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Residential camps as a setting for nutrition education of Australian girls.

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Abstract

Objective: To implement a planned nutrition education program aiming to promote healthy eating and consumption of a variety of foods in a residential camp setting for Australian girls aged 9 – 15 years.

Methods: 1600 girls attending a residential camp for 7 days in Queensland Australia (2000), participated in a nutrition education program involving the provision of healthy tasty foods based on the Australian Dietary Guidelines for Children and Adolescents and a nutrition education package for use at the camp restaurants each evening. The package included nutrition information on table-talkers and place-mats, together with individual "passport" booklets involving puzzles and questions with incentives for completion. Process and impact evaluations were conducted by surveying a sample of participants using questionnaires and focus groups.

Results: Of those surveyed, 77% felt they had learned something from the health promotion material. 94% stated they had changed their eating habits to include more core food groups during the camp with over 40% stating they had increased vegetable consumption compared to their usual intake. However, implementation of the program was difficult with approximately 60% of campers apparently unaware of the incentives offered and less than 30% demonstrating completion of their passports by receiving their final badge.

Conclusions: Barriers to the involvement of this target group in the health promotion activities need to be explored further. Involvement and training of all key personnel is suggested to ensure consistent implementation and encouragement for all participants. For many participants, an increased awareness of nutrition issues and changes to usual eating habits did occur during the camp period. Long term behaviour changes outside the camp environment should also be assessed in any future programs.

Implications: Using residential camp settings to target children aged 9 – 15 years is an innovative strategy for nutrition education programs. Integration of such strategies into longer time frame programs may be of great benefit to participants and improve effectiveness of nutrition education programs aimed at this target group.

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Introduction

Children's eating habits have a fundamental influence on their health. Concerns regarding the balance and adequacy of their dietary intake in terms of fat, and particularly for girls, iron and calcium content, have been raised based on the 1995 National Nutrition Survey (NNS) results[1]. In Australia, 19-24% of school aged children are overweight or obese with these rates being among the highest in the world[2]. There is increasing evidence to suggest that these conditions in children persist through to adulthood[3] resulting in significant cost to the health care system and debilitating physical and emotional side effects for the obese person[4]. The financial cost of adult obesity in Australia is conservatively estimated at $810 million per year with an extra $500 million spent on weight control programs[5]. Developing programs that improve the nutrition of children and prevent the development and progression of obesity is a public health priority[6].

The setting of a public health campaign is vital to ensure the desired target group is captured. Access to the desired target group is the first challenge in the development of health promotion and nutrition education programs. Targeting children in the 9-15 year age group has historically been achieved by accessing schools and community groups by means of extra curricular activities facilitated by teachers, school nurses or health promoters[7]. The social context of the Girl Scouting movement has been used for the development of at least one nutrition program aiming to increase fruit and vegetable intake of 9-12 year old girls in the United States[8].

Camp settings have also been used in Canada and the United States for health promotion in children with chronic diseases for many years. Programs implemented throughout the last decade publicise the success of this style of program for nutrition education in children with chronic diseases such as cystic fibrosis, asthma and kidney disease[9-11]. American health promoters have extended this concept to embrace the growing prevalence of obesity and diabetes in children by providing camps specifically designed to implement nutrition education and health promotion strategies for healthy eating and weight reduction. They have been successful in inducing weight loss, improving aerobic fitness and psychometric variables in this young target group. An increase in awareness of nutrition issues has been achieved within 3-7 days but with only short term evaluation data available[11-15]. No published data was found on the implementation of any nutrition education programs or strategies in a camp setting within Australia.

The Girl Guide 'jamboree' is a Guides Australia biennial event, conducted over 7 days. The Jamboree of 2000 involved over 1600 girls aged between 9 and 15 years and 600 adult camp leaders. Nutrition and dietetic students at the Queensland University of Technology, Brisbane, were asked to plan and provide a centralised catering service for the camp, supplying 3 meals per day plus snacks in a variety of formats and settings. The opportunity was thus taken to incorporate a planned nutrition education program to promote healthy food choices to this target group in this unique setting.

This paper describes the development, implementation and evaluation of a nutrition education program promoting healthy eating following the Australian Dietary Guidelines for Children and Adolescents[16].

Methods

Following a literature review, discussions with camp organisers and with girls of similar ages and background to participants, a number of factors or determinants were identified as

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influencing children's eating behaviours. These included taste, personal preferences, availability, parent and peer influence, convenience, time constraints, little concern or sense of urgency about future health, concern about body fat/ image and the popular media[8]. Learner-focused cognitive, affective and behavioural objectives were then considered as recommended by Contento et al[17] for effective nutrition education programs. Considering the determinants identified, the context of the program and budgetary, time and resource constraints, it was decided to focus on the learner centred cognitive and affective rather than behavioural objectives in this program. These can be seen in Table 1.

Methods recommended by current behaviour change theories, such as Social Cognitive Theory and the Transtheoretical Model[19] , that aim to promote empowerment, were selected and appropriate strategies identified to achieve the set objectives, as described in Table 1. Two main arms of intervention were thus used to address both environmental and individual determinants of the girls' eating behaviours – the provision of healthy, tasty foods throughout the days of the camp and the provision of a nutrition education package.

The residential aspect of the camp setting and innovative foodservice design fostered a supportive environment. This involved breakfast supplies for approximately 30 people being collected by group leaders and eaten at the campsites. Lunches and snacks were cold prepared and provided centrally for consumption, pick up or packed for excursions. Evening meals were distributed from 5 different locations or "restaurants" identified by a specific ethnic cuisine such as Italian, Mexican, Greek, Australian and Asian. Guide groups were rotated through the different restaurants so that each guide attended all restaurants over the course of the camp. Access to any other foods from other off site sources was greatly restricted.

Daily menus for the 2200 camp attendees, involving three meals plus snacks were designed by the university students to meet the nutritional needs of this age group as defined by the Australian Guide to Healthy Eating (AGHE)[18] and the Australian Dietary Guidelines for Children and Adolescents. The menu parameters were based on a 13 year old female. The energy allowance was 9,100 kJ/person/day to be provided within a budget of $12/person/day to include all food, disposables, hiring of equipment and cleansers. Menu analyses were completed using Foodworks Version Two (Xyris Software Australia Pty Ltd; 1999). A sample menu and the amounts of foods involved can be seen in Table 2.

By modelling and demonstrating a variety of tasty, appealing breakfast, lunch, snack and main meal food items with appropriate serve sizes based on the AGHE, it was hoped the girls would increase their knowledge and ability to select similar foods and serves after the camp. Food was served in cafeteria style at the restaurants with guide leaders serving the food based on serve size directions provided. Second helpings were available upon request.

The nutrition education package involved providing nutrition information to increase the girls' knowledge and awareness via "table talkers" (Figure 1), place mats (Figure 2) and individual booklets or "passports" (Figure 3) with incentives (passport stamps) provided as positive reinforcement for completion.

Each participant was given the nutrition passport with a page allocated for each evening restaurant. Pages included questions, puzzles and activities related to nutrition, health and cuisines specific to each restaurant and related to cognitive objectives set. These also promoted the girls active involvement in the learning process and attempted to make the experience as enjoyable as possible. At the restaurants each participant had a placemat with a

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printed nutrition message. “Table talkers” consisted of fliers placed in prominent positions on tables for the children to read and use to help answer their passport questions. These were all presented in an easy to read, eye catching format with extensive use of colour and graphics. Cloth badges depicting the AGHE were presented on completion of the program as a final incentive and reward (Figure 4).

Formative evaluation via peer review and feedback from a similar target group sample was used in the development of all menus, recipes and materials used. Process and impact evaluation were carried out using participant feedback via focus groups and questionnaires, monitoring of the number of badges presented for completion of the program and general observation throughout the week. Feedback was also verbally both volunteered and actively sought from the group leaders and the volunteer team leading the overall camp management.

Results

As all guides attended all restaurants at some stage over the week, a convenience sample of participants at one restaurant on the final night of the camp was selected, allowing process and impact evaluation questionnaires to be collected from 14% (guides n=275; leaders n=28) of camp participants. Further feedback was obtained from informal group discussions with participants at other restaurant sittings using the questionnaire as a basis for discussion.

Nutrition education resource package

Of those guides who completed the survey, 77% felt they had learned something from the health promotion resources such as table talkers, passports and place-mats. This ranged from general knowledge about ethnic cuisines and types of vegetables available to the variety of foods needed to meet their nutritional needs. Content of the education material appeared to be at a suitable level with over half of participants (54%) stating the questions and puzzles were at an acceptable level of understanding. However approximately one third (36%) stated that the health promotion questions were too easy.

65% reported they did not regularly bring their passports to the restaurants to be stamped. Awareness of incentives for completion of passports was low with 60% of respondents unaware that they would receive a badge on completion and less than 30% of campers actually collecting the final badge. The main reasons given for not bringing passports to the restaurants were the loss of passports or forgetting. During the course of the week, it was apparent that regular reminders and reinforcement were required for the participants to maintain interest and this was perceived to be related to the involvement and enthusiasm of the camp leaders.

Provision of healthy varied meals

94% of guides surveyed stated that they had changed their eating habits for the duration of the camp with over 40% of these stating they had increased their vegetable consumption compared to their usual eating. It was said that these new foods were tried due to their appearance and presentation as well as the desire to try a new food that was offered. On average participants also stated they had eaten more rice, fruit, bread, breakfast cereals and yoghurt than in their usual diet (Table 3).

Observation of guides at meal times suggested the involvement and enthusiasm of the camp leaders influenced the willingness of girls to try new foods and have a positive approach. Varying attitudes and beliefs of the leaders to both nutrition generally and the purpose of the camp were seen. Some obviously valued variety and exploration of new experiences while others felt the camp was a special time for the girls and not a time to be focusing on healthy

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eating. This can be seen from some leader comments such as “the girls want more cakes and sweet biscuits “ or “the girls need more meat”.

The menu items were well accepted by the participants with 82% rating the quality of the food as OK, good or excellent. Serve sizes were not so well appreciated with 52% rating the serve sizes as too small. Adult leaders also supported this notion with 54% stating inadequate quantities of food despite having excess food available after all meals.

Discussion

Until now nutrition education of this style and magnitude, has not been attempted within Australia. Literature searches could find no direct comparison, with those found either using activities over time for the same target group [8] or focussed on special needs children [9-11]. Use of residential camp settings is an innovative method of accessing this target group in order to promote the adoption of healthy eating habits and assist in preventing diet related diseases. Many residential camps have the potential to be the venue for such programs.

Results suggest that participants increased their awareness of healthy eating and improved their vegetable consumption during the week. The poor involvement and completion of the nutrition education resource part of the program however, indicates a poor overall impact of the total intervention. Perceived barriers to implementation included a lack of consistent support from camp leaders, lack of time and human resources to adequately promote the project and no formal inclusion of complementary nutrition education activities into the daily camp schedule. The selected food service design in itself restricted the inclusion of active participatory skill development sessions and small group discussions, which are recommended to promote attitude changes[20]. Cooking in individual guide groups may have facilitated this more if appropriately managed.

The support and encouragement from the adult leaders was a critical component to the successful implementation of the program and correct use of resources. Facilitating greater participation and involvement of the leaders in the program planning and implementation would have been valuable due to their role as key personnel and role models for the girls. Formal training of leaders in nutrition education methods and supportive roles would thus have been advantageous. Other simple strategies to facilitate the use of the passports could have been provision of a neck cord with the passport or a deposit and collection box at each restaurant that was moved with the groups so they were accessible when the participants arrived for dinner.

The style of written resources used was well accepted across the broad range of age and literacy levels attending the camp. More than half the participants felt they had learnt something from the nutrition education program, which suggests the information was directed at the correct level and accessible to the participants. The assessment of the quizzes as being too easy by approximately one-third of participants may have been due to the wide age range (9-15 years). In future developing different levels of passports to better meet the learning needs of different age groups may be advantageous although the need for simplicity and fun must continue to be addressed to promote participation and a positive learning experience.

The increase in core food group consumption including vegetables was a promising sign of the program’s potential. Participants stated they were keen to try new foods that were offered. Long term follow up of participants is required to determine if these changes were due to the

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short term availability of only healthy options during the camp or are indicative of longer term changes to healthier food choices.

Our results suggest that both the camp participants and adult leaders felt the serve sizes were too small and expected a greater quantity of particular foods to be offered. This could be due to a number of factors. It may reflect the growing level of overweight and obese children becoming accustomed to larger serve sizes so when an “adequate” serve based on their nutritional requirements is offered, they perceive it as being too small. This feedback may also reflect inconsistencies in the sizes of meals served by volunteer leaders as plate waste was small but leftover unserved food was common.

It may also have been due to lack of awareness or willingness by camp leaders to access the foods that were available on an unlimited basis such as bread, milk and fruit. Unwillingness may have been due to the leaders’ real or perceived beliefs as to the purpose of the camp and the girls’ preferences and needs. The important roles of leader knowledge, attitudes and beliefs are again seen. The girls’ expectations of camp foods could also have been a barrier to reorientating the participants’ diets to include more breads and cereals, fruits and dairy rather than relying on meat and sweet cakes for a large proportion of energy intake.

The provision of meals which adhere to Dietary Guidelines and the Australian Guide to Healthy Eating was possible within the required budgetary constraints and with limited cooking and personnel resources available. Considerable time and effort was required in the planning and determining of the menus, supply orders and logistics of operating the food service and as shown the overall effectiveness and satisfaction was still largely dependent on the support and attitude shown by the key personnel involved. All menus and materials used are available on request.

Findings support the need for long term multiple-strategy interventions in order to effectively target identified determinants, provide long term support and allow useful modifications and evaluation to be made. Provision of both education and foodservice components are recommended to reinforce and support the overall healthy eating messages.

Conclusions

This intervention had limited success in terms of improving the participants’ knowledge, awareness of and attitudes to nutrition and healthy eating habits, but was nevertheless useful and has the potential to be an effective health promotion strategy eg at school camps. Process issues were recognised as posing barriers to the effectiveness of the intervention and options to overcome these were considered. Incorporating and implementing such an intervention in a camp setting within a more long term program would perhaps be more effective. Greater involvement of key personnel such as youth leaders would also be encouraged.

Implications

Residential camp settings are an innovative opportunity to access children and adolescents for the promotion of health and nutrition messages. The results of this intervention suggest the need for planned resources, integrated implementation and longer involvement and evaluation in order to demonstrate successful outcomes. Inclusion of leaders in the development of programs is essential to obtain support during the implementation phase and training of the facilitators should become an integral component of the program.

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Objectives	**Methods** and Strategies
Cognitive **To know** - a variety of foods are recommended to be consumed each day - the number of foods that are recommended to be consumed per day - the quantities they should aim for each day - what serve sizes are recommended by AGHE - a variety of ways foods can be prepared and consumed based on cuisines of different countries	<u>*Environmental*</u>: **Stimulus/ cue control; Supportive environment** • Provide food via central catering service • Restrict access to foods via central catering service and camp setting • Utilise social support from leaders and peers in guide fraternity <u>*Individual:*</u> **Cognitive restructuring; Information transfer; Active participation; Positive reinforcement; Modelling** • Give information via printed education resources on tables and place mats • Include puzzles and questions in passports • Demonstrate healthy, tasty meal variety at all meals • Provide different menus and types of foods at each restaurant using a variety of different cooking methods for example stir-fry, baking, broiling with <u>no deep fried foods</u> • Demonstrate serve sizes • Provide rewards and incentives with passport stamps and badges on completion.
Affective **To believe** - a variety of foods is beneficial to health - healthy foods can taste good - healthy foods can be obtained and prepared easily and quickly **To desire** - To continue eating a variety of foods based on AGHE guidelines after the camp	

Table 1: Goals and objectives of the nutrition education program and corresponding methods and strategies deployed to achieve them.

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Example of menu	Amounts of foods for this menu
<u>Wheety Wonder Breakfast</u> Fruit salad Cornflakes®/ Weetbix®/ Ricies® Chocolate milk Muesli slice	<u>Breakfast per camp of 30</u> 6 loaves bread 3 doz breakfast bars 4 kg fruit salad 10 litre plain milk 6 litre chocolate milk 1 box each of Cornflakes®/ Weetbix®/ Ricies® margarine portion control jams and spreads additional fresh fruit as selected by leaders
<u>Cheeser Pleaser Lunch</u> Cheese and bacon rolls with/without salad or bacon Banana Celery and carrot sticks Popper Muesli bar/muffin	<u>Lunch per person</u> Large cheese rolls With or without margarine 30-60 g cheese and meat 30-50g salad (rolls made in many combinations) 1 large banana 250ml fruit juice 1 muesli bar bag of celery and carrot sticks
<u>Dinner at Italian restaurant</u> Chicken and Vegetable Pasta Healthy Lasagne (beef) Vegetarian Pizza Salad Bread Ice Cream	<u>Dinner per person</u> 150g cooked meat/equivalent in each choice 180g cooked pasta or equivalent in each choice additional 3 vegetable serves per person in each choice 1 bread roll margarine 1 serve vegetables as salad 150 ml ice cream in a cone
<u>Snacks</u> muffin/rice cakes muesli bar/popcorn sweet biscuits fruit nuts 2 fruit juice tetra-paks per person per day cordials and water ice-creams cakes	

Table 2: Sample menu and amounts of food prepared

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Food	n	%
Bread	47	17
Breakfast cereal	34	12
Rice	98	36
Fruit	94	34
Vegetables	112	41
Yoghurt	41	15
Cheese	18	7
Milk	28	10
Meat	37	13
No Answer	27	10

Table 3: Percentage of participants surveyed (n=275) who reported increase in core food consumption during 7 day camp compared with usual dietary intake

Did You Know?

Variety is the key to good nutrition.
At least twenty different types of food should be eaten every day!
Most Australians eat only 15-18 different foods per week!
A few quick and easy healthy foods that help provide variety include salads, muesli, fruit salad, soups, stews, multigrain breads and stir fries.

Figure 1: “Table Talkers” provided participants with nutritional information during their meals and related to the puzzles and questions on the passport booklets

Figure 2: Place mats for each ethnic restaurant were used to promote a variety of foods and nutrition messages

WATTLE ON INN
"Variety provides health and vitality"

1: Meat is an excellent source of:
a) carbohydrate
b) calcium
c) protein
d) vitamin C
e) fibre

2: What am I?

I'm made from flour and water.
I taste good with jam or honey.
I'm on tonight's menu.

I am ________________

3: Unjumble the letters to find the names of two Australian trees.

m g t w l a e u t

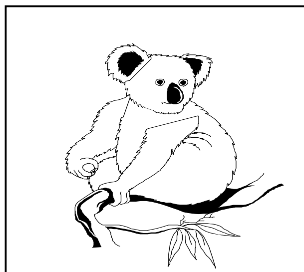

Figure 3: Example of passport activity page for each evening restaurant and sample stamp incentive provided on completion.

Figure 4: Example of the cloth badge incentive for completion of the program

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