



HM Partnerships
Innovators in Public Health

Liverpool Nursery Nutrition Programme

Final Report

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Key Findings and Changes in Practice

- **Increased use of nutritional guidelines during menu planning: 60% now using Caroline Walker Trust *Eating Well for Under 5s in Childcare***
- **55% of nurseries reported making changes to their menus - a further 36% were intending to make changes**
- **40% of nurseries reported making changes to their food policy**
- **Nurseries are adapting recipes/cooking practices**
- **Reduction in use of food ingredients typically high in salt**
- **Statistically significant improvement in participants confidence**
- **Significant improvement in knowledge and attitudes towards nutrition**
- **Increased communication between catering and other nursery staff**

1. Introduction

In 2009 Liverpool First for Health and Wellbeing Partnership identified a need to offer support in food and nutrition to early years settings across the city. HM Partnerships* were commissioned to carry out an evaluation of the existing practice, knowledge and food provision in Liverpool nurseries. The evaluation report¹ made a number of recommendations including a requirement for support on healthy eating and nutrition at a policy, knowledge and training level for nurseries. Nutritional analysis of food provision showed that all sample menus were not fully compliant with the nutrient based standards produced by the Caroline Walker Trust². The report went on to recommend that the support provided to nurseries should address concerns relating to both menu planning and ingredients used in food provision, giving nursery staff the skills and knowledge to implement changes to improve food provision for under 5's.

These recommendations led to the development of the Liverpool Nursery Nutrition programme. This programme was designed to enable nursery staff and caterers to increase their knowledge and skills in early years nutrition and to provide dedicated resources to assist nurseries in the provision of nutritionally balanced diets, the impact of which is discussed in this report.

2. Background

Research into the health and wellbeing of school children shows that their daily diet raises major health concerns in terms of an increase in obesity and other related conditions.³

In the UK, in 2008, 16.8% of boys aged 2 to 15, and 15.2% of girls were classed as obese, an increase from 11% and 12% respectively in 1995⁴. It is now known that even in childhood, overweight and obesity can cause significant health complaints and lead to diseases such as type 2 diabetes, hypertension and psycho-social stress. Overweight children are also more likely to become overweight and obese adults⁵. In 2008, the Government Cabinet Office's Strategy Unit said that "existing patterns of food consumption will result in our society being loaded with a heavy burden of obesity and diet-related ill health"⁶ and that "ill health is already costing the NHS £10 billion per annum"⁷. If current trends continue, up to half of all children and one third of adults will be overweight or obese by 2020.

In Liverpool it is estimated that 76,000 adults and 13,000 children are obese, and this figure is predicted to rise⁸. The most recent data (2009/10) for Liverpool shows that of children in reception year 11.3% were overweight, whilst 12% were obese. Also of concern are those

* *HM Partnerships is a public health consultancy, based in North West England and established as a Community Interest Company (social enterprise) in 2008. As a social enterprise, profits are re-invested into the prevention of cardiovascular disease through the company's partner charity, Heart of Mersey*

2.2% of children who were shown to be underweight⁹. Other areas in Merseyside reflect these increases, between 1989 and 1998 the proportion of overweight and obese children under five years of age in Wirral increased from 20% to 33%¹⁰.

There is evidence that the diets of children under 5 years of age do not provide sufficient energy, iron, zinc and vitamins A & D. They also report excess intakes of sodium and saturated fat^{11 12 13}. The most recently published data shows that the level of Non Milk Extrinsic Sugars consumed by children aged 1½ to 4½ years, has decreased in recent years to 11% of food energy¹³. This complies with the dietary reference values for the population¹⁴. However, oral health in young children is of concern in Liverpool as 45% of children under 5 have experienced tooth decay¹⁵, these levels of poor oral health are far greater than the England average of 31%.

In addition, children on average eat only two of the recommended five portions of fruit and vegetables a day¹⁶ and within the lowest socio economic groups, consumption of fruit and vegetables is 50% lower than the highest social group. This may be contributing to existing health inequalities.

To help children develop patterns of healthy eating from an early age, it is important that the food and eating patterns to which they are exposed – both at home and outside the home are those which promote positive attitudes to good nutrition. However families may not always be able to provide an adequate diet for their child for many reasons; including financial circumstances, knowledge and beliefs and social and cultural factors. The problem is most acute for those who are born into low-income families, with inadequate income and inadequate access to healthy food making it much more difficult to improve the diet¹⁷.

Schools and pre-schools therefore offer an environment that can support children to achieve a healthy diet. In the briefing paper 'Interventions on Obesity' (2004) the Health Development Agency reported that 'Multi-faceted, school-based interventions can reduce obesity and overweight in schoolchildren, particularly girls.' The paper concluded that 'nutrition education and modification of school meals may prevent obesity'¹⁸.

To support the consumption of healthy balanced diets of school aged children, food based and nutrient based school food standards^{19 20} became statutory in England in 2008 (primary schools) and 2009 (secondary schools). The food based standards restrict the serving of specific foods and drinks in schools (e.g. confectionery and bagged savoury snacks other than nuts and seeds (without added salt or sugar), and drinks other than milk, fresh fruit juice and water or combinations of these) In addition nutrient based standards require school lunches to offer food which provides specific amounts of energy and nutrients. However, these statutory nutritional standards only cover local authority maintained primary, secondary and special schools and do not apply to early years settings.

2.1 The Early Years Settings

The period before a child starts school is one of the most critical times for their growth and development. It is essential that their food offers good quality nutrition since it provides the nutritional building blocks for the development of essential physiological systems and it sets patterns of eating habits, good or bad, for life. Indeed the recent Audit Commission report (2010) states, "Evidence clearly demonstrates that improving early years' health contributes to better health outcomes in later life, with reduced levels of diabetes, coronary heart disease and hypertension, all of which have a significant impact on the National Health Service as well as wider society, children and their families"²¹.

In 2009 the number of children attending full day care and full day care in children's centre settings in England was 946,000 (this figure does not include sessional care, nursery schools, childminders etc). The type of providers providing full day care is broken down as 66% in the private sector, 22% voluntary and 10% percent maintained (or state) sector, 2% other. Those providing day care in Children's Centres are represented as; 21% private, 19% voluntary and 57% maintained²².

The childcare setting therefore provides an important opportunity to contribute to children's health through the provision of a healthier diet. Indeed it could be argued that the nursery setting is of greater significance to a child's diet than that of the primary or secondary school, since 'a significant proportion of children who attend nurseries are there from 7am to 7pm and therefore receive the bulk of their food and nutrition from nursery'²³. For these children, all daily food intakes may be provided entirely by the nursery on the days they attend.

The food provided by nurseries has been the subject of an increasing number of studies in recent years. Surveys across Cheshire and Merseyside^{1 24 25} found that training on healthy eating by catering staff was not common or considered a priority in the pre-school sector; this was partly due to the lack of suitable training available for staff in early years nutrition. The survey also found that pre-school food policies on healthy eating were not robust and reflected the lack of national guidelines.

In 2008 data from a self selecting survey of nursery workers²⁶ across England and Wales showed wide variation in the types and quality of food provided to children in daycare settings. Seventeen per cent felt that children at their nursery were not given healthy food, with children from families on low incomes having less varied diets that are higher in sugar, saturated fat, salt and low in fibre, vitamins and minerals²⁷. Only eight percent of nurseries responding to the survey ever served oil-rich fish and only 27% said they regularly served water as a drink to children in their care. Eight per cent described their food provision as "lots of processed food such as biscuits, burgers, etc, and sugary drinks like orange squash".

A number of studies of nursery food^{23 28 29} found that menus tended to provide insufficient energy, iron and zinc, they also report that levels of salt are high. These findings were supported by a review of food provided within Liverpool nurseries in 2010¹. The review analysed full day care menus from twenty nurseries. Results showed that none of the menus analysed were fully compliant with the nutrient based standards stated in the Caroline Walker Trust guidelines for under fives². Levels of salt were over the recommended maximum limits in 85% of menus. Calcium was also of concern in some nurseries as 40% of menus did not meet current targets. All nurseries in the survey had the best of intentions in regard to the food that they were providing however, these shortfalls in menu planning are hardly surprising when only 21% of those surveyed reported that they had adequate knowledge of nutrition for early years.

Scotland³⁰, Northern Ireland³¹ and Wales³² produced non statutory guidelines for early years settings between 1995 and 2009 which summarised the principles of nutrition for under fives and suggested how to achieve these guidelines through best practice. Until 2011 there was little national support or guidance available in nutrition for those working in early years in England. The Early Years Foundation Stage³³ (EYFS), the statutory guidance for those working in childcare, at present simply states 'where children are provided with meals, snacks and drinks these must be healthy, balanced and nutritious'. The EYFS is currently under review and England has recently produced non-statutory guidance for child care settings in the report 'Laying the Table'³⁴, which has been endorsed by the EYFS review team. Resources based on this guidance will be made available through The School Food Trust over the next 2 years. This new guidance will suggest that a number of foods and drinks are excluded from nursery menus and will offer support and guidance around both food and drink choices, portion sizes and issues such as fussy eating and creating a 'whole setting approach' to food for the early years. Much of the new guidance for England was based on the report 'Eating well for under 5s in child-care' produced by The Caroline Walker Trust (CWT)², a registered charity that promotes better public health through good food.

The new guidance for England also suggests that early years practitioners should be offered training to enable them to provide appropriate food and drink. The report also highlighted the need for individual settings to be able to access support in interpreting guidance, from suitably qualified professionals such as dietitians and public health nutritionists³⁴.

3. Programme Aim and Objectives

The programme offered nursery staff the opportunity to participate in training, increase their skills and knowledge and improve the nutritional provision for children under five years in Liverpool day care settings.

Aim

1. To improve the food provision for children under five years in Liverpool nurseries

Objectives

1. To develop an accredited educational training programme to meet the needs identified in the evaluation of nursery food provision in Liverpool¹
2. To improve the knowledge and skills of nursery cooks and managers in Liverpool
3. To provide key resources to support nurseries in the provision of nutritionally appropriate diets in nurseries
4. To evaluate the impact of the Liverpool Nursery Nutrition Programme

4. Methodology

A multidisciplinary nursery nutrition steering group was formed to guide the content of the programme. The group was comprised of key staff in the areas of public health, nutrition, early years, environmental health and academia from Liverpool City Council, Liverpool Primary Care Trust, Heart of Mersey, Liverpool John Moores University and University of Liverpool.

Invites to take part in the Liverpool Nursery Nutrition Programme were initially sent to nursery settings who had taken part in Phase 1¹ (An exploration of food provision and staff's food knowledge, attitudes and skills across the early years settings in Liverpool). All Liverpool nurseries were subsequently invited to take part in the programme; however, participation was not mandatory.

4.1 Training

A course specialising in early years nutrition was required for the programme. The specification and objectives were set jointly by HM Partnerships and Liverpool John Moores University (LJMU). LJMU was commissioned to develop and deliver the training course for the programme; they were supported in this delivery by SportsLinx. The '*Food and Nutrition in Early Years*' course was written by LJMU and is accredited through Open College Network as a Level 2 unit. The course was free for staff to attend and was taught over 30 hours, 24 hours of theory and a one day practical session.

The content the course covered is as follows:

- Energy and Nutrients
- Young children's nutritional requirements
- Infant feeding – breastfeeding and weaning
- Allergies and special diets
- Food labelling
- Portion sizes and menu planning
- Meal time difficulties
- Nutrition and health
- Practical cookery session

Five cohorts of training ran during the programme. The course was taught either as 5 full days or 8 half days with 1 full day cookery practical.

It was decided that food hygiene should not be included in this course as there was currently adequate provision and access to this type of training for nurseries.

4.2 Evaluation

The impact of the training programme was assessed in the form of questionnaires, confidence scales, focus groups and one to one interviews.

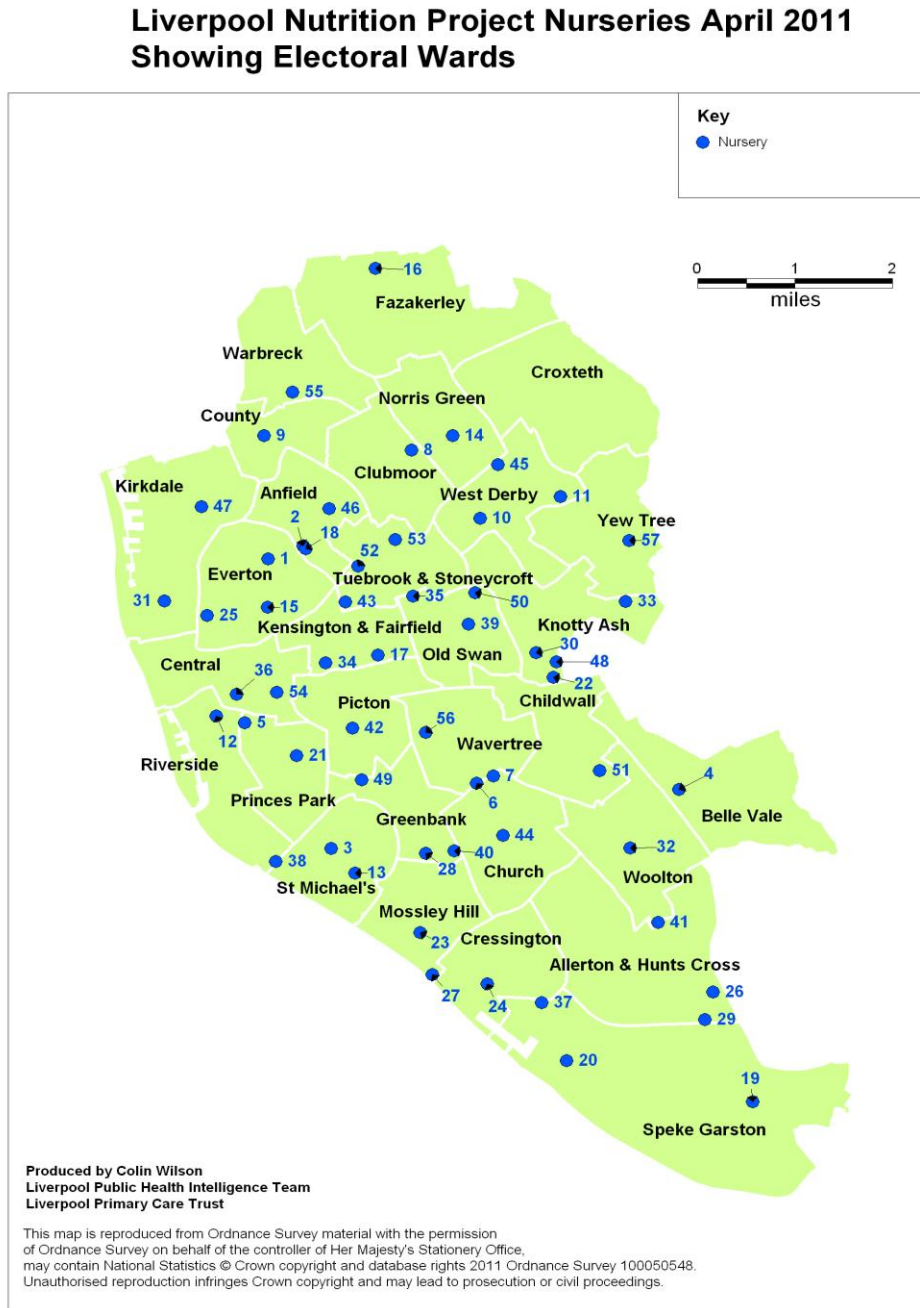
Participants completed questionnaires (appendix 1) and confidence scales (appendix 2) prior to and post completion of the nutrition training course, these were sent and returned by post. The questionnaires requested information about nursery practice and policy, frequency with which certain types of foods and drinks are provided, cooking methods, nutritional knowledge and attitudes to healthy eating. The confidence scales assessed how confident participants felt to carry out tasks such as menu planning, reading food labels, identifying allergens etc. The post training questionnaires and confidence scales were sent to nurseries 1 month after completing the course. All individuals who completed the course were asked to complete a confidence scale; one questionnaire was requested per nursery. Further information regarding the use of guidelines and the usefulness of the resources that they received as a result of taking part in the programme (appendix 3) was obtained 2-5 months after attending the course.

Nursery staff that completed the training were invited to attend focus groups and one to one interviews. These were used to gather further information about the content and impact of the course and the resources provided by the programme.

4.3 The Early Years Settings

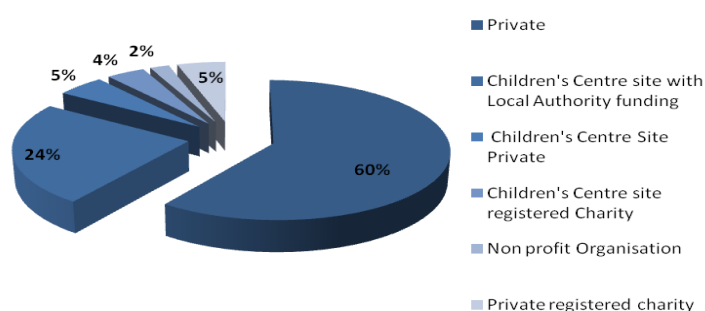
Liverpool has approximately 130 nurseries. In total 57 (43%) nurseries took part in the programme from across the city (figure 1).

Figure 1: Location of programme nurseries in Liverpool



The majority of settings were private businesses (60%), with 33% being nurseries based in Children’s Centres (figure 2). The programme nurseries had approximately 3,000 children registered to attend them.

Figure 2: Type of nursery taking part in the programme



Initially a member of staff from both the management and catering team from each nursery were invited to attend the training. Nurseries that were unable to release two members of staff were asked to send the person who had most responsibility for menu planning and food provision in the setting.

Table 1: Number of nurseries who were able to send 1, 2 or 3 members of staff

Number of staff attending	Number of nurseries
1	28
2	30
3	2

From the 57 nurseries taking part in the programme, 92 members of staff registered to attend the training, with 100% completing the course and gaining the accreditation. The gender breakdown of those attending was typically mainly female, with 86 female and 6 male participants.

Table 2: Role of staff who attended the course

Staff Type	Number
Cook - Nursery	39
Cook - Outside catering company	4
Owner	7
Owner/manager who also cooks	2
Manager	23
Other nursery staff	9
Children's centre health promotion worker	5
Childminder coordinator	1
School meals service manager	2

4.4 Resources

A number of resources were produced and distributed as part of the programme: 1. A three week menu package; 2. A Children Eating Well (CHEW) photo card binder; and 3. A food and healthy eating policy.

Three week menu package

Menu specialists Menu Matters³⁵ were commissioned to develop three week menu plans (appendix 4) which included:

- **A 3 WEEK MENU** that adopts the guidance for the under 5's in childcare, set by the Caroline Walker Trust².
- **RECIPES THAT ARE SIMPLE TO PREPARE** from ingredients readily available in Supermarkets.
 - A wide variety of dishes, with key nutrients being supplied through numerous different ingredient sources that are likely to appeal to children. They have meat, fish and vegetarian choices, with cultural dishes alongside established favourites and regional specialities.
 - Preparation and cooking requirement is kept to a minimum for tea recipes where time and resource may be an issue.
- **INGREDIENT COSTINGS** are calculated for menus based on average Supermarket prices in December 2010. The average daily ingredient cost per head across the menu is £1.33.
- **A SHOPPING LIST** for each weekly menu, to use as guide for buying ingredients.

CHEW food photo card binder

CHEW³⁶ (Children Eating Well) is a resource pack produced by the Caroline Walker Trust. A set of A5 food photo cards were reproduced for each nursery taking part in the programme. These cards contain colour photos of breakfasts, snacks, lunches, teas and desserts for 1-4 years olds, with suggested portion sizes and recipes. The cards were ring bound and wipe clean to ensure they were practical to be used in nursery kitchens.

Food and healthy eating policy

During phase 1 of the programme it was observed that a number of nurseries did not have healthy eating/food policies. A standard food policy that settings could adopt as their own was identified by nursery staff as a useful resource. As a result, a policy was developed in consultation with the nursery nutrition steering group and nurseries taking part in the programme.

The policy was sent to nurseries electronically in two formats: a PDF standard healthy eating/food policy containing the messages it was thought would be beneficial for all nurseries to adopt, as well as a useful information section with details of both national and local information. They were also sent a front cover for the policy as a word document which could be amended to include individual nursery logos and statements, as well as any points that are key to individual nurseries, which are not included in the standard messages (appendix 5).

5. Results

“I have thoroughly enjoyed being part of the programme. It has challenged and changed my previous understanding about child nutrition. I understand how to provide healthy balanced meals, portion size and calorie intake. I also understand how to modify recipes to reduce fat/sugar/salt for children. As a result I have changed menus and snack items in nursery. I now will write to parents to inform and involve them in these changes” –
manager cohort 3

Nurseries taking part in training cohorts 1-4 were included in the evaluation data, n=45 nurseries, n=73 people.

Of those 45 nurseries, 96% returned the pre-training questionnaires and 73% returned the post-training questionnaires. The breakdown of response rates for all evaluation measures is shown in table 3.

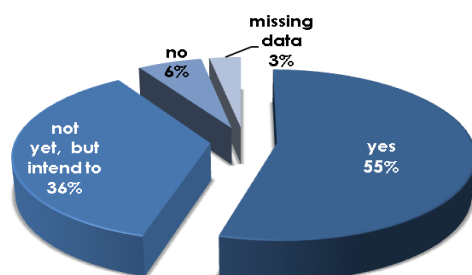
Table 3: Response rates for evaluation measures

Evaluation measure	Response rate (n)	
	Pre-training	Post-training
Nurseries engaged in training	45	45
Nurseries completing food provision & resource use survey	43	33
Participants completing confidence evaluation	73	47
Participants completing course evaluation	N/A	68
Participants attending 1 to 1 interviews	N/A	10
Participants attending focus group	N/A	10

5.1 Impact of training

Fifty-five percent of nurseries reported having made changes to their menus as a result of attending the training course. A further 36% of nurseries were intending to make changes at the time they submitted their questionnaires (Figure 1). Two nurseries reported not making changes, one of which was closing down in January 2011.

Figure 1: Changes made to menus following the training course



The actual and intended changes to food provision and changes made to menu and snack provision are reported in Tables 4 and 5 respectively.

Table 4: Intended changes to food provision

Intended Changes
To use more fish (oily fish)
We have been reviewing our menus and sampling some new dishes from the booklet we received [CHEW], we intend to add some of the recipes to our menu.
Change puddings and late snacks
Give them a snack early afternoon
Stop using jar sauces, include more vegetables in meals
More fish dishes, raisins only to be given at meal times
Include all food groups

Table 5: Changes made to menu and snack provision

Changes to menu/general	Changes to snack provision
Making sure the main food groups are incorporated in menus	Frozen fruit and crème frais, houmous and veg sticks, fruit in own juice occasionally used
Reduced fat, salt, sugar. Ensuring main food groups each day - Eatwell plate	Cutting back on sugary snacks eg. biscuits, cakes
Introduced more pulses and beans into menu	Bigger snacks/consider the more starchy carbs, Eatwell plate when planning
Inclusion of more oily fish	Made more attractive to the children - help themselves more
Inclusion of fresh orange juice diluted 50% as part of 5 a day at lunch	Including sardines, fish mousses some veg & cucumber sticks with dips. Encouraging healthy eating more than before.
We now include chicken & beef in the menu	Reduced sugar, salt and more fresh vegetables
Cut down on processed sauce, making them using fresh ingredients	White bread served as well as brown bread
Making sure that there is more iron and vitamins in ingredients used	Using snack menus from Caroline Walker Trust
Observed what the children have preferred at lunch time.	Improved snacks made healthier, more fruit more vegetables and oily fish. Good variety given, now promoting 5-a-day
Reading more labels and identifying foods that would not be suitable	

5.2 Food & Drink Provision

5.2.1 Drinks

All but one of the nurseries, who provided post-training data, reported having drinking water freely available throughout the day.

Post-training only one (3%) nursery reported serving skimmed milk and more were serving both whole and semi-skimmed milk. This is an improvement on pre training practice as skimmed milk is not recommended for children under 5 years of age. Current guidelines recommend that semi-skimmed milk can be given to children aged 2 and above (table 6).

Table 6: Type of drinks provided in nursery

Type of drink	% of nurseries serving type of drink	
	Pre-training	Post-training
Milk – Whole	77	94
Milk - Semi-skimmed	37	46
Milk - Skimmed	10	3
Fruit juice (diluted)	0	24
Squash (diluted)	14	0
Sugar free squash (diluted)	5	9

Pre-training none of the nurseries reported serving diluted fruit juice. Post-training 8 (24%) nurseries reported regularly serving diluted fruit juice (table 6). Overall the number of nurseries serving diluted squash of any sort decreased post training. No nurseries were serving regular diluted squash post-training however, 9% were serving sugar free squash. This is a step in the right direction, however there are still improvements to make as sugar free drinks have little or no nutritional value and still contribute towards poor oral health due to the acids contained in them.

5.2.2 Snacks

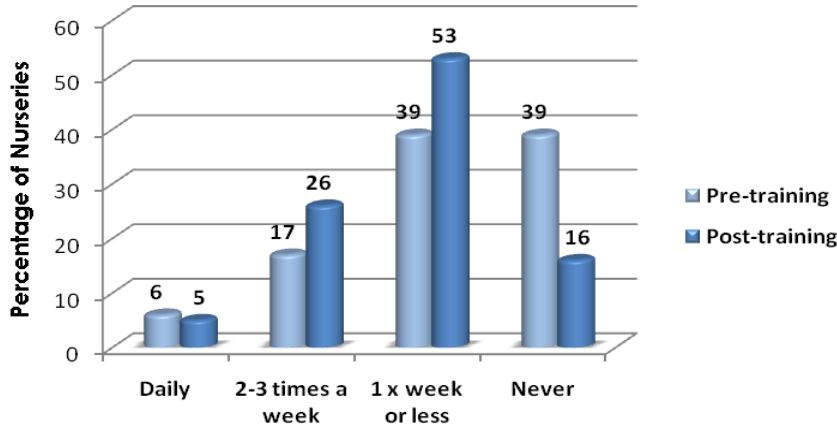
Nurseries provided information on the type of foods given as snacks and frequency with which they were served within the setting.

Chopped fruit and vegetables were the most common snack with over 90% of nurseries serving fruit daily, both pre and post-training.

Post-training the frequency of serving dried fruit declined with 27% never serving it as a snack, compared with 13% pre-training. This finding is encouraging as the training course specified that dried fruit should be served as part of a meal and not as a snack due to its

concentrated sugar content, leading to tooth decay. The frequency with which cakes/biscuits were served as snacks has appeared to increase post-training (figure 6), possible reasons for this are explored in the discussion (chapter 11).

Figure 6: Frequency in serving cakes/biscuits as snack



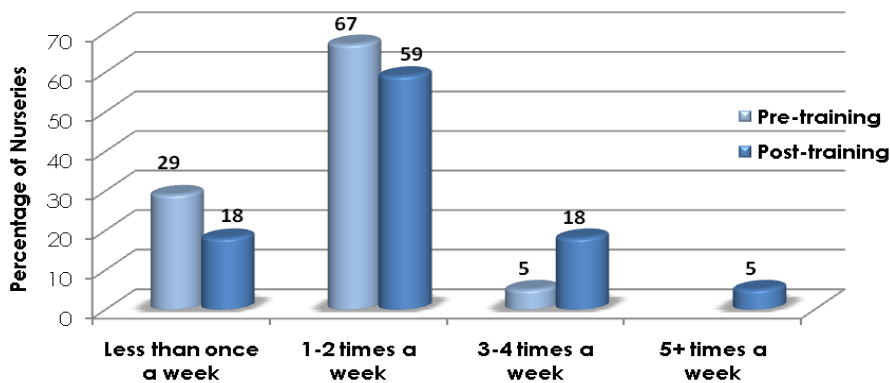
5.2.3 Other foods

All nurseries were asked to provide details of specific types of food provided to the children and frequency of serving.

The types of foods served and the frequency of serving did not appear to vary significantly between pre and post-training.

There was an overall increase in the frequency with which red meat was served (Figure 7).

Figure 7: Frequency in serving of beef, pork and lamb

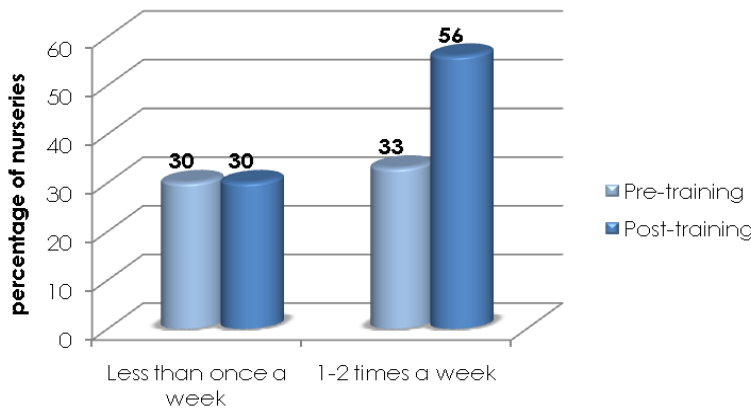


Fish provision also increased post-training with 37% of nurseries serving ‘other fish’ (e.g. fish pie) 1-2 times a week compared with 30% pre-training.

Post-training, nurseries reported serving oily fish more frequently, with 63% of responding nurseries serving oily fish between 1 and 4 times a week. Pre-training 37% of nurseries served oily fish less than once a week.

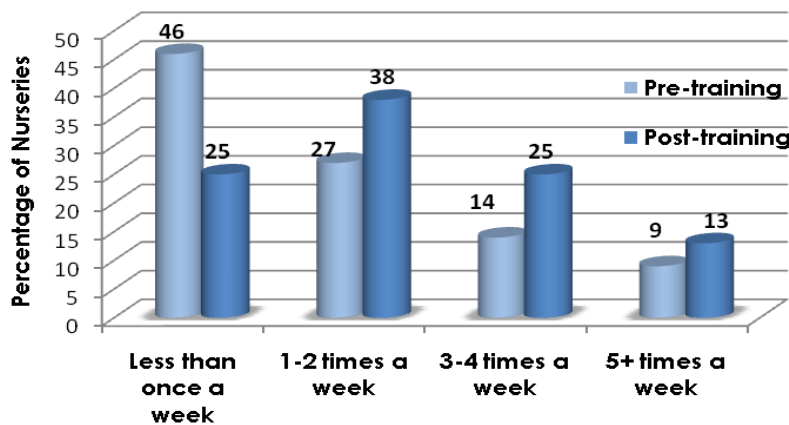
There was a reported increase in the use of pulses as a way to ‘bulk out’ foods provided and adding an alternative protein source to common dishes (Figure 8).

Figure 8: Increase in use of pulses



Post-training there was an increase in the number of nurseries and frequency of serving puddings. As part of the training course, nurseries were advised to consider the children’s food intake over a whole day, rather than just a meal, and that sensible sized portions made puddings a simple way to boost young children’s energy and nutrient intake (Figure 9).

Figure 9: Increase in serving of puddings



5.2.4 Ingredients typically high in salt

Nurseries were asked to give details on the frequency with which they used certain ingredients (packet/jar sauces, gravy granules, stock cubes and tinned vegetables in salt water) which are typically high in salt.

Post-training data showed a reduction in the frequency with which all of these ingredients were used (table 7).

Table 7: Frequency with which ingredients are used which are typically high in salt

Type of ingredient	Packet/Jar sauces		Stock cubes		Tinned vegetables in salted water		Gravy granules	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post
*Frequency of serving	Percentage of nurseries using ingredient pre and post training							
2-3 times/week	17	15	29	13	5	0	34	16
Once/week	59	42	39	63	24	19	59	78
Never	24	42	20	25	61	81	7	6

*N.B. No nurseries were using any of the ingredients on a daily basis pre or post training, apart from stock cubes which were used by 5% of nurseries pre-training, this ceased post-training

5.2.5 Salt

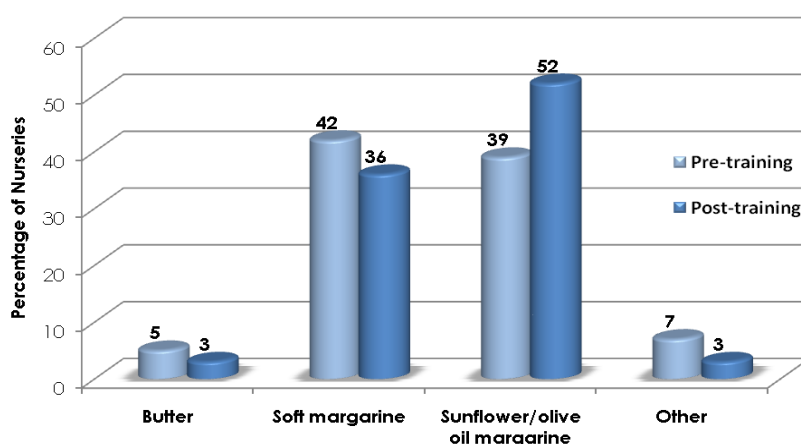
Pre-training 93% of nurseries reported never adding salt during cooking. Post-training figures were similar with 90% never adding salt. Nurseries were most likely to add salt to stews/casseroles and soups.

Nurseries were asked if they ever allowed children to add their own salt or sauce (tomato, brown etc) to food. Unfortunately data is not available to distinguish if children were adding salt, sauce or both. Two nurseries responded positively to this question pre-training. Post-training two nurseries reported this to be the case, with one specifying that this was reduced sugar/salt tomato ketchup.

5.2.6 Spreading fats and cooking oils

Data was collected on spreads and cooking oils used within the nurseries. Pre and post data showed soft margarine and sunflower/olive oil margarine were the most commonly used spreads for cooking, adding to cooked vegetables or on sandwiches (Figure 11).

Figure 11: Spreading fats used on sandwiches



5.2.7 Cooking methods

Pre-training data on cooking methods showed that fish in breadcrumbs, fish fingers and fishcakes were oven cooked by 66% of nurseries, 2% reporting grilling these foods.

Chicken/turkey burgers, nuggets and chicken drummers were not served by 83% of nurseries. Where these foods were served they were oven cooked. Data was not collected on whether these foods were home-made or shop bought.

Post-training data showed very similar results.

5.2.8 Bread and sandwiches

Post-training the use of brown/wholemeal bread only declined (Table 8). Participants on the training course were made aware that although adults should be encouraged to eat a high fibre diet, too much fibre can reduce young children's appetites, in turn reducing overall calorific and nutritional intake.

Table 8: Type of bread used by settings

Type of bread served	Pre-training	Post-training
Both brown & white	35%	79%
Brown/wholemeal	53%	9%
White	10%	3%
50/50 bread	3%	3%

Post-training nurseries recorded using sandwich fillings such as sardines, mackerel pate and tinned salmon, reflecting the increase in oily fish provision.

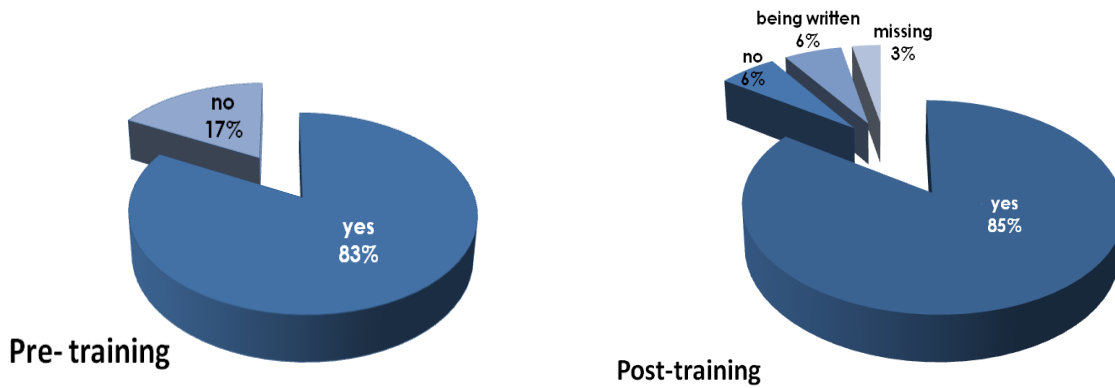
5.3 Food Policies & Impact on Practice

“I enjoyed the course very much and will implement the healthy recipes in our setting and encourage the children to join in with the cooking” – manager cohort 1

5.3.1 Food/Healthy eating policies

Nurseries were asked to provide details of whether or not they had a food/healthy eating policy. Two additional nurseries (6%) reported they were in the process of making changes to their policies (Figure 12). Thirteen (40%) nurseries reported that they had made changes to their healthy eating policy as a result of attending the training.

Figure 12: Percentage of nurseries with food/healthy eating policies



5.3.2 Meals served

Following training 2 additional nurseries reported serving breakfast and 3 nurseries introduced an afternoon snack. Post training one nursery reported not serving lunch themselves as parents provided food for their children (Table 9).

Table 9: Changes in meal provision

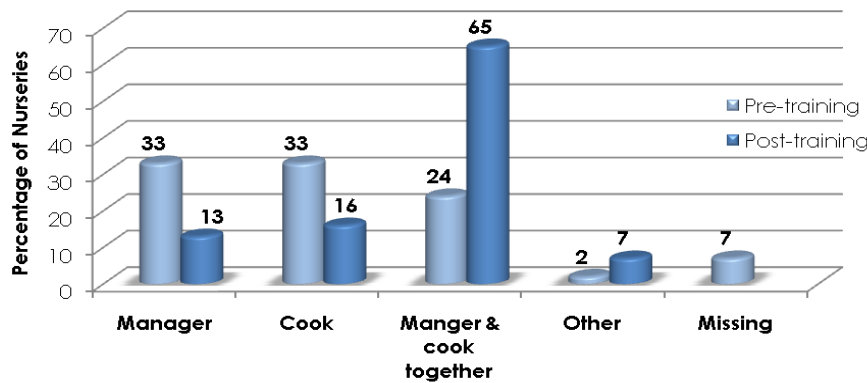
Meal served	Number of nurseries	
	Pre-training	Post-training
Breakfast	23	25
Morning snack	18	18
Lunch	28	27
Afternoon snack	21	24
Tea	16	16

5.3.3 Menu planning

Nurseries were asked to provide details of who was responsible for menu planning in the setting.

Post-training the majority of nurseries (65%) reported both the cook and manager working together on menu planning compared to only 24% of nurseries pre-training (Figure 13). This was a change in behaviour from either the cook or the manager having lone responsibility.

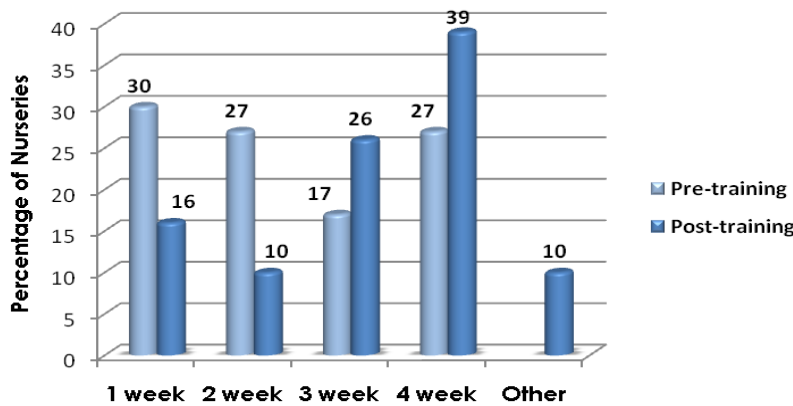
Figure 13: Person responsible for menu planning in all nurseries



5.3.4 Time-Span of menu planning

There was a statistically significant ($p=.000$) change observed in the menu planning time span. Pre-training nurseries most commonly used a 1 week menu plan; post-training more nurseries were working to menu plans of 3 weeks and over (figure 14). This is in line with suggestions by CWT of a minimum 3 week cycle.

Figure 14: Time span of menu plans



5.3.5 Nutritional guidelines

Pre-training 21 (51%) nurseries stated they were aware of nutritional guidelines to take into account when menu planning. Only one nursery stated it was aware of 5-a-day, one reported the School Food Trust and 3 stated the Food Standards Agency.

One month post-training 26 (87%) nurseries reported using nutritional guidelines when menu planning and 1 nursery was unsure as meals were provided by an outside catering company. Further information regarding use of guidelines was obtained 2-5 months after attending the training (Table 10).

Table 10: Nutritional guidelines taken into account during menu planning

Guidelines stated by nurseries	% of nurseries		
	Pre-training	1 month post training*	2-5 months post training
Caroline Walker Trust/CHEW	-	40	61
5-a-day	2	17	
School Food Trust	2	-	
Food Standards Agency	7	-	
Early Years Foundation Stage (EYFS)	-	7	
Change 4 Life	-	7	
DRV(Dietary Reference Values)	-	3	
Aware of guidelines but none named	51	87	

*Main guidelines stated only

5.4 Changes in Confidence

"I found the knowledge I have gained invaluable and it has given me the confidence to speak to staff members and parents." – cook cohort 4

All participants were asked to select how confident or 'able to do' they felt about the 8 questions pre and post-training shown in Table 11 below.

All questions showed a significant improvement in perceived 'ability to do' after the training course.

Table 11: Changes in average confidence levels pre and post training

	No confidence ←————→ Extremely confident				
	1	2	3	4	5
Completing the training course?				4.03	
				4.47	
How confident do you feel about your own healthy eating knowledge?			3.40	4.35	
Would you be able to name the 5 food groups on the Eatwell plate model?			3.29	4.75	
I am able to plan a week's menu to meet the nutritional needs of preschool children			3.26	4.47	
I can identify which foods are high in sugar by reading the food label			3.81	4.61	
I can cook meals from scratch using fresh, basic ingredients				4.10	5.65
I can identify which foods contain common allergens by reading the food label			3.60	4.53	
I know the difference between good fats and bad fats			3.32	4.62	

Key



Pre-training score



Post-training score

BOLD statistically significant improvement in post training score

5.4 Knowledge and Attitudes

“Thank you for running this very worthwhile course. I am now much more confident with menu planning and providing a healthy diet to our children. I am also more confident in sharing my knowledge with the staff and parents.” – cook cohort 2

Participants were asked questions about food provision for under 5’s to assess their pre and post-training knowledge and attitudes around early years nutrition. Table 12 below shows a selection of key results.

Table 12: Percentage of participants agreeing or disagreeing with key statements

Statement	Percentage of participants									
	Strongly Disagree		Disagree		Not Sure		Agree		Strongly Agree	
	Pre	Post	Pre	Post	Pre	Post	Pre	Post	Pre	Post
All children would benefit from a low fat diet	16	43	7	17	29	30	10	7	42	3
Food eaten in nursery is Less important than that eaten outside	55	94	0	3	0	0	0	0	45	3
My knowledge on the nutrition of preschool children is adequate	13	0	20	0	33	19	23	45	10	36
I am prepared for any healthy eating initiatives Ofsted may launch	23	3	10	0	16	7	0	16	52	74

6. Food and Nutrition in Early Years Course Evaluation

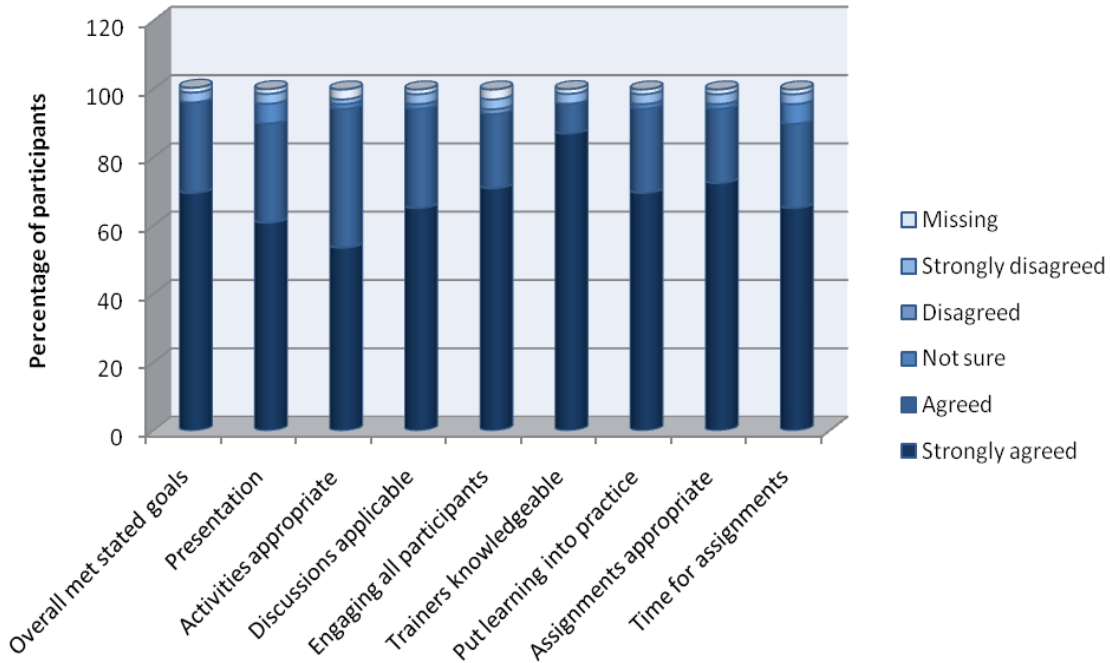
“The course structure was very good, well planned and very informative. The knowledge I will take with me will be very useful in the workplace. Thought will now be put into adjusting the menus and adapting them in the workplace.” – cook cohort 1

6.1 Course delivery

Participants were asked to rate how closely they agreed with 9 statements regarding the delivery of the training course (Figure 15) 7 out of 9 of the questions were rated as good or excellent by over 90% of participants (1 participant stated strongly disagree to all questions

in this section, however they provided positive comments in all other areas of the course evaluation, it is thought this person may have indicated disagree in error).

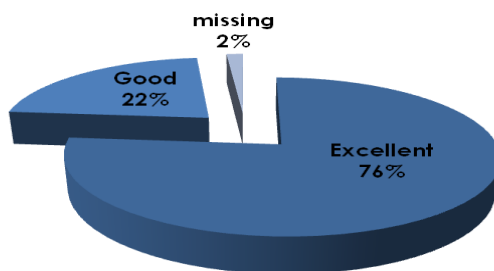
Figure 15: Responses to course evaluation questions



6.2 Overall organisation

98% of participants felt the overall organisation of the training course was good or excellent (Figure 16).

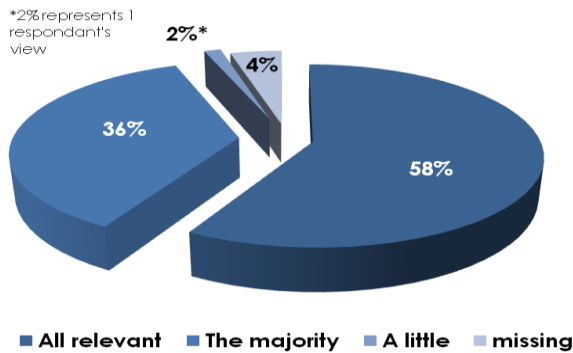
Figure 16: Overall organisation



6.3 Course content

Ninety four percent of participants considered ‘All’ or the ‘majority’ of the course content to be relevant to their role in the nursery (Figure 17). Ninety three per cent of participants felt that all subjects/topics were covered by the training course. One nursery manager felt food hygiene should have been included in the training and one cook would have liked more time spent on menu planning.

Figure 17: Perceived relevance of the course content



6.4 Subjects considered most relevant

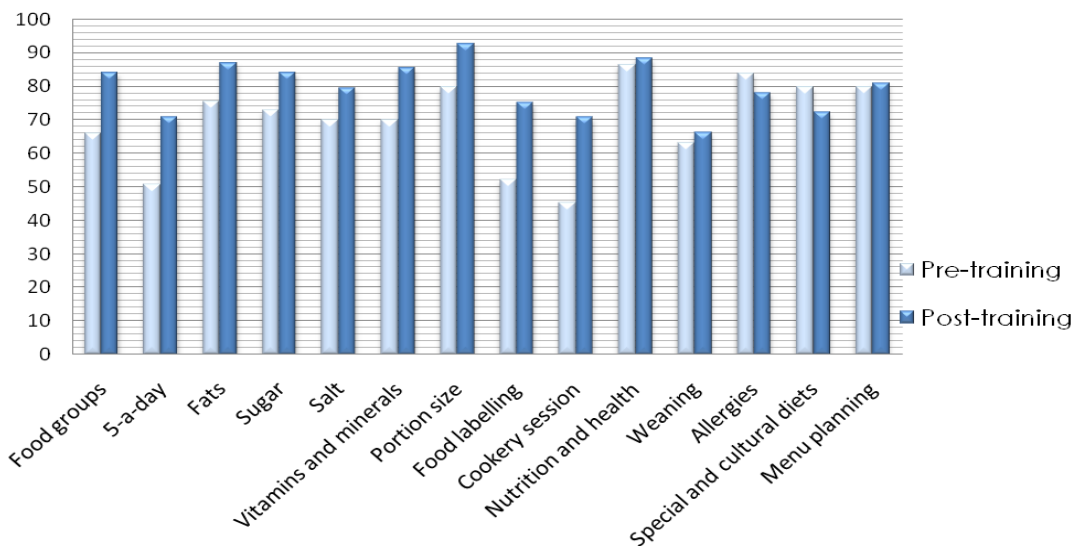
Participants were asked to select the topics on the training course they perceived to be of most relevance to their role in their nursery (Figure 18).

Pre-training the cookery session was considered the least relevant topic. With 55% of managers and 59% of cooks stating the cookery session **was not** relevant to their role. Post-training 84% of managers and 66% of cooks thought this session **was** relevant to their role in their setting.

Food labelling was also perceived as the third least relevant topic. Pre-training only 9 managers felt this was relevant, whereas post-training this rose to 15.

Allergies and special and cultural diets were the only topics that were deemed less relevant post-training.

Figure 18: Most relevant topics – all respondents



6.5 Length of the course (30hours)

Eighty five per cent of participants felt the course length was “just right”. Two managers and 2 cooks found the course too long and a further 2 managers, 2 cooks and 1 other member of nursery staff felt the course was too short.

6.6 Course evaluation comments:

Participants were also asked to add their own comments regarding the course. The responses given reflect participants’ views of the course organisation described in section 6.

“Really enjoyed last day of the course practical workshops, working with other settings was really useful. This was the part of the course I was most looking forward to.” – Owner cohort 1

“I feel the course is an excellent taster for people involved in catering for nursery children. Many nurseries (and care homes) seem not to value the position of cook and ‘promote’ anyone. Often adverts state ‘no experience necessary, full training will be given’ and as a qualified caterer this suggests de-skilling. Practical training of this nature should be part of nursery nurses training as often whoever is free is left to prepare snacks/tea, which then becomes something quick rather than healthy. Thoroughly enjoyed all aspects of the course!” – cook cohort 1

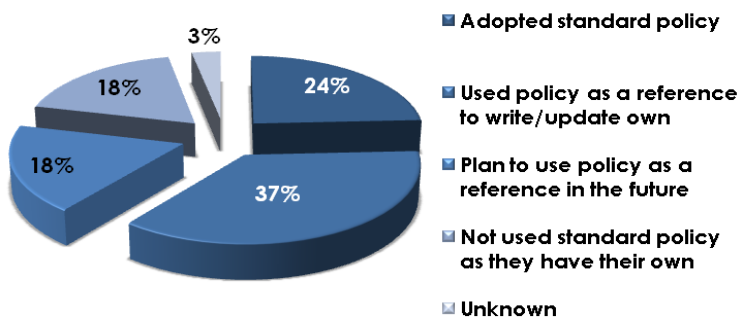
7. Use of Resources

Participants received a number of resources (see chapter 4, section 4.4 for a description) to support them in providing suitable food and nutrition within the nursery setting. Participants’ responses to these resources are described in the following section.

7.1 Food and nutrition policy

Nurseries were asked if they had found the provided standard food and healthy eating policy useful. The majority had used or planned to use the policy as a reference guide to writing their own policy. Eight (24%) nurseries had adopted the policy without any alterations (Figure 19).

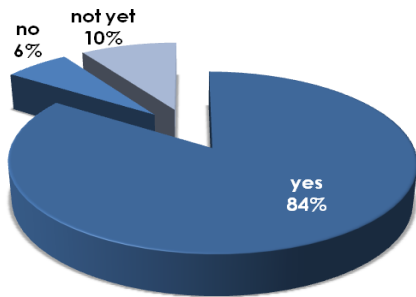
Figure 19: Use of standard food and healthy eating policy in nurseries



7.2 CHEW (Children eating well) food photograph and recipe binder

The majority of nurseries found the CHEW³⁶ resource useful, especially for assessing food portion sizes (Figure 20).

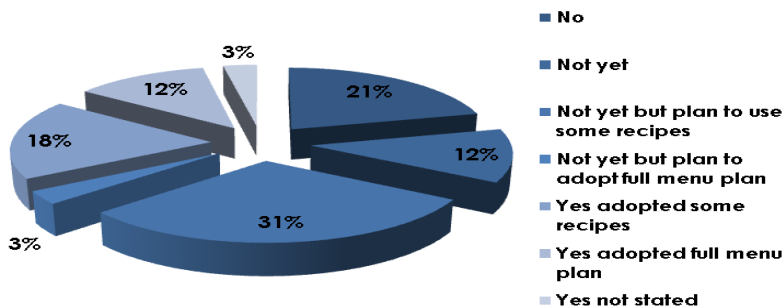
Figure 20: Have nurseries used the CHEW resource?



7.3 Three week menu package

Thirty three nurseries responded to the question “have you used the three week menu package (3 week menu plan, recipes and shopping list)?” (Figure 21) The majority planned to use some or all of the elements of the package in the future. Four (12%) nurseries had already adopted the full menu package. Four (12%) nurseries stated they had not yet looked through the package as it was only received 2 weeks prior to the questionnaire being administered.

Figure 21: Have nurseries used the 3 week menu package?

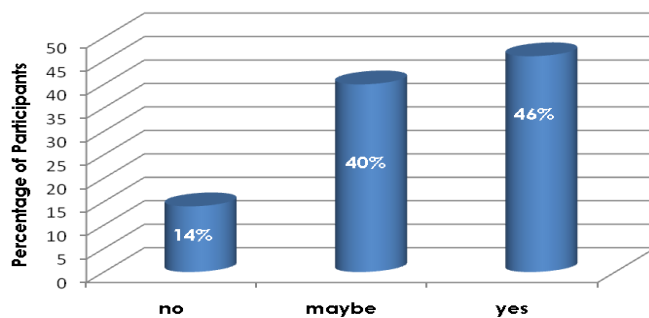


8. Future Support

Individual participants were asked if they would like further support in nutrition if it were available (figure 22).

Six participants (14%) stated they did not require additional support. Those who indicated that 'maybe' support would be required (40%); two respondents stated this would depend on the financial implications for the nursery.

Figure 22: Would you like/require further support in nutrition?



Respondents were asked to specify the type of support they would like. The responses were along the same four themes (table 13). These themes were also reflected in the discussions with staff (chapter 9.3)

Table 13: Type of support nurseries requested

Type of support	% of nurseries requested
Relaying information to parents	25
Training updates or training for other staff	35
Menu planning	20
Updates on guidelines etc	20

9. Face-to-Face Interviews and Focus Groups

Ten semi-structured face-to-face interviews were carried out with staff from nurseries from cohorts 1-4 of the training programme. The interviews were structured to collect information on the impact of the training, actual and planned changes to food provision/nursery practice alongside any areas practitioners felt were missing from the course. Two focus groups were also conducted to further explore the learning experience on the training course, the 'usefulness' of the resources and the impact on the settings.

Focus group 1 was made up of 5 participants from cohort 1 and 2 and focus group 2 was made-up of 5 participants from cohorts 3 and 4.

9.1 Impact on practices and knowledge

The overall impact on food provision and practices varied across settings although all mentioned making some changes. One Children's Centre reported overhauling the whole menu:

"There has been a major change because after the nutrition course that we attended M (cook) and I then got together and discussed the tea menu after learning what we did learn on the programme about processed foods, salt content, sugars and so-on, we learned then the children weren't getting enough calories, they weren't getting their nutritional needs met, and they weren't really having the energy dense foods that they needed. So the nutritional programme really helped us to understand what the children were having across a whole day, so some of children stay from 8 o'clock to 6 o'clock so some of them come in for breakfast, snack, lunch, snack and tea. So that made us think about the whole calorie intake across a full day." - Children's Centre manager 2

Another nursery was limited due to the menu and ordering being controlled by Head Office. However, the nursery had still made several positive changes to their food provision and reported sending copies of the Liverpool Nursery Nutrition Programme resources to Head Office.

"Well as I say we're getting new menus and we're waiting on them, we have to stick with the company menus, the menus we have got I've adapted some of them from information on the course and what I have done has gone down really well, like the flapjacks with the bananas, they've gone down really well, a lot of it I've introduced, and I've cut down loads on sugar where they've given ideas about something else with half the sugar I've done quite a bit of that." - cook 1

All participants showed a broad awareness of nutritional knowledge and issues in early years nutrition as a result of attending the training. The focus groups provided an opportunity for the managers and cooks to share and reflect on changes made within their nurseries. In both groups importance was assigned to knowledge gained around portion sizes and energy requirements.

"Definitely the portion sizes with us cos that used to come up all the time, you know are they getting too much, are they not getting enough?" - Manager 2 focus group 2

"The Caroline Walker Trust portion things I thought was good...the cafe provide our lunch and we bring it in on a trolley, and the girls...used to put it out, but now it's self-

service for the children, so it's getting that portion control right." – Deputy Manager focus group 1

Both focus groups discussed adapting menus and cooking methods. The overall consensus was that the cooks felt the course supported their original menu plans, but supplied deeper knowledge and tips to increase the nutritional content or cooking method for the meal.

"So yeah it was quite good actually cos you do doubt yourself as long as you've been doing the job, you'll doubt yourself, 'am I doing things right?' But when I went back and I went through everything 'I'm doing that, I'm doing that, I'm doing that', and I made sure I've done it and I've changed the way things are done, you know what I mean? Took away certain things, like I say the sugar out of semolina because they have the jam so that's enough." –cook focus group 1

"I think where I work it's not the menus being bad that we've had to change it's been altered...it's what actually goes into each meal and the cookery methods, yeah, so, say it's tuna pasta, it's still on the menu, but rather than use jars its we just make it fresh, and just watch the salt content, and I don't get the stock cubes now like the Oxo I get the Heinz baby one for the other children with lower salt." – cook 2 focus group 1

Oral health messages were mentioned by both groups, although in slightly different contexts. Group 1 raised the issue of food labelling and understanding the break-down of nutrients such as carbohydrates (of which sugar) on nutritional information labels:

"I was looking more at the sugars as well the carbohydrates that sugared cos they were the problem ones weren't they? And as I was saying like the smoothies, you think you're doing right giving a child a smoothie, but you're not because once you crush that fruit that's it then it's havoc for their teeth..." – cook focus group 1

Group 2 discussed implementing 5-a-day in their settings, and serving diluted juice with lunches. Conflicting oral health messages were mentioned as causing problems within some nurseries.

They don't have a lot of it (juice) and it's with their meal, they don't have a lot of it. Before it was just always water, there's milk at breakfast, but lunch and afternoon was always water, so we've thrown the juice on and it is an extra portion for the 5-a-day, it's quite easy. But I think we were a bit nervous about the juice, because at one point they went no juice because of their teeth" – manager 2 focus group 2

This discussion (although not a direct outcome of the training) actually proved an excellent opportunity for practitioners to network and share knowledge as contacts were exchanged for the local Oral Health Promotion Team and examples of good practice were shared.

"That's the thing, it's the dental conflict of it sometimes you can get a little bit of hassle off mums about the dental health and we were saying we could introduce brushing their teeth after dinner, and then there was an issue with that, where do you keep the tooth brushes and things its unhygienic if they get mixed together" – manager 1 focus group 2

"...I think you need to get in touch with the dental health team for some advice, I don't know what they do in a private nursery, but they're doing it in the Sure Start...you could still get advice because we have to follow a protocol of how you store, clean, it's the same as everything, a tick list for how you clean your equipment, storage..that it's all replaced every 3 months, but they would guide you ..." – manager C3

The course was considered important for all early years staff. All participants interviewed reported on the need to cascade knowledge and the importance of getting all staff within a nursery 'on-board' when implementing changes.

"...The main thing is looking at the policy as a full staff team. That is the main thing because there was a lot of things in it that you think are happening, and it doesn't. So the main thing is obviously all of the staff, getting them on board." – Children Centre manager 1

"It's also giving out the knowledge about the nutritional value for the children, benefits to them you know, physically, mentally, educationally...If they're not getting the right food, then you're not gonna develop the children, you can do all these wonderful things around the EYFS but if you're not getting the right nutrition, and if the girls (nursery assistants) I think it would be worth their while knowing that..." – Child Minder

Some participants mentioned reviewing information and making sure the training sessions were 'pitched' at the right level for the audience. In some cases, managers felt the course was more appropriate for cooks:

"Oh yeah, I think it was targeted at the cooks, wasn't it, really? Which I think it should have been initially, because, that they're the ones that actually prepare the food. But I think it would benefit" – owner 1

"It'd be good for the managers as well wouldn't it? To get an insight into what's acceptable and what isn't..." – cook 2

9.2 Staff roles and working environment

Improved working relations between managers and cooks were reported in most of the interviews. This was primarily due to both staff members attending the same training cohort, where possible. Interestingly nurseries mentioned the changing role of the cook and their value within the setting. This discussion was also echoed in the one-to-one interviews.

"I think what was really good was the fact that I went along with the cook...I think it was good for the cook as it was time away from the nursery where we could share information, you know what it's like, life's so busy we don't very often get a chance to get away from the Centre and come together to discuss issues and I was really impressed with D, (cook). ...it means now, I know what should be going on. I know what should be happening so I can question more, I'm more confident in questioning..." – Children Centre manager 1

Focus group 1 also stressed the importance of the cook in regards to their value within the nursery and the importance of training

"There doesn't seem to be any guidelines on employing people who know anything about cooking, the nurseries and I wrote this on the comment sheet, sometimes you see in the advert, they'll be advertising for somebody, a manager or somebody, and underneath it will say 'also require cook, no training, no qualifications required, training will be given.' You need training." – cook 3, focus group 1

Participants also expressed the need to encourage parents to be aware of the changes nurseries were making to their food provision. The following is an excerpt from the discussion around involving parents in changes:

"Just getting them involved initially...when we do our menus I send copies of the menus out to parents and ask if anyone's got any queries or issues with any of the recipes, I'm not saying I'm gonna change it but I do give them the option, the option to say I'm not happy with that, and then it gives you a chance to say 'Is there a reason for that?' But as well as me saying here's what we're doing, I'm also asking them if they've got any ideas or suggestions." – Manager 2 focus group 2

"And then if any parents are interested like when you've sent your menus out you might get parents coming back saying 'Well how do you make that?' and I'll give them the ingredients the recipe, and I'll talk to them about how you do it." – cook 3, focus group 2

"Maybe that's it, cooks need to take more of a bigger role in the nursery and not just shoved in the kitchen, type of thing, and do things with the children and deal with the parents as well." – Manager 1 focus group 2

9.3 Feedback on the course and implementing change

See appendix 6 for nursery case studies

On the whole feedback on the training was extremely positive. Participants were asked about anything they felt would have been beneficial, but was missing from the training. Several participants felt the course could have had more of an even split between the theory and practice.

"As I say maybe more hands-on, because, you know when we did the comparisons of like spaghetti bolognaise that was so good.maybe I'm just a hands-on person really, but to actually make it and see it and taste it, that was brilliant." – Manager

Another repeating theme was that changes need to be made slowly, particularly for children to accept the new foods or recipe adaptations. Issues were also noted around introducing and explaining new menus to parents, which may contain food unfamiliar to both the children and their carers.

"...I noticed at first I did tuna pasta salad and I was using probably too much yoghurt instead of, you know probably a shock to the system at first ...with the mayonnaise, so I've started to do it more gradual, I do half and half now and they don't notice." –cook 2

"...the only different thing that we have introduced more of is the likes of cucumber sticks, carrot sticks, using celery... and we're using houmous which we never did before. We've been having a lot more dips as well with the snacks...the first time it was hit and miss some liked some didn't like but each time we've brought it out for a snack it's disappearing there's not much coming back." – cook 4

"I think we've found that as well, on the subject, we've had parents come in 'What's houmous?' you know things like that cos they're not used to, 'What is that? Chick pea? What's a chick pea?' and we've found that saying to parents about bulking food out, you know lentils and chick peas, how am I gonna cook with them? And we were saying you know, bulking bolognaise or shepherd's pie with these sorts of things, some parents didn't even know what they were, and that's an issue isn't it?" – Manager 1 focus group 2

When asked about requirements for additional resources, several nurseries mentioned they would welcome being up-dated with any forthcoming legislation. Ideas for disseminating information to parents was also a popular request.

"Well just basically updates on the legislation 'cos you don't always get to know what the legislation is you know, unless you've got access to computers for the internet or you manage to get something in the nursery world magazine but apart from that we could do with having stuff being mailed to us..." – cook 3

Nurseries reported being keen to disseminate information to parents, and generally this was felt to be part of the nursery's responsibility.

"We're gonna start doing like so many recipe cards in like a clear box on the wall, more for the preschool age to take home with them if they want a look and try the simple recipes." – cook 2, focus group 1

In both the focus groups and interviews, Children's Centres mentioned holding parent's cookery sessions.

"We were thinking of running a class with the children's centre you see we've got close links with them, they were going to do cooking on a budget, if they got enough interest from our parents and I think that'll be coming up in the next few months as a result of this." – Manager focus group 2

9.4 Wider impact

It was noted in both the focus groups and interviews that the course had impacted not only on practice within the settings but additionally on the participants themselves and their own nutritional knowledge, cooking and eating habits. Changes to home cooking were discussed as well as reading food labels when shopping.

"I think even for me, I'm eating healthier for my family and it does make a difference to how you feel in yourself and everything, I would often be going through my day, 'I haven't got time to stop for anything to eat, and now I will I'll make sure and I feel so much better, I don't flag in the afternoons and I kind of got a shock about my own health as well by doing this and my little boy.'" – Manager 1 focus group 2

"...for me personally I don't use jars at home either anymore and I've made lots more soups where I never made a soup before in life before that course I have to say. So I make a lot more things myself at home and I'm conscious, more conscious now of what goes into my cooking, whereas before it was easier to just fry a bit of mince and throw a jar in, whereas now I think about how many vegetables I can get in there using tinned tomatoes and some herbs and things like that, so it's definitely made me think..." – Nursery owner

Furthermore, nurseries reported that it made them think of their overall staff food culture, with one nursery jokingly commenting on staff's diets.

"Thinking about that, I remember now we were talking about what's your eating culture within your staff...I went back to the staff room...they're monkeys (the staff) for going out to Sayers [bakery]..there's two chip shops, and they all come back in the front door so I jokingly said 'Right ladies that's it now you can't come through this door with your pie and chips'...I went 'No this is our new healthy eating policy.'" – Manager 1 focus group 1

10. Key Findings

Changes to practice and policy

- **Increased use of nutritional guidelines during menu planning** - 60% now using Caroline Walker Trust guidance
- **40% of nurseries have reported making a change to their food policy**
- **55% of nurseries reported making changes to their menus** - a further 36% were intending to make changes
- **Reduction in use of ingredients high in salt**
- **More nurseries serving a variety of both wholemeal and white bread**
- **Nurseries now serving diluted fruit juice as part of 5-a-day**
- **Nurseries adapting recipes/cooking practices**

Participants knowledge and attitudes

- **Statistically significant improvement in participants confidence**
- **Statistically significant improvement in knowledge and attitudes towards nutrition**
- **All nursery staff considered the training to be relevant**

Additional findings

- **Training provided an opportunity to exchange views and ideas with other participants**
- **Improved working relationship between caterer and manager**
- **Role of the caterer viewed as more central in the nursery with more interaction with both children and parents being encouraged**
- **Impact noted on participants' own eating habits**
- **Role for nursery in informing parents to continue food improvements in home environment**
- **Changes need to be implemented slowly in order for children to accept them**
- **On-going information/support required in nutrition for nurseries**

11. Discussion

All responding nurseries had made or were planning to make positive changes to the food provided within their settings.

The *Food and Nutrition in Early Years* course was developed to bridge the gap in training and support for nursery staff that was previously identified in the 2010 review of nursery food provision in Liverpool¹. It aimed to equip nursery staff with the knowledge required to provide healthy, balanced and nutritious food in the nursery setting, and importantly understand the differences between nutrition for children under five years of age and healthy eating messages for older children and adults. Nurseries seemed to be implementing adult nutritional guidelines through lack of awareness of differences in nutritional needs of younger children.

Overall the training was well received by participants and the content was thought to be suitable. This was reflected in the course evaluation (chapter 6) and comments made in the interviews. The training was free for nurseries to attend, however there were no funds available to cover staff time out of the nursery. Nurseries showed great commitment to improving nutrition in their settings by taking time out to attend a 30 hour course.

Participants confidence (table 11) and attitudes (table 12) in early years nutrition improved post-training. Encouraging results were seen in terms of perceived “ability to do” common early years nutrition tasks with a clear and significant improvement noted for all staff post-training. Staff felt they were more knowledgeable in early years nutrition which was reflected in both the questionnaire and the interviews, for example there was an increase in the number of staff recognising that food provided in nursery was just as important as that provided elsewhere.

Changes have been observed at a policy level in participating nurseries. One month post-training, 40% of nurseries reported making changes to their food policy. A standardised food and healthy eating policy was received by nurseries (appendix 5) which was based on best practice and Caroline Walker Trust (CWT) guidelines². The majority of nurseries found this document of use, either adopting the standard policy or using it as a reference guide for writing their own healthy eating policy (figure 19).

There has been an increase in the use of nutritional guidelines, with 61% of nurseries now referring to the CWT *Eating Well for Under 5's in Childcare* guidelines² (2-5 months post-training) (table 11). Participants were largely unaware of the availability of these guidelines prior to the programme and found them to be a useful reference document. Nurseries were also given a set of CHEW³⁶ food photograph cards which were reproduced with permission from CWT. These were a well used resource (figure 20), in particular as a portion size guide for programme participants and other staff in the nursery.

There was a statistically significant change observed in the period for which menus were planned. More nurseries now are working to suggestions by CWT of a minimum 3 week cycle (figure 14).

The 3 week menu package nurseries received, which contained nutritionally compliant full day menus for 3 weeks, recipes and shopping lists was only received by nurseries 2 weeks prior to the questionnaire being administered. Even in this short timeframe, one third of nurseries had used or planned to use the menu plans in some way, either adopting the full menu package or using elements of it.

A key finding from the previous analysis of food provision in nurseries identified that menus were providing insufficient calories for children to meet their nutritional requirements. Changes have been made to ensure children receive appropriate amounts of energy at regular intervals throughout the day. For example, some nurseries have introduced an afternoon snack and breakfast where this was not previously provided (table 9). There was also an increase in the number of nurseries that serve a pudding with main meals (figure 9). It was previously perceived as unhealthy to serve puddings by some nurseries. The course highlighted to participants that puddings can be used to ensure children receive essential nutrients. For example, fruit and milk based puddings can count toward the 5-a-day target and increase calcium intake of children, the review of nursery food in Liverpool in 2010¹ found that 40% of programme nurseries were not meeting recommended targets for calcium intake.

Though the types of food/drinks and frequency of serving did not alter pre and post-training with any statistical significance, many positive changes have been made.

The main drink children were given throughout the day was water, which reflects the EYFS³³ legal requirement that fresh drinking water must be available at all times. This is also good practice as poor oral health is of concern in young children in Liverpool¹⁵. Post-training there was an overall reduction in the number of nurseries serving squash of any type which is a step in the right direction. However, a small number (9%) were still serving sugar-free squash (table 6) which causes concerns over oral health due to the acids contained in them causing dental erosion.

Dried fruit and fruit juice both count towards the 5-a-day target, however it is recommended, as with all food and drinks high in sugar, that they are only consumed at meal times due to their effect on tooth decay and that fruit juice is served diluted with 50% water. From a nutritional point of view, serving fruit juice with meals has a positive impact as vitamin C and the organic acids found in fruit juice also aid the absorption of non-haem iron. Iron is commonly found to be lacking in diets of under 5's in child care^{1 23 28 29}. Unfortunately some nurseries (n=4) were serving fruit juice at snack times which is not recommended. Positively, there was a decrease in the number of nurseries serving dried fruit as snacks post-training (chapter 5.2.2).

Worryingly there was an increase in the number of nurseries reporting they served cakes/biscuits as snacks post-training (figure 6). There are a number of possible theories for this increase. Firstly, this was due to chance as the increase was not statistically significant. Secondly, the question was misread and the respondent assumed the question related to food that is given at meal times. Serving of puddings has also increased so it may be that nurseries are serving cakes as part of a main meal. Thirdly, it was communicated during the training that foods should not be 'banned or seen as bad', however sugary foods should be consumed at meal times to reduce the risk of dental decay. Alternatively nurseries may have been adapting cake and biscuit recipes so they contain less sugar. These may then be incorrectly thought to be suitable as a snack food. It seems there may have been some confusion as to how suitable cakes and biscuits are and when they should be eaten to minimise dental decay.

Positive steps are being made towards best practice for oral health, but there are some areas for further improvement. Oral health messages can be complex and it seems that they may have been confused. In order to ensure best practice in nurseries regarding snacks and drinks, these messages could be emphasised in any future courses to avoid confusion.

Analysis of menus in the Nursery Nutrition and Food Provision in Liverpool study¹ showed low levels of the nutrients zinc and iron. Nurseries were made aware of this whilst attending the course and were given tips as to how to increase the content in menus. For example serving foods/drinks high in vitamin C with meals to increase iron absorption and serving red meat which is a good source of both iron and zinc. The attitude towards serving red meat was mentioned in face-to-face interviews and focus groups where red meat had typically not been on the menu previously. It was reported that a number of parents had requested that red meat was not served to their children. This was often not due to religious/cultural beliefs, but parents own perception of the 'healthiness' of beef in particular. Possible explanations for this could be the enduring public opinion of beef after the BSE scare in the late 1990s or the link between red meat and saturated fat or bowel cancers. Following training, participants felt more able to question requests such as these from parents, offering explanations of the nutritional benefits of including certain foods to help parents make an informed choice.

The provision of fish and oily fish (5.2.3) increased post-training as did the frequency with which pulses were used (figure 8). Pulses were reported to be used in snacks such as houmous and to provide an additional protein source in common dishes such as bolognese, soups and casseroles.

Previous menu analysis¹ showed that salt/sodium levels were of concern, with 85% of menus providing over the maximum levels of salt for children of this age group. Positively, a decrease in the use of foods typically high in salt (stock cubes, jars/packets sauce, gravy granules and tinned vegetables in salt water) was reported in both the questionnaires (table

7) and interviews. Both pre and post-training two nurseries allowed children to add salt/sauce (tomato/brown) to food. From the questionnaire it is not possible to determine if it was salt, sauce or both, apart from one nursery post-training who commented that this was reduced salt/sugar tomato sauce.

An increased number of nurseries were using unsaturated fats such as sunflower and olive oil spreads post training (figure 11). There was a slight reduction in the use of spreads which are higher in saturated fats such as butter and soft margarines.

Prior to the programme over 50% of nurseries were serving only wholemeal/brown bread to children. This could indicate that they were applying adult healthy eating messages of eating a diet high in fibre. One of the key nutrition messages of the course was that children under 5 years should be served different types of starchy foods including wholemeal and white varieties. As children under 5 years should not consume too many foods that are high in fibre as some young children have small stomachs. A diet high in fibre for this age group can reduce appetite, inhibiting the absorption of energy and other nutrients. The majority of nurseries are now serving both white and wholemeal bread rather than just wholemeal (table 9).

One of the observations of the programme is that, attending the course gave participants an excellent opportunity to network, share knowledge and best practice. This appeared to be of particular benefit for all staff in private nurseries and cooks/chefs in Children's Centres as managers and other nursery staff based on Children's Centre sites seem to have more of an opportunity for this. Also observed was an increase in the interaction between the manager and the cook within the setting.

Participants were asked if they would like support in food and nutrition in the future. Responses from participants show there is a desire for continued training and support in nutrition (figure 22, table 13).

11.1 Study limitations

The study was reliant on self reported data and therefore open to bias. The possibility exists that participants reported what they believe the trainers/researcher wanted to hear. Furthermore, it is possible that only the most interested/motivated nurseries took part in the intervention programme³⁷. However, anecdotal evidence from all nurseries and other services also supports the findings that the training has had a positive impact on food and nutrition in nurseries.

12. Conclusion

Prior to this programme there was little comprehensive training and support available for nursery staff. In addition there is a lack of national guidance on food provision for under fives e.g. types, quantities and frequency of foods to be given has been left to the discretion of individual nurseries.

The programme has demonstrated that given the opportunity, early years staff are eager to access training and to provide the best nutrition that they can for the children in their care.

The Liverpool Nursery Nutrition programme has had a beneficial impact on all the nursery settings that participated. Importantly, increases in staff confidence and perceived “ability to do” early years nutrition tasks such as menu planning, reading food labels, etc. have been observed in all nurseries, reflecting that the course was appropriate for all attendees and will ultimately improve the nutritional status of children.

13. Recommendations

- Funding needs to be secured to enable continuation of this programme
- This accredited training course in early years nutrition should be made available for all nursery caterers and managers in Liverpool
- Catering company staff providing food to nurseries should access the training
- Development of a condensed version of the course should be offered to nursery staff who cannot take a lot of time out of the setting, childminders and children’s centre staff
- Development of parents resources
- There should be continued support and updates for early years settings in food and nutrition legislation and guidance for the under fives
- Nurseries should be encouraged to build links with parents where possible in regard to healthy eating for the under fives
- The Caroline Walker Trust *Eating Well for Under-5s in Childcare. Practical and nutritional guidelines* should be actively promoted to early years settings in the absence of any national standards

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