5. The BBTD program appears to have mobilized communities whose members have learned how to organize themselves for positive change.

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Participation Rates, Weight Loss, and Blood Pressure Changes Among Obese Women in a Nutrition-Exercise Program

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This investigation was funded by Cooperative Agreement No. V50-CCU400919.

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Synopsis

Since 1985, a black urban community in Atlanta has planned, implemented, and evaluated a cardiovascular risk reduction project. The Community Health Assessment and Promotion Project (CHAPP) was developed to reduce the high incidence of cardiovascular risk factors in the neighborhood's predominantly black population. Based on data from a needs assessment, a community coalition designed and directed a 10-week exercise and nutrition intervention targeted to obese residents between the ages of 18 and 59 years. The intervention consists of an orientation, attitudes assessment, selection of a specific exercise class, and twice-weekly information on nutrition and community resources.

The program uses a wide range of strategies, including individual consultations, reminder telephone calls, incentives, and rewards, and free transportation and child care, to encourage participation. The exercise-nutrition intervention was provided to two separate groups. A total of 70 participants completed the intervention over a 7-

month period. Program evaluation has demonstrated high participation rates and significant reductions in weight and blood pressures both immediately after the intervention and on 4-month followup. Since completion of this evaluation study, over 400 additional community members have participated in this intervention.

THE REPORT of the Secretary's Task Force on Black and Minority Health describes the disparities that exist between the U.S. population, in general, and minorities, particularly blacks. Among the six identified major health problems characterized by preventable or modifiable risk factors is cardiovascular disease and stroke, which leads the list of causes of premature morbidity and mortality among blacks. For most age and sex groups, blacks have a higher mortality rate for cardiovascular disease than do whites. Not surprisingly, the higher excess mortality rates among blacks are accompanied by a greater prevalence of risk factors, including hypertension and cigarette smoking. Among middle-aged black women, diabetes and obesity are risk factors. In the summer of 1986, a nutrition-exercise intervention program was developed for clinically diagnosed obese residents in a predominantly black, low socioeconomic, urban community in Atlanta, GA. This report presents the results of the intervention program.

Background Information

The Community Health Assessment and Promotion Project (CHAPP) was created through a cooperative agreement between the Emory University Department of Community Health and the Centers for Disease Control. The project included formation of a community coalition, defining the community's perception of its most pressing problems through an 1,800 sample community opinion poll, and determining the prevalence of risk factors among its 86,000 residents.

The results of the 1,800 sample poll conducted in 1985 indicated that 51 percent of the respondents rated their own health as "good." A closer look revealed that 42 percent of the persons older than 50 years and 47 percent of persons 65 years or older perceived their health to be "fair" or "poor." The greatest personal concern of those polled was money (33 percent), which was followed by concern about health problems (17 percent). The third greatest personal concern was crime and violence (8 percent). Crime, violence, and safety were identified by 28 percent of the respondents as the major community problem. When asked what community problem they would most like to see addressed, 30 percent of the total sample chose unemployment, 21 percent chose education-schools, and 19 percent chose crime-violence.

Results of a survey of risk factors among a sample of 1,200 persons in the community indicated that the prevalence of uncontrolled hypertension was double that reported by the State. Nearly 63 percent of the interviewees indicated a sedentary lifestyle. About 28 percent were overweight and more than 31 percent smoked cigarettes. The prevalences of these risk factors were all higher in this community than those for the State of Georgia.

In the summer of 1986, the CHAPP coalition selected cardiovascular disease as the priority health problem for their community. Functioning out of a community health clinic, the coalition designed a nutrition-exercise program. The program used facilities at a clinic, a YMCA, and a school, all of which were within close walking distance of each other and in an easily accessible area of the community. Transportation was made available to participants as needed. Persons who were clinically diagnosed as obese and between the ages of 18 and 59 were allowed to register for the program.

Intervention Program

Program structure. The intervention program was designed to reduce attrition of subjects as much as possible. Prospective participants were screened at a local clinic. This process included a short physical examination, a body fat determination, a step test to assess cardiovascular condition, and completion of a questionnaire. The questionnaire addressed health risks, occupational history, current exercise activities, reasons for wanting to increase physical activity, knowledge of the effects of regular activity, and social support structure. Participants were informed that on the first night of class blood samples would be taken for analysis. They were also told what types of logs and records they would be expected to keep and the type of interventions that would be available. Weekly weight and blood pressure records were maintained. These measures were also collected 3 months after the intervention. Attendance records were kept, and persons who

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stopped attending were given an exit interview over the telephone.

The program lasted 10 weeks, and meetings were held from 6 p.m. to 8 p.m. every Tuesday and Thursday. On Tuesday, the nutrition component of the program was conducted during the first hour and the exercise component in the second hour. The first hour on Thursday was used for assessment, counseling, and special interest sessions; an hour of exercise followed. The last meeting was a banquet featuring healthful foods prepared by the participants. At this time, participants were recognized and rewarded for their accomplishments.

Program content. The nutrition component initially consisted of a 1-hour lecture but was changed to short presentations followed by food sampling sessions at the suggestion of the participants. These sessions usually lasted 30 minutes and consisted of demonstrations of healthful cooking techniques and recipe sharing, which eventually resulted in a CHAPP cookbook (available from Dr. Robert Curry, Department of Community Health, 69 Butler St. SE, Atlanta, GA 30303-3219). The following topics were covered:

- making good nutrition a habit and food log instructions
- the terrible trio: sugar/salt/fat
- losing weight sensibly
- poor eating habits and how to change them
- eating wisely—when to eat what
- the smart shopper
- menu planning: benefit of advanced preparation
- general nutrition discussion—remodeling old recipes and menus
- remodeling our menus
- dining out: what to look for, what to avoid

The exercise component of the program consisted of water aerobics, low-impact aerobic dance, and walking. Participants could enroll in two of these three programs. They could then choose which of the two programs they wanted to attend when they arrived each evening. Program descriptions follow:

Low-impact aerobic dance. The low-impact aerobic dance program consisted of a warmup period designed to stretch the major muscle groups, an aerobic workout, and a cooldown period of slower movements and relaxation. The exercises consisted of variations of marching and walking in place, swinging the arms, and lifting the legs. As a safety precaution, we cautioned this particular group against jumping. Arms, thighs, legs, stomach, and buttocks were all exercised. Participants were taught how to move safely, and the floor exercise for stomach and buttocks were done with minor stress to the back.

Water exercises. The water exercise program, which is easier for extremely overweight persons, was similar to the low-impact aerobic dance program. A warmup period was followed by aerobic exercises and a cooldown period. Variation of marching and walking were used to exercise arms, thighs, legs, stomach, and buttocks. The relative ease of performing water exercise allowed instructors to incorporate a few of the more traditional calisthenics.

Walking. The walking program was the most popular because it could be done anytime, without a group, and at no extra expense. This program encouraged persons to walk 3 to 5 miles per week. A warmup period was followed by speed walking with arm movement and a cooldown period of slower movement and stretching.

Special interest session. The special interest session was used as a time of assessment and dealt with the following topics:

- how to take pulse and blood pressure readings—American Heart Association
- nutritional counseling
- nutritional presentation—Georgia Extension Service
- makeup class—Mary Kay Cosmetics
- injury control—Centers for Disease Control
- dancing for the elderly—University of Georgia
- wardrobe and fashion analysis
- low back pain

Special features. The CHAPP program had the following special features:

- Participants monitored food intake daily, pulse rates biweekly, and weight and blood pressure weekly.
- Contingency contracts of short duration (1–2 weeks) were designed for specific kinds of behavior (for example, drinking a glass of water instead of having a usual snack).
- Home visits by a public health educator were planned to build family support and alleviate spousal concerns (for example, jealousy, dieter assertiveness).
- Participants were asked to comment on the program, and their suggestions were incorporated into the special interest sessions.
- Rewards of all types were built into the program.
- Participation was monitored. Absentees were called and encouraged to attend the next session. An exit interview was completed when persons left the program. Weight and blood pressure were measured 3 months after the intervention program.

Results

A total of 209 persons responded to the advertisement of the program during the fall of 1986. Of these, 19 were over the age of 59, 78 were not interested in attending the program, and 40 left the program before the end of the second week. This left a total of 72 persons who actively started the program. Of these 72, two additional persons left the program; one moved out of Atlanta and the other had a serious illness in the family.

The data presented in the results section are based on the 70 persons for whom we were able to collect preintervention weight data and postintervention weight data during the fall 1986, or winter 1987, intervention programs. All participants were black women. Sixteen percent were between 50 and 59 years old; 25 percent between 40 and 49; 39 percent between 30 and 39; and 20 percent between 18 and 29.

On the basis of the 1983 Metropolitan Height and Weight Tables for medium-frame women, 48 percent were between 120 percent and 149 percent of their recommended weight, 45 percent were between 150 percent and 199 percent of their recommended weight, and 7 percent were over 200 percent of their recommended weight. Their average height was 64 inches; their average weight was 201 pounds.

Forty-one percent were being treated for hypertension. In addition, 19 percent of the total group had a systolic blood pressure higher than 139, and 44 percent had a diastolic pressure higher than 89. For the total group, 49 percent felt their health was average to very poor, 24 percent smoked cigarettes, 45 percent drank alcoholic beverages, and during a typical workday, 67 percent spent more than 3 hours sitting. During their leisure time, 97 percent reported they did not bike, 93 percent did not slow dance, 88 percent did not fast dance, 98 percent did not jog, 67 percent did not climb stairs, 93 percent did not swim, and 49 percent did not walk.

'The coalition members studied the actual and perceived social and health problems existing in the target community and selected cardioascular disease as its focus because it is the leading health problem in the area.'

The number of persons attending the sessions of the intervention program follows.

Sessions attended	*Number of persons*
0–4	0
5–9	21
10–14	18
15–20	31
Total	70

The table shows that 49 of the 70 participants (70 percent) attended 10 or more sessions and 31 of the 70 participants (44 percent) attended 15 or more sessions. Of the 21 persons attending between 5–9 sessions, 3 indicated at the beginning of the program they could only attend 1 day per week (maximum of 10 sessions). Of the remaining 18 persons, 14 attended no more than 3 times during the last 10 sessions. The percent of the 70 participants who attended by session follows.

Sessions in program	*Percent attending*
1–4	85 or more
5–11	70 or more
12–14	60 or more
15–20	50 or more

More than 85 percent of the 70 participants attended each of the first 4 sessions, more than 70 percent attended each of the next 7 sessions, more than 60 percent the next 3 sessions, and between 50

'Rather than being imposed on the community from the outside, the impetus for this intervention came from the targeted community and its members, who formed a community coalition.'

percent and 60 percent the last 6 sessions. During sessions 12 to 20, the main reasons given during telephone interviews regarding lack of attendance were Thanksgiving commitments, work commitments before Christmas, and sickness (flu).

Weight measurements were obtained on participants before the intervention program, immediately following it, and 3 months after the end of the program. The following data are based on information collected immediately before the intervention and during the last session of the intervention:

Change in weight	*Number*	*Percent*
More than 10 pound gain	2	3
3-10 pound gain	9	13
Within 2 pound difference	28	40
3-10 pound loss	22	31
11-20 pound loss	7	10
More than 20 pound loss	2	3

Of the persons who gained more than 10 pounds, one gained 12 pounds and the other gained 13 pounds. Nine of the 31 persons who lost weight lost more than 10 pounds. The most weight lost by a participant was 41 pounds. The average weight gain among the group that gained more than 2 pounds was 5.8 pounds; the average weight loss among the group that lost more than 2 pounds was 9 pounds.

A Wilcoxon matched-pairs signed-ranks test was used to test the difference between preintervention weight and weight immediately following the intervention. Results from the test indicated that 42 of the 70 participants lost weight (mean rank 25.17) and 8 of the 70 participants' weight remained the same. This yielded a $Z = -3.3162$ with an associated two-tailed probability of $P = .0009$. Of the persons whose weight was recorded prior to the intervention program, 62 or 89 percent were weighed 3 months after completing the intervention program. A comparison of preintervention weight and weight obtained 3 months following the program showed that 55 percent of the participants weighed less 3 months after the intervention than when they started the program. For the group of 62 persons, the average weight loss was 2.8 pounds. The most weight gain was 17 pounds while the greatest weight loss was 59 pounds.

Blood pressure measurements were obtained on participants prior to the intervention program, immediately following the program, and 3 months after the end of the program. In the table that follows, blood pressure data collected immediately before the beginning of the intervention program and during the last sessions of the intervention program are shown.

	Systolic		*Diastolic*	
Blood pressure change	*Number*	*Percent*	*Number*	*Percent*
More than 5 points	12	20	8	13
Within 5 points	20	33	25	42
More than 5 point decrease	28	47	27	45
Total	60	100	60	100

Wilcoxon matched-pairs signed-ranks test was used to test the difference between preintervention blood pressure and blood pressure immediately following the intervention. Results from the test for systolic blood pressure yielded a $Z = -2.9126$ with an associated two-tailed probability of $P = .0036$. Results from the test for diastolic blood pressure yielded a $Z = -3.3387$ with an associated two-tailed probability of $P = .0008$.

Data were also available for comparing preintervention blood pressure and blood pressure obtained 3 months following the intervention program. For the 57 participants with sufficient data, diastolic blood pressure was lower among 47 percent 3 months after the intervention program than when they started the program. For the entire group, participants had an average decrease in diastolic blood pressure of 2.8 points. For systolic blood pressure, 56 percent showed a decrease. For the entire group, participants had an average drop of 5.8 points in systolic blood pressure.

Discussion

This program is one of the first projects addressing weight reduction in urban obese black women. Because attrition of participants has been a problem in weight loss programs for obese whites, an intervention program was designed that incorporated strategies to prevent attrition. For this population, the following strategies seemed important:

Prescreening. The prescreening of participants not only allowed the staff to get valuable baseline data on potential participants but also allowed the staff

to explain to the participants their responsibilities in the program. As evidenced by the number of persons who could have joined the program and the number who actually did, this technique resulted in the enrollment of well-motivated people.

Conducting the intervention program.

- Information was collected through personal interviews that not only improved the quality of the data obtained but also gave the participant a sense of importance. Participants did not object to spending 1 to 2 hours during the preintervention assessment. During the 10 weeks of intervention, assistance was also provided to the participants in filling out food logs, recording pulse rates, weighing weekly, and filling out other self-report forms.
- Transportation was offered to participants by the intervention staff on a weekly basis. The staff took the initiative of offering transportation rather than telling participants to call the intervention staff if they needed transportation.
- Home visitation by a male public health educator to discuss the program with the husband and children helped build family support. Children's feelings, "Mommy's too fat to exercise," and spousal concern (jealousy, dieter assertiveness, attractiveness) were important to prevent the subjects from reducing participation.
- Rewards were frequently given to participants. Rewards included participation certificates, towels with the CHAPP logo, shirts, sweat shirts, sweat bands, make-up supplies, and some expensive prizes such as a running trampoline, bicycle, and a Walkman tape player.
- Babysitting performed by high school volunteers was used by 27 of the 70 participants who otherwise could not have attended the session.
- Participants' concerns about the interventions were responded to immediately. For this program, the responses resulted in (*a*) police protection for the walkers, (*b*) steps for the water aerobics class for use by the participants because of their weight, (*c*) blinds for privacy in the aerobics dance class, (*d*) exercise routines that were not uncomfortable, (*e*) supplies such as flashlights, (*f*) alternate facilities during inclement weather, and (*g*) food samples as part of the nutrition session and also as part of recipe sampling each Tuesday and Thursday.
- Intervention staff, members of the CHAPP community coalition, and others (older people and family members) participated in the interventions with the subjects. Subjects also became class leaders during some of the sessions on nutrition.
- Slides and prints were made as often as possible and displayed at the intervention site. They became a very popular part of the program and, for some participants, provided visual proof of their accomplishments.
- For this population, it was essential to offer the program in the neighborhood at minimal cost. The use of a deposit-refund system would not work in this community.

Content of the Intervention Program

The nutrition-exercise program was designed specifically for this targeted group. The nutrition segments were specific to the types of food and preparation used within this community. The nutrition program also included a significant amount of actual preparation and food sampling. This activity proved to be very popular and resulted in a cookbook to be published by the project. The special interest sessions gave participants a sense of program ownership and were heavily attended. These sessions were also supplemented with group functions such as attending an Atlanta Boy's Choir recital and going to a professional basketball game. The exercise portion of the program was designed to prevent participants from hurting themselves during and after exercise.

Some obese persons were embarrassed about their bodies so the program provided facilities that emphasized privacy for the participants. Finally, the participants were allowed to invite friends and relatives, which provided a social atmosphere. A formal banquet at the end of the program was a way for the project staff and the participants' friends to acknowledge the participants' completion of the program.

Conclusions

First, the results in terms of weight loss and change in blood pressure indicate that a nutrition-exercise program can lead to positive behavioral change with this population.

Second, the participation rates for this group were high. Prescreening self-monitoring, rewards, and other techniques all seem to be important for ensuring high participation. In addition, a comparison of the high and the low participation groups indicated more family involvement, more family encouragement, and less criticism from family and friends among the high participation group.

Third, some aspects of data collection require further refinement.

• Questionnaire data should not be collected over the telephone nor by giving the participants a form to fill out by themselves. Data need to be acquired by personal contact between the participant and program staff. Only after 5 or 6 weeks into the program were participants able to fill out the self-monitoring information accurately.
• Many of the participants in the study were on hypertension medication. For most of them, the medication required included a beta blocker which made the cardiovascular step test data invalid. In addition, the step test for large obese participants proved painful and resulted in incomplete test results.

Fourth, oversubscribing is needed for beginning a program of this type. Out of a total of 209 persons who responded to program advertisements, 70 persons actually attended the intervention program. However, since the first two interventions, the program has been oversubscribed with more than 400 additional persons having participated in this nutrition exercise program (the program has been repeated 9 times).

Finally, CHAPP was designed to produce a change in health attitudes and behavior in a population at high risk for cardiovascular problems, yet typically resistant to interventions associated with health promotion. Rather than being imposed on the community from the outside, the impetus for this intervention came from the targeted community and its members, who formed a community coalition. The coalition members studied the actual and perceived social and health problems existing in the target community and selected cardiovascular disease as its focus because it is the leading health problem in the area.

They determined that there was a need for programs to educate and assist people in their community to alter their nutrition and exercise patterns. Working with a committed coalition, the CHAPP staff developed a culturally sensitive intervention that incorporated techniques to minimize attrition. This step not only resulted in high participation rates, but also it resulted in significant reductions in blood pressure and weight. This finding should provide encouragement to public health workers seeking to bring about similar behavior change in the community where such changes can have a significant impact on health.

Tuberculosis: an Increasing Problem Among Minorities in the United States

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Synopsis

Although the number of tuberculosis cases reported annually in the United States has decreased markedly during the past three and a half decades, the decrease among whites has been considerably greater than among nonwhites. As a result of this widening gap, nearly two-thirds of the cases reported in 1987 occurred in minority populations and, for the first time in history, the number of cases among blacks exceeded the number of cases among non-Hispanic whites. From 1985 to 1987, tuberculosis among blacks increased 6.3 percent and among Hispanics, by 12.7 percent, but it decreased 4.8 percent among non-Hispanic whites. Much of the increase appears attributable to tuberculosis occurring among persons infected with the human immunodeficiency virus (HIV). Although there are many obstacles to the elimination of the disease in minority populations, numerous strategies have been developed and are being implemented to address this situation.
