The Family Team Approach to Fitness: a Proposal

SUSAN J. CROCKETT, PhD, RD

Dr. Crockett's proposal won third prize in the contest for the 1987 Secretary's Award for Innovations in Health Promotion and Disease Prevention. The contest is sponsored by the Department of Health and Human Services.

When Dr. Crockett competed for the award, she was a candidate for her doctorate in the Division of Epidemiology at the University of Minnesota's School of Public Health. Tearsheet requests should be addressed to her at the Department of Food and Nutrition, 351 K Home Economics, North Dakota State University, Fargo, ND 58105.

Synopsis

Disseminating health information to parents from school-based programs is beneficial in at least four ways: children need the support of their parents if they are to implement the behavior changes they learn in school, parents can benefit from the information themselves, adults may be especially willing to learn about promoting health when they have young children in the home, and efforts to promote healthful behavior changes among children may be more effective if interventions are aimed at attitudes and habits of the family rather than those of individual persons.

In this paper are summaries of published research on influencing parents in youth-directed health education interventions, including recent data collected in the Minnesota Heart Health Program. Following the review of the literature is a plan for an in-home nutrition and physical activity intervention that could maximize the impact on the eating and exercise patterns of the parents and their children.

Very little research has been reported on how important parents are as participants in the health promotion efforts directed to their children. Funding this proposal would help researchers to learn more about maximizing the impact of primary prevention interventions by studying a process for improving eating and exercise patterns of the family unit—the children and their parents—that could serve as a model health promotion program.

COMPELLING ARGUMENTS exist for teaching health enhancing behaviors to children: First, primary prevention is important because eating and exercise habits develop during childhood and adolescence and are difficult to change. Second, experts agree that great numbers of children in the United States are establishing eating patterns that are implicated as causes of cancer and cardiovascular diseases (*1–3*). Third, children and adolescents are important members of families, schools, and communities and can both motivate and serve as role models for other persons who need to change behaviors.

Although children are usually amenable to change, they need parental support when implementing new eating and exercise practices (*4–7*). Therefore, interest in ways to influence parental eating and exercise behaviors in the context of youth-directed programs is growing along with the interest in primary prevention through interventions in childhood.

Parents are important targets for health education efforts because they are the role models for their children. Theoretical and empirical evidence demonstrates that interventions that influence family attitudes and habits are likely to promote long-lasting changes in health behaviors (*8*). Parents may be more willing to learn about nutrition and to change their eating behavior during the years when they have young children in the home (*9*). Further, parents are reaching the age when disease processes may begin to manifest, so they need relevant information about and can benefit from positive changes in health behavior. (*10*).

Although several researchers acknowledge the importance of, as well as the potential for, influencing adults through interventions aimed at youth (*11–14*), the phenomenon has not been widely studied. In this paper, I summarize some key background studies that helped me to learn about such an approach, and I conclude with a plan for a youth-directed nutrition and physical

activity intervention that is designed to maximize impact on the eating and exercise patterns of parents as well as their children.

Literature Summary

Family-based interventions. One approach to improving health behavior of parents has been to recruit families at risk and then provide classes or individual counseling sessions for family members. Examples of this approach come from the Minneapolis Children's Blood Pressure Study (*15*) and the Bogalusa Heart Study ADAPT Trial (*16,17*), a dietary-exercise alteration program trial. While these two interventions differ in several important ways, each program sought to intervene, in an evening group class setting, with parents of high-risk children. These programs demonstrated important health behavior changes among families whose members attended the educational sessions. However, only 17 of 41 study families completed the full program in the Minneapolis Children's Blood Pressure Study. In the ADAPT Trial, 23 percent of mothers attended no classes; the highest attendance at any class was 26 mothers (60 percent) and the lowest was 7 mothers (16 percent). No parent attended all 10 classes.

In the Oregon Family Heart Project (*18*), randomly selected families were recruited to participate at monthly evening sessions in a long-term, gradual process of health behavior change. Hollis and coworkers showed that families that joined the program were different from families that did not. Joiners had slightly higher occupational and educational status, more knowledge about cardiovascular disease, and a greater feeling of control over their health than did the nonjoiners. Families reporting members with high cholesterol or chronic disease were not more likely to join than families without such medical problems.

The family-based approach is advantageous because it can provide personalized education for high-risk families. Interventions of this type have achieved significant improvement in health behavior and some have shown changes in physiological measures. However, there are indications that significant numbers of families may not be willing to participate in evening classes. High dropout rates and nonattendance during the implementation phase also have been reported. Families who would benefit most from intervention are not more likely to volunteer to attend health classes. Experience in family-based interventions points to the need to develop and evaluate alternative health education approaches that can reach larger numbers of parents and families.

School-based interventions. Some researchers report that parents will make changes in their own health behavior or attitudes when interventions are aimed not at them, but at their children in a school setting. McKay and coworkers reported a school-based, community-oriented nutrition program aimed at reducing the sodium intake of sixth grade, urban black children (*13*). The component of the intervention that was directed to parents consisted of meetings and printed messages about dietary sodium and preventive health measures attached to small bags of unsalted snack foods. When family dietary behavior was assessed with the use of a questionnaire distributed after the intervention, 47 percent of participating parents, compared with 17 percent of control parents, reported having made dietary changes to reduce the amount of sodium in their family's diet as a result of messages received in the previous 3 months. These data indicate that a change in family eating patterns can be effected in an intervention aimed at changing the habits of children.

Coates and coworkers reported results of a health education project and replication developed for fourth and fifth graders (*12*). The interventions included education aimed at parents, and it was implemented through stickers given to students whose sack lunches predominantly consisted of foods that reduced the risk of cardiovascular disease, that is, "heart healthy" foods.

Tell (*19*) reports a parent intervention as part of the Oslo Youth Study. Of the 828 students surveyed at baseline, those with the highest serum cholesterol were identified. Nutritionists visited at the homes with parents of high-risk children. They discussed the significance of elevated serum cholesterol levels and the possibility of influencing blood lipids through diet modification. After the visits, mothers in the intervention group reported more often that they used oil rather than butter or lard when preparing foods for their children than did the mothers in the control group.

Minnesota Heart Health Program

Recently, I have assisted in evaluating the impact on parents of four youth-directed interventions (*11*). All of the interventions were implemented as part of the Minnesota Heart Health Program (MHHP), which is described elsewhere

'The family-based studies showed that classes for parents were a useful intervention technique for high-risk populations, but significant nonattendance rates and difficulty in recruiting participants presented barriers to reaching large numbers of parents.'

(*20*). In the four evaluations, MHHP youth-centered interventions were shown to influence parents through (*a*) timely parent-child discussions about health issues, (*b*) an example of a child who improved his or her own health behavior, (*c*) written information brought home from school or other forms of communication that may stimulate greater knowledge of the parent, (*d*) heightened belief among parents in the ability of their children to make decisions for themselves such as choosing snacks, (*e*) more child-initiated discussions with a parent about health issues, and (*f*) more intervention-related content in parent-child discussions.

Currently, I am evaluating the impact on parents' eating patterns of "Hearty Heart Home Team" (Home Team), a MHHP intervention that is mailed to the homes of third graders to teach heart healthy eating habits to their parents and to them. Home Team was implemented in 16 schools with 1,389 families in Fargo, ND, and 3 suburbs of Minneapolis, MN. The participation rate of families was a promising 86 percent, with 71 percent of all families completing more than four of the five program sessions.

Pretest and posttest questionnaires were distributed to randomly selected parents. At posttest only, interviewers conducted a shelf inventory of selected foods in the homes. Of the three measures, only the results of the shelf inventory were available by the deadline for this proposal. All foods on the inventory checklist were targeted as either "encouraged" (recommended) or "discouraged" (not recommended) foods, were relatively perishable, and were easy to inventory.

Parents who participated in Home Team had significantly more encouraged foods in their home ($P<.01$). There was no significant difference in the number of discouraged foods. When subcategories of encouraged foods were examined, significantly more intervention homes had fresh fruits, low-fat cheeses, whole-grain breads, and low-fat frozen desserts. Results suggest that, in response to nutrition education intervention, parents may add encouraged foods before they delete discouraged foods. Further, frozen desserts, fresh fruits, breads, and cheeses may represent food categories that are more easily changed than others.

Summary of background studies. The family-based studies showed that classes for parents were a useful intervention technique for high-risk populations, but significant nonattendance rates and difficulty in recruiting participants presented barriers to reaching large numbers of parents. Preliminary evidence indicates that parents' health behavior or attitudes can be influenced through school-based interventions aimed primarily at changing the health behavior of children.

In MHHP, school-based health education interventions were shown to have the potential for causing changes in parents' health beliefs and behaviors and parent-child communications about health issues. However, simply expecting the child to communicate on his or her initiative about the intervention or to take the written materials home may not be sufficient. Many children appeared to have communicated with their parents about health topics discussed in school; however, in a school-based physical activity curriculum, only 40 percent of parents were aware that their eighth grader had taken part in the intervention. It appeared that newsletters sent to the children's homes had more impact on parents than an intervention that took place at school.

Evaluation of a mailed-home intervention showed that parents will change their food purchasing practices in response to a youth-directed intervention, and they may add recommended foods before deleting nonrecommended foods. Frozen dessert, fresh fruit, breads, and cheeses are the foods that are most apt to be changed.

The results of this background research and experiences in implementing the parent intervention Home Team were used in planning the intervention that is proposed subsequently. I seek funding to develop this nutrition education intervention, which could maximize the impact on the eating and exercise patterns of parents and their children.

Proposed Intervention

Family fitness team. The proposed intervention is a 5-week correspondence course called Family

Fitness Team, an extension of the model that was tested with the Hearty Heart Home Team described elsewhere (*11*). The parent and third-grade child are asked to form a team to learn about healthful eating and exercise—a strategy that mimics the athletic team approach, which is familiar to most children. The theoretical model that was a guide for the development of this intervention is based on social learning theory (*21*) and has been submitted for publication (Crockett, S. J., Mullis, R., and Perry, C. L.: Parent nutrition education: a review and conceptual model.) Activities are planned to impact parents' attitudes and knowledge, home and family environment, and behavior.

An in-home format was chosen for four reasons. First, in MHHP studies, a newsletter approach was shown to have more impact on parents than school-based interventions alone. Second, I sought an approach that would have strong incentives for parent participation. Third, an alternative to parent classes was sought since experience in family-based classes has shown significant dropout problems. Fourth, I wanted parents and children to complete learning activities in the home where many of the family's food choices are made and where parents model exercise habits for their children.

The intervention uses positive messages to teach parents and children about the health value of aerobic activities and low fat, low salt, high fiber eating patterns. The parent and child together are asked to learn through activities and games, rehearse positive behaviors, and set eating and exercise goals. They receive points for doing so. Each week, Family Fitness Team packets will have similar components: directions for the parent and child (Player's Guide), learning games, an adventure story book, favors such as stickers, a card with directions for preparing a healthful food or for doing an exercise activity, a scorecard to record points earned in completing activities, and a poster (Team Tips) offering nutrition and exercise information for parents.

Strong incentives will be built into the program to encourage participation. Intervention workers or volunteers in the role of Home Team "coaches" will visit the classroom before the intervention begins and once per week for 5 weeks to explain the intervention and give incentives, such as Fitness Team hats for every student. Coaches will distribute Family Fitness Team packets to all of the children and impress upon them that they must deliver the packet to their home and encourage their parents or caregivers to participate. Scorecards will be signed by parents and children and brought back to school, where the coaches will record each child's points on a large wall scoreboard in the classroom. Both parents and children will receive points for participation. As an additional incentive for participation, children earning at least 360 out of 500 possible points (the equivalent of 4 out of 5 weeks of the intervention) will be eligible for a grand prize drawing for a family vacation trip.

Because the evaluation of Home Team showed that families were more apt to add encouraged foods than to eliminate discouraged foods, a positive nutrition message stressing encouraged foods will be used. The eating pattern message will encourage use of everyday foods such as fresh fruits and vegetables, whole grain cereals, bread and pasta, and low fat dairy products, especially low fat cheese. "Sometimes" foods are high in calories, salt, and fat and low in dietary fiber. They are not forbidden but are recommended only for occasional consumption. Food preparation activities will stress the food categories of bread, cheese, frozen desserts, and fresh fruits because these foods appeared most amenable to change in evaluations of Home Team.

Parents and children will learn the value of physical activity, evaluate their current activity level, learn which physical activities are aerobic, and perform exercise activities together. Educational materials will stress the combined benefits of exercise and low fat eating for weight control and disease prevention. Emphasis will be placed on lifetime habits for both children and parents, instead of short-term weight loss programs. These eating and exercise recommendations are key ones in guidelines for weight control, cardiovascular disease, and cancer prevention. The Family Fitness Team will seek to enhance parent-child communication about exercise habits of the family members and about salt, fat, and fiber levels of foods actually present and eaten in the home.

Parents and children will be asked to exercise together and to prepare and eat tasty, healthful snacks containing recommended foods, and they will receive points for doing so. Home Team materials will promote healthful habits in a fun format similar to that used in advertising. Rewards will be given for setting and reaching healthful eating goals.

To strengthen the health message, intervention materials will be developed to stimulate three changes in the school environment: snacks brought to the classrooms will be of the health-promoting

kinds; low or nonfat milk will be served at the midmorning break; more aerobic activities will be performed at recess, in gym classes, and after school. A series of camera-ready handout materials will be developed for use in educating parents about aerobic activity, nutritious snacks, and the importance of low fat dairy products. Ideally, classroom teachers in all grades will participate in the distribution of these materials. A special effort to educate physical education instructors will be implemented that encourages them to teach and model aerobic activities in their classes.

The costs of the Hearty Heart Home Team project were high because the information packets were printed in a costly format and distributed to families by mail. The Family Fitness Team project will be revised so that it can be widely disseminated at lower cost. Materials will be carried home from school by the children, and camera-ready copy will be developed to facilitate low cost duplication. In addition, specific protocols for implementation will be developed so that volunteer groups such as parent-teacher associations, local dietetic associations, college health education, and physical education classes can use the protocols to implement the intervention.

Children may not be able to make permanent eating and exercise changes without the support of parents who model an active lifestyle, reduce barriers to exercising, and make shopping and food preparation changes at home. Therefore, this proposed intervention will seek to influence parents so they will support their children's positive eating and exercise changes. Further, the intervention will seek to increase parents' understanding about the positive health outcomes, for children as well as themselves, of an active lifestyle and sound eating habits.

Conclusion

Reaching parents with school-based health information is beneficial in at least four ways. Children need the support of their parents if they are to make permanent eating and exercise pattern improvements. Parents can benefit from health information and positive behavior changes themselves, and they may be especially receptive to health education during years when they are responsible for rearing young children. Positive eating and exercise behavior changes should be longer-lasting if interventions are aimed at family, rather than individual, attitudes and habits. If the nutrition and exercise knowledge, attitudes, and eating habits of parents as well as children can be improved, the potential benefit of youth-directed primary prevention interventions becomes greater.

Youth-directed interventions through the school have the potential for influencing parents' attitudes and knowledge and parent-child communications. If parental behavior is to be changed through a school-based intervention, carefully developed incentives for parental involvement must be a planned part of the curriculum. Relying on the child to volunteer information; holding group parent meetings; and mailing information, brochures, or newsletters to parents without including incentives for reading it appear to hold little promise of influencing great numbers of parents. Therefore, I have proposed an intervention that will use approaches preferred by parents and provide sufficient incentives for parental involvement. It incorporates techniques that assure parent-child communication about food choices and exercise.

Budget

The estimated costs of the project for 100 families—50 study and 50 control—are shown subsequently. (Indirect costs equal to the approved institutional rate must be funded in addition to the direct costs listed.)

Item	*Cost*
Development of the intervention	$40,000
Graphics design and printing	20,000
Stickers, hats, game materials	3,000
Grand prizes (incentives)	3,000
Development of protocols for volunteer group	7,000
Implementation and evaluation	25,000
Consultation fees	2,000
Secretarial support	14,000
Site visits and professional meetings	4,000
Supplies	1,000
Computer time	2,000
Principal investigator's salary and benefits	29,000
Total	$150,000

References

1. Lauer, R. M., et al.: Coronary heart disease risk factors in school children: the Muscatine study. J Pediatr 86: 697-706 (1975).
2. Frerichs, R. R., Srinivasan, S. R., Webber, L. S., and Berenson, G. S.: Serum cholesterol and triglyceride levels in 3446 children from a biracial community: the Bogalusa heart study. Circulation 54: 302-309 (1976).
3. Doll, R., and Peto, R.: JNCI 66: 1192-1308 (1981).
4. Coughenour, M. C.: Functional aspects of food consumption activity and family life cycle stages. J Marriage and Family 34: 656-664 (1972).
5. Emmons, I., and Hayes, M.: Nutrition knowledge of

mothers and children. J Nutr Ed 5: 134–139 (1973).
6. Fox, H. M., et al.: Family environment. J Home Econ 62: 241–245 (1970).
7. Goode, J. G., Curtis, K., and Theophano, J.: A framework for the analysis of continuity and change in shared sociocultural rules for food use: the Italian-American pattern. *In* Ethnic and regional foodways in the United States: the performance of group identity, edited by L. K. Brown and K. Mussel. University of Tennessee, Knoxville, 1984, pp. 66–68.
8. Nader, P. R.: Community approaches promoting cardiovascular health involving children. Paper presented at the Symposium on Cardiovascular Risk Factors in the Young, San Antonio, TX, October 1985.
9. Lund, L. A., and Burk, M. C.: A multidisciplinary analysis of children's food consumption behavior. Technical Bull 265, Minnesota Agricultural Experiment Station, St. Paul (1969).
10. Holcomb, J. D., Carbonari, J., Weinberg, A., and Nelson, J.: Evaluation of a comprehensive cardiovascular curriculum. J Sch Health 51: 330–335 (1981).
11. Perry, C. L., Crockett, S. J., and Pirie, P.: Influencing parental health behavior: implications of community assessments. Health Ed. In press.
12. Coates, T. J., Jeffrey, R. W., and Slinkard, L. A.: Heart healthy eating and exercise: introducing and maintaining changes in health behaviors. Am J Public Health 71: 15–23 (1981).
13. McKay, R. B., Hollander, R., and Levine, D.: Community diagnosis, planning and implementation of a nutrition education program for cardiovascular risk reduction. Paper presented at the meeting of National Heart, Lung, and Blood Institute Cardiovascular Behavioral Medicine Training Programs Meeting, Dallas, TX, November 1981.
14. Cosper, B. A., Hayslip, D. E., and Force, S. B.: The effect of nutrition education on dietary habits of fifth-graders. J Sch Health 47: 475–477 (1977).
15. Gillum, R. F., Elmer, P. J., Prineas, R. J., and Subey, D.: Changing sodium intake in children: the Minneapolis children's blood pressure study. Hypertension 3: 698–703 (1981).
16. Frank, G. C., et al.: An approach to primary preventive treatment for children with high blood pressure in a total community. J Am Coll Nutr 1: 357–374 (1982).
17. Farris, R. P., Frank, G. C., Webber, L. S., and Berenson, G. S.: A nutrition curriculum for families with high blood pressure. J Sch Health 55: 110–111 (1985).
18. Hollis, J. F., et al.: The family health dietary intervention program: community response and characteristics of joining and non-joining families. Prev Med 13: 276–285 (1984).
19. Tell, G. S.: Factors influencing dietary habits: *In* Promoting adolescent health: a dialog on research and practice, edited by T. J. Coates, A. C. Peterson, and C. L. Perry. Academic Press, Inc., New York, 1982, pp. 381–398.
20. Blackburn, H., et al.: The Minnesota Heart Health Program: a research and demonstration project in cardiovascular disease prevention. *In* Behavioral health: a handbook for health enhancement and disease prevention, edited by J. Matarazzo, et al. John Wiley and Sons, New York, 1984, pp. 1171–1178.
21. Bandura, A.: Social learning theory. Prentice Hall, Englewood Cliffs, NJ, 1977, p. 247.

ABSTRACTS OF SEMIFINALISTS' PAPERS

Educational Program to Prevent HIV Transmission Among Teens

Joann Schulte

To prevent human immunodeficiency virus (HIV) infection from spreading among teenagers in Dallas County, TX, a 1-year pilot program aimed at educating teens about HIV transmission is proposed. Because programs to reduce promiscuity are not likely to result in behavioral change that alone will reduce the HIV infection rate, the use of condoms would be promoted. The program's goal would be to reach 12–14-year-olds and educate them about AIDS and its risks as they undergo puberty and, in many cases, before they become sexually active.

The two major thrusts of the education campaign would be an educational outreach program and a regional advertising campaign. The educational component would include fliers, brochures, and posters distributed in video arcades, record stores, retail stores with over-the-counter displays of contraceptive devices, physicians' offices, clinics, juvenile detention centers, and drug programs. About 50,000 fliers and brochures and 200 posters would be distributed.

To gain maximum, immediate exposure, a regional advertising campaign is proposed that would be underwritten by condom manufacturers. Such a campaign is needed because it could be implemented before a comprehensive sex education program could be. Appropriate advertisements would be placed in regional editions of teen and entertainment publications and local magazines.

The proposed program will be incorporated by the Dallas County Health Department into its AIDS Demonstration Program funded by the Public Health Service.

Entry submitted by Texas College of Osteopathic Medicine. Ms. Schulte's address: 217 9th St., NE, N. Canton, OH 44720.

Application of the PRECEDE Model To Reduce Adolescent Pregnancy

Dina Clevenson
Whitney Winn

The PRECEDE model for intervention can be used to analyze the problem of adolescent pregnancy and to develop, implement, and evaluate appropriate programs. PRECEDE stands for predisposing, reinforcing, and enabling causes for educational diagnosis and evaluation.

Educational factors found to be linked to teen sexual behavior are loss of personal efficacy (a predisposing factor), lack of assertiveness skills (an