Development of a Community Cancer Education Program: the Forsyth County, NC, Cervical Cancer Prevention Project

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Synopsis

The authors outline the development and implementation of a public health education program for cervical cancer screening among black women in Forsyth County, NC. The educational program includes distributing electronic and printed information media messages, a program of direct education for women, and providing information on current issues in cervical screening to primary-care physicians. Program development was based on social marketing principles, the PRECEDE model, and the communication-behavior change (CBC) model. Since a true experimental design was not feasible, program evaluation is based on several complementary quasi-experimental designs.

Analysis of baseline data indicate that the county where the intervention is taking place, and the control county, are similar with respect to both demographic characteristics and the current level of screening activity. Preliminary results indicate that the program has been successful in raising women's level of awareness of cervical cancer and cervical screening.

A COMPREHENSIVE public health education program to improve screening for cervical cancer among black women residing in Forsyth County, NC, began in November 1988, and will continue for 3 years. Forsyth County is a predominantly urban county of about 260,000 inhabitants, located in the Piedmont region of North Carolina. Forsyth County has one moderate-size city that includes more than half the total population. About 25 percent of the population is black, and about 90 percent of the black population lives in the central city.

The project includes (*a*) electronic and printed information media messages advocating the Papanicolaou (Pap) smear as an effective screening test for cervical cancer prevention, (*b*) a program of direct education for women, and (*c*) providing up-to-date information on cervical cancer and cervical cancer screening to primary-care physicians in the community. About 25,000 black women ages 18 years and older will be reached by at least one component of the educational program. Special emphasis is placed on reaching poor, elderly, and rural women, those at highest risk.

The purpose of the project is to increase the proportion of women who obtain Pap smears at intervals established in the 1987 American Cancer Society guidelines and to increase the proportion of women with positive cervical smears who return for needed followup and treatment.

Current practice in community health education includes using existing data to assess the population and the community, and using the data in developing and implementing the program. We describe the model used for the community analysis, describe the development and implementation of the program, and present baseline evaluation data on the target population.

Background

The PRECEDE model developed by Green and coworkers provided a basic framework for the community analysis and program development (*1*). PRECEDE is an acronym for predisposing, reinforcing, and enabling causes in educational diagnosis and evaluation. Following the guidelines of the model, cervical cancer was identified as a particular problem affecting the quality of life of minority women in Forsyth County.

Although mortality from cervical cancer is not responsible for a great number of deaths in the United States, it is one of the leading causes of cancer death among women. It was estimated that in 1989 about 13,000 new cases of cervical cancer would be diagnosed and 6,000 women would die from the disease in that year (*2*). Mortality from cervical cancer is much higher among black women than among whites. The age-adjusted mortality rate for cervical cancer for the United States is about 2.5 times higher for black women than for white women (*3*). In North Carolina, the age-adjusted mortality rate is 3.5 times higher for black women. In Forsyth County, the rate is about 5.6 times higher (data from the North Carolina State Center for Health Statistics). The larger black-white mortality ratios in North Carolina and in Forsyth County have not resulted from lower mortality rates for white women but are the result of higher mortality among black women.

Efficacy of Cervical Screening

The number of deaths attributed to cancer of the cervix for both black and white women would be even greater if it were not for the fact that the prognosis improves greatly if the disease is discovered at an early stage. While some disagreement exists concerning the treatment of dysplasia and carcinoma-in-situ as precursors of cervical cancer, substantial evidence exists implicating these lesions as stages in the development of cervical cancer (*4–10*).

Research suggests that invasive cervical cancer is preceded in a large proportion of cases by carcinoma in situ and dysplasia; that carcinoma in situ and dysplasia persist for some time before becoming invasive; and that patients treated for carcinoma in situ or dysplasia have a high probability of being cured (*11*). However, a small proportion of cases seem to progress very rapidly from an asymptomatic state, with no evidence of dysplasia revealed by a cervical smear, to invasive cervical cancer (*12–14*).

Separate reviews of research conducted prior to 1980 presented evidence suggesting that screening can effectively identify women at high risk of developing cervical cancer and that treatment of the asymptomatic lesions would result in lowered incidence and mortality from cancer of the cervix (*11, 15*). Studies that compared screened and unscreened women over time consistently found lower incidence and mortality for the screened women. In addition, this research demonstrated that the more intense the screening efforts, the greater the decline in both incidence and mortality. More recent research on the effectiveness of screening programs has consistently supported these conclusions (*16–25*). Thus, despite many problems in obtaining cervical smears, problems in their interpretation, and difficulties in followup and treatment of women who test positive for cervical neoplasia, the general evidence indicates that early detection through cervical screening can reduce both incidence and mortality from cervical cancer (*11, 15, 26*).

Previous national and regional studies have found that cervical screening is less frequent for nonwhite women (*27, 28*). Earlier research in Forsyth County found that a substantial proportion of economically disadvantaged women, both black and white, who have positive cervical smears, do not return for followup and treatment (*29*). This evidence, together with the apparent efficacy of cervical screening as a means of reducing incidence and mortality from cervical cancer, provides the rationale for the program goals.

Rationale for the Intervention

Research on community health education consistently suggests that efforts to change health behavior are most successful at the individual level. However, the cost of producing behavior change is highest when implemented at the individual level. Since the goal of community-based projects is to effect behavior change among populations, the educational program usually is provided on a scale that does not include individual interaction and attention. A reasonable compromise is to design standardized materials and methods that can be implemented on a large scale, but without sacrificing an undue amount of the effectiveness inherent in more individualized approaches (*30*). Program efforts need to be targeted to the general population at risk and, more specifically, to high-risk subgroups in the population.

Education to influence positive changes in health

behavior has produced modest results to date (*31, 32*). However, some evidence exists that well-designed, multifacted educational efforts can be effective. Examples of projects that have produced encouraging results are the Stanford Heart Disease Prevention Project (*33*), the North Karelia Project (*34*), and the Hypertension Detection Follow-up Program (*35*). These projects have demonstrated that positive, if modest, changes in health behavior can be achieved using a media-based approach in community health education. The intervention developed for the Forsyth County project was based in part on the successful community public health education programs in heart disease prevention. Results of these projects suggested that the effectiveness of a community education program is enhanced by including both media and direct education components.

Community Assessment

The first step in developing the program was a comprehensive examination of the factors in our community that impact upon preventive behavior in general and screening for cervical cancer in particular. The community assessment was conducted in the context of the PRECEDE model to identify the most important predisposing, enabling, and reinforcing factors. Sources of information for this phase of the project included (*a*) analysis of existing demographic and institutional data, (*b*) discussions with community leaders and health care providers, and (*c*) the conduct of focus groups composed of women in the target population. The discussions with health care providers and community leaders not only obtained valuable background information, but served as an initial word-of-mouth campaign to introduce the project to the community. Each data collection approach will be discussed in detail in future publications.

Positive factors operating in favor of preventive health behavior in the community include a generally positive perception of the availability of health care for most segments of the population, the desire by many women in the target population to stay healthy to care for their families, and the presence of a well-regarded comprehensive care public health center that serves the low-income population.

Some of the negative factors operating against community preventive health behavior include cultural attitudes, lack of knowledge, practical concerns, and prevailing misconceptions about health care.

Among culturally based attitudes are a fatalistic view of cancer; a loss of value as an individual associated with the loss of the uterus if removed; and the belief that religious faith is an alternative to medical care for a serious illness, such as cancer.

Examples of lack of knowledge included women not knowing that cervical cancer is more curable than many cancers, if detected early; confusion over exactly what information is provided by a Pap smear; and a general lack of access to information about preventive health care.

Practical concerns dealt with such matters as balancing more immediate financial needs against the cost of health care, especially preventive health care; the difficulty some women experienced in obtaining transportation to a health center or a physician's office; problems in obtaining someone to care for young children while at the clinic or the physician's office; difficulty in obtaining time off from work to obtain preventive health care during office hours; problems in communication with health care providers; and delays in getting appointments, together with lengthy waits in the physician's office or the clinic.

Prevalent misconceptions encountered were the belief, reinforced by some physicians, that older women do not need cervical smears, regardless of their testing history; a disbelief in the ability of health professionals to cure cancer, reinforced by some significant persons in the community; and a belief that the pelvic examination is painful or highly embarrassing.

Another negative factor results from the absence of symptoms for the precursors of cervical cancer and invasive cervical cancer in the early stages.

Recognition of the factors, and definition of their effects in the target population, provided the basis for developing general themes for the intervention, and for specific information that needed to be included in the educational program. The fact that many women explicitly said that they were central to the effective functioning of their family, and that they needed to stay healthy for this reason, was a particularly important positive factor identified in the community assessment.

Important negative factors identified were lack of understanding of the unique value of early detection for cervical cancer (despite a general acceptance of the value of early detection), lack of money for preventive health care, and lack of access to information about preventive health care. The problem in accessing information partly results from a perception that health care providers are unwilling to take time to provide desired informa-

tion, and partly from the difficulty many women have in reading existing literature on cancer prevention. Based on these results, the initial theme of the educational program was "Early Detection Works." The second theme to be developed will emphasize staying healthy for one's family.

Development and Implementation

The PRECEDE model was the basis for the selection of an overall intervention strategy. However, additional models were needed to develop systematically specific intervention program components. Social marketing, or the application of marketing strategies to social programs, was adopted as a general developmental strategy (*36*). The communication-behavior change (CBC) model was used as an organizing framework for deciding what types of materials to produce, and how to disseminate them (*37*). The social marketing approach was based on developing a detailed understanding of the consumer (the target population). Development and implementation of the intervention was guided by the four Ps of consumer marketing: the right product, introduced by appropriate promotion, offered at the right place, and at an acceptable price.

The CBC framework organizes development of health education programs by coordinating the components of the behavior change process (awareness, understanding, decision, learning, and action), with the elements of communication (source, message, channel, receiver, and destination). Through use of the model, methods of communication and messages are selected that are sensitive to specific population-defined issues.

The flexibility of the model is important, since all individuals do not enter the process at the same point. For example, some women in the target population have very little awareness of cancer screening, while others have been screened and only need support and reinforcement to maintain their health behaviors.

An example of how the CBC was used to stimulate awareness of cervical cancer and cervical screening in the target population is the development of the program's first public service announcement. Testing with focus groups revealed that a black newswoman seen on the local television station was a source of information with high visibility and credibility. A brief message was developed to communicate two simple ideas, that cervical cancer is an important issue for women and that early detection through the Pap test is effective in preventing or curing cervical cancer. The channel for the message was television, and a 30-second public service announcement was developed, with the local newswoman delivering the message. The desired audience was the segment of the target population that could be reached by television (a large proportion of the women in the target population). Destination was the behavior change anticipated, in this case to stimulate awareness of the problem of cervical cancer, the concept that early detection may be helpful, and the fact that the program was in progress.

All elements of the CBC model have not been included in the educational program yet, but each component reflects the process of integrating background information obtained in the community assessment with specific cells of the model.

Print and broadcast media materials, consisting of public service announcements, posters, 1- and 2-page pamphlets, and a comprehensive pamphlet on uterine health, were developed to address the concerns and questions identified in the community assessment. Most printed materials were designed to require no more than a seventh or eighth grade reading level for complete comprehension of the message, compared with an average reading level of 10th or 11th grade for the 185 cancer prevention and early detection pamphlets reviewed as part of the materials development process.

Since implementation of the educational program began in November 1988, more than 55,000 pieces of printed material have been distributed through such outlets as commercial establishments, churches, community agencies, and direct mailing. However, even the most focused and simply written educational materials can have only limited impact on behavior change and little impact on the poorest and most poorly educated subgroups in the target population. The high-risk subpopulation must be reached directly.

The second component of the intervention is a program of direct education that complements the media campaign. The direct education program is in workshop format and consists of a brief 15-minute flip-chart presentation conducted by the project's direct education coordinator. A demonstration kit includes a uterine model, a speculum, and a cervical brush and spatula. After the presentation, the women's concerns and questions are addressed in a discussion period. The general strategy for the direct education program is first to present it to social, civic, and church groups in the black community in order to build credibility. The second phase will focus more intensively on recruit-

Table 1. Characteristics of women in the panel sample, intervention county

Characteristic	Number	Percent
Source:		
Random household sample	48	51.1
Experiment in Self Reliance	28	29.8
Churches	11	11.7
Local college	4	4.2
Day care center	3	3.2
Age:		
18–24 years	6	6.4
25–34 years	15	16.0
35–44 years	18	19.1
45–54 years	9	9.6
55–64 years	15	16.0
65–74 years	17	18.1
75 years and older	12	12.8
Unknown	2	2.1
Marital status:		
Married	25	26.6
Single	21	22.3
Other	48	51.1
Education:		
8 years schooling or less	19	20.2
9–11 years, high school	23	24.5
12 years, high school	23	24.5
1–3 years college, or equivalent	17	18.1
4 or more years college	11	11.7
Unknown	1	1.1
Last Pap smear:		
Within past year	65	69.1
Within past 2 years	14	14.9
Within past 3 years	2	2.1
4 years or longer	8	8.5
Never	3	3.2
Don't know	2	3.1

ing women in high-risk subgroups for the workshops. Special emphasis is placed on reaching women through churches in the community.

The third component involves providing primary care physicians in the target area with current information on cervical cancer and cervical screening. This involves disseminating educational materials in clinics and physicians' offices and by a quarterly project newsletter. Examples of articles published in the newsletter include a discussion of the updated American Cancer Society screening guidelines and a summary of recent research on the relationship of human papilloma virus to the risk of cervical cancer.

Process Evaluation

Documentation of activities is performed on a monthly basis to determine adherence to program objectives and the timetable. In addition, a sample panel of 94 women in the target population has been selected and they are interviewed every 4 to 6 months to provide feedback on the media campaign and to assist in developing new materials. They are asked to identify project messages they have seen in the community, evaluate materials currently being distributed, and assist in evaluation of samples of new materials under development. The panel was selected so as to overrepresent high-risk groups, as well as to represent all segments of the population. The characteristics of the sample are shown in table 1.

A second component of the process evaluation consists of feedback from women who participate in the direct education program. All women who participate in a workshop are asked at the end of the session to complete a brief questionnaire to obtain their immediate reactions, as well as background information. The questionnaire provides feedback on specific aspects of the presentation and discussion, and more importantly, provides information on the women's ages, education, marital status, and recent cervical screening activity. The background information permits continuing updates on whether or not the program is reaching women in high-risk subgroups.

A small sample of three to five women from each workshop receives additional followup at varying intervals. In-depth telephone interviews are conducted to determine their subsequent behavior with respect to cervical screening, their recall of the workshop, and any concerns or suggestions. Their feedback is used to test modifications in the messages presented and in the format of the direct education program.

Outcome Evaluation

Since the nature of the program does not allow a true randomized design, a multifaceted approach to evaluation was developed, based on multiple data sources and a number of different quasi-experimental designs. Approaches were selected to complement one another and strengthen the overall conclusions concerning the program's effectiveness. Evaluation components include conducting a telephone survey of random samples of women from the intervention county and the control county (Durham County, NC), monitoring the number of cervical smears obtained in the public health sector in both the intervention and control counties, monitoring the followup and treatment outcomes in the intervention county for women with class III and higher positive smears, and interviewing ran-

dom samples of women in selected private and public health clinics in the intervention county, on a monthly basis.

The telephone survey is a population-based data collection procedure that will provide information on changes in knowledge and attitudes concerning cervical cancer and cervical screening, and directly measure changes in the proportion of women who report obtaining cervical screening before and after exposure to the educational program. The research design for this component of the evaluation is a separate-sample, pretest-posttest, quasi-experimental design. The intervention and control counties are noncontiguous and are similar in overall demographic composition.

Sampling for the survey is based on a simple random sample of black households with telephone access; one randomly selected black female age 18 years or older is interviewed in each household. The pretest survey was completed in November 1988, and about 470 women were interviewed in each county. The overall response rate was approximately 73 percent. Baseline data from the survey will be presented subsequently.

The second evaluation approach monitors trends in screening for cervical cancer in the public health sector. Information on women who obtain cervical smears at the public health clinics in the intervention and control counties is obtained annually, and will be analyzed for trends by month. The design for this component of the evaluation is a separate sample, multiple time-series, quasi-experimental design. Data on all cervical smears are available beginning in 1984 and will be monitored for at least 1 year after the program ends.

The third component of the evaluation is monitoring changes in the proportion of women with positive smears (class III or higher) who return for appropriate followup and treatment. The design is a separate sample, single group (intervention county only), time series quasi-experimental design. Followup data on positive smears are being obtained from two public health clinics and one private practice clinic, on a monthly basis, beginning in July 1987. The data will be summarized at 6-month intervals and trends in the proportion who return for followup and treatment will be monitored for the duration of the program and for at least 1 year after the program ends.

The final evaluation component consists of brief interviews with women who attend two public health and three private practice clinics in the intervention county. The design is a single group, time series model similar to that previously described for followup of positive cervical smears. The interviews are conducted at randomly sampled times and days to achieve representativeness across all hours when the participating clinics are open. All eligible women (black, aged 18 years and older, and not pregnant) are interviewed. Interviews began in June 1988 and will continue throughout the duration of the project. About 60 to 75 women are interviewed each month.

Baseline Data

Analyses of baseline data from the pretest telephone survey have been conducted to determine if the program and control counties are comparable and to identify high-risk demographic subgroups in the target population. A comparison of the program and control counties with respect to selected background characteristics is shown in table 2. The data indicate that small but significant differences exist between the counties for the percentage of respondents who reported that their regular source of care is a private physician, and for the percentage who live in a city or town. The counties do not differ on any other reported health or demographic characteristic.

The counties are similar with regard to women's knowledge of the Pap smear and cervical cancer and in reported screening behavior (table 3). About two-thirds of the women reported having had a Pap smear in the past year and having had two consecutive annual Pap smears. A large majority of the women in both counties correctly answered questions dealing with the need for cervical screening after menopause, the need for medical screening and for regular Pap smears, and with the value of early detection. In contrast, many women were unable to identify the Pap smear as the test for cervical cancer (this definition was then given before the other questions were asked). Many believed that cervical cancer runs in families, and a large majority did not know that black women are at increased risk for cervical cancer. These topics are important points for program emphasis.

The data represent results for only selected variables. Overall, less than 3 percent of all tests conducted showed statistically significant differences ($P<0.05$ criterion) between the intervention and control counties. In addition, preliminary multivariate analyses of predictors of knowledge and behavior concerning cervical cancer revealed no significant differences by county. Thus, the pre-test indicates a good match between intervention and control counties.

Table 2. Comparison of intervention and control counties: background data

Background	Percent with characteristic: Intervention (N = 474)[1]	Percent with characteristic: Control (N = 477)[1]	χ^2	P value
Respondent has regular source of care	93.2	93.1	0	1.00
Source of care is private physician	69.5	63.0	3.86	0.049
Respondent has medical condition requiring regular care	28.7	32.7	1.62	0.204
Ever had cancer	4.6	5.5	0.18	0.673
Self-rating of health (percent excellent or very good)	53.3	57.4	1.50	0.220
Married	43.8	43.2	0.02	0.886
Less than high school education	20.5	20.9	0.01	0.922
Attending school now	13.3	13.9	0.02	0.880
Respondent is head of household	51.1	55.7	1.85	0.173
Residence in central city or town	91.5	84.6	10.13	0.002
Household income less than $11,000	32.9	27.6	2.40	0.121
Percent aged 45 years and older	34.9	37.4	0.50	0.479

[1] Sample size varies slightly for each variable because of missing information.

Table 3. Comparison of intervention and control counties: knowledge and behavior

Characteristics	Percent with characteristic: Intervention	Percent with characteristic: Control	χ^2	P value
Knowledge				
Know that Pap smear tests for cancer	53.2	53.7	0.01	0.928
Women only need Pap smear during reproductive years (percent disagree)	88.0	84.7	1.90	0.168
After a couple of Pap smears that show everything is OK, no longer need to have Pap smears (percent disagree)	92.8	89.9	2.17	0.141
Cervical cancer runs in families (percent disagree)	44.5	38.6	3.21	0.073
Women can tell if they have cervical cancer without going to the doctor for tests (percent disagree)	88.8	88.1	0.07	0.788
Black women are more likely to get cervical cancer than white women (percent agree)	17.1	22.0	3.36	0.067
If cervical cancer is detected early, there is a good chance of cure (percent agree)	94.3	93.3	0.26	0.608
Mean total knowledge score, range is zero-low to 7-high	[1] 4.79	[2] 4.70	[3] 1.01	0.310
Behavior				
Had Pap smear in past year	69.8	68.3	0.18	0.670
Had Pap smear in 2 consecutive years	63.5	62.9	0.02	.899

[1] Standard deviation = 1.25. [2] Standard deviation = 1.32. [3] *t*-test for difference between means.

Multivariate analyses of the data for the intervention county were conducted to identify demographic subgroups in the population at higher risk for infrequent screening activity and little knowledge of cervical cancer and the Pap smear. Demographic characteristics examined included age, marital status, urban-rural residence, educational attainment, income, and head of household status. Multiple logistic regression analysis was used to determine the net odds of not having had a Pap smear in the past year and of not knowing that the Pap smear tests for cervical cancer. Based on an additive model, age and education were found to be the most important predictors of both knowledge and behavior. Accordingly, a reduced model was fitted that include only the main effects of age and education.

Age is the strongest predictor of behavior; older women are less likely to have reported having a Pap smear in the past year (table 4). Women older than 45 years were far less likely to have said that they have had a Pap smear, and this relationship is maintained within each category of education. Older women who reported educational attainment through 1 or 2 years of college have an estimated odds ratio about 8 to 12 times higher than the reference group, women aged 18 through 24 years, with 3 or more years of college. Even in the highest

educational category, older women are an estimated 4 times more likely to have not been screened in the past year. The data suggest that older, poorly educated women should receive the highest program priority, but that special emphasis needs to be placed on reaching older women regardless of educational level.

Education is the most important predictor of knowledge, with age having a curvilinear effect. Younger and older women with little education have the highest estimated odds of not knowing that the Pap smear tests for cancer. The curvilinear effect of age is present for each level of education, but with sharply decreasing odds as educational attainment increases. Essentially, the data suggest that, with regard to knowledge, the program should give priority to reaching all women with low educational attainment, placing special emphasis on the youngest and oldest women. Interestingly, although a high proportion of young women report having had a recent Pap smear, many do not know its purpose. This finding supports data from the community analysis.

Program Results

Implementation of the program began in November 1988 with the first television PSA, distribution of printed materials, and the direct education workshops. Preliminary results of the overall impact of these activities are available from the interviews at clinics. It was hypothesized that, if the program was effective, a trend analysis of the interview results would show an increase in the percentage of women coming to the clinic who (*a*) made an appointment to get a Pap smear or an examination that includes a Pap smear, (*b*) had seen, heard, or read something about the Pap smear or cervical cancer, (*c*) decided to get a Pap smear as a result of something they saw, heard, or read, and (*d*) had not had a Pap smear within 3 years.

The results suggest that while the educational program has not yet had an impact on behavior, awareness has increased (table 5). Before November 1988, about one-fourth of the women interviewed reported that they had seen, heard, or read something about the Pap smear or cervical cancer in the past few months, with no observable trend by month. After the program began, an increasing proportion reported awareness. The test for a linear trend during the months before and after the start of the program revealed a significant increasing trend ($\chi^2 = 38.6$, 1 degree of freedom, $P < 0.001$), and overall, 26.8 percent reported awareness before the program began as compared to 46.6 percent afterwards.

Table 4. Estimated odds of 459 women in the intervention county not having had a Pap smear in the past year, or not knowing that the Pap smear tests for cervical cancer, by level of education and age in years

Category	Estimated odds [1]	
	Did not have Pap smear in past year	*Did not know that the Pap smear tests for cancer*
Less than 12 years, high school:		
18–24 years	2.50	19.63
25–34 years	3.25	10.59
35–44 years	6.18	6.84
45–54 years	10.86	8.00
55 years and older	12.24	15.66
12 years, high school:		
18–24 years	1.84	10.78
25–34 years	2.25	5.82
35–44 years	4.54	3.76
45–54 years	7.98	4.39
55 years and older	9.00	8.60
1 or 2 years college:		
18–24 years	1.97	5.49
25–34 years	2.41	2.96
35–44 years	4.87	1.92
45–54 years	8.55	2.24
55 years and older	9.64	4.38
3 or more years college:		
18–24 years	1.00	2.87
25–34 years	1.22	1.55
35–44 years	2.46	1.00
45–54 years	4.33	1.17
55 years and older	4.89	2.29

[1] Estimated odds computed from additive multiple logistic regression analysis with age and education as independent variables.

Discussion

Successful efforts to reduce incidence and mortality from cancer will in part depend upon effectively promoting behavior change among the high-risk segments of the population, namely low-income, little-education subgroups. While some exceptions exist for specific cancer sites, persons whose lifestyle is defined by poverty and low educational attainment are at higher risk for incidence and mortality from cancer, and are less likely to engage in preventive health behavior (*38–44*).

Consequently, the perceptions of cancer in communities with a large proportion of high-risk persons are strongly influenced by negative experiences with the disease. Public education consists not only of providing accurate information that can be translated into action by the poor, but also by

Table 5. Women's reasons for visiting clinic, preliminary results from clinic interviews, intervention county

Month	Number of interviews	Percent who came for Pap smear	Percent who saw/heard/read about Pap smear	Percent who decided to get Pap smear	Percent who have not had Pap in 3 years
1988:					
June	120	12.5	28.3	0	5.8
July	78	14.1	25.6	1.3	6.4
August	41	22.0	22.0	0	4.9
September	68	20.6	29.4	1.5	14.7
October	73	13.7	26.0	0	11.0
November [1]	82	17.1	43.9	0	12.2
December	68	22.1	33.8	4.4	11.8
1989:					
January	90	20.0	40.0	0	11.1
February	90	17.8	50.0	0	10.0
March	73	17.8	56.2	0	12.3
April	71	11.3	56.3	0	11.3

[1] Intervention began in November 1988.

providing this information in a way that promotes optimism about the possibility of preventing cancer and, if a person has cancer, the chance of recovering from the disease.

Significant problems exist in implementing community health education for high-risk groups. Specific barriers to and concerns about preventive health care must be identified, and reasonable strategies must be developed for extending education to the subgroups that are at highest risk. In addition, since cancer prevention is not a one-time activity, it is necessary to enlist community support for a program, as well as to promote a sense of community ownership in order to increase the changes of continuing basic educational and support activities after the funding period ends.

The Forsyth County project has addressed these issues through a process of problem identification that involves obtaining basic information from community health care providers, community leaders, and members of the target population. An attempt has been made to involve community leaders as well as social and civic organizations in all phases of the project. Educational materials and approaches were developed to address specifically gaps in the knowledge and concerns of the target population. The development of educational materials is continuous, and they will be modified, based on feedback from the community.

Substantial problems must be addressed in evaluating community health education efforts. Since the unit of analysis generally is a population or subpopulation, true experimental designs would require a large number of population units that could be randomized to program and control groups. This approach can be prohibitively expensive, and many community education programs use evaluation designs that include one program unit and one approximately equivalent control unit. A reasonable approach to dealing with the problems of cost and experimental control is to employ a variety of quasi-experimental designs that will provide complementary data to evaluate components of the program. Although problems in external validity still will be present, the improvement in internal validity resulting from a multifaceted evaluation approach will help determine if the program is worth replicating in other populations.

Preliminary data from one component of the evaluation, interviews with women attending private and public health clinics, have indicated that the initial program activities have successfully raised awareness of cervical cancer and the Pap smear among the target population. In the context of the CBC model, new messages will emphasize understanding, decision-making, and learning behavior on the part of the women in the community. Specific information will be provided that addresses all identified barriers to participation in cervical cancer screening.

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