Original research

An assessment of the potential of Family Day Care as a nutrition promotion setting in South Australia

Lynne A. Daniels, Bunny Franco and Julie-Anne McWhinnie

Abstract

Objective: To assess the potential role of Family Day Care in nutrition promotion for preschool children.

Design and setting: A questionnaire to examine nutrition-related issues and practices was mailed to care providers registered in the southern region of Adelaide, South Australia. Care providers also supplied a descriptive, qualitative recall of the food provided by parents or themselves to each child less than five years of age in their care on the day closest to completion of the questionnaire.

Subjects: 255 care providers. The response rate was 63% and covered 643 preschool children, mean 4.6 (SD 2.8) children per carer.

Results: There was clear agreement that nutrition promotion was a relevant issue for Family Day Care providers. Nutrition and food hygiene knowledge was good but only 54% of respondents felt confident to address food quality issues with parents. Sixty-five percent of respondents reported non-neutral approaches to food refusal and dawdling (reward, punishment, cajoling) that overrode the child’s control of the amount eaten. The food recalls indicated that most children (> 75%) were offered fruit at least once. Depending on the hours in care, (0 to 4, 5 to 8, greater than 8 hours), 20%, 32% and 55%, respectively, of children were offered milk and 65%, 82% and 87%, respectively, of children were offered high fat and sugar foods.

Conclusions: Questionnaire responses suggest that many care providers are committed to and proactive in a range of nutrition promotion activities. There is scope for strengthening skills in the management of common problems, such as food refusal and dawdling, consistent with the current evidence for approaches to early feeding management that promote the development of healthy food preferences and eating patterns. Legitimising and empowering care providers in their nutrition promotion role requires clear policies, guidelines, adequate pre- and in-service training, suitable parent materials, and monitoring.

Key words: child care, Family Day Care, health promotion, preschool children, nutrition

Introduction

The importance of nutrition for optimal growth and physical and cognitive development of children is recognised by numerous federal and state government guidelines. These include the National Health and Medical Research Council’s Dietary Guidelines for Children and Adolescents (1) and the South Australian Health Commission Strategic Directions for Child Health in South Australia (2). It is generally agreed that food choices and preferences developed in childhood lay the foundation for adult eating habits (3), although longitudinal data is not available (4). Interventions that help promote positive eating habits in young children may have important short- and long-term outcomes for health and wellbeing (3,5).

Over recent years the demand for child-care services has grown substantially. In South Australia in 2000 there were 19 790 children attending child-care centres (6) and 14 820 children under the care of 1900 approved Family Day Care providers (7). Most young children will have some food intake while in child care and, for many, this will make a significant contribution to their daily intake and overall nutritional status. Thus, it is essential that children in child care are provided with food of sufficient variety, quality and quantity to meet their particular nutritional requirements (8).

Preschool children have the cognitive capacity to learn and understand basic nutrition messages (9–11). Furthermore, there is evidence that food-related programs and interventions by carers and teachers positively influence food knowledge, acceptance and selection by preschool children (3,8). Young children also influence family food purchases (12). This means that feeding children in child care presents an opportunity to develop and reinforce food preferences and eating habits that prevent disease and sup-

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port good health. A recent review evaluating interventions to promote healthy eating among preschool children (3) supports day-care settings as an appropriate setting for health promotion interventions.

The promotion of healthy eating for children has more dimensions than just the nutritional quality of food defined in terms of nutrient content and balance. Children’s food preferences and eating patterns are not innate, but are powerfully influenced by early food and eating experiences (9,13). Eating habits are learned through the social contexts and physical consequences of eating and the example of parents, carers and peers (4,9,13). There is evidence that repeated exposure to unfamiliar foods (4), use of stories (14) and the use of praise and reward (4) can influence food acceptance and consumption. Birch (13) goes as far as suggesting ‘that child-feeding practices play a causal role in the development of individual difference in the controls of food intake, and perhaps in the aetiology of problems of energy balance, especially childhood obesity’. Just as repeated exposure to healthy foods has a positive effect on food acceptance and preferences, repeated opportunities to consume high fat, energy dense foods will result in conditioned preferences for these foods (4). Nutrition promotion to preschoolers must encompass more than just the quality and quantity of foods. An eating environment that is conducive to developing attitudes and eating patterns that will promote health and wellbeing into adulthood is also important (13,14).

In recent years there has been considerable emphasis on developing guidelines and standards (15–17) and provision of specific programs (8) to promote the provision of healthy food choices for children in child-care centres. However, there is evidence that the implementation of such guidelines is not ideal (17). The National Child Care Accreditation Council (18) has identified four principles related to food and nutrition in defining quality long-day care. These relate to meal times, meeting nutritional and cultural requirements, and food hygiene. Nutrition is thus firmly on the child-care centre agenda but to date it seems that the Family Day Care sector has received comparatively little attention in terms of the potential for nutrition promotion to significant numbers of children and their families. Resources and research that specifically address these issues or target providers in this setting, both in Australia and overseas, are limited.

From a strategic perspective, this study established collaboration between Noarlunga Health Service and Flinders University Nutrition Unit to promote and implement practice-based research. It also provided Noarlunga Health Service with an avenue to extend previously limited involvement with this aspect of child-care services in their catchment area. Thus, the study endeavoured to raise awareness of nutrition by Family Day Care staff and inform and encourage collaborative activities. The longer-term goal of such activities was to build structures and supports to enable care providers and field workers to effectively promote nutritional wellbeing for children and families in South Australia.

The specific research aims of this study were to assess the potential of Family Day Care as a health promotion setting by examining nutrition-related issues, practices and capacity of Family Day Care providers relevant to children aged under five years and the capacity for care providers to promote positive eating habits in young children. Care providers’ beliefs about the importance of good nutrition for preschool children, their interactions with parents and children around healthy eating and the confidence they felt in these roles were considered. The study also aimed to obtain a qualitative estimate of the range of foods provided to children while in care.

Methods

Questionnaire

In South Australia (SA) the Family Day Care program is administered by the SA Department of Education, Training and Employment (DETE) through 23 regional offices. Field workers are responsible for the training and support of care providers and the monitoring of care quality. A self-administered questionnaire was sent to all care providers (n = 255) registered with the Morphett Vale office, which is responsible for provision of Family Day Care services to the Southern Vales region in the south of Adelaide. The questionnaire was developed in consultation with a steering committee that included nutritionists from the region’s community health service, field workers, care providers and the DETE District Co-ordinator of Children’s Services. The term ‘Careprovider’ was used in line with Family Day Care practice and preference. Questionnaire content was informed by the objectives of the study, current literature and a preliminary discussion with the field workers, which highlighted relevant issues. Substantial reference was made to the questionnaires used in a needs assessment addressing nutrition in Family Day Care undertaken by the Tasmanian Department of Community and Health Services (19). Areas covered included:

- provision of food,
- strategies to manage feeding,
- sources of nutrition information and training needs and interests of care providers, and
- basic demographics.

Until April 1996 care providers generally catered for children in their care funded by a food subsidy paid on a per child basis directly to the care provider by the government. The impact of the removal of this subsidy on the source (care provider and/or parents) and perceived quality of the food available to children in Family Day Care was explored. Both open-ended and multiple choice questions, including some multiple response questions, were used. Care providers were asked to complete the questionnaire with reference to all of the children under five years of age currently registered in their care, regardless of whether they were in care on the day of completion of the questionnaire. Twelve, four-item multiple choice questions were included to assess knowledge of healthy food choices for preschool children and eight true or false questions evaluated knowledge of food hygiene. The questionnaire was piloted on ten care providers from another Family Day Care region, resulting in minor modifications. A copy of the questionnaire is available from the authors.

The care providers were introduced to the project a month in advance by a short letter from their district co-ordinator and a newsletter item. Based on a modification of the Dillman approach (20), the first follow-up, posted
two weeks after the first mail-out, was a postcard reminder to non-respondents. The second follow-up, three weeks after the postcard, consisted of a cover letter and a replacement questionnaire and reply-paid envelope. Non-respondents were asked to return the covering sheet with details of age, gender, level of education and language spoken other than English.

**Food provided to children during day care**

In addition to completing the questionnaire, care providers were asked to provide a descriptive estimate of the food and amount eaten by each child under five years in their care on the day they completed the questionnaire. For children under their care on other days of the week they were asked to recall the food eaten by the child/children on the most recent day they provided care. Respondents were also asked to identify which foods they and the parents provided. The recall provides an estimate of food provided rather than consumed. Quantitative estimates of actual food and nutrients were beyond the scope of the study and the resources of both care providers and study staff.

Foods were divided into nine categories, based on the Australian Guide to Healthy Eating (21). Additional categories were also used to cover beverages, baby foods (including formula, soya milk and canned baby food), extras and treats (hot chips, wedges, sweet biscuits, cakes, muffins, crackers, crisps and extruded snack foods, muesli and fruit bars, chocolates, sweets, chicken nuggets, pies, and any other fried or high fat foods). Given the practical limitations and variable quality of the quantitative data, no attempt was made to estimate size or number of serves and only data on the proportion of children consuming was generated. Although care providers were asked to recall or record food consumed, the data are most appropriately interpreted as ‘food provided’.

The study was approved by the Clinical Investigations Committee of Flinders Medical Centre and the DETE Research Council.

**Statistical analysis**

Statistical analyses were performed using SPSS for Windows 8.0 (SPSS Inc, Chicago, SPSS for Windows, version 8.0 1998). Frequency data are generally expressed as percentage or if both are in parenthesis (%), n value). These data are based on the number of respondents and do not include non-respondents to specific items and as such the n value denominator will vary. There were a number of multiple response questions for which the percentages of responses will sum to greater than 100% as the respondents were able to offer more than one option, where appropriate data is expressed as mean (standard deviation) or median (range).

**Results**

**Respondents**

Twenty-two care providers from the initial sample were excluded because they did not care for children less than five years of age, were not currently caring for children or had recently left Family Day Care. The valid sample size was 223 with an overall response rate of 62.8% (140). The mean age of care providers was 40.7 years (9.3; range 24–66) and 98% were female. Eighty-four percent of respondents were married and 16% were single, separated or divorced. Total household income was stated to be under $40 000 for 72% of respondents. The majority of care providers had primary (2%), lower (26%) or upper secondary school education (44%), 28 (21%) had a trade certificate or diploma and 12 (9%) had a tertiary degree or were studying towards one. Fifteen respondents (11%) spoke a language other than English at home and only two identified themselves as Aboriginal people.

Twenty-two of 82 non-respondents returned usable information indicating they were all females of mean age 39.3 (11.5) with 18 having primary (1), lower (9) or secondary (8) schooling as the highest level of education. Two non-respondents spoke a language other than English at home.

**Role of the care providers**

The care providers in this study cared for a total of 643 children with a mean of 4.6 (SD 2.8; range 1–13) children per carer. The mean ages of the youngest and oldest child under five years cared for by individual respondents were 20.6 (12.8) and 48.9 (9.9) months respectively. Forty-four (32%) care providers indicated the youngest child in their care was under one year old. The number of days per week the respondents cared for children ranged from one day to seven days with a mean of 4.2 (1.6) days. Ninety-one percent (127) and 93% (130) of care providers gave the children morning and afternoon snacks respectively, 94% (132) provided lunch and 69% (96) also provided breakfast. Dinner/tea and supper were provided by 49% (68) and 21% (29) of respondents respectively.

**Source of food provided and the impact of removal of the previous food subsidy paid to care providers**

In a multiple response question, 88% (121) of care providers indicated that parents provided all of the food for at least some of the children in their care. Thirty percent (41) and 18% (25) of care providers were paid by parents to provide all or some food respectively, for at least one child in their care. However, 45% (62) of the respondents found it necessary to provide some additional food, at their own cost, to at least one child, who was not supplied with enough food from home. In addition, 42% (57) of care providers chose to share food, at their own cost, acknowledging the social importance of sharing food. Of the 62 care providers who stated they needed to provide extra food at their own cost, 57% (35) did so often or always at an estimated median expense of $10.00 per week.

There were 99 (71%) respondents who had been working in Family Day Care when the food subsidy was operating. In response to a question asking if the withdrawal of the subsidy had affected the nutrition of children in their care, 30 (31%) of these experienced care providers responded ‘yes’ and 11 responded ‘not sure’. In reply to the follow-up question, ‘If yes, please say how’, 84% (25) of the ‘yes’ responders specifically identified concerns with the extent of non-nutritious, convenience foods, soft drinks and sweets provided by parents. Fifty-nine percent (58) of these experienced care providers stated that nutrition was not affected by the cessation of the food subsidy. However, of this subsample, 40% (23)
indicated ‘If no, please say why?’”. This was because they, the care providers, supplied additional nutritious food.

Issues related to food and nutrition identified by Family Day Care providers

The most common food and nutrition issues identified were children wanting each other’s food (53%, 71) and the quality, type and amount of food provided by parents (53%, 70). Dealing with eating problems (e.g. fussy eaters) was an issue for 50% (66) of care providers. Table 1 shows the relative importance accorded by care providers to a range of specified potential issues.

Knowledge of healthy food choices and food hygiene

A total of 138 care providers responded to the 12 questions on healthy food choice, returning a mean score out of 12 of 8.3 (SD1.9). Thirteen respondents scored less than 50% correct and two answered all the questions correctly. Ninety-three percent (129) of care providers identified water as the best drink for a four-year-old and that 93% (130) made water available to children most of the time. The nutrition knowledge questions, which gave the three lowest scores asked respondents to identify the healthiest breakfast, lunch and snack from four alternatives for each. One quarter of respondents chose a muesli bar and vitamin C syrup drink over crackers, peanut paste and juice as the healthiest snack and 83% (115) identified a Vegemite sandwich, apple juice and a banana as a healthier lunch alternative than a meat sandwich, flavoured milk and a banana. The mean number of correct responses to the eight food safety questions was 5.8 (1.2). Seventeen (12%) respondents scored less than half correctly and six (4%) answered all questions correctly. The average score for the 20 knowledge questions was 14.1 (2.6). Seven (5%) respondents scored less than ten correct answers and only one care provider achieved the full score.

Health promotion role of care providers

Attitudes of care providers to food and nutrition in young children

There was unanimous agreement that good nutrition for children is essential and that children should be provided with healthy food while in Family Day Care and 92% (129) of respondents agreed that children should learn healthy eating habits in Family Day Care. Eighty-six percent (121) of participants felt they knew enough about nutrition to inform parents regarding appropriate food choices.

Nutrition promotion activities directed to parents

Forty-three percent (56) of care providers identified talking to parents about appropriate food choices as an issue. In responses to specific questions regarding the degree of confidence felt in the nutrition promotion role, almost all care providers felt confident or very confident in discussion of child-centred problems such as food refusal (91%, 127) or children wanting each other’s food (88%, 123). Fewer care providers felt confident in making suggestions to parents regarding appropriate food and drink choices (73%, 101), or discussing the quantity of food provided (75%, 102). Only 54% (75) felt confident and a further 17% (24) were unsure about their confidence in telling parents that the quality of the food supplied was unsatisfactory.

Care providers were asked to identify (yes/no) the types of difficulties they faced in nutrition promotion activities involving parents. The majority of care providers (76%, 106) faced no difficulty with parents. The most common concern was that parents were too busy to listen to care providers (20%, 28) and 18% (25) stated that parents did not respond well to advice. Twelve percent (16) of respondents were concerned that parents may take their business elsewhere and 18% (25) reported they did not want to upset good relationships with parents. Only a very small number of care providers believed that they themselves (6) or that the parents (12) thought they did not have adequate nutrition knowledge to support a nutrition promotion role.

Nutrition promotion activities directed to children

Table 2 shows how often care providers employed or encouraged specific behaviours at meal or snack times to manage the feeding situation and related behaviours and issues they experienced. Sixty-five percent (91) of care providers ‘often/always’ talked to the children about the nutritious value of food. A smaller proportion ‘often/always’ told stories about food such as how it grows or cultural differences (29%, 41), or discussed taste, colour and texture (24%, 34).

Care providers were asked to indicate the frequency with which they faced a range of specific feeding problems and then given an opportunity (open-ended) to describe how they dealt with each of these problems. The

<table>
<thead>
<tr>
<th>Issues</th>
<th>% of responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parents providing healthy food for children while in care</td>
<td>139</td>
</tr>
<tr>
<td>Involving children in food-related activities</td>
<td>139</td>
</tr>
<tr>
<td>Discussing food and nutrition issues with parents</td>
<td>140</td>
</tr>
<tr>
<td>Relaxed and enjoyable mealtimes</td>
<td>140</td>
</tr>
<tr>
<td>Food handling and hygiene</td>
<td>140</td>
</tr>
<tr>
<td>Dealing with eating problems (fussy eaters, food refusal)</td>
<td>139</td>
</tr>
<tr>
<td>Addressing special nutrition needs (e.g. allergies, vegetarianism)</td>
<td>140</td>
</tr>
</tbody>
</table>

Table 1. Importance ratings of nutrition issues identified by Family Day Care providers (n = 140)
Table 2. Frequency of Family Day Care provider (n = 140) undertaking activities at meal times to manage feeding situation and behaviour of children

<table>
<thead>
<tr>
<th>How often do you do the following?</th>
<th>n(a)</th>
<th>Rarely</th>
<th>Sometimes</th>
<th>Often/Always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sit with the children during meal times?</td>
<td>140</td>
<td>0</td>
<td>14</td>
<td>86</td>
</tr>
<tr>
<td>Encourage quiet activity before meals?</td>
<td>139</td>
<td>12</td>
<td>41</td>
<td>44</td>
</tr>
<tr>
<td>Use food as a reward for good behaviour?</td>
<td>139</td>
<td>67</td>
<td>31</td>
<td>1</td>
</tr>
<tr>
<td>Let children decide when they have had enough to eat?</td>
<td>140</td>
<td>2</td>
<td>21</td>
<td>77</td>
</tr>
<tr>
<td>Encourage children to help in food preparation (e.g. setting table, serving own food, buttering bread)?</td>
<td>139</td>
<td>7</td>
<td>30</td>
<td>63</td>
</tr>
<tr>
<td>Use food to keep children quiet?</td>
<td>140</td>
<td>85</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>Encourage children to sit down to eat?</td>
<td>140</td>
<td>1</td>
<td>6</td>
<td>94</td>
</tr>
<tr>
<td>Encourage children to try new foods?</td>
<td>139</td>
<td>3</td>
<td>21</td>
<td>75</td>
</tr>
</tbody>
</table>

(a) non-responses to each individual issue excluded
(b) ‘not sure’ responses excluded

most common specified issues experienced by respondents sometimes or often/always, respectively, were:

- ‘food refusal’ 58% (80) and 15% (21)
- ‘dawdling over food’ 52% (73) and 32% (45), and
- ‘not trying new foods / a limited range of foods’ 51% (71), 20% (28).

Only 14% (19) of respondents indicated that dawdling was a problem that they rarely encountered. Thirty-nine respondents identified (open-ended) additional issues which could be broadly categorised as lack of table manners (72%, 28), (some examples could be considered a form of dawdling) or further variations of food refusal (41%, 16). The latter increases the proportion of care providers having to deal with food refusal, at least sometimes, to 85% (117).

In response to an open question, 112 respondents gave details of how they dealt with food refusal and dawdling. Ten percent (11) of these respondents cited assuming that the child is not hungry as a response to dawdling or food refusal, 27% (30) reported they would take the food away and try again later. Nineteen percent (21) indicated that they would take the food away if encouragement failed, 29% (32) would use a range of strategies to encourage eating, including game playing and 26% (29) indicated they would offer an alternative food with 5% disguising food. Only 17% percent of respondents indicated their approach to refusal to try new foods was to re-offer several times. Allergies and special diets were issues ‘sometimes’ for 26% (36) and 27% (37) of care providers and ‘often/always’ for 9% (13) of respondents for both issues. The majority (79%, 110) of respondents indicated they felt confident in dealing with special diets.

Training and development needs identified by Family Day Care providers

Fifty care providers (38%) indicated they had previously attended a course or workshop on nutrition and/or food safety with only eight attending more than one. Only 44 of those who had attended a course stated the type of course attended. Sixty-four percent (32 in 50) of those who had participated in nutrition training, attended a Family Day Care course, a further 16 attended a formal course leading to a diploma or certificate and another 16 attended other courses. Eighty-two (59%) care providers had not attended any courses. Eighteen care providers suggested other sources; the three most common were ‘common sense’, ‘TAFE lecture notes’ and ‘labels on packaging’.

The training needs and interests identified by care providers from a specified list are shown in Table 3.

Estimated food intake

Food records or recalls were available for a total of 400 children under the care of the 140 care providers. This represents the total number of preschool children in their care, not just those present on the day of responding to the questionnaire. Thirty-three of the 400 children were infants 12 months of age or under. Of these infants, 17 (52%) were in care for four to eight hours and 13 (39%) were in care for over eight hours on the day the record was completed. Canned baby foods and bread were provided to 61% (20) and 33% (11) of the children respectively.

Table 3. Current sources of nutrition information and training needs and interests of Family Day Care providers (n = 139)

<table>
<thead>
<tr>
<th>Current sources of information:</th>
<th>Number</th>
<th>% of ‘yes’ responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Books</td>
<td>116</td>
<td>84</td>
</tr>
<tr>
<td>Magazines</td>
<td>98</td>
<td>74</td>
</tr>
<tr>
<td>Radio/television</td>
<td>68</td>
<td>49</td>
</tr>
<tr>
<td>Family Day Care material</td>
<td>97</td>
<td>80</td>
</tr>
<tr>
<td>Field worker</td>
<td>45</td>
<td>32</td>
</tr>
<tr>
<td>Family/friends</td>
<td>87</td>
<td>63</td>
</tr>
<tr>
<td>Like more information:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Food and nutrition requirements of infants, toddlers and young children</td>
<td>119</td>
<td>52</td>
</tr>
<tr>
<td>Informing parents about their roles and responsibilities in providing food for their child in Family Day Care</td>
<td>118</td>
<td>35</td>
</tr>
<tr>
<td>Dealing with parents when they send inappropriate food with their child</td>
<td>121</td>
<td>36</td>
</tr>
<tr>
<td>Healthy and practical meals and snack ideas</td>
<td>128</td>
<td>73</td>
</tr>
<tr>
<td>Making mealtimes a positive experience for children</td>
<td>121</td>
<td>47</td>
</tr>
<tr>
<td>Hygiene and safety in food handling</td>
<td>121</td>
<td>36</td>
</tr>
<tr>
<td>Special diets (e.g. allergies, vegetarianism)</td>
<td>123</td>
<td>59</td>
</tr>
<tr>
<td>Dealing with eating problems (e.g. fussy eaters, food refusal)</td>
<td>123</td>
<td>54</td>
</tr>
<tr>
<td>Involving children in food-related activities (e.g. stories, cooking)</td>
<td>122</td>
<td>43</td>
</tr>
</tbody>
</table>

Percentages were calculated on the basis of the number of care providers who provided at least one response
Fruit was available for 27% (9) of the infants, although, some may have been additionally included in the canned food. Formula was provided for 73% (24) of the infants, while 21% (7) and 15% (5) had milk and juice respectively. Only one infant was reported to have soya milk. Seventy percent (23) of infants had all their food supplied by their parents and for the remainder, the food was contributed by both parents and care providers.

Food records or recalls were available for 367 older children and the time spent in care is shown in Table 4. The proportion of children who were offered various categories of food are shown in Table 4. Only 28% (149) of the children in care for more than four hours were offered more than one piece serve of fruit during the day. Dairy products (excluding milk) were provided for 51% (23), 64% (132) and 73% (85) of children in care for less than four, five to eight hours and more than eight hours respectively. Thirty-four percent (109) of children in care for more than four hours were offered foods from four food groups. For those in care for more than eight hours, only 34% (39) had food from four groups and 17% (20) from all five food groups. The inclusion of extras, such as chocolates, sweets (including muesli bars), sweet biscuits and cakes are also shown in Table 4.

For children in care up to four hours and five to eight hours, 44% (20) and 43% (88) respectively had food supplied by their parents alone while parents and care providers jointly provided food for 36% (16) and 49% (100) respectively of these children. The remaining children received food from the care provider only. For children in care for more than eight hours, care providers made a higher contribution with 22% (26) of children fed by care providers only and in 52% (60) of cases both the parents and care providers contributed the food. Parents alone provided food for only 26% (30) of these children.

Discussion

Family Day Care is an important nutrition promotion setting with the capacity to reach up to 15 000 children and their families in South Australia alone (6). Nutrition is seen as a relevant issue for Family Day Care by care providers who had the almost unanimous view that good nutrition is important for young children and that they should be provided with healthy food and learn healthy eating habits while in Family Day Care. Many care providers are already proactive in a range of important nutrition promotion activities with children aged less than five years in their care.

Prior to the removal of the food subsidy, reputedly most care providers catered for the children in their care and hence had the capacity to influence the nutritional quality of food provided to children while in Family Day Care. In this study, care providers were paid by parents to provide all the food for less than one-quarter of the children in their care and parents were supplying at least some food for most of the children. As a result care providers are faced with a range of foods of variable adequacy, in terms of quantity and nutritional quality, with which to provide meals and snacks for the children. The most common nutrition issues identified by care providers were children wanting each other’s food and the quality, type and amount of food provided by parents. These concerns are likely to be more common and consequential since the removal of the food subsidy and the subsequent increase in the number of parents providing food for their child when in care. Half of the care providers were frequently providing food at their own expense for social reasons or to compensate for the amount or quality of food provided by parents.

The results presented here suggest that the removal of the food subsidy may have had detrimental consequences in terms of food and nutrition experiences of young children in Family Day Care and for care providers. Despite their best intentions, care providers had only limited scope to determine exposure and access to appropriate foods, both of which are important determinants of food preferences (4). The extent to which Family Day Care can meet its responsibilities to ensure access to nutritious food and positive feeding practices for children in its care is limited by the cooperation of parents and the scope and capacity of care providers to facilitate partnerships with parents around food and nutrition issues.

Although the study provides only a limited and very applied assessment of working knowledge of nutrition and food hygiene, overall the results were encouraging. Despite a heartening level of and degree of confidence in their nutrition knowledge, discussing food choice with parents was an issue for half of the care providers. The majority did communicate with parents about food and nutrition issues. Generally they felt able to discuss with parents what the child ate during the day, but were less

<table>
<thead>
<tr>
<th>Hours in Family Day Care [Number]</th>
<th>Bread/cereal</th>
<th>Vegetables</th>
<th>Fruits</th>
<th>Milk</th>
<th>Juice</th>
<th>Cordial</th>
<th>Sweets/chocolates</th>
<th>Cakes/sweet biscuits</th>
<th>Chips/twisties</th>
<th>Extras (a)</th>
</tr>
</thead>
<tbody>
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<td>&gt; 8 [n = 116]</td>
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<td>22</td>
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(a) Extras refers to all snack foods like hot chips/wedges, sweets/chocolates/muesli bars, cakes/sweet biscuits, crackers/savoury biscuits, crisps/twisties and chicken nuggets/pies/pasties/any deep fried food.
confident in directly addressing the importance of healthy eating or the quality and quantity of the food supplied by the parents. Relationships with parents were generally regarded as positive. However, although nine in ten felt they had sufficient knowledge, only half to three-quarters felt confident to discuss nutrition issues with parents. One in five respondents felt parents did not want to listen to suggestions. The commercial relationship with parents was a barrier to the nutrition promotion role for up to one-third of care providers. These results may reflect a lack of clarity about the extent of the care providers’ responsibilities for the nutrition of the children while in their care. The development of partnerships between parents and care providers in optimising the nutritional well-being of children in Family Day Care may enhance confidence and facilitate care providers taking an increasingly proactive nutrition promotion role.

There is growing evidence that approaches used to manage eating behaviour in young children may influence the development of food acceptance and preferences and hence eating habits (4,22). As such, this aspect of the care providers role is potentially an important nutrition promotion strategy. Food refusal, dawdling and neophobia were significant and common issues. Clearly, these problems are, at least to some degree, related. Appropriate management of these common and indeed normal features of eating behaviour in young children can have a significant impact on food acceptance and preference and hence eating habits (4). Evidence suggests that allowing the child to retain the locus of control in relation to how much they eat is extremely important. It assists the development of appropriate long-term eating habits in terms of food acceptance, food preference and the capacity for appetite control. A third of respondents sometimes used food as a reward and one quarter failed to let the child determine the amount eaten. The number of appropriate, unprompted responses to these problems was of concern. Only 10% of respondents indicated that they would assume the child was not hungry, while about one in four reported playing games, offering an alternative or disguising foods. A number of authors suggest that neutral, repeated exposure to new foods reduces neophobia and enhances acceptance and that focus on the new food is counterproductive to long-term acceptance (4,9,22). Less than one-fifth of respondents indicated their approach to refusal to try new foods was to re-offer several times. These results suggest that management of the common and interrelated problems of the fussy eater, food refusal, neophobia and dawdling could be improved, particularly if care providers are to have an effective, proactive role in promoting the development of healthy eating habits in young children.

Although respondents indicated a strong belief and interest in nutrition promotion, less than half had attended a nutrition course. Adequate training in the development of eating behaviours and positive feeding practices would enhance the credibility and increase the confidence of care providers in a nutrition promotion role.

### Food intake estimates

As discussed in the methods, detailed quantitative estimates of intake were beyond the scope and resources of the study. The methodology used to obtain the food intake data is crude and at best can provide only a very general estimate of the range of foods being made available to children in Family Day Care. Nevertheless, given the paucity of data in this area, the results suggest some aspects of intake that might be targeted in nutrition promotion activities.

The low number of children being offered vegetables is a concern, with only a quarter of children in care for eight hours or more receiving any vegetables. Reported fruit intake compares well with National Nutrition Survey data for two-to-seven-year-olds (24) with over 75% of children being offered fruit at least once. Only 20% to 30% of children in care for up to eight hours were offered milk but the proportion increased to 55% for children in care for more than eight hours. Another concern is that of those in care for more than eight hours, only one-third had food from four groups and less than one in five from all five food groups (21). This suggests that the variety of food offered could be improved, particularly for children in long care.

The proportion of children offered foods considered as ‘Extras’ by the Australian Guide to Healthy Eating (21) is a further concern. These foods are by definition foods of low nutritional value with high fat and/or sugar content. The use of chocolates, sweets (including muesli bars), sweet biscuits and cakes was relatively common. These foods were offered to between a third and a half of the children. The use of fried potatoes and high fat food such as chicken nuggets, pies and pasties was rare. The use of cordial and juice was encouragingly low with only about one-third of children being given these two types of drinks. The use of soft drinks was very rare.

Overall the nutritional quality and variety of food provided to children in Family Day Care could be improved by increasing the use of fruit, vegetables and milk and reducing the number of high fat, high sugar snacks foods, particularly chocolates, sweets, biscuits and cakes. The low intake of soft drinks, juice and cordial is commendable, as is the low use of high fat meal items such as nuggets and fried chips. Data were not detailed enough to assess the number of serves of particular food groups provided.

### Study limitations

The interpretation and conclusions drawn from these data need to include a consideration of the limitations inherent in the data. Although the relatively good response rate of 63% (20) lends validity to the results, the potential for response bias must be considered, whereby those more interested in, and perhaps more capable in relation to, nutrition issues, were more likely to respond. The limited
data on non-respondents suggests they were of similar age and gender, but were more likely to have lower secondary as the highest level of education. In addition, the study sample was taken from only one of the Family Day Care administrative regions and hence may not represent the situation in other regions or states. Acquiescence bias may also be present with participants giving the responses that they perceived to be desirable. However, participants were assured in the covering letter that there would be no disclosure of individual responses to Family Day Care staff and the questionnaire was returned directly to the researchers at Flinders University. Attempts to simplify questions and minimise length may have resulted in variable interpretations of questions that may have influenced responses. However, the contribution of the steering committee, nutrition practitioners working in child care and the Family Day Care field workers to questionnaire design should have reduced this effect.

Conclusion

Overall these results suggest that care providers were enthusiastic about and committed to healthy eating for children in their care. There appears to be considerable scope for strategies to strengthen the partnership between parents and carers and facilitate and legitimise the nutrition promotion role of care providers. If Family Day Care providers are to contribute to nutrition promotion, they require not only the knowledge and skills but also the structures to be available at an organisational level to support them and enable them to provide safe nutritious food to the children in an environment that promotes positive eating practices. Facilitating and empowering care providers in this role requires clear policies, standards, guidelines, adequate pre- and in-service nutrition training, materials on healthy food choices, feeding practice guidelines, and monitoring and evaluation procedures. Advocacy for and commitment to nutrition within the child-care sector and the departments responsible for administering programs is required to legitimise and strengthen the partnerships between parents and carers. Such an investment will make an important contribution to the nutritional wellbeing of children and families who use Family Day Care services.

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References

5. Reid M. Opportunities for and barriers to good nutritional health in women of childbearing age, pregnant women, infants under 1 and children aged between 1–5 years. London: Department of Health; 1997.

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