

Cooking For Your Life! A Family-Centred, Community-Based Nutrition Education Program for Youth With Type 2 Diabetes or Impaired Glucose Tolerance

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ABSTRACT

OBJECTIVES

To modify the Canadian Diabetes Association Pacific Area's *Cooking For Your Life!* program for youth with type 2 diabetes and their families, and to evaluate program satisfaction.

METHODS

Cooking For Your Life! is a community-based cooking and nutrition education program initially developed by the Canadian Diabetes Association for adults with type 2 diabetes. It has been well attended and resulted in excellent program satisfaction. Several methods were used to guide and evaluate modifications to the adult *Cooking For Your Life!* program for youth. These included review and recommendations from a steering committee, focus groups and a series of pilot classes evaluated via the collection of quantitative and qualitative data. Attendance was tracked at each class, and each participant answered a satisfaction questionnaire.

RESULTS

The modified program consists of 3 interactive, hands-on cooking classes and a Shop Smart tour co-facilitated by a dietitian and cook. A total of 36 people participated in the

RÉSUMÉ

OBJECTIFS

Modifier le programme *Cuisiner pour la vie!* de la région du Pacifique de l'Association canadienne du diabète pour qu'il convienne aux jeunes atteints de diabète de type 2 et à leur famille et évaluer leur satisfaction à l'égard du programme.

MÉTHODES

Cuisiner pour la vie! est un programme communautaire d'art culinaire et de nutrition qui a d'abord été créé par l'Association canadienne du diabète à l'intention des adultes atteints de diabète de type 2. Les participants ont été nombreux et ils ont été très satisfaits du programme. Plusieurs méthodes ont été utilisées pour déterminer et évaluer les modifications à apporter au programme pour l'adapter aux jeunes, dont les suivantes : évaluation et recommandations d'un comité directeur, formation de groupes de consultation et tenue d'une série de cours pilotes évalués par la collecte de données quantitatives et qualitatives. Les présences ont été notées à chaque cours et les participants ont rempli un questionnaire sur la satisfaction.

RÉSULTATS

Le programme modifié comporte trois cours d'art culinaire interactifs et pratiques et une visite guidée de supermarchés avec une diététicienne et une cuisinière. Trente-six personnes ont pris part au programme pilote, soit 15 adolescents et 21 membres de leur famille. La majorité des participants ont été satisfaits du cours, aimé les recettes et dit qu'ils aimeraient suivre une autre série de cours.

CONCLUSIONS

Les résultats indiquent que les jeunes et leur famille ont été satisfaits du programme d'éducation communautaire et très intéressés à y prendre part.

MOTS CLÉS

Jeunes, nutrition, éducation.

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pilot program, including 15 adolescents and 21 of their family members. The majority of participants were satisfied with the course, enjoyed the recipes and expressed interest in taking a second set of classes.

CONCLUSIONS

These pilot results suggest that both youth and their families were satisfied with and committed to attending this community-based education program.

KEYWORDS

Education, nutrition, youth

INTRODUCTION

Type 2 diabetes is characterized by hyperglycemia secondary to insulin resistance as well as impaired insulin secretion (1). Obesity is a major modifiable risk factor for type 2 diabetes and exacerbates insulin resistance (2). Given the current obesity epidemic, the incidence of type 2 diabetes is rapidly rising (3). Type 2 diabetes among youth is now recognized as a public health problem for which there is great potential to improve primary and secondary prevention (4). Impaired glucose tolerance (IGT) is often diagnosed prior to the development of overt type 2 diabetes, and without treatment, almost half of individuals with IGT go on to develop type 2 diabetes within 5 years (5). The Diabetes Prevention Program clearly demonstrated that diet and exercise were superior to medication in preventing the development of overt type 2 diabetes (5). Even after the development of type 2 diabetes, first-line therapy often consists of lifestyle modification (healthy eating and exercise) for 6 months prior to initiating medication (6,7). Effective prevention and management of type 2 diabetes is essential given that type 2 diabetes during childhood is associated with severe and early onset of microvascular complications (8-10).

Currently, nutrition education for youth with type 2 diabetes and IGT at the British Columbia Children's Hospital (BCCH) is limited to a 30 minute didactic group session with 3 families facilitated by a dietitian, followed by a 30 minute individual appointment with each family to discuss a personalized meal plan. Subsequent follow-up visits with a dietitian are 30 minute individualized sessions every 6 months. The program is relatively resource-intensive and is not designed to address the skills required to apply learnings in daily life. There is an urgent need to develop innovative, resource-efficient educational approaches in order to serve this growing population.

To date, few studies have assessed action-oriented, family-centred diabetes education programs. However, it is well recognized that treatment programs for adolescents with type 2 diabetes need to address the lifestyle and health habits of the entire family if they are to be effective (11,12). Patients' and families' adherence to recommended healthy

eating patterns is low and has been attributed, in part, to the poor teaching practices of health professionals (13).

Families of adolescents with type 2 diabetes share many anthropometric risk factors and have lifestyles characterized by high fat intake, minimal physical activity and a high incidence of binge eating (11). Furthermore, the incidence of diagnosed and undiagnosed type 2 diabetes or IGT in families of adolescents with type 2 diabetes is striking (11). These data highlight the need for family- and lifestyle-focused interventions.

Family support is known to be a key factor in promoting the integration of diabetes self-care activities into one's life (11). While much is known about therapy for type 2 diabetes in adults, little is known about effective approaches for children and youth with type 2 diabetes or IGT (12), and even less about those activities that help youth and their parents to translate knowledge into practice. The proposed program focuses on education, active learning and goal-setting, not only for youth with diabetes, but also for their parents and other family members.

The Canadian Diabetes Association (CDA) Pacific Area initially developed the *Cooking For Your Life!* (CFYL) (14) program for adults with type 2 diabetes. The program is administered over the course of 1 month in the evenings and consists of 3 classes (3 hours in length) taught by a dietitian and a professional cook in a community setting. The majority of participants in the adult program are between 45 and 65 years of age. During each class, nutritional knowledge and healthy eating principles are reviewed, and then participants have the opportunity to cook and eat a meal using the concepts learned during the class. The fourth class consists of a 2 hour Shop Smart tour, with an emphasis on label reading. Both a facilitator manual and participant workbook have been developed as part of the adult program.

The aim of this pilot study was 2-fold: 1) to modify the existing adult CFYL nutrition education program (facilitator manual and participant workbook) for use with youth with type 2 diabetes or IGT and their family members; and 2) to evaluate program satisfaction through attendance rates, satisfaction questionnaires and group discussions.

METHODS

Several methods were used to guide and evaluate modifications to the adult CFYL program. These included review and recommendations from a steering committee, focus groups, and a series of pilot classes that were evaluated through the collection of quantitative and qualitative data.

Steering committee

This project was guided by a steering committee that included representation from BCCH (pediatric endocrinologist, diabetes clinical nurse specialist and dietitian, all with expertise in pediatric type 2 diabetes), the CDA (dietitian, education staff member and administrative leader) and the community (professional cook, youth advocate and parent of a child with type 2 diabetes). The steering committee held 6 meetings, during which the original adult program was reviewed and initial changes were made to the participant workbook, facilitator's manual and class organization. Changes to the recipes, graphics and educational information in the workbook were based on committee recommendations in order to enhance the relevance to youth and parents, increase the appeal of the content and graphics, and ensure youth-friendly language at a Grade 6 level. Modifications to the class organization as presented in the facilitator's guide were focused on ways the dietitian and cook could most successfully engage youth participation and enhance communication with youth and between youth and adult participants. New methods of information delivery, ice breakers and youth-friendly games were developed. A new module was added to the facilitator manual to address frequently asked questions about type 2 diabetes in youth, self-esteem and body image issues, and considerations for interacting and communicating with youth.

Focus groups

Subsequently, 2 focus groups were held to obtain perspectives and suggestions regarding the revised draft program from youth and caregivers recruited from the BCCH type 2 diabetes/IGT clinic. The focus groups, comprised of 5 youth and 5 caregivers, were held concurrently in 2 separate rooms over 1.5 hours. The groups provided input on the program related to general level of interest, course content, program organization and other areas perceived to be important. Table 1 summarizes the focus group discussion guide, youth and parent responses, and subsequent modifications made to the program based on their suggestions. Those who participated in the focus group were also invited to participate in the pilot classes.

Pilot sessions

Recruitment

An initial letter of contact was mailed to all youth attending the BCCH type 2 diabetes/IGT clinic. Youth between the ages of 11 and 18 years diagnosed with either IGT or type 2

diabetes were invited to participate if they had a good understanding of written and spoken English, and at least 1 caregiver living in the same home and willing to participate in the program. If interested, the families could contact the study nurse by phone or e-mail for an explanation of the study, although the majority of youth and families were recruited during routine clinic appointments. Three separate pilot sessions, each consisting of 4 classes over the span of a month, were conducted. Youth and parents who agreed to participate in the pilot were contacted by the study nurse during the program to remind them about the classes and assist them in rescheduling any missed classes.

Evaluation

Quantitative data on attendance and satisfaction were collected. Attendance at each of the 4 classes was monitored. If a participant did not attend a class, the research coordinator requested a reason for his/her absence. Participants who missed 1 of the first 2 sessions were given the opportunity to make it up during the next session and still be credited with full attendance. A satisfaction questionnaire was distributed to all participants during the last session. Using a 5-point visual scale, participants rated their satisfaction with the course, workbook, general learning and location. They were also asked about their interest in a second set of classes, and if they would pay for such a class and, if so, what cost would be reasonable. As this was a small pilot study designed to provide direction for program modification based on the needs and perceptions of youth and parents, qualitative data were also collected from group discussions and written responses. After the first pilot session, class evaluations were used to make the final modifications to the CFYL program.

The project was reviewed and approved by both the Children's and Women's Research Review Committee and the University of British Columbia Behavioural Research Ethics Board. All parents and caregivers provided written informed consent, and youth provided written assent.

RESULTS

Steering committee changes

Workbook and facilitator manual

The content of the workbook was modified (15) on the basis of relevance and appeal to youth. Of the existing 18 adult recipes, 4 were removed from the program and a complicated lasagna recipe was simplified. The names of a number of recipes were also changed (e.g. "Lentil Vegetable Soup" was changed to "Soup'er Veggie Soup") to further engage youth.

A number of additional concepts were added to the facilitator manual (15). A section on snacking tips was added, with suggestions about portion sizes and creating a snack cupboard at home filled with healthy snack choices. The section on healthy eating basics was expanded to include balancing a meal and emphasis on the importance of 3 meals per day. A small-group session was added titled "Where's

Table 1: Focus group results and related program modifications

		Results and examples		Program modifications based on focus group input
		Youth focus group	Parent focus group	
General interest				
General interest in program?	Mixed interest <ul style="list-style-type: none"> • "I will cook, but I'm not that interested" • "I guess it's good to have the life skill [cooking]" • There are "too many other things to do" 	Parents keen but not confident youth would participate <ul style="list-style-type: none"> • "I would have to bribe them [youth]" • "As long as food is served! Food or payment" • Focus on healthy eating and food choices; if youth also learn to cook, this is "a bonus" 	<ul style="list-style-type: none"> • Phone reminders, encouragement to attend 	
Suggestions for making it fun/interesting for youth?	Allow for active learning <ul style="list-style-type: none"> • Hands-on activities: "Lectures are boring, and we don't listen" Use music <ul style="list-style-type: none"> • Music would be OK: "We wouldn't mind listening to some radio stations when we cook, but parents wouldn't like it" 	Include music <ul style="list-style-type: none"> • "Radio stations that the kids like" 	<ul style="list-style-type: none"> • All sessions included active learning and hands-on practice • Radio/CD player available for youth to listen to music, if desired 	
Course content				
Workbook cover: opinions/suggestions?	Remember who it's for <ul style="list-style-type: none"> • "Use pictures of foods that we would actually cook; put mac & cheese on the front cover" 	Good because there are pictures of kids on it; make pictures of kids bigger; food pictures are too big — not in proportion to pictures of kids	<ul style="list-style-type: none"> • Front cover photos modified; photos of kids enlarged and food photo changed from stir-fried tofu and veggies to quesadillas 	
Recipes: opinions regarding recipes and recipe names included in program?	Not sure about trying unfamiliar/new foods <ul style="list-style-type: none"> • "I don't think I've ever had tofu" • "Tofu is like rubber" • "The tofu my Dad gets is flavoured and tastes good" Tell us what's in the food <ul style="list-style-type: none"> • "The recipe should tell you what's in it — 'Stir Crazy Veggies' doesn't tell you there is tofu in it!" • Don't use "babyish" names for the recipes; some of them are for "3-year-olds" (e.g. "Spaghetti Noodle Dandy") 	Make foods relevant for kids <ul style="list-style-type: none"> • Include food that "won't make kids stand out at school"/"appear different from their peers" • Need more info on pop — diet and sugar, sweeteners and other sorts of drinks Tell us what's in the food <ul style="list-style-type: none"> • "Like the real names of recipes!" • "Always include the real name even if another name is also used" • "Ones like 'Spaghetti Noodle Dandy' would be a 'put-off' to kids" 	<ul style="list-style-type: none"> • Some tofu recipes were kept in the program for youth to try; others were replaced with chicken • "Liquid sugar" section added; sugar content of popular beverages included • Recipe titles changed to indicate actual ingredients and/or use names chosen by youth (e.g. "Spaghetti Noodle Dandy" was changed to "Veggie Spaghetti") 	

Table 1: Focus group results and related program modifications (cont'd)

		Results and examples		Program modifications based on focus group input
		Youth focus group	Parent focus group	
Discussion topics/questions	<p>Grocery store tour: suggestions for areas of store and types of food to include in tour?</p> <p>If there has to be a tour, make it interesting</p> <ul style="list-style-type: none"> • Don't like the idea of travelling in a large group around the store — "too embarrassing", "everybody needs their own space" • If there has to be a tour, include the deli and convenience foods 	<p>Do tour in separate groups. Show youth healthier food choices</p> <ul style="list-style-type: none"> • "Show kids where to look", "How to find healthier food in an unhealthier mix" • Discuss portion sizes: "Supersizes compared to regular size" 	<ul style="list-style-type: none"> • Tour modified to include 2 separate groups for youth and parents and store sections/items suggested by youth and parents 	
Program organization				
	<p>Timing?</p> <p>Schedule on weekends, but not too early</p> <ul style="list-style-type: none"> • "It would have to be after 11 AM ... everyone sleeps in until at least 11 AM" • Evenings OK, too 	<p>Schedule on weekend mornings</p> <ul style="list-style-type: none"> • Do them on Saturday mornings, not in the middle of the day, which takes up the whole day • "Saturday mornings are fine – they (teens) are only sleeping anyway"; prefer 9 AM, but 10 AM OK 	<ul style="list-style-type: none"> • Programs organized for 3 classes to be held on Saturday mornings and the shorter Shop Smart tour to be held in the evening 	
	<p>Participant mix: youth and parents together or in separate groups?</p> <p>Have teens cook with teens</p> <ul style="list-style-type: none"> • Better if "teens cook together" • Brothers/sisters "may get type 2 diabetes, so they should learn too" • Put the parents together • Parents can learn the right type of food to buy 	<p>Have teens cook with teens</p> <ul style="list-style-type: none"> • Best if kids are together • Don't put kids with their parents or "they will expect their parents to do everything" 	<ul style="list-style-type: none"> • Each session included some time with the entire group, but teens and parents worked in separate groups for cooking activities 	
Other suggestions				
	<p>Respect, youth and their experience</p> <ul style="list-style-type: none"> • Don't enforce rules: "Give us credit to make our own decisions" • Don't force stuff on youth • Remember: "You don't have a damn clue what it is like to have diabetes, how hard it is" 	<p>Have a youth-centred approach</p> <ul style="list-style-type: none"> • Acknowledge the participation of youth at every session • "The attitude of the instructor is most important — upbeat, fun, treat kids well" 	<ul style="list-style-type: none"> • Group activity added to first session to involve youth in identifying ground rules for CFYL classes • Youth given exercises and encouragement to set own goals • CFYL facilitator manual appendices added to: a) review adolescent growth and development b) provide guidelines for interacting and communicating with youth 	

CFYL = Cooking for Your Life!

the Fat,” in which participants learned to rank a number of common fast food choices according to fat content, giving them the knowledge to make better choices. A “Food Hunt” was added to the Shop Smart tour. Participants were asked to identify the brand name of low-fat or low-calorie options of common foods, such as no-added-sugar ice cream or fat-free cookies. The deli section was also added to the grocery store tour at the specific request of youth.

Cover graphics were changed. Five new pictures were used for the cover: 2 pictures of youth cooking, 1 picture of a family cooking together and 2 pictures of recipes made during the class. The pictures included various ages, ethnicities and body shapes, and were intended to appeal to a diverse population of youth and families.

Class structure and organization

Sessions were held in the home economics classrooms of 3 different high schools in Vancouver and the surrounding Lower Mainland. This provided a familiar setting for the youth and allowed for the convenience of a local setting for participants. Although the course was initially conceptualized as a series of evening classes similar to the adult program schedule, parents and teens noted that this would not be practical. The time of the classes was therefore changed to Saturday mornings from 10 AM to 1 PM. The modified schedule was based on specific feedback obtained during the focus groups, in which teens said they needed to sleep in on weekends, and parents said they did not want classes in the middle of the day, since that would interfere with other activities and responsibilities. During classes, most of the work was done in small groups, with youth and their caregivers working separately. Music chosen by the youth was played during the classes. Information delivery was modified to limit didactic teaching, and games such as “Nutrition Jeopardy” were developed. The Shop Smart tour was completed at a local grocery store, with the youth and adults completing the tour separately. Each class included some homework and goal-setting, which were discussed at subsequent classes.

Pilot sessions

Three pilot sessions were held in November 2004, February 2005 and April 2005. There were a total of 36 participants, including 15 youth (7 females) and 21 family members (16 parents [4 families with both parents attending], 3 grandparents and 2 siblings). Of the 15 youth ranging in age from 11 to 18 years, 9 had type 2 diabetes and 6 had IGT. All had a body mass index >90th percentile for age and sex (16).

Attendance

Of the 36 participants, 31 (86%) attended at least 3 of the 4 classes; 14 of 15 (93%) adolescents attended at least 3 of the 4 classes. The families of 2 of the adolescents with poor attendance also had poor attendance. In 2 families from which both

parents initially attended, 1 parent subsequently attended only 2 classes while the other parent attended 3 of the 4 classes.

A number of reasons were given by families who did not attend all classes. These included conflicting school responsibilities, such as additional tutoring for 1 youth, parents having difficulty getting teens out of bed in time to attend, other appointments and weekend work schedules.

While overall session attendance was high, it must be noted that significant effort went into recruiting participants and encouraging them to attend all sessions. A skilled communicator accustomed to working with teens spoke with youth on the phone in advance of the classes to remind and encourage them to come. If any youth missed a class, a follow-up call was made to review reasons and discuss ways to make up classes.

Satisfaction evaluations

Of the 36 participants, a total of 31 (86%) completed evaluations. The 5 evaluations not completed represented the 5 participants who did not attend the final class. Of the 31 who completed an evaluation, 28 (90%) were mostly or completely satisfied with the program and enjoyed the program’s recipes; 28 (90%) felt the workbook was easy to read and helpful, and 23 (74%) were interested in taking a second set of classes. Three of the 15 youth (20%) did not enjoy the combination of adults and youth in the classes.

Although the pilot classes were offered to participants at no charge, they were asked to provide feedback at the end of the program regarding a possible charge for the course.

Of the 31 responding participants, 20 (65%) said they would be willing to pay for the program, and amounts that were identified as reasonable to charge for the program ranged from \$10 to \$100. The remaining 11 (35%) felt there should be no charge for the program and stated they would not attend if they had to pay.

Written feedback

Handwritten comments were submitted by 6 youth, and all comments indicated satisfaction with the program as well as positive attitudes and learning experiences. In the unedited words of the youth:

This class was overall a good course to attend. The recipes were excellent, they were easy to make and they were tasty.

I liked this cooking class because the food was low in fat but tasted good. Don’t feel nervous, it doesn’t help at all.

I really enjoyed this, even though I came in thinking I wouldn’t. The dessert tofu was really good. Don’t let the thought of tofu mislead you. I had lots of fun and it was an experience I’d totally repeat again or take for a longer period of time.

This cooking class was awesome! At first I felt uncomfortable, but after the first half hour I already felt at home. The food's great, the people are nice, the staff are supportive and we play fun games. I think this was so much fun I would come back again and again. Also, you learn tons about how to cook healthy food and stuff that doesn't taste gross. Lastly, it was an awesome way to be more interactive.

DISCUSSION

The youth and families who participated in this pilot project demonstrated their commitment to the program through their regular attendance and comments. Just 1 youth attended only half of the classes, with her 2 caregivers demonstrating the same poor attendance. In contrast, the 3 other adults with poor attendance came from families that included 2 caregivers initially attending; thus, in each of these 3 families there was full attendance by the youth and at least 1 caregiver.

Although attendance was generally good, it was a challenge to coordinate class schedules with the lives of busy youth and families. Unlike the adult program, which is well attended in the evenings, the youth program demands consideration of the unique interests and schedules of young people, as well as those of their parents. Youth are in school during the day and often have extracurricular evening or weekend activities. Furthermore, when faced with the choice of sleeping in on the weekend or getting up to attend a class, some youth may need considerable encouragement. Parents with work or other responsibilities also have additional family and childcare responsibilities to attend to in the evenings and on weekends. The success of our pilot program attendance may be attributed in part to the recruitment work of the study nurse. Any future program planning will need to consider the logistics of a sustainable schedule for this unique group of learners.

Funding options to cover program costs would also need to be considered to sustain the program. Not all participants in the pilot indicated a willingness to pay for the program, although many felt a registration fee would be reasonable. Ability to pay would need to be considered if a registration fee were to be charged. This is particularly important given that many of the participants are youth.

Due to the effort required to recruit families and encourage their ongoing attendance over 4 weeks of classes, it may be desirable to consider other possible forums to allow learning to be condensed into a shorter timeframe. One option to consider would be a family camp over 2 to 3 days. The partnership between the CDA and BCCH means there is potentially greater opportunity to offer the program in novel, family-centred settings, such as a camp.

Further consideration should also be given to broadening the reach of the CFYL program to enable more youth, not just those diagnosed with IGT or type 2 diabetes, to benefit

from participation. Integrating the program into established mainstream youth activities, such as school home economics classes, may be more practical and have greater reach. Although this would weaken the family-centred approach piloted in the study, the potential to reach a larger number of youth who could benefit from the information and skills covered in the CFYL program could be considered a public health intervention. Further study would be required to determine the feasibility of school-based programs, as well as measurable program outcomes.

CONCLUSIONS

The adult CFYL program was successfully modified for youth with type 2 diabetes or IGT and their families (15). Participants reported high levels of satisfaction with the modified program content, program organization and workbook. Youth and their caregivers were interested in learning about healthy eating, food choices and cooking. The focus groups, pilot classes and questionnaires demonstrated that adolescents are willing to participate in programs with their parents when the classes have a youth focus and youth are given the opportunity to make their own choices. Both the youth and their caregivers were satisfied with the course and interested in taking further classes of a similar nature.

This program represents a community-based intervention targeting youth with type 2 diabetes or IGT, and more study is needed to determine the overall effectiveness of the program as an intervention for these conditions. The modified CFYL program (15) offers a unique approach to education that is not currently available in clinics or other programs for youth with type 2 diabetes or IGT. It has potential to be used not only for education in those already diagnosed with IGT or type 2 diabetes, but also as an intervention for primary prevention. Further consideration should be given to offering the program to a broader youth population, who due to circumstances of living in North America's obesogenic environment, face an increasing risk for obesity, IGT and type 2 diabetes.

ACKNOWLEDGEMENTS

This study was funded by the BCCH Foundation Telethon Special Projects Fund and the Canadian Diabetes Strategy, Health Canada. We thank members of the steering committee for their contributions to program development and implementation; Doreen Yasui, registered dietitian, for her contributions to the review and development of nutrition materials and learning activities; and the CDA Pacific Area for leadership in developing the original adult CFYL program and the opportunity to collaborate in adapting the program for use with youth and families. CP is the recipient of a Child & Family Research Institute Clinician Scientist Award.

AUTHOR DISCLOSURES

No duality of interest declared.

AUTHOR CONTRIBUTIONS

HN and CP equally contributed to the conception and design; analysis and interpretation of the data; and initial drafting and critical revision of the manuscript. JR contributed to data collection and analysis, and initial drafting of the manuscript. All authors approved the final version to be published.

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