

The Healthy Incentive for Pre-schools Project

Summary Report



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ISBN: 978-1-905767-52-6

Publication date: January 2015

Acknowledgements

safefood wishes to thank all those involved in this research project, including:

- The research team led by Dr Charlotte Johnston Molloy and Ms Corina Glennon Slattery, Health Service Executive, and their colleagues, Dr Clare Corish, Dr John Kearney and Prof Nóirín Hayes, Dublin Institute of Technology, with support from Ms Cathriona Loonam, Ms Cara Cunningham, Ms Maria Murtagh and Ms Sarah Mumford, HSE
- The members of the National Advisory Group who provided support to the research team throughout the study. They included Ms Marion Brennan and Ms Rita Melia, Early Childhood Ireland, Ms Kara Murphy, Ms Ann Spain, Ms Anne Gerety, Ms Sheelagh Reaper-Reynolds, HSE and Ms Sinead Keenan, Healthy Food for All, as well as their colleagues at Dublin Institute of Technology
- The Pre-school Local Expert Group from the Midlands, including the environmental health officers and public health nurses who supported the project locally
- Those full-day care (FDC) pre-schools and local support staff who took part in the process in counties Wicklow, Westmeath, Longford, Laois and Offaly

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1 Overview

This project was named the Healthy Incentive for Pre-schools Project (subsequently referred to as the HIP project). It looked at current practices around food, nutrition and related health practices in the pre-school setting and developed an intervention to improve such practices.

First, a tool was developed to assess practice in pre-schools. It looked at four areas – environment, meals, snacks and food service (Table 1). The tool allowed each pre-school to get an overall score and be awarded one of the following categories: Participation, Bronze, Silver, Gold or Platinum.

The assessment tool was used in 62 pre-schools in order to look at baseline practice. At the baseline, pre-schools were found to score highest for the ‘snacks’ section and lowest for the ‘food service’ section with the assessment tool. A total of 74% (n 31) of services were classified as Participation level, with the remaining 26% (n 11) achieved a Bronze level.

The pre-schools received feedback on their practice and were assigned to one of two interventions – manager only training (one hour) or manager and staff training (three hours). A guide and serving size resources were provided. The practice was then assessed six months after training. N=24 pre-schools (manager only) and n=18 pre-schools (manager and staff) completed training and a six-month follow-up.

Following training, overall practice improved equally in both intervention/training groups (Table 1). A greater than 50% improvement in practice was observed in the following areas:

- The visibility of a written healthy policy
- Provision of outdoor time for all children
- Children’s participation in meals and snacks

The majority of pre-schools (87%, n 37) in both groups moved to either Bronze (57%, n 24) or Silver (30%, n 13) categories. A small minority (10%, n 4) of services did not improve their practices significantly and remained at Participation level.

Overall, the pre-schools that participated in the study were very willing to do so. A form of recognition for participation was seen as important. The project demonstrated that with a minimum amount of training for managers, practice in this sector could be substantially improved.

Table 1: Changes in practice from baseline to post-intervention (an arrow denotes an improvement while a yellow line denotes no improvement in practice)

Criteria	Manager trained (MT) group	Managers & staff trained (MST) group
Environment		
Have a health promotion policy	↑	↑
Education materials	↑	↑
Planned physical activity	↑	—
Outdoor time	↑	↑
Not using food as reward	↑	—
Adequate no. of meals and snacks	—	↑
Food Service		
Staff sitting at food times	↑	↑
Staff eating with children	↑	↑
Family-style food service	↑	↑
Allowing sufficient time at meals and snacks	↑	↑
All kids encouraged to self feed	↑	—
Appropriate feeding and drinking utensils	—	—
Meals		
Portion of protein foods	↑	↑
Portion of starchy foods	—	↑
Portion of dairy foods	↑	—
Portion of vegetables	↑	↑
Self-service meals	↑	↑
Iron-rich foods	—	—
Snacks		
Fruit as a snack	↑	↑
Top-shelf foods	—	—
Dairy other than at a main meal	↑	↑
Drinks with snacks	↑	↑
Drinks with meals	↑	—
Milk/water between meals/snacks	↑	↑

2 Introduction

A nourishing diet is essential for the healthy development of children, and health-related habits learned early in life have been found to continue into adulthood. In 2012, the National Pre-school Nutrition Survey reported that a significant proportion of pre-school children had low intakes of nutrients such as iron and vitamin D, as well as high intakes of sugar and salt. Also reported was a low intake of healthy food, such as vegetables, and high intakes of foods high in sugar and fat (1). With one in four three-year-old children carrying excess weight, childhood obesity is one of the major challenges facing our children's future health (1).

Parents have a powerful influence on their children's eating habits and the food provided to them. However, a large number of children spend much of their time in full day childcare (FDC), that is, more than five hours per session with at least two meals (one hot) and two snacks provided. By the age of three years, 50% of children in Ireland attend out-of-home care (2). The pre-school environment has the capability of having a positive effect on children's nutritional health and wellbeing through the provision of healthy nutritious food and supporting the establishment of healthy behaviours. However, little is known of the food provided or the related health practices in place in this setting in the Republic of Ireland (ROI).

Although the 'Food and Nutrition Guidelines for Pre-school Services' are available in ROI, these are not mandatory, and the practice among pre-school providers varies across the country. The Healthy Incentive for Pre-schools (HIP) Project described here looks at current practices around food, nutrition and related health practices in the pre-school setting and has developed an intervention to improve such practices. It builds on previous work by the Health Service Executive (HSE), which looked at developing a draft set of criteria for assessing practices and found that pre-schools were in favour of introducing a nutrition incentive scheme (3).

3 Aim and objectives

This research set out to develop a tool to assess food, nutrition and related health practices in FDC pre-schools and to test the impact of this tool, along with training, on improving such practices in this sector.

The objectives were as follows:

1. Devise and validate a tool to assess food, nutrition and related health practices in pre-schools
2. Carry out a baseline audit with the assessment tool of FDC pre-schools registered with HSE Dublin Mid-Leinster in the Midlands region
3. Develop a nutrition and related health education resource pack to accompany the assessment tool
4. Deliver two levels of training – manager-only training and manager and staff training – using the assessment tool and an accompanying education resource pack to improve practice. Finally, to measure their impact on food, nutrition and related health practice in comparison groups

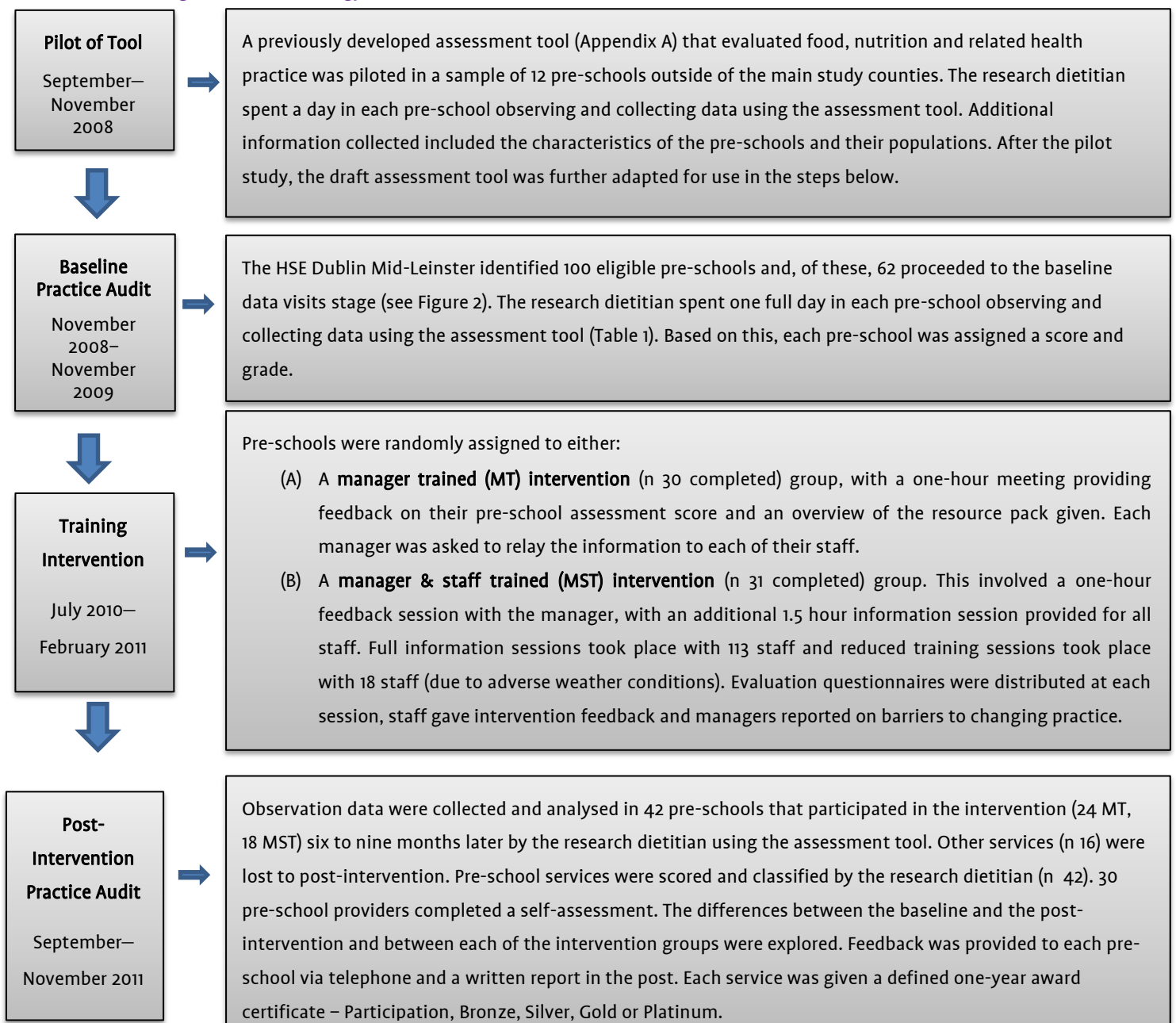
4 Methods

There were a number of phases of the HIP project, as outlined in Figure 1.

Pilot, audit and intervention

The work was led by a research dietitian, and information was collected from pre-schools providing FDC. For the main study, the data collection took place at 62 pre-schools in the midland counties of ROI.

Figure 1: Methodology



Development of education resources

The development of education resources for this project took place in two stages between 2008 and 2010.

A Serving Size Guide: This was developed in September and October 2008. It is a picture guide, with a list of household measures for common foods for pre-school age children provided to help staff to determine serving sizes accurately. It also provides sound advice on a family-style food service (FSFS), the introduction of new foods and the environment which nurtures healthy eating habits for life. The resource was subsequently adapted by *safefood* and made available online in December 2013 as an independent resource, 'What is a serving size? A Guide for Pre-schools'(4). It was based on the serving sizes recommended in the Food and Nutrition Guidelines for Pre-school Services (5), the 3-Week Menu Plan – a Resource for Pre-schools (6) and the Caroline Walker Trust (7).

The Pre-school Education Resource Pack: This was developed between January and July 2010. Two booklets, a 'Best Practice Guide' and a 'Hints and Tips Pack', both available on the *safefood* website (8), were included in this pack. The content was based on nutrition and health-related needs identified at the baseline.

Both were developed in consultation with community dietitians and the local nutrition working group, and were piloted with local child minders.

Views of pre-school providers

Between December 2011 and March 2012, the pre-school providers' views on a suitable incentive scheme that would help motivate them to take part in initiatives, such as the HIP project, were analysed using the Delphi Technique.¹ Feedback was collected after training using a questionnaire. It involved open qualitative questions (round one) being sent to all managers of pre-school services in the project, with a final response rate of 23/45 (51%) being achieved. All ideas were then grouped to create a list of responses that the managers were asked to rate using a five choice Likert scale (round two), with a response rate of 17/23 (74%) being achieved. The data were then analysed and the ideas were ranked. This was repeated until a 70% consensus was reached and a total of 16 incentive ideas were created.

Ethical approval

This study received ethical approval from the Research Ethics Committees of the HSE Dublin Mid-Leinster (Midlands Area) and Dublin Institute of Technology.

¹ The Delphi Technique method is based on the results of several rounds of questionnaires sent to a panel of experts. The anonymous responses are aggregated and shared with the group after each round. The experts are allowed to then adjust their answers in subsequent rounds. A final response is then reached by consensus.

5 Results

Pilot study

The pilot highlighted that the following changes were required to the original draft assessment tool (Appendix A and B): providing criteria to cover all ages of the children attending the pre-school, rephrasing some criteria to avoid misinterpretation, providing criteria to measure all six aspects of an FSFS² and, finally, ensuring that all utensils used were quantifiable.

The scoring scheme of the draft assessment tool was also modified to give a three possible answer scale (0; 1; 3): 'no score' (0 points scored), 'minimum standard' (1 point scored) and 'best standard' (3 points scored). The categorization of the overall score was as follows: Participation (score 0-19), Bronze (score 20-39) Silver (score 40-54), Gold (score 55-64) and Platinum (score 65-72) award. The main criteria for the finalized assessment tool (Appendix C) are outlined in Table 2.

Details of the characteristics of the pre-schools that took part in the pilot study are given in Appendix D.

² 'Family style food service' is defined as: 'meals in which child-size tables are set with plates and utensils. Food is passed in small containers for children to serve their own plates. Children may pour their own beverages from small pitchers' (National Food Service Management Institute (United States), 2003).

The six aspects of 'Family style food service' are: Meal times are relaxed events; providers sit and eat with children, and discuss food and other stories; children participate, laying cutlery, serving foods, cleaning up, etc.; children do not start the meal until all are served and wait at the table until all are finished eating; the cleaning of surfaces or clearing of plates is not commenced during meal time; plates are provided on the table for all meals and snacks.

Table 2: Finalised assessment tool and its criteria

Assessment tool		NMS, Not Minimum Standard (Score=0)	MS, Minimum Standard (Score = 1)	BP, Best Practice (Score = 3)
Categories	Criteria			
Environment	Whole pre-school health promotion policy comprising: physical activity, food, nutrition, dental health and confidence	No policy visible	Policy visible. All elements are not included. No annual review plan	Visible policy. All elements are included. All service community involved, including parents. Annual review date set
	Food-related education materials	None/or not in all service rooms	≥1 in each room and/or evidence in hallways/corridors	≥3 in each room – (posters, games, crafts) and evidence in hallways/corridors
	Do children take part in the recommended amount of physical activity (PA)?	None, at any age	Only some age groups. PA schedules not in all rooms/corridor. PA not in health policy	≥1 planned PA session for all ages. PA schedule in corridor/each room. Children move freely between rooms. Policy refers to planned PA
	Outside in the day	None; outdoor clothing absent	Some are taken outside; no outdoor clothing	Everybody is taken outside in all weather; outdoor clothing provided
	Evidence of food being used as rewards/treats	Food used as a reward/treat, e.g. on Fridays	Evidence of food/drink used as a treat but not as a reward, or vice versa	No evidence that food is used as a reward/treat; there is a healthy reward scheme in place
	Two meals and two snacks given to all FDC children with the correct amount of food groups (FGs)	No breakfast; meals do not have four FGs; only one meal (main, not light) provided	Breakfast, mid-morning snack, main meal, light meal provided. Meals contain all four FGs	All meals and snacks provided in MS, including a mid-afternoon snack. All meals contain the four FGs and snacks contain two of four FGs
Food service	At least one provider sits with children at food times	No staff sitting at children's table/high chair with the children; no adult seating	≥1 provider sits in each room; Staff not at all tables; no adult seating	At least one provider sits at each table and beside a high chair in each room at food times. Suitable adult seating provided
	Staff eat the same food as children at food times	No staff eat with children at any meal or snack time	≥1 staff eats with children at snack time but not at meal times in each room; vice versa	At least one provider eats with children at snack, main and light meal times in each room. Staff eat the same food as children
	Practising the six aspects of 'family-style food service' (FSFS)	The six aspects are not practised	≥4 of the six aspects are observed	All six aspects are observed
	Adequate allocation of time for meal/snack times	Rushed feeding times; meals <30mins, snacks <15mins	Snacks are not hurried but meals are; vice versa	Adequate time is allocated for meals and snacks; children are not rushed to finish eating
	Adequate encouragement to self-feed	Not at any age; children spoon fed to hurry food times	Some infants/children can self-feed; some are spoon-fed to rush the process	All suitable infants/toddlers and all children are allowed/encouraged to feed selves
	Age appropriate feeding and drinking utensils used	Not for any age group	Some aspects are followed	All aspects are followed

Assessment tool		NMS, Not Minimum Standard (Score=0);	MS, Minimum Standard (Score = 1);	BP, Best Practice (Score = 3)
Categories	Criteria			
Meals	Age appropriate serving of protein at main meal	None or <1/2 serving given	1/2-1 serving given – is too small/ too big	Adequate serving for all ages is provided
	Age appropriate serving of starch at main meal	None or <1/2 serving given	1/2-1 serving given – is too small/too big	Adequate serving for all ages is provided
	Age appropriate serving of dairy food at main meal	None or <1/2 serving given	1/2-1 serving given – is too small/too big; a choice is given between milk and juice/squash	Adequate serving for all ages is provided
	Age appropriate serving of vegetables at main meal	None or <1/2 serving given	1/2-1 serving – is too small; or too big	Adequate serving for all ages is provided
	Children serve themselves from larger dishes; second helpings at main meal	No self-service food given; no second helpings offered	Some self-service food given; second helpings offered/given to some	All food/fluids can be self-served; second helpings of main meal are available/offered
	Iron-rich food provision at main meal	Not for any age	Offered to some children; serving too small	Offered to all infants and children
Snacks	Fruit given at least once other than with the main meal	No fruit given to any infant/child	Fruit is given to some/all, but serving is not adequate	Appropriate serving size of fruit is provided to all appropriate children at least once other than with the main meal
	Foods offered from top shelf of the Food Pyramid	All foods are from the top shelf of the Food Pyramid	Some foods are from the top shelf of the Food Pyramid	No foods are provided from the top shelf of the Food Pyramid
	Dairy food offered at least once other than main meal	No dairy food offered outside the main meal	Some are offered, but serving is too small	All are given a serving at least once outside the main meal
	Tap water and milk are only given with snacks	None/other drinks offered	Some rooms offer other drinks with snacks	Only tap water/milk is offered with snacks in all rooms
	Tap water, milk or aptly diluted juice with meals	All rooms offer other drinks	Some rooms offer other drinks	No other drinks given; pure unsweetened juice diluted (1:4/5) and juice is given only once a day
	Tap water/milk offered between meals and snacks	Neither given in any room; milk given in bottles not cups	Some rooms comply; no water stations or stickers provided to encourage fluid intake	All rooms comply. All rooms have poster/stickers, jugs/bottles of water (water stations), dedicated water breaks

Pre-school participation

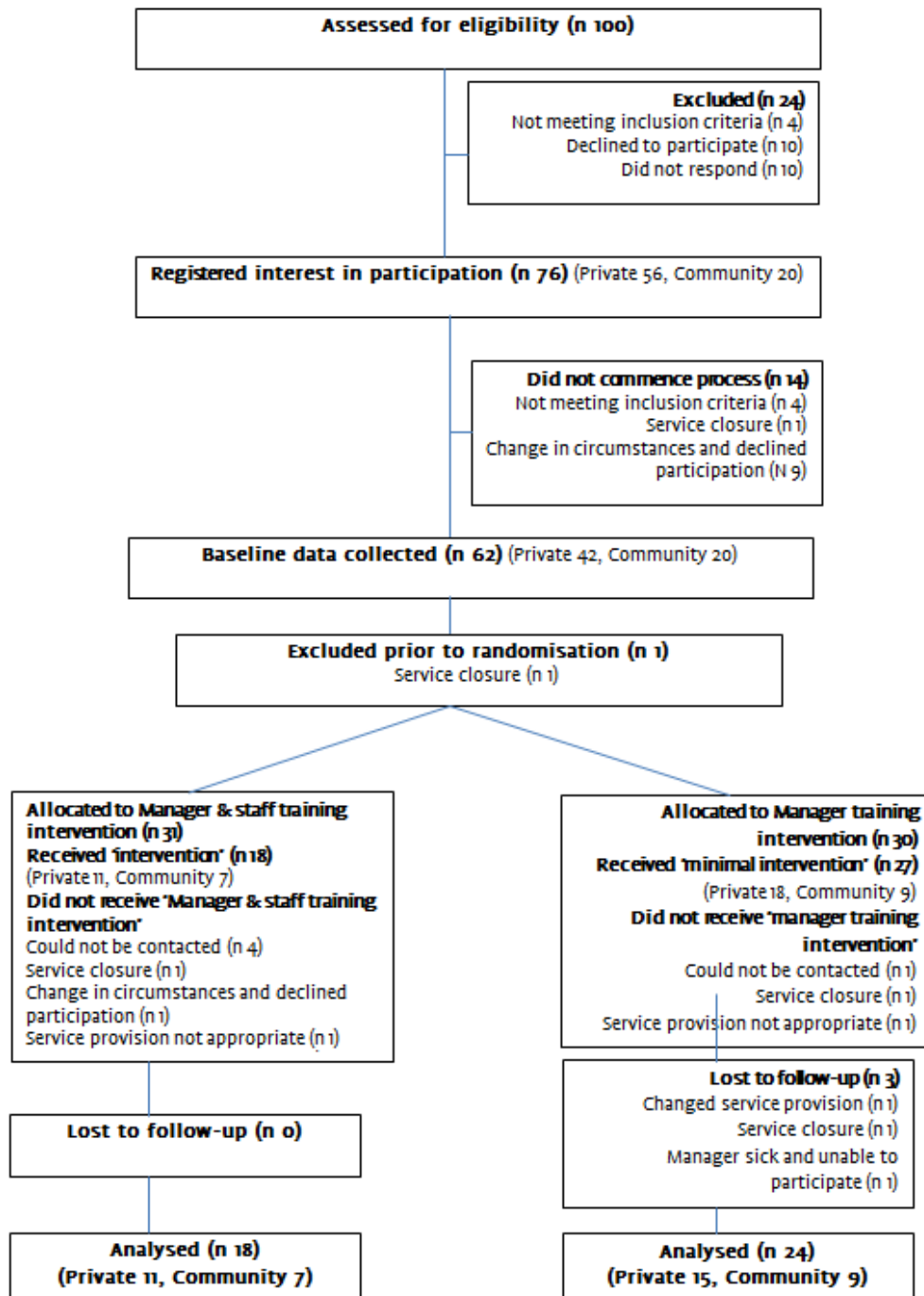
Figure 2 shows the recruitment and progress of pre-schools during the project. Table 3 outlines the baseline characteristics of the pre-schools that proceeded to post-intervention. No difference was found between the services that completed the baseline audit only and those that progressed to post-intervention, or between the characteristics of the manager trained (MT) and manager & staff trained (MST) groups.

Table 3: Baseline characteristics of manager trained and manager & staff trained intervention groups

Characteristics	Manager trained (n 24)			Manager & staff trained (n 18)			Pvalue
	<i>n</i>	Median (IQR)	Range	<i>n</i>	Median (IQR)	Range	
Total no. of carers (n)	24	8 (9)	2-27	18	9 (7)	3-30	0.750 NS
Full-time carers (n)	24	5 (7)	2-16	18	4 (2)	2-10	0.070 NS
Part-time carers (n)	24	3 (4)	0-17	18	3 (6)	0-20	0.300 NS
Children (n)	24	41 (51)	19-147	18	36 (42)	7-150	0.751 NS
Children >5hr/day (FDC) (n)	23	17 (18)	8-53	18	20 (27)	3-51	0.655 NS
Children < 5hr/day (n)	23	19 (29)	3-122	18	21 (31)	1-107	0.733 NS
FDC children (< 12 M) (n)	20	2 (3)	0-8	17	1 (2)	0-6	0.313 NS
FDC children (13–24 M) (n)	19	4 (3)	1-22	15	2 (7)	0-13	0.272 NS
FDC children (25–36 M) (n)	18	6 (5)	0 -20	15	6 (7)	0-14	0.478 NS
FDC children (> 36 M) (n)	19	8 (9)	3-19	16	5 (8)	0-19	0.122 NS
Cost FDC (€) /wk < 12 M	24	148 (31)	99-195	14	150 (29)	25-195	0.553 NS
Cost FDC (€) / wk 13–24 M	24	150 (23)	110-175	18	150 (26)	25-190	0.878 NS
Cost FDC (€) / wk 25–36 M	24	150 (15)	110-175	18	150 (26)	25-190	0.868 NS
Cost FDC (€) / wk 36 M+	24	150 (15)	110-175	18	150 (26)	25-190	0.908 NS
Cost food provision(€)/wk	22	188 (170)	40-670	15	200 (180)	30-400	0.577 NS

n, the number of pre-schools; IQR, interquartile range; M, month; P, significance level (P <0.05); NS, not significant

Figure 2: Recruitment and progress of pre-schools throughout the HIP project



Baseline findings

The scores achieved by the pre-schools in the MT and MST intervention groups across the two timelines are displayed in Table 4. At baseline, the pre-schools were found to score highest for the 'snacks' section in the assessment tool and lowest for the 'food service' section (Table 5). A total of 74% (n 31) of services were classified as Participation level, with the remaining 26% (n 11) achieving a Bronze level (Table 6).

1. Environment

- Three pre-school services had a written **health promotion policy** on display in their service and one service had involved parents or staff in the policy development. No service used the 'whole pre-school environment' approach that comprises elements of physical activity, food, nutrition and dental health and confidence.
- Over 50% of pre-schools had at least one form of **food related education materials** in each pre-school room or hallway.
- Just over three quarters of both groups **planned** some amount of **physical activity** during the day for certain age groups. The oldest age groups generally received more physical activity periods than the infants. Two services had an activity timetable visible in the hallway and eight pre-schools had no physical activity time for any child in their service. No pre-school was working to a best practice standard with regard to physical activity.
- Two pre-schools brought every child outside during the day regardless of the weather and had outdoor clothing or wellington boots visible in the pre-school. Nearly two thirds of pre-schools in both groups gave certain age-groups **outdoor time** at least once a day.
- Four services (10%) did not use food or drink as a reward and used a healthy reward scheme instead. Over 50% of services used **food items as either a reward or a treat**. Approximately a third of pre-schools used food as both a reward and a treat, either providing a treat or processed food on the menu each Friday or had a treat food day specifically.
- Most services (95%) did not provide an **adequate number of meals and snacks** each day. This was defined as at least two meals and two snacks provided to all FDC children in the service. Instead, these services did not either provide breakfast or gave a main meal but not a light meal, or the meals did not consist of the four main food groups.

2. Food service

- The majority of pre-schools did not have at least one **member of staff sitting (>83%) in each room or eating (>78%) the same food as the children** at mealtimes, irrespective of age.
- Seven services provided at least four of six aspects of a **family-style food service**: adults sitting, eating and making conversation with children during mealtimes; allowing children to self-serve; allowing sufficient time for meals and providing correct utensils such as plates for all meals and snacks. 80% of pre-schools did not practise any of the six aspects, and no pre-school was observed to follow all six aspects of this practice completely.
- Less than 10% of pre-schools gave **adequate time for meals and snacks** and did not rush children to finish eating, the recommended time being 30 minutes for meals and 15 minutes for snacks. Over half of each intervention group provided adequate time during meals but not for snacks or vice versa, and about 40% did not provide enough time for either meals or snacks.
- Two services actively encouraged all suitable infants/toddlers and children in their care to **feed themselves**. Almost 90% of pre-schools encouraged some groups of children to self-feed, while others were spoon-fed. Five services spoon-fed all children and did not encourage children to feed themselves.
- All services in the 'manager & staff trained intervention' group and 92% in the 'manager trained intervention' group did not provide **age appropriate feeding and drinking utensils**³ for all infants and children.

3. Meals

- Two pre-schools provided an **appropriate serving of protein food**⁴ at the main meal for all children. However, about half of pre-schools provided either no protein food or <1/2 a serving to some/all children. The rest (~50%) served between 1/2 to 1 serving, which was not suitable for all age groups.
- Nine services gave the **appropriate serving of starchy food** to all children, at the main meal, although over three quarters of pre-schools (75% [MT], 83% [MST]) gave children a serving that was too small or too large for their age group.

³ Appropriate feeding and drinking utensils: Lidless cups are used to train infants and children to drink from six months. Plates are available for all meals and snacks for all infants and children. Age appropriate cutlery is available at all meal and snack times. A spoon and bowl is given to infants to encourage self-feeding.

⁴ Food weight and measure reference guide used to determine appropriate portion sizes of all food groups.

- Two pre-schools in both intervention groups were working to best practice, providing **an appropriate serving of dairy food with main meals**, and over 70% of services provided no serving or a serving that was too small for some or all age groups.
- A small number of services (21% [MT], 11% [MST]) provided the correct **amount of vegetables** at the main meal. Half of the pre-schools provided between ½ and 1 serving and the remainder (30%) gave none or less than a ½ serving of vegetables with main meals.
- Three pre-schools offered an **adequate serving size of iron-rich food** to all children with the main meals. Just over 40% of services gave an iron-rich food to some/all children, but the serving size was too small. The remainder (about 50%) served less than a ½ serving or none at all.

4. Snacks

- Nearly a third of pre-schools (29% [MT] 28% [MST],) provided an age-appropriate **serving of fruit as a snack** to all children, at least once a day. However, about two thirds gave fruit to some/all children, but the serving size was too small. Moreover, three services served no fruit to any infant or child.
- About a third of pre-schools (33% [MT], 22% [MST]) did not allow any food from the **top shelf of the Food Pyramid**; i.e. foods high in fat, sugar and salt (HFSS). And the rest of the pre-schools (67% MT, 78% MST), only allowed some foods from this category.
- A large proportion of services (33% [MT], 50% [MST]) gave every child an **appropriate serving of dairy outside the main meal** at least once a day. Nearly half of the pre-schools provided some or all children with a serving of dairy food outside the main meal, but the serving size was too small. Eight services were found not to give children dairy foods outside of the main meal.
- Nearly half of pre-schools (38% [MT], 61% [MST]) served the **correct drinks with meals**; water or milk or correctly diluted unsweetened fruit juice. However, almost a third of services gave drinks other than water, milk or diluted juice to children with all meals served in all rooms.
- Three pre-schools offered **milk and water only with snacks**. However, the majority of services (84% [MT], 72% [MST]) gave either no drink with snacks or drinks other than milk or water with snacks.
- Almost 90% of services did not offer **milk or water in between meals and snacks** in all rooms, or did not use posters/stickers to encourage fluid intake or have water stations at dedicated water breaks during the day. Five pre-schools offered water or milk between meals and snacks but they had no visible water station or poster/stickers in each room.

Practice after intervention

Details of the characteristics of pre-schools post-intervention are given in Appendix E. Positive changes were observed in the majority of the health-related practices of both groups following the training intervention (Tables 4 and 5). There was a greater than 50% improvement in practice observed in both groups in the visibility of a written healthy policy, provision of outdoor time for children and children's participation in meals and snacks in all rooms. Appendix F provides a detailed description of the changes in food, nutrition and related health practices across the two intervention groups.

The majority of pre-schools 87% (n 37) in both intervention groups moved to either Bronze (57%, n 24) or Silver (30%, n 13) categories (Table 6), while a small minority 10% (n 4) of services did not improve their practice significantly and remained at Participation level. One service enhanced its practice to move to a Gold level.

Effect of training

- The training intervention led to significant improvement in overall nutrition and health-related practice, as seen in the overall scoring (Table 4).
- Post-intervention, no significant differences in overall health promotion practices were found between the MT and MST groups, with no significant benefit resulting from additional staff training.
- However, some differences between training groups were observed (Table 4). For example, the MST group scored better in the meal provision section, while the MT group scored higher in the snacks section of the assessment tool.

Table 4: Assessment tool criteria scores at baseline and post-intervention in the manager trained and manager & staff trained intervention groups

Scores	Manager trained intervention group (n 24)			Manager & staff trained intervention group (n 18)		
	Baseline <i>Median (range)</i>	Post-intervention <i>Median (range)</i>	<i>Pvalue</i> ^b	Baseline <i>Median (range)</i>	Post-intervention <i>Median (range)</i>	<i>Pvalue</i> ^b
Environment	3 (0-9)	7.5 (2-16)	***	3 (1-6)	7.5 (5-12)	***
Food service	2 (0-6)	6.5 (0-14)	***	2 (0-11)	6 (2-10)	**
Meals	4 (2-11)	7.5 (2-15)	**	3.5 (1-8)	9 (3-18)	**
Snacks	5 (2-14)	12 (3-18)	***	6.5 (3-12)	10.5 (6-16)	**
Overall score	13 (7-39)	34 (11-60)	***	15 (8-32)	33.5 (18-48)	***

Wilcoxon Signed-Rank Test, * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

Table 5: Changes in practice from baseline to post-intervention

Criteria	Manager trained (MT) group	Manager & staff trained (MST) group	Comments
Policy	↑	↑	>90% were at a NMS initially, then over half of these moved to MS in both groups
Education materials	↑	↑	The majority of both groups were in either NMS or MS, then practice improved and there was ~ 50:50 distribution to MS:BP
Planned physical activity	↑	▬	MT group had 25:75 in NMS: MS, then 92% improved practice to MS level. The majority of MST stayed at an MS level (89% to 100%) throughout the intervention.
Outdoor time	↑	↑	For both groups, there was ~33%/60% split between NMS/MS; then ~ 60%/33% improved to a MS/BP level respectively.
Not using food as reward	↑	▬	For the MT group, 33%/60% were at a NMS/MS level; then, 63%/29% moved to MS/BP. For the MST group, there was NS change in practice
Adequate no. of meals and snacks	▬	↑	The MT group had NS change in practice. In the MST group, 100% were at an NMS level, and 60%/30% improved to NMS/BP.
Staff sitting at food times	↑	↑	The majority (96 & 83%) were at a NMS level in both groups, then most services (75/94%) achieved a MS after training
Staff eating with children	↑	↑	Many services (88% and 78%) were at an NMS level in both groups, then some services (38% and 61%) improved to an MS practice
Family-style food service	↑	↑	A lot of pre-schools (88% and 78%) were at an NMS, and then 63% (MT) and 94% (MST) moved to an MS level, after training
Allowing sufficient time at meals and snacks	↑	↑	~ 40/50% worked to NMS/MS in both groups. Then most of these moved up a level, to either an MS or BP level.
All children encouraged to self-feed	↑	▬	Many services (88% and 78%) were at a MS level in both groups; then 46% (MT) moved to BP, with NS change in the MST group
Appropriate feeding and drinking utensils	▬	▬	Most services (92% and 100%) were at an NMS level in both groups; then the majority (71% and 94%) remained at this NMS level, giving NS change in practice

Criteria	Manager trained (MT) group	Manager & staff trained (MST) group	Comments
Portion protein	↑	↑	~50/50% of both groups were at NMS/MS; then 29% (MT) and 39% (MST) moved to a BP level after training
Portion of starch	▬	↑	NS change in practice (MT), with 70%/30% staying in MS/BP, while 60% of the MST group improved practice to a BP level, from 17%.
Portion of dairy	↑	▬	70/30% were at a NMS/MS level in both groups; then ~1/3 (MT) moved to BP and there was an NS change in practice for the MST group
Portion of vegetables	↑	↑	~30/50% were working to an NMS/MS level in both groups. Then 50% (MT) and 70% (MST) improved to a BP level
Self-service meals	↑	↑	The majority (88% and 78%) were working to NMS level; then ~50% of both groups improved practice, reaching an MS level
Iron-rich foods	▬	▬	~50/40% of both groups were at an NMS/MS level; but after training NS change in practice was achieved by either group
Fruit as snack	↑	↑	A lot of services (58% and 72%) were at MS level; then 88% (MT) and 78% (MST) reached a BP level after training
Top shelf foods	▬	▬	Most pre-schools (67 & 78%) worked to a MS level & the rest (33/22%) a BP standard. There was NS change in practice however, in either group post training
Dairy other than main meal	↑	↑	The majority of services achieved MS/BP (50% and 40%) in both groups; then 79% (MT) and 100% (MST) reached a BP level
Drinks with snacks	↑	↑	Most pre-schools (84% and 72%) worked at an NMS level in both groups, then a lot of services (42%/61%) moved to a BP level
Drinks with meals	↑	▬	38% of the MT group worked to a BP level, and then after training, 75% improved to a BP standard. However, there was NS change in practice for the MST group
Milk/water between meals/snacks	↑	↑	Most services (88% and 89%) worked to a NMS level in both groups; then ~ 50/20% improved to an MS/BP level post training

↑ A positive change/improvement in practice from baseline to post-intervention.

▬ A non-significant change/improvement in practice from baseline to post-intervention.

NMS, non-minimum standard; MS; minimum standard; BP, best practice; MT, manager trained; MST, manager & staff trained; NS, not significant.

Table 6: Classification of pre-schools in manager trained and manager & staff trained intervention groups at baseline and at post-intervention

	Baseline (<i>n</i> 42)		Post-intervention (<i>n</i> 42)	
	Manager trained intervention (<i>n</i> 24)	Manager & staff trained intervention (<i>n</i> 18)	Manager trained intervention (<i>n</i> 24)	Manager & staff trained intervention (<i>n</i> 18)
	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)	<i>n</i> (%)
Participation	17 (71)	14 (78)	3 (13)	1 (6)
Bronze	7 (29)	4 (22)	13 (54)	11 (61)
Silver	0	0	7 (29)	6 (33)
Gold	0	0	1(4)	0
Platinum	0	0	0	0

n, number of pre-schools; %, percentage.

Self-assessment and observation scoring and classification

When pre-schools self-assessed their service using the assessment tool, they generally gave themselves a higher score than the research dietitian (Table 7). The MT group awarded their service a higher number of Gold and Platinum classifications compared to the MST group when self-assessing.

Table 7: Classifications achieved depending on intervention group and method of assessment

Classifications	Manager trained intervention group (n 24)		Manager & staff trained intervention group (n 18)	
	Expert observation (n 24) n (%)	Self-assessment (n 16) n (%)	Expert observation (n 18) n (%)	Self-assessment (n 11) n (%)
Participation	3 (13)	0	1 (6)	2 (17)
Bronze	13 (54)	0	11 (61)	5 (42)
Silver	7 (29)	3 (18)	6 (33)	4 (33)
Gold	1 (4)	9 (53)	0	0
Platinum	0	4 (24)	0	0

n, number of pre-schools; %, percentage

Views of pre-school providers

1. Intervention/training feedback

Staff feedback from the training sessions is shown in Table 8. A full information session took place with 113 staff and truncated training (due to weather conditions) took place with 18 staff (n 131).

Table 8: Feedback sessions on the Education Resource Pack training (n 131)

	Poor %	OK %	Good %	Very Good %	Excellent %	Not answered
Session notes	0	0	2	11	82	6
Session content	0	0	2	13	80	6
Presentation materials, i.e. desk top, flipchart	0	0	2	9	83	7
Assistance and attention	0	0	1	9	84	7
Training session					95	
Participation					94	
Group discussion					92	

It was found that 6% (n 1) did not complete the questionnaire due to lack of time to answer. Other key findings reported by staff at training included knowledge around serving sizes, how to involve children in meals, healthy eating guidelines, best practice with food and physical activity, dental friendly drinks, and planning a varied diet.

2. Barriers/information

At baseline and post-intervention, pre-school managers reported that all of the following affected their ability to change practice:

- The cost of food, the potential of food wastage, staff attitudes and training, children's habits, parents' influence and the economic downturn.
- Lack of information and children's food habits were perceived as a barrier at baseline; however, this was not evident, post-intervention.

Post-intervention, there was an overall drop in the number of managers requesting more information on certain topic areas and a fall in their concerns around food provision in general.

3. Incentive feedback

Using the Delphi Technique, consensus was reached on 16 ideas, including the following:

- A form of recognition for participation, i.e. a plaque, certificate or quality mark for engaging in the project
- Healthy eating and physical activity resources for pre-schools and parents
- Equipment, funding, grants or vouchers towards providing healthy eating and physical activity initiatives in pre-schools

6 Discussion

The HIP project is the first intervention study of its kind to take place in pre-schools offering a FDC service in Ireland. It provides insights into nutrition and related health practice in this setting using expert observation and self-assessment. The project also investigated the impact of providing two methods of training to the pre-schools studied which, contrary to expectations, showed the provision of manager-only training to be as effective in promoting changes in practice as a more intensive model of training that included staff. This important finding may be attributable to the positive impact of leadership on the developing quality practice in this setting. In light of current economic constraints and the potential cost to the health service of providing additional staff training, this finding is very beneficial.

Some instances of good practice were observed at baseline in this project, specifically in the snacks provision section. However, a wide range of significant improvements were achieved following training, particularly in providing planned physical activity, outdoor time, education materials, health promotion policy, FSFS and improvements in food serving sizes and in the majority of snacks and fluid provided, as well as in getting more staff to sit and eat with children at food times.

There are, however, a number of areas of practice that still appear to be a challenge to both intervention groups, with little significant improvement in practice observed in providing 'all suitable age-appropriate feeding and drinking utensils', 'serving sizes of iron-rich foods' and 'reducing top shelf foods'. In addition, it was apparent that a further challenge for the 'manager & staff trained' group involved serving the right drinks with meals and correctly sized dairy food portions and planning more physical activity sessions. However, it is worth noting that these findings are not unique to this setting in ROI: Poor nutrition and physical activity practices have also been documented in other countries, such as the UK (9, 10), the US (11-14), Australia (15) and Holland (16).

It must be acknowledged that good practice not only supports food and nutrition intake but the emotional, intellectual and motor skills development of a child. Indeed, an FSFS provides a conducive environment for children to support and develop these skills, as well as having positive effects on picky eaters (17). Ensuring the provision of adequate outdoor time and planned physical activity is also fundamental to developing children's motor skills (18) and is linked to increasing the likelihood of maintaining a healthy weight (19).

Implementing this intervention training has significantly improved nutrition- and health-related practice in the pre-schools involved. Unfortunately, there is no structured formal training programme around healthy eating and food safety best practice for pre-school staff, either on the job or through third level education, despite being recommended in the current Food and Nutrition Guidelines for Pre-school Services (5). Obviously, best practice is the ideal approach, and the HIP project has demonstrated that with structured manager training, based on needs identified in the setting, significant improvements in practice are possible and can lead to many positive changes to the pre-school setting environment, food service and food provision.

The HIP project acknowledges that changing practice can be a long and gradual process. Considering the barriers mentioned by pre-schools, such as staff attitudes, parental influences, children's habits and the current downturn in the economic climate, it is encouraging to see so many pre-schools willing to participate. Evidently, barriers do exist for pre-school services in the area of health and nutrition, and it is acknowledged that it can be challenging to change practice in this setting. However, the results emerging from this research not only showed initial positive changes but also a commitment to continuing the project in the community. There is a willingness to work towards overcoming these challenges and implementing best practice nutrition and health-related guidelines in the child-care setting where possible. This research demonstrates that, with support, many pre-schools are willing and able to make changes to improve the diets of the children in their care.

With the high usage of non-parental childcare in Ireland (20) and the growing incidence of childhood obesity (21), there is a need for a co-ordinated national approach to ensure that childcare is based on best practice and that pre-schools are supported in achieving these best practice standards in a positive and meaningful way.

7 Conclusion

This project has investigated the introduction of an incentive scheme to the FDC pre-school setting in ROI. Using a three-tiered approach – an assessment tool to look at food, nutrition and health related practice; distributing education resources, including a serving size atlas to support practice; and training of managers and staff – this project supported an improvement in practice.

At baseline, instances of good practice were observed in this setting, particularly in the provision of healthy snacks. However, many providers were found not to provide adequate amounts of protein and iron-rich foods. Aspects of pre-school practice that required particular improvement were providing a family-style food service and a general health-promoting environment.

Post-intervention data collection demonstrated that through manager training and without the need for additional staff training sessions, improvements in food and health-related practice could be made. Significantly improved practice was implemented by both intervention groups during this project in all areas evaluated: the environment, food service meals and snacks section. The research furthermore highlighted a willingness in the sector to improve practice. Feedback from managers also emphasised that a form of recognition such as an award scheme should be a feature of any future intervention in the sector. Overall, the initiative was viewed as practical and acceptable to all parties involved.

Currently, pre-schools are inspected on food and related practices by a local inspection team. The assessment tools and resources developed as part of this project will be relevant to any future food and nutrition practices incorporated into pre-school inspections.

8 Key project recommendations

Based on the project findings and a review of current best practice literature, a number of recommendations can be made:

- The roll-out of this three-tiered intervention should be considered nationally as part of existing schemes such as Smart Start⁵. A national co-ordinated approach is required to support the implementation of the Food and Nutrition Guidelines for Pre-school Services in this sector, including basic mandatory staff training. The practical roll-out and application of this initiative nationwide is a key issue that needs to be considered for future project planning.
- The validated assessment tool developed in this research should be considered for use by the pre-school inspectorate as part of its assessments. Implementing a pre-school healthy eating award system, which parents can easily identify with, should also be considered for future initiatives.
- National physical activity guidelines⁶ in this sector need to be fully implemented. An effort must be made to ensure that sufficient physical activity and outdoor time is provided each day and included in all pre-school assessments.
- Supports for this sector should be provided, with clearly signposted resources included to enable effective interaction and communication with parents so that staff can confidently support healthy parental practices and behaviours. The resources developed as part of this project and other resources are signposted through the **safefood** website: visit www.safefood.eu (8).
- Nutrition and health-related practices need to be included in ongoing monitoring and evaluation of pre-school services.

⁵ The Healthy Ireland Smart Start Training Programme for Pre-school services is a holistic health promotion programme that aims to promote the development of a co-ordinated, integrated and strategic approach to the delivery of accessible, affordable, culturally appropriate and quality early childhood and out of school services: www.bccn.ie/dynamicpages.php?id=56

⁶ The national physical activity guidelines state that children should get at least 60 minutes of moderate intensity activity every day of the week: www.getirelandactive.ie/

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10 Appendices

Appendix A: An outline of the pilot draft assessment form sub-categories and criteria⁷

Assessment tool categories	Assessment tool criteria
Environment (all ages)	<ol style="list-style-type: none"> 1. Whole pre-school health policy 2. Healthy reward scheme 3. Education Activities 4. Planned physical activity 5. Outside in the day 6. Praised for eating
Children 6–12 months (weaning)	<ol style="list-style-type: none"> 7. Consistency of weaning foods 8. Weaning food appropriately 9. Feeding selves encouraged 10. Iron-rich foods 11. Drinks for infants 12. Unlidded cups
Children over 12 months (weaned children)	<ol style="list-style-type: none"> 13. Providers sitting with children 14. Help when eating 15. Protein portion @ main meal 16. Starch portion @ main meal 17. Dairy portion @ main meal 18. Vegetable portion @ main meal
Snacks over 12 months (weaned children)	<ol style="list-style-type: none"> 19. Fruit as snack 20. Water with meals and snacks 21. Water between meals and snacks 22. Only milk or water offered 23. Milk offered other times during day 24. Snacks low in fat and sugar only

⁷ Following a literature review, the original scoring system used in the preliminary studies was revisited for each criterion from a yes/no system to a ‘three way’ value system (0; 1; 3). Services could attain one of three possible score: ‘does not meet standard’ (zero points scored); ‘partially meets standard’ (one point scored); or ‘completely meets standard’ (three points scored). HIP project criterion standards were created to clarify and explain the scoring system, and a classification range for the scoring system was determined as follows: Participation (score 0–24); Bronze (score 25–49); Silver (score 50–74), Gold (score 75–99); Platinum (score 100–120).

Appendix B: Draft Assessment tool (pilot)

Draft 4 Assessment tool - Version 6

Code_____

	Environment (All Ages)	Not minimum Std (0)	Minimum Std (1)	Best practice (3)
1.	Is there evidence of a 'whole school' healthy food policy in this pre-school?			
2.	Is there evidence of a healthy reward scheme in place in the pre-school?			
3.	Is there evidence of food related education activities in each pre-school room?			
4.	Do all children take part in at least one planned physical activity during the day?			
5.	Are all infants and children taken outside during the day?			
6.	Are infants and children praised for eating meals and snacks in each pre-school room?			
	Total		/6	/24

/30

	weaning foods (6–12 months only)	Does not meet minimum std (0)	Minimum Std (1)	Best practice (3)
1.	Is consistency of food relevant to all infants' age and development stage?			
2.	Are weaning foods appropriate to age of development?			
3.	Are infants encouraged to feed themselves at the appropriate age?			
4.	Are iron-rich weaning foods being given to all infants?			
5.	Are formula / breast milk and cooled boiled water the only drinks offered?			
6.	Are infants given fluid from a two-handled unlidded beaker or cup?			

	Total		/6	/24
				/30

	MEALS: WEANED CHILDREN (over 12 months)	Does not meet minimum std (0)	Minimum Std (1)	Best practice (3)
1.	Do providers sit down at the table with the children?			
2.	Is help given to children if they are having difficulty eating?			
3.	* Is portion of protein food appropriate at main meal?			
4.	* Is portion of starchy food appropriate at main meal?			
5.	* Is portion of dairy food appropriate at main meal?			
6.	* Is portion of vegetables appropriate at main meal?			
	Total		/6	/24
				/30

	SNACKS: WEANED CHILDREN (over 12 months)	Does not meet minimum std (0)	Minimum Std (1)	Best practice (3)
	Is fruit offered as a snack to all infants and children?			
	Is tap water offered with meals and snacks in each pre-school room?			
	Is tap water offered between meals and snacks in each pre-school room?			
	Is milk offered to children at least once during pre-school day?			
	Are tap water and milk the only drinks offered during the day?			
	Are offered snacks low in fat and low in sugar?			
	Total		/6	/24
				/30

GRAND TOTAL			/120
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* See food photo guide

Award Categories:

6 months–school age: Total 120

Participation	0-24
Bronze	25-49
Silver	50-74
Gold	75-99
Platinum	100-120

12 months–school age: Total 90

Participation	0-18
Bronze	19-37
Silver	38-56
Gold	57-75
Platinum	76-90

Appendix C: Assessment tool (baseline and post-intervention phases)



The assessment tool: (baseline and post-intervention phases of HIP project)

Service code: _____ Date of assessment tool completion: _____



	Environment	Not minimum std (0)	Minimum Std (1)	Best practice (3)
1.	Is there visible evidence of a written 'whole pre-school service' healthy policy in this service?			
2.	Is there evidence of food related education materials in each service room?			
3.	***Do children of all ages take part in the recommended amount of age-appropriate physical activity during the day?			
4.	Is there evidence that all infants and children are taken outside during the day regardless of weather?			
5.	Is there evidence that food is used as a reward or treat?			
6.	Are at least two meals and two snacks provided to all full-day care children in the service?			
	Total		/6	/18
			/18	
	Food service	Not minimum std (0)	Minimum Std (1)	Best practice (3)
1.	Does at least one provider sit at each table with the children when the children are eating, or sit beside infants in highchairs when they are eating?			
2.	Does at least one provider eat the same food as the children, with the children and each time that children, irrespective of age, are eating?			
3.	***Is 'family-style food service' practised in the service?			

4.	Is adequate time allocated to feeding times?			
5.	***Are all children, irrespective of age, actively encouraged to feed themselves?			
6.	***Are age-appropriate feeding and drinking utensils available for all ages of children and infants?			
	Total		/6	/18

*** The developmental milestones in this assessment tool would not apply to children with special needs

/18

	Meals	Does not meet minimum std (0)	Minimum Std (1)	Best practice (3)
1. *	* Is appropriate serving of protein food available at the main meal?			
2. *	* Is appropriate serving of starchy food available at the main meal?			
3. *	* Is appropriate serving of dairy food available at the main meal?			
4. *	* Is appropriate serving of vegetables available at the main meal?			
5.	***Are meals offered in a self-service style to all children?			
6.	Is an iron rich food given to all children as part of the main meal?			
	Total		/6	/18

/18

	Snacks	Not minimum std (0)	Minimum Std (1)	Best practice (3)
1.	Is an appropriate serving of fruit offered to children of all ages on at least one occasion other than the main meal?			
2.	Are foods being offered from top shelf of the Food Pyramid?			
3.	Is an appropriate serving of dairy food offered to each child on at least one			

	occasion other than main meal?			
4.	Are tap water and milk the only drinks offered with snacks during the pre-school day?			
5.	Are tap water, milk or appropriately diluted juice the only drinks offered with meals during the pre-school day?			
6.	Is tap water or milk offered to all children between meals and snacks in each pre-school room?			
	Total		/6	/18
			/18	
	Grand Total			/72

* See food weight and measure reference guide

Award Categories:

Total: 72

Participation	0-19
Bronze	20-39
Silver	40-54
Gold	55-64
Platinum	65-72

Appendix D: Pilot pre-school characteristics (n 12)

	<i>n</i>	%	Median (IQR)	Range
No. of carers	12	100	7 (4)	3-12
No. of children	12	100	29 (20)	15-65
No. of boys	4	33	15 (11)	7-20
No. of girls	4	33	8 (8)	7-17
No. of children <12 m	11	92	0 (1)	0-5
No. of children 12-24 m	11	92	5 (6)	0-30
No. of children 25-36 m	10	83	10 (6)	3-30
No. of children >36 m	10	83	16 (21)	6-49
No. of rooms in facility	12	100	3 (2)	1-4
Daily care charge to parents (€) when services provide food	6	50	44 (22)	20 (55)
Weekly expenditure on food (€) when services provide food	5	42	85 (120)	50-200

n, number of pre-schools; %, percentage, IQR, interquartile range; m, month; €, euro; No., number.

Appendix E: Post-intervention characteristics of manager trained intervention and manager & staff trained intervention pre-schools (n 42)

Characteristics	Manager trained intervention (n 24)				Manager & staff trained intervention (n 18)				Pvalue
	n	%	Median (IQR)	Range	n	%	Median (IQR)	Range	
Total no. of carers	24	100	8 (8)	2-27	18	100	10 (11)	3-30	0.889 NS
Full time staff	24	100	6 (4)	2-16	18	100	4 (6)	2-20	0.337 NS
Part time staff	24	100	3 (6)	0-15	18	100	4 (7)	0-20	0.481 NS
Total no. of children	24	100	51 (32)	18-140	18	100	45 (44)	14-175	0.334 NS
No. of children >5 hr / day (FDC)	24	100	21 (21)	4-117	18	100	15 (12)	2-84	0.077 NS
No. of children <5 hr / day	24	100	31 (35)	5-106	18	100	25 (24)	4-72	0.477 NS
FDC children (<12 m)	18	75	1 (2)	0-6	16	88.9	1 (3)	0-4	0.957 NS
FDC children (13-24 m)	19	79.2	5 (3)	0-17	17	94.4	4 (7)	0-12	0.431 NS
FDC children (25-36 m)	18	75	5 (4)	1-15	18	100	4 (4)	0-13	0.363 NS
FDC children (>36 m)	19	79.2	9 (6)	0-26	17	94.4	6 (14)	0-27	0.533 NS
Cost FDC (€) / wk <12 mo.	24	100	153 (28)	100-195	15	83.3	150 (25)	127-195	0.633 NS
Cost FDC (€) / wk 13-24 mo.	23	95.8	150 (25)	100-175	17	94.4	150 (18)	127-190	0.575 NS
Cost FDC (€) / wk 25-36 m	24	100	150 (25)	100-175	17	94.4	150 (18)	127-190	0.631 NS
Cost FDC (€) / wk >36 m	24	100	150 (25)	100-175	17	94.4	150 (18)	127-190	0.689 NS
Cost food (€) / wk	22	91.7	200 (125)	70-645	18	100	169 (153)	100-475	0.989 NS

n, number of pre-schools; %, percentage; IQR, interquartile range; M, month; €, euro; FDC, full day care; P, significance level (P <0.05); NS, not significant.

Appendix F: Assessment Tool criteria scores at baseline and post-intervention in the manager trained and manager & staff trained intervention groups. **Manager trained Group (n24)** **Manager & staff trained Group (n18)**

	Baseline %			Post-intervention %			Pvalue	Baseline %			Post-intervention %			Pvalue
	NMS	MS	BP	NMS	MS	BP		NMS	MS	BP	NMS	MS	BP	
Environment														
Policy	96	4	0	42	46	13	**	89	11	0	33	61	6	**
Education materials	46	50	4	4	50	46	**	22	78	0	0	50	50	**
Planned physical activity	25	75	0	14	92	4	*	11	89	0	0	100	0	NS
Outdoor time	33	58	8	8	54	38	**	33	67	0	6	67	28	**
Food as reward	33	58	8	8	63	29	**	39	50	11	6	83	11	NS
Adequate no. meals/snacks	92	14	4	75	17	8	NS	100	0	0	61	11	28	*
Food Service														
Staff sitting at food times	96	14	0	17	75	8	***	83	11	6	6	94	0	**
Staff eating with children	88	13	0	42	38	21	**	78	22	0	39	61	0	*
Family-style food service	88	13	0	29	63	8	***	78	22	0	6	94	0	*
Time at meals and snacks	42	50	8	13	46	42	**	39	50	11	0	67	33	*
All kids encouraged to self-feed	13	88	0	4	50	46	**	11	78	11	0	61	39	NS
Feeding and drinking utensils	92	8	0	71	29	0	NS	100	0	0	94	6	0	NS

	Baseline %			Post-intervention %			Pvalue	Baseline %			Post-intervention %			Pvalue
	NMS	MS	BP	NMS	MS	BP		NMS	MS	BP	NMS	MS	BP	
Meals														
Portion protein	46	46	8	21	50	29	*	56	44	0	17	44	39	**
Portion starch	0	75	25	0	71	29	NS	0	83	17	0	39	61	*
Portion dairy	67	29	4	54	17	29	*	72	22	6	61	17	22	NS
Portion vegetables	29	50	21	8	42	50	*	39	50	11	6	22	72	**
Self-service meals	88	13	0	46	54	0	**	78	22	0	28	44	28	**
Iron rich foods	50	42	8	38	38	25	NS	44	50	6	33	39	28	NS
Snacks														
Fruit as snack	13	58	29	0	13	88	***	0	72	28	6	17	78	**
Top shelf foods	0	67	33	0	54	46	NS	0	78	22	0	78	22	NS
Dairy other than main meal	17	50	33	8	13	79	**	6	44	50	0	0	100	**
Drinks with snacks	84	8	8	38	42	20	*	72	22	6	22	61	17	**
Drinks with meals	42	21	38	8	17	75	**	28	11	61	17	39	44	NS
Milk and water between meals and snacks	88	13	0	33	46 21		***	89	11	0	28	56 17		**

P, significance level; NMS, non-minimum standard (score=0); MS, minimum standard (score = 1); BP, best practice (score = 3); ^a scores range from 0-18 in each section; 0-72 as overall score, ^b Wilcoxon Signed-Rank Test, * P<0.05; ** P<0.01; ***P<0.001; NS, not significant

(Values circled in green demonstrate some of the largest changes in practice from baseline, and those circled in red highlight the lowest.)

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ISBN: 978-1-905767-52-6

Publication date: January 2015