritionally adequate 'standard' meals they are providing each week. Some food service organisations consider a standard meal to be 250g as was the figure to date SecondBite had been applying to their collections. This however does not represent a nutritionally adequate meal.

Other food service organisations consider a standard meal adequate if it meets certain nutritional requirements. Meals on Wheels has set criteria that each meal provided must meet one third of daily energy requirements, half of the daily protein requirements and two thirds of vitamin C requirements regardless of the meal size (weight) (1). The British Dietetic Association suggests when establishing a meal plan for a food service system, the nutrient targets that need to be met for a main meal include between 1.26 and 2.1MJ and 18g protein (or 12g if vegetarian) for it to be considered nutritionally adequate (2). The main meal must also consist of 80-160g of vegetables, 115g of a starch food and either a meat source that provides 12-14g

protein or a meat alternative option providing 9-10g protein (2). These applications could be determined by undertaking a nutritional analysis of the food with a program such as FoodWorks. This application however does not apply easily to SecondBite as their collections of foods vary constantly and using a program such as FoodWorks may prove too complex and time consuming to apply.

A broader resource that could be applied is the 'The Australian Guide to Healthy Eating' (AGHE). This considers the amounts of different foods required each day to meet nutritional requirements. It provides recommended serves of each of the different food groups needed to achieve the recommended daily intake value (RDI) for protein, calcium, magnesium, iron, zinc, sodium, potassium, vitamin A, vitamin B1, vitamin B2, vitamin B3, vitamin C, folate and vitamin B12 (3).

It refers to 6 different food groups that we require a determined amount of serves of each day depending on our age and sex to meet our nutritional requirements.

These groups include:

- Breads, Cereals, Rice, Pasta, Noodles
- Vegetables, Legumes
- Fruit
- Milk, Yoghurt, Cheese
- Meat, Fish, Poultry, Eggs, Nuts, Legumes
- Extra Foods

The recommended serves can also be referred to in weight which can be easily applied and if the recommendations are met is considered a nutritionally adequate daily intake of food.

To define a standard meal and what is considered nutritionally adequate we decided to apply the theory that the average person is considered to consume 3 meals and 3 snacks per day. An adequate meal would be one of the main meals of the day and for it to be considered nutritionally adequate it should provide 25-30% of one's daily requirements.

Methodology

We decided to apply the Australian Guide to Healthy Eating tool. The recommended average daily intake of each of the food groups (the non-carbohydrate dominant recommendations) for women and men aged between 19-60 years old (our target clientele) is:

- Breads, Cereals, Rice, Pasta, Noodles 5.5 serves
- Vegetables, Legumes 6 serves
- Fruit 3 serves
- Milk, Yoghurt, Cheese 3 serves
- Meat, Fish, Poultry, Eggs, Nuts, Legumes 1.5 serves
- Extra Foods 1.5 serves

Using the AGHE recommendations and applying the theory that the average person should meet 30% of their daily requirements from a 'standard' meal, the amount of each of the food groups required in one meal theoretically should be 30% of the above serves.

To average the recommended serves of each of the food groups into a single weight value is applicable. The average weight will be heavily influenced by the most dominant foods from each of the food groups that are provided by SecondBite on the most regular basis. For example, SecondBite collect numerous amounts of breads each week, however, do not often collect pasta, rice or muesli so the average weight of a serve from the Breads, Cereals, Rice, Pasta, Noodles food group will be based on bread. The most dominant foods from the other food groups collected by SecondBite include:

- Dairy: milk, cheese to a lesser extent
- Fruit: fresh varieties
- Vegetable: fresh varieties
- Meat and alternatives: fresh meats and nuts
- Extra: sweet pastries including doughnuts, cakes etc.

Table 1 –

Converting the food groups recommended serves into weight values is as follows:

Food Group	Average Recommended Serves	Average Weight of One Serve	Average Recommended Serves in Total Weight (grams)	30% of the Recommended Serves (in grams)
Breads, Cereals, Rice, Pasta, Noodles	5.5 serves	30g	165g	50g
Vegetables, Legumes	6 serves	75g	450g	135g
Fruit	3 serves	150g	450g	135g
Milk, Yoghurt, Cheese	3 serves	145g	435g	130g
Meat, Fish,	1.5 serves	100g	150g	45g

Poultry, Eggs, Nuts, Legumes				
Extra Foods	1.5 serves	40g	60g	20g

Adding up the total weights of 30% of each of the recommended serves equals a total of 515 grams. Therefore this used by used to define that a standard meal meeting 30% of the daily requirements should weigh 515g. For the purposes in which this figure will be applied, the average meal weight can be rounded down to 500g to make it more appropriate and practical. A value of 500g can also be applied to the pre-prepared meals.

As our recommendations are based on the weight of the different foods it has to be taken into consideration that there will be a confounding factor with the weights of fruit and vegetables due to their whole forms consisting of a significant proportion of inedible weight. As we have based our serve weights on the edible portion of fruits and vegetables, we need to apply a factor that eliminates the inedible portion when weighing the fruit and vegetables. This can be done using the Australian Food Composition Tables which list the edible portion percentage of all fruits and vegetables available in Australia (1). By using the tables to calculate an average of all the raw fruit and all the raw vegetable edible portions we can apply these factors into the final total weights after collections to eliminate the confounding factor. The average edible portion of fruits is 77% and the average edible portion of vegetables is 80% (1). This means a factor of 0.77 must be implemented into the total weights of fruits ($\times 0.77$) and a factor of 0.8 must be implemented into the total weights of vegetables ($\times 0.8$) when working out meal statistics.

In order to determine the number of meals SecondBite is providing by using the standard meal definition of 500g and taking into account inedible confounding factors is a relatively easy process. Firstly, recorders (likely to be volunteers) of the weights of the food collected and distributed will need to allocate the food weights to their respective food groups (i.e. breads and cereals, fruit, vegetables, meat and alternatives, milk and dairy products or extras). Next inedible confounding factors will need to be applied to the fruit and vegetable groups. The total weights of all the food groups (after confounding factors have been applied) will need to be added and then divided by the defined standard meal weight of 500g. The end figure will then represent the number of meals provided by SecondBite from a given food collection. An example of how this process can be implemented to determine the amount of meals provided by whatever food is collected and donated is outlined in the results below.

Results

In order to assess and confirm that the standard meal description determined from this project does in fact meet 30% of the daily nutritional requirements of an average person it was necessary to undertake a nutrient analysis. The individual weights of the food groups which make up the defined meal weight of 500g were analysed using the computer dietary analysis program, 'FoodWorks' (see appendix 3). The foods entered were common foods collected and therefore provide a common example 'meal'. This meal was found to provide approximately 3.3MJ and approximately 36g protein (see table 2 below). These values would meet an average of one third of the energy requirements for adult men adult women (just over 30%) (1). In regard to protein, 36g would also meet between 60-65% of daily protein requirements for adults. In this situation meeting more than 50% of an adult's daily protein requirements is appropriate as we would like to consider the meal as a main meal for the day which means it should be a good source of daily protein requirements (2). In regard to micronutrients, the 500g meal analysed provided approximately 29mg of Vitamin C, 3mg Iron and 705mg of calcium. This would satisfy approximately 65% of the RDI for Vitamin C for both men and women, 40% of the iron RDI for men and 16% for women and 70% of the calcium RDI for both men and women. Overall the macro and micronutrient quantities provided by this estimated weight of 500g confirms that it would satisfactorily represent a nutritionally adequate meal.

The pre-prepared meals collected by SecondBite generally always consist of a dense and thick soup which is, predominantly vegetable based (i.e. minestrone and potato and leek). Using the same target requirements to achieve as outlined above would not be applicable for the pre-prepared meals as these meals are unlikely to provide the same amounts of energy and protein and therefore meet the same percentage of requirements. However a 500g serving of the pre-prepared meals is considered to be nutritionally adequate by other standards. The British Dietetic Association (BDA) suggests a main meal should include a minimum of 1.26MJ and 12g of protein for a vegetarian meal to be considered nutritionally adequate (3). Based on our nutrient analysis for a 500g serve of vegetable soup (see table 3 below and appendix 4), the minimum requirements set by the BDA would be met. Furthermore, applying the BDA target requirements to our analysis of the respective weight of foods from each of the 6 food groups used to determine a final value of 500g shows that using this defined meal weight more than adequately provides what is considered to be a nutritional adequate meal by the British Dietetic Association.

Table 2 - 500g standard meal

Based on Australian Guide to Healthy Eating - weights of food groups equate to amounts required to meet 30% of an average adult's daily nutritional requirements

	Weight	Foods used	Energy	Protein
Breads & Cereals	50g	50g of mixed grain bread	512kj	5g
Fruit	135g	135g fresh apple	269kj	.5g
Vegetables	135g	135g raw pumpkin	227kj	3g
Meat and meat alternatives	45g	25g ham, 20g almonds	652kj	8.5g
Milk and dairy products	130g	65g milk, 65g cheese	1275kj	19g
Extras	20g	20g cinnamon doughnut	312kj	1.5g
TOTAL	515g (~500g)		3.3MJ	36g
Daily Requirements Recommended by AGHE			Males: 9-13.7MJ Females: 7.2-11.3MJ	
Daily Requirements Recommended by NHMRC				Males: 59.5 Females: 55.3
% meets requirements			Males: 24-37% Females: 29-45%	Males: 60% Females: 65%

Table 3 - 500g pre-prepared meal

	Energy	Protein
E.g. minestrone soup	1.26MJ	19g
Requirements set by British Dietetic Association	1.26MJ	18g (12g if Vegetarian meal)
% meets recommendations Set by British Dietetic Association	~100%	~105% (~158%)

In order to apply the methodology of the project to the working operations of SecondBite, it was necessary to take part in the both the collection and distribution of food from food donors to food recipients. An example of applying the defined standard meal weight of 500g (and taking into account inedible confounding factors) to determine the amount of meals provided from the food collected and distributed by SecondBite is outlined below.

'Restaurant Run' & 'Aroma Bakery collection'

Key:

ASRC – Asylum Seeker Welcome Centre

SH – Sacred Heart

PM – Prahran Mission

SA – Salvation Army

BSL – Brotherhood of St Laurence

SM – St. Mary's House of Welcome

DONOR	Prepared Meals	Breads & Cereals	Fruit	Vegetables	Milk & Dairy products	Meat & alternatives	Extras	RECIPIENT
Abyssinian	10kg							ASRC
Macro			5kg			10kg		ASRC
Precinct	20kg							SH
Bamboo House	10kg							SH
Becco	40kg							SH
Carrick/Sth Melb.Market				30kg	25kg	1kg		SH
"			2.5kg	20kg		20kg		PM
"			40kg	68kg				SA
"			15kg	25kg		18kg		BSL
"			10kg	20kg		19kg		SM
"			12.5kg	100kg				ASRC
AromaBakery		30kg					4kg	BSL
Totals	80kg	30kg	85kg	263kg	25kg	68kg	4kg	
Edible portion factor			0.77	0.80				
Totals	80kg	30kg	65.45	210.4	25kg	68kg	4kg	
Combinedtotal	482.85kg							
/500g	= 966 meals provided (each meal meets approximately 30% of an average adult's nutritional requirements)							

For the above sample food collection, using the methodology outlined in this project yields 966 meals. However, SecondBite's current method of determining the number of meals provided would have calculated a total of 2,220 meals (555kg/250g). Hence SecondBite has previously been overestimating the meal numbers provided from the food they collect when compared to the results obtained using the methodology of this project.

Discussion & Recommendations

The way we chose to define a nutritionally standard meal was only one of a variety of different options, however we believed it would be the easiest and most simple way for SecondBite to apply. It has to be considered however, that the method we have used to determine a standard meal weight will only yield an estimated number of nutritionally adequate meals provided. While a more accurate answer would prove more complex and time consuming, we think for the purposes that it will be applied, an estimate that has been justified and based on reputable tools is acceptable.

The results from our methodology do display, however, that a meal weight of 500g is realistic in order to meet at least 30% of macro- and micronutrient analysis (except for iron requirements for women). A meal weight of 500g also meets other set standards of meal services organisations such as the Meals on Wheels standards as stated in the literature review, and it exceeds the British Dietetic Association standards as shown in the nutritional analysis. Applying a figure of 500g will not overestimate the number of standard meals provided by SecondBite but could slightly underestimate this number if anything.

Although SecondBite wanted to apply their figures of standard meals as if they were providing food to general adult men and women; their main clientele in fact is actually consume the disadvantaged of society, such as, the homeless. Therefore it can be suggested that in this case it may not be of disadvantage that the meals estimated exceed our initial aim of meeting 30% of requirements as it may be more individualised to the actual clientele's needs. Many of these individuals do not actually consume 3 meals and 3 snacks per day like the average person. For example, they may only consume two meals per day and a higher energy and nutrient density (more than 30% of their requirements) may be more suitable for these individuals eating a limited number of meals.

Some of the limitations of methodology conclusions can include the weight application of different food groups. While the AGHE recommends a serve of bread from the breads, cereals, pasta, rice and noodles group is 60g (i.e. 2 slices), it can also be considered 30g (1 slice) of bread. We decided to apply the lesser weight value as we have observed in hospital food service systems a serve of only one slice of bread always accompanies a meal and so we thought 30g (one slice) would be an appropriate application. While the dairy group of foods collected generally consists predominantly of milk, there is sometimes a collection of cheese which we decided to implement equally when working out the weight and which therefore may have resulted in a slightly lower final weight than it would be if milk had been calculated as the dominant food. The final weight of all the food groups however does meet energy and protein requirements shown by a nutritional analysis and consequently justifies a value of 500g as an applicable value of a nutritionally adequate meal; therefore making the other limitations disregardable

During our two week placement with SecondBite we took part in many aspects of the organisation. For example, we were able to familiarise ourselves with the food donors by assisting with a market pick-up, restaurant run, bakery delivery and so forth. Similarly we met with the food recipients (charity agencies) and were able to speak with staff, take part in the preparation of meals and hence see how the food was being utilised at the recipient agencies. Observing the operation of SecondBite and speaking with SecondBite employees and volunteers has enabled us to establish some practical recommendations. These recommendations aim to improve the current food collection and distribution processes of the organisation, in order to develop an accurate and repeatable method of determining how many meals SecondBite is providing.

(i) Changes to the recording of the weights of food collected is recommended. This includes more thorough separation of food into a larger number of food groups. Currently, food is allocated to one of 4 groups – breads, meats, fruits and vegetables and dry goods. In accordance with the Australian Guide to Healthy eating (1), food is generally allocated to one of 6 groups – breads and cereals, fruit, vegetables, meat and meat alternatives, milk and dairy products and ‘extras’. In order to allocate food correctly into the 6 food groups fore mentioned basic education of SecondBite employees and staff would be necessary (refer to Appendix 1). For example, nuts and milk were previously being allocated to the ‘dry goods’ group yet with the 6 food groups nuts would actually be considered as a meat alternative and hence be allocated to the meat and meat alternatives section and milk understandably be allocated to the milk and dairy products group. Previously, sweet bakery items were incorporated into the breads group yet considering their high fat and high sugar content these foods would be regarded as ‘extras’ and therefore would need to be placed in this group. (See Appendix 2 for example of recording sheet containing 6 food groups.)

Secondly, the weights of the foods collected is currently determined by educated guesses or by noting weights on bags, boxes or containers. In order to improve the accuracy of the weights recorded it is recommended that a set of scales is used to weigh foods either at collection or distribution.

(ii) Consideration of ‘edible portions’ needs to occur in order to more realistically determine the actual weights of food used in the preparation of a meal. For example, when eating or using fruit and vegetables; the food is generally not eaten or used in its entirety. Fruit and vegetables are peeled, cores are discarded, seeds and pips are removed. The Australian food composition tables outlines the edible portions of foods in the fruit and vegetable groups (2). The average percentages of the inedible portions of these food groups should be applied to the final weights of the foods collected in order to determine the edible portions of foods and hence the amount that would be consumed in a meal. These average percentages were found to be 77% for fruits and 80% for vegetables and therefore it is recommended that a factor of 0.77 and 0.8 be applied to the weights of fruits and vegetables collected respectively.

(iii) Changes to the excel spreadsheets needs to occur to determine the amount of meals being provided. As described in the methodology and results, a weight of **500g** has been determined, based on the Australian Guide to Healthy eating, as the amount of food required to meet 30% of an average adult's nutritional requirements. After application of edible portion factors, the total weight of all foods collected needs to be added together and then divided by 500g. In regard to the calculation of the number of meals provided by the pre-prepared meals which are collected from restaurants and so forth, edible portion factors do not apply as food preparation would have already taken these into account. However, a weight of 500g is still applicable to the pre-prepared meals in order to provide sufficient energy and protein in a standard meal.

Overall SecondBite is a rapidly growing and motivated charity providing food to disadvantaged groups in Melbourne that would have otherwise been discarded. The fact that SecondBite is significantly focused on increasing the amount of fruit and vegetables provided and utilised by charity organisations in their day centre meals, soup runs and so forth is particularly encouraging. Studies have suggested that the simple incorporation of fruit and vegetables into the diets of the homeless could reverse the nutrient intake deficits commonly observed in this population and therefore improve their overall nutritional status, health and general wellbeing (3).

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Discussion and Recommendations

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2. ANZFA. Nutritional Values of Australian Foods. Australia: ANZFA.
3. Malmauret L. Dietary intake of homeless people. European Journal of Clinical Nutrition. 2002 April; 56 (4):313-320.

Appendix 1: Australian Guide to Healthy Eating food groups

Food Group	Foods Included
<i>Breads & Cereals</i>	All bread types i.e. loaves, rolls, pita bread, Turkish bread, English muffins, crumpets All cereal types i.e. breakfast cereals, oats, rice, pasta, noodles
<i>Fruit</i>	All fresh, dried and tinned fruit varieties
<i>Vegetables</i>	All fresh, frozen and tinned vegetables
<i>Meat & meat alternatives</i>	All meat types and meat alternatives i.e. eggs, legumes, lentils, nuts
<i>Milk & dairy products</i>	Milk, yoghurt, cheese
<i>Extras</i>	Biscuits, cakes, desserts, pastries, ice-cream, soft drinks, high fat snack items such as crisps, pies, pasties, sausage rolls and other takeaways, lollies, chocolate, margarine and oil.

Appendix 2: Food collection & distribution record sheet

DONOR	Prepared Meals	Breads & Cereals	Fruit	Vegetables	Milk & Dairy products	Meat & alternatives	Extras	RECIPIENT
Totals								
Edible Portion factor	-	-	0.77	0.8	-	-	-	-
Totals								
Combined totals								
/500g = no. of meals provided								

Appendix 3 – Foodworks computer analysis print-out for 500g ‘standard meal’
Appendix 4 - Foodworks computer analysis print-out for 500g pre-prepared meal