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EFFECTS OF AN AIDS EDUCATION PROGRAM ON THE KNOWLEDGE, ATTITUDES AND PRACTICES OF LOW INCOME BLACK AND LATINA WOMEN

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ABSTRACT: The purpose of this study was to test the effects of an AIDS education program on the knowledge, attitudes and practices of low income black and Latina women. A pretest-posttest nonequivalent control group design was used with a 2-3 month retest of the experimental group. The sample consisted of 506 experimental and 206 control group women who were clients of the Public Health Foundation's Nutrition Program for Women, Infants and Children in Los Angeles County. The program included a slide-tape presentation, and educational and resource brochures in English and Spanish. Knowledge, attitudes, and sexual and drug use practices were measured using a structured questionnaire that was developed in English and Spanish. Content validity and reliability of the questionnaire were established. A 2-way repeated measures ANOVA examined differences in pretest-posttest knowledge, attitudes, and practices for experimental and control groups and for both racial/ethnic groups. The experimental group made significant gains over the control group on pretest-posttest measures of knowledge and attitudes. Both experimental and control groups made significant changes in practice. Changes in knowledge were retained on retest; changes in practices came close to significance on retest. Blacks and Latinas differed on pretest knowledge and attitudes but not practices. Blacks had more knowledge and positive attitudes on pretest. However, posttest improvements for both knowledge and attitudes were greater in Latinas than in blacks. A multiple regression analysis revealed that the best predictors of knowledge, attitudes and practices were racial/ethnic group, education, and religion. It is concluded that a didactic audio visual program can positively affect the knowledge and possibly the practices of participants and that these are retained over time but that changes in attitudes will take further efforts.

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INTRODUCTION

Recently, attention has been focused on the disproportionate occurrence of acquired immunodeficiency syndrome (AIDS) among black and Latino populations, especially in urban areas.[1,2,3,4] Although blacks and Latinos account for about 18% of the total population of the United States, they make up almost 40% of all AIDS cases nationwide.[5] Blacks represent 12% of the total population but 26% of AIDS cases; Latinos represent 6% of the population but 13% of AIDS cases.[2,3] The ethnic differences, however, are even more stark among women and children. Among U.S. women with AIDS about 54% are black and 16% are Latina; 55% of children with AIDS are black and 20% are Latino.[2] Black and Latina women are at risk of contracting AIDS through intravenous drug abuse and through sexual contact with males who are HIV infected, both IV drug abusers and bisexuals.[6,7,8]

Blacks and Latinos may be at greater risk than whites because of less knowledge of AIDS and fewer available health resources. Education programs as well as health services are necessary to prevent the spread of AIDS. However, education and prevention programs may not be effective in reaching minority populations unless specifically designed for these groups.[6] Targeted programs are needed for blacks and Latinos to prevent transmission of HIV through IV drug abuse, sexual contact, and perinatal exposure. The purpose of this study was to test the effects of culturally relevant AIDS education programs on the knowledge, attitudes and practices of low income black and Latina women in Los Angeles County.

Risks in Minority Communities. In minority communities, AIDS particularly affects male and female intravenous drug users (IVDUs), their sexual partners and children.[8,9] About 25% of all AIDS cases involve IVDUs.[5] Recent data have identified poor inner city residents as a subgroup at highest risk. Among women with AIDS who are IVDUs or sexual partners of IVDUs, the ethnic/racial breakdown is 74% black, 80% Latina, and 52% white.[2] In addition, IV drug use is a major contributing factor in the perinatal transmission of AIDS. Among children with AIDS the proportion whose mothers or mothers' sex partners are IVDUs is 62% black, 72% Latino, and 31% white.[2]

Another possible threat to minority communities comes from the spread of the virus to the heterosexual population by bisexuals. Several reports have suggested that many blacks and Latinos who engage in homosexual activity are bisexual.[1,3,4,8,10,11] The Centers for Disease Control

have reported that among blacks, 54.2% of the homosexual/bisexual risk group are bisexual and among Latinos, 44.2% of the homosexual/bisexual risk group are bisexual. In contrast, among whites only 11.3% of this risk group are bixexual.[12]

Studies of blood donors provide additional support for the increased risk of AIDS in minority communities. In the Los Angeles-Orange Counties Region during 1985 and 1986, seropositive donors were 47% white, 37% black, and 18% Latino.[10] Other cities also have reported a higher infection rate and less knowledge of risk factors in blacks and Latinos than in whites.[4,13]

Knowledge, Attitudes and Community Education. Several studies have suggested differences in AIDS knowledge and attitudes related to race or ethnicity.[14,15,16] An assessment of adolescents' knowledge, attitudes and misconceptions demonstrated that white adolescents were more knowledgeable than black adolescents about the cause, transmission and prevention of AIDS, and black adolescents were more knowledgeable than Latino adolescents.[14] A study of black college students in Los Angeles revealed a lack of knowledge of the seroprevalence of AIDS. The students viewed blacks as significantly less likely than whites to get AIDS.[15] Preliminary analyses of the National Health Interview Survey questions on AIDS indicated that blacks and hispanics consistently reported lower levels of information about AIDS and greater proportions of erroneous knowledge regarding HIV transmission than did whites.[16] Less knowledge of AIDS could result in the disease not being recognized. Furthermore, community resources may not be known or available. For these reasons, blacks and Latinos are diagnosed later and may die more quickly of AIDS than whites.[17]

Few organizations offer AIDS education and prevention programs targeted to minorities.[18] The absence of visible and formal organizations within minority homosexual and bisexual communities and drug using communities is a barrier in implementing community education programs.[19] Therefore, in this study, black and Latina women were targeted for a variety of reasons. The most compelling reason was to prevent the spread of AIDS among the women themselves. In addition, women are involved in the perinatal transmission of AIDS. Women are also wives and mothers. They can provide health education to husbands and teenaged children and thereby to a greater circle of men, women and children.

Women are also a potentially receptive group and a mobilizing force in communities where public health education has been difficult.

In black and Latino communities, they have traditionally held social and cultural roles and strong family values that make them key figures in the education of the community.[20,21,22]

METHOD

The study used a pretest-posttest nonequivalent control group design.[23] The experimental group constituted a naturally assembled collective of black and Latina clients at four Women, Infants and Children (WIC) Program community sites who consented to be involved in the study. This group received a pretest, the AIDS educational intervention, and a posttest; they also received a second posttest (the retest) at 2-3 months post-intervention. The control group consisted of black and Latina WIC clients at 2 other sites who received a pretest, an education program on nutrition, and a posttest. This group received the AIDS education program at a later date when the experimental group was retested.

Sample. The sample consisted of 506 experimental group subjects (256 black and 250 Latina women) and 206 control group subjects (105 black and 101 Latina women) who took the pretest and the posttest. Of the experimental group, 80.2% participated in the retest (205 black and 201 Latina women). Sample characteristics are displayed in Table 1.

Relationships were examined between sociodemographic characteristics and group membership (experimental, control), participation in the retest, ethnicity (black, Latina), and WIC program site. There were no significant relationships or differences between any of the sociodemographic characteristics and group membership. There were also no significant sociodemographic differences in experimental group subjects who participated only in the pretest and posttest and those who paticipated in the pretest, posttest and retest. Furthermore, there were no significant relationships or differences between sociodemographic characteristics and program site. Significant differences did occur between sociodemographic characteristics and ethnic/racial identification. The ethnic/racial groups did not differ significantly in age, number of children nor income. There was a significant difference in education ($t = -17.17$, $df = 449.79$, $P = .000$) with black women having more years of school. There were also significant relationships between ethnic/racial identity and marital status ($\chi^2 = 116.36$, $df = 2$, $P = .000$), religion ($\chi^2 = 303.31$, $df = 2$, $P = .000$) and country of birth ($\chi^2 = 406.7$, $df = 1$, $P = .000$). Latina women were more often married than black women; they were predominantly Catholic and the majority of black women were Protestant; and the large majority (94%) of Latina women were born outside the U.S. (75% in Mexico and 25% in Central America) whereas black women were born in the U.S. (84%).

Setting. An agreement was reached with the Public Health Foundation Nutrition Program for Women, Infants and Children (WIC) in Los Angeles

TABLE 1

Sociodemographic Characteristics

	Group Membership		*Racial/Ethnic Identity*	
	Experimental $N=506$	*Control* $N=206$	*Black* $N=361$	*Latina* $N=351$
Age (in years)				
Mean, S.D.	27, 7.9	27, 5.8	27, 6.9	27, 7.9
Education (in years)*				
Mean, S.D.	10.7, 3.4	10.6, 3.6	12.6, 1.8	8.6, 3.7
Marital Status (in %)*				
Married	53	56	34	75
Never Married	33	34	47	19
Ever Married (D,S,W)	14	10	19	6
Monthly Income (in %)				
$0-832	61	65	61	65
833-1666	34	31	34	32
1667-2499	5	4	5	4
Children under 18 (#)				
Mean, S.D.	2.0, 1.3	1.9, 1.1	2.0, 1.3	2.0, 1.1
Religion (%)*				
Protestant	34	28	60	4
Catholic	53	56	20	88
Other/None	13	17	20	8
Country of Birth (%)*				
U.S.	49	45	84	6
Other	51	55	16	94

*Significant differences in racial/ethnic groups.

County to provide AIDS education for their black and Latina women clients. The WIC program provides nutritional supplements, education, and counseling for low-income pregnant and nursing women, and their infants and high risk children in Los Angeles County. Clients attend the WIC program on a monthly basis to receive food coupons. Prior to receiving the coupons they participate in an education and counseling program.

In Fall 1988, one month was set aside for AIDS education at four WIC sites, two which served black clients and two which served Latina clients. Women at these sites were invited to attend the AIDS education program as their educational program for the month.

Procedure. Subjects in the study were approached when they came for their regularly scheduled visits. They were invited to participate in an AIDS education program and research project; informed consent was obtained at that time. There were 712 subjects who participated in the study and an additional 697 persons who attended the program but did not complete the pretest and posttest. The pretest questionnaire was self administered by the subjects and took about 5 minutes to complete. Black and Latina nurse educators and data collectors were available to assist the respondents by answering questions on how to complete the pretest and by reading it to them if they had difficulty.

Following the pretest, subjects attended a twelve minute English or Spanish slide-tape educational program on AIDS which was presented by a nurse educator of the same race/ethnicity as the participants. Subjects also received an English or Spanish language brochure on AIDS and a community resource brochure which focused on AIDS service organizations and resources specific and available to Los Angeles County black or Latino communities. The nurse educator was available for questions following the program. After participation in the educational program, subjects completed the posttest which took less than 5 minutes.

Instrument. A questionnaire was developed in both English and Spanish that collected sociodemographic data and assessed the AIDS related attitudes, knowledge and practices of respondents. The questionnaire was developed with the assumption that most respondents were literate. Literature and AIDS educational materials were surveyed to develop items on the questionnaire. Knowledge items assessed knowledge of signs and symptoms, transmission, prevention, and community resources. Attitudes items assessed attitudes toward sexuality and drug use, and fears. Practice items assessed current sexual practices and drug use practices. Responses to the knowledge, attitudes and practice items were dichotomized into "Yes" and "No" categories.[24] Sociodemographic items assessed age, education, income, marital status, religion, number of children, race/ethnicity, and country of birth. The pretest, posttest and retest were the same except that on the posttest the order of items was changed, subjects were asked to project their intended changes in practice, and the sociodemographic items were deleted. On the retest, the order of questions was changed and subjects were asked to report actual changes in behavior.

The questionnaire was submitted to experts in AIDS research and questionnaire construction at UCLA Schools of Nursing, Medicine, and Public Health who judged it for content validity. It was then translated into Spanish and back-translated into English to establish semantic equivalence. The questionnaire was pilot tested on one group of black (N = 51) and one group of Latina (N = 16) participants in the WIC program.[25] It underwent its final revision based on results of the pilot testing.

The 16 item questionnaire was considered to contain items measuring knowledge (10 items), attitudes (3 items), and practices (3 items). Scales were created for the knowledge items, the attitude items and the practice items. Reliabilities for these scales were determined using Cronbach's alpha. The alpha coefficient for the knowledge items was 0.72, for the attitude items was 0.67 and for the practices items was 0.66. An exploratory factor analysis was done of the dimensions of the instrument using a principal components analysis with a quartimax orthogonal rotation. The Kaiser-Meyer-Olkin measure of sampling adequacy was 0.8911. The factor analysis identified four factors which cumulatively accounted for 43% of the variance: knowledge of transmission, practices, attitudes and knowledge of symptoms. The knowledge of transmission factor consisted of 4 items with an eigenvalue of 2.88 (18% of variance). The practices factor consisted of 3 items with an eigenvalue of 1.63 (10.2% of var). The attitudes factor consisted of 3 items with an eigenvalue of 1.30 (8.1% of var) and the knowledge of symptoms factor consisted of 3 items with an eigenvalue of 1.08 (6.8% of var).

RESULTS

Data were analyzed using the Statistical Package for the Social Sciences (SPSS-X). A single score was calculated for each of five sets of items: total knowledge items (10), knowledge of transmission items, knowledge of symptoms items, drug use and sexual practice items, and attitude items. Differences between experimental and control groups and between ethnic/racial groups on pretest-posttest scores of each of the 5 sets of items were examined using a 2-way repeated measures ANOVA. Significance was set at .013 to control for experimentwise error. Pretest and posttest means and standard deviations for the experimental and control groups in both subgroups are displayed in Table 2.

On the total knowledge items, there was a significant 3-way interaction (group by subgroup by time) ($F(1,708) = 8.09, P = .005$). Black and Latina participants differed from each other in both the experimental and control groups on pretest with blacks having more knowledge than Latinas. Both ethnic/racial groups in the experimental group made significant improvements in knowledge on the posttest, however Latina participants made greater improvements than black participants. There was also a significant 3-way interaction on the knowledge of transmission items ($F(1,708) = 6.27$, $P = .012$) with blacks more knowledgeable than Latinas at pretest but both showing significant improvement on posttest in the experimental group and not in the control group.

On knowledge of symptoms items, there was a significant change in pretest-posttest scores for the total experimental group that did not

TABLE 2

Experimental and Control Group Pretest, Posttest and Retest Comparisons

	Group "*Subgroup*"	*Pretest* $\bar{X}$	*S.D.*	*Posttest* $\bar{X}$	*S.D.*	*Retest* $\bar{X}$	*S.D.*
"*Total Knowledge*"	Experimental	7.46	1.95	8.82	1.38	8.61	1.64
	Latina	6.72	1.98	8.43	1.60	8.17	1.93
	Black	8.18	1.61	9.21	1.16	9.01	1.18
	Control	7.31	1.99	7.48	2.02		
	Latina	6.67	2.09	6.94	2.21		
	Black	7.95	1.88	8.01	1.83		
Knowledge of Transmission	Experimental	0.37	10.59	1.74	9.34	1.42	10.74
	Latina	−1.43	12.88	0.25	12.61	0.12	13.85
	Black	2.13	7.32	3.23	6.07	2.72	5.05
	Control	0.48	9.41	0.53	9.36		
	Latina	−1.30	12.12	−1.25	12.58		
	Black	2.25	6.71	2.31	6.13		
Knowledge of Symptoms	Experimental	−0.06	1.54	0.23	2.58	0.03	1.53
	Latina	−0.44	1.55	0.11	2.63	−0.17	1.69
	Black	0.32	1.42	0.34	2.52	0.33	1.33
	Control	0.05	1.51	0.06	2.16		
	Latina	−0.29	1.63	−0.26	2.25		
	Black	0.41	1.37	0.38	2.06		
Attitudes	Experimental	0.09	2.20	0.32	2.09	0.11	2.22
	Latina	−0.74	2.11	−0.29	2.31	−0.69	2.38
	Black	0.90	1.98	0.93	1.88	0.91	1.89
	Control	0.01	2.19	−0.03	2.22		
	Latina	−0.82	2.16	−0.75	2.17		
	Black	0.84	2.21	0.70	2.27		
Practices	Experimental	5.78	0.68	5.71	0.61	5.73	0.67
	Latina	5.80	0.61	5.69	0.66	5.70	0.74
	Black	5.76	0.74	5.81	0.56	5.75	0.60
	Control	5.70	0.75	5.51	0.86		
	Latina	5.67	0.76	5.35	0.89		
	Black	5.72	0.74	5.67	0.82		

occur for the control group (F (1,708) = 21.75, P = .000). There was a significant difference between subgroups in knowledge of symptoms with blacks having more knowledge than Latinas on pretest (F (1,708) = 20, P = .000) From the mean scores, it can been seen that Latina participants made significant improvements but black participants stayed the same. Changes were similar on attitude items with significant pretest-posttest differences for the total experimental group but not for each of the subgroups (F (1,708 = 30.80, P = .000). Blacks had more positive attitudes than Latinas on pretest (F (1,708) = 138.9, P = .000) but Latinas made greater improvements in attitude.

Significant differences occurred on pretest-posttest sexual and drug use practice items for both the experimental and control groups (F (1,708) = 8.27, P = .004). Both groups indicated intended changes in practices on posttest. Again there were differences in blacks and Latinas with more Latinas indicating intended changes in behavior (F (1,708) = 8.08, P = .005). Only about 5% of each group reported drug use or sexual practices that are considered risk behaviors.

To determine whether changes in knowledge and attitudes were retained over time, the experimental group was retested 2-3 months after the posttest. Differences in experimental group pretest-retest scores for the five sets of items for each ethnic/racial group was examined by way of a repeated measures ANOVA. Significance was set at .01 to control for the inflation of alpha. Pretest-retest means and standard deviations are displayed in Table 2. On total knowledge items, there were significant pretest-retest differences and subgroup retest differences (F (1,398) = 27.79, P = .000). Improvements in knowledge were retained on retest for both groups. Blacks had more knowledge of AIDS but Latinas made greater improvements in knowledge. Changes were similar in knowledge of transmission items with significant differences in pretest and retest scores and between subgroups (F (1,398) = 7.17, P = .008). The pretest-retest difference on knowledge of symptoms was not significant; the difference between subgroups on retest came close to significance (F (1,398) = 5.35, P = .021).

Significant pretest-retest difference did not occur on attitude items; differences between subgroups were significant (F (1,398) = 40.38, P = .000) with blacks having more positive attitudes than Latinas. From the mean scores it can be seen that gains in attitude scores made by Latinas at posttest had decreased about to pretest levels at retest. Attitude scores for blacks remained the same at pretest, posttest and retest. On practice items, pretest-retest differences and differences in subgroups came close to significance (F (1,398) = 4.87, P = .028). From

the mean scores it can be seen that Latinas changed their sexual and drug use practices more than blacks.

The Pearson product moment correlation coefficient (r) was used to examine the relationships between sociodemographic variables and the five sets of items. Correlations were examined between sociodemographic variables and pretest total knowledge, knowledge of transmission, knowledge of symptoms, attitudes and practices. A multiple regression analysis was used to identify the best predictors of each of the five sets of items. The best predictors were identified for total knowledge, knowledge of transmission, knowledge of symptoms, attitudes, and practices. Racial/ethnic group (black), years of school, religion (Protestant), and positive practices (in that order) predicted total knowledge (r^2 = .22). Knowledge of symptoms, years of school and positive attitudes predicted knowledge of transmission (r^2 = .09). Racial/ethnic group (black), knowledge of transmission, positive attitudes, age (older), marital status (married), and negative practices predicted knowledge of symptoms (r^2 = .14). Racial/ethnic group (black), years of school, knowledge of transmission, religion (Protestant) and knowledge of symptoms predicted positive attitudes (r^2 = .24). Knowledge predicted positive practices (r^2 = .01).

DISCUSSION

The AIDS education program described here was conducted in an established community agency which provides food supplements and nutritional counseling for low income women. It was developed to fit the agency's time constraints and format for providing education. Within those constraints, the program was available to large numbers of low income black and Latina women, ethnic/racial groups considered to be at risk for AIDS.

The program was successful in changing the AIDS related pretest-posttest knowledge of experimental group participants that was retained over a 2-3 month period on retest. Although the program initially was able to also effect a change in experimental group participants AIDS related attitudes on pretest-posttest measures, these changes were not retained on retest. Significant pretest-postest gains in practices were indicated by participants in both experimental and control groups. On retest, these changes fell just short of significance.

Important differences were observed between racial/ethnic groups. While black women had more AIDS related knowledge and

more positive attitudes at pretest, Latina women made greater gains on posttest. Black women maintained their attitude score on retest, however Latina's attitude score decreased to pretest levels. Practices were similar at pretest but Latina women indicated a greater change in intended practices at posttest and retest. Sociodemographic differences in education, religion and country of birth between the two racial/ethnic groups influenced the knowledge, attitudes and practices of respondents.

Limitations of the study were lack of random assignment to experimental and control groups and its setting in a single geographic area. Additionally, the effects of history could have influenced retest results, and the effects of testing could have influenced posttest results. This latter phenomenon may have been noted in posttest changes in practices for the control group.

The program was only partially successful in meeting its goals. This outcome has to be weighed against the possible benefits of the program. A priority of public health education is to provide prevention programs to populations at risk for a disease. A problem for AIDS prevention programs is reaching those populations at highest risk. To date, most AIDS education programs have not been successful in reaching black and Latino populations. By placing this AIDS prevention program within an established community education program (WIC), the AIDS program reached large numbers of the target population with minimal refusal to participate.

Disadvantages of the AIDS education program were its length (12 minutes), didactic format, and lack of opportunity for any kind of personal contact or follow-up with participants. Despite these drawbacks, the program did result in changes in knowledge that were retained over time and changes in practices over time that reached borderline significance. However, changes in attitudes were not retained and these are also major goals of AIDS prevention programs.[26,27] Other investigators have suggested that attitude change cannot be effected by didactic programs and that experiential learning is necessary.[28] An experiential learning program is not currently an option in the WIC program. One possible solution is to repeat the AIDS education program within the WIC program on a regular basis. Currently the WIC program offers its nutritional education program on a regular and repeated basis with the assumption that repetition will change both knowledge and behavior. The AIDS program could also be offered repeatedly accompanied by pretest and posttest measures of attitudes and practices. It would then be possible to determine whether changes

in attitudes and practices are being made by participants and retained over time.

There are implications for AIDS education that can be drawn from this study. The differing levels of education and knowledge, and differing attitudes of the black and Latina participants strongly suggest that separate programs be developed for these populations. Participants also differed dramatically in country of birth suggesting the necessity of Spanish language programs for latino populations.

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