

INTERNATIONAL ARTICLE

West African Youth Initiative: Outcome of a Reproductive Health Education Program

WILLIAM R. BRIEGER, M.P.H., C.H.E.S., Dr.P.H., GRACE E. DELANO, R.N., R.M.,
CATHERINE G. LANE, M.P.H., OLADIMEJI OLADEPO, B.A., AND
KOLA A. OYEDIRAN, B.Sc., M.Sc.

Purpose: To describe the implementation and evaluation of an adolescent reproductive health peer education program in West Africa. The program, known as the West African Youth Initiative (WAYI), was developed to improve knowledge of sexuality and reproductive health, and promote safer sex behaviors and contraceptive use among sexually active adolescents in Nigeria and Ghana.

Methods: Between November 1994 and April 1997, two organizations, the Association for Reproductive and Family Health (ARFH), based in Nigeria, and Advocates for Youth, based in Washington D.C., supported community-based youth-serving organizations in the two countries to implement peer education projects. Consultants from the African Regional Health Education Centre (ARHEC) in Nigeria provided technical assistance in designing and conducting a quasi-experimental process and outcome evaluation of the projects.

Results: There were significant differences over time and between intervention and control groups concerning reproductive health knowledge, use of contraceptives in the previous 3 months, willingness to buy contraceptives, and self-efficacy in contraceptive use.

Conclusions: Overall, the project provides evidence that peer education is most effective at improving knowledge and promoting attitudinal and behavior change

among young people in school settings. © Society for Adolescent Medicine, 2001

KEY WORDS:

Adolescents
Reproductive health
Pregnancy prevention
STI prevention
HIV prevention
Contraceptives
Peer education
West Africa

The reproductive health of adolescents is a priority for many of sub-Saharan Africa's governments, non-governmental organizations (NGOs), and international donors. Rapid population growth remains a concern, and births to adolescents significantly contribute to Africa's overall growth.

Sixteen percent of Nigerian and 21% of Ghanaian unmarried women between the ages of 15 and 19 years report they are sexually active [1]. According to the Nigeria Demographic and Health Survey (DHS), the median age at first intercourse for girls is just over 16 years, $\frac{3}{4}$ of a year earlier than the median age of marriage [2]. The same survey found that 41% of urban youth aged 12 to 24 years were sexually experienced. In Ghana, the median age at first intercourse for both boys and girls is 17 years, and by age 19 years, 85% are sexually active [3]. These trends in adolescent sexual behavior are thought to be the result of earlier menarche, increased access to education, later age of first marriage, urbanization and

From the African Regional Health Education Centre (ARHEC), College of Medicine, University of Ibadan, Ibadan, Nigeria (W.R.B); the Association for Reproductive and Family Health (ARFH), Ibadan, Nigeria (G.E.D); the Advocates for Youth (AFY), Washington, D.C. (C.G.L.); and the African Regional Health Education Centre (ARHEC), College of Medicine, University of Ibadan, Ibadan, Nigeria (O.O., K.A.O.).

Address correspondence to: Catherine Lane, The Futures Group International, 1050 17th St. NW # 1000, Washington, DC 20036. E-mail: cate_lane@hotmail.com.

Manuscript accepted March 16, 2001.

the influence of the media, among others. These factors have lengthened the socially defined period of adolescence, and weakened traditional constraints on sexual behavior, especially in urban areas [4,5].

Africa's youth are at high risk for sexually transmitted infections (STIs), including the human immunodeficiency virus (HIV), the virus that causes AIDS. The Joint United Nations Programme on HIV/AIDS (UNAIDS) data show that two-thirds of the world's people infected with HIV live in sub-Saharan Africa [6]. Studies of HIV worldwide show that 50% of newly acquired HIV infections occur among those aged 15 to 24 years; in parts of Africa, the rates of infection are much higher among young women. It is estimated that nearly 2.2 million people in Nigeria are infected with HIV; no doubt a significant number of those infected are young people [7]. Results of an HIV sero-prevalence study in patients attending select STI clinics throughout Nigeria show a range of infection from 0% to 34.6%, depending on the location of the clinic [8]. In Ghana, 40% of those with AIDS are between the ages of 20 and 29 years, implying that most contracted the disease during adolescence [9].

A national survey in Nigeria found that the age-specific fertility rate among Nigerian girls aged 15 to 19 years is 173.3 births per 1000 women, one of the highest rates in the world [10]. Fifty-four percent of Nigerian and 49% of Ghanaian women become mothers by the age of 20 years [1]. In Ghana, 58.6% of unintended births are to young women aged 15 to 19 years, and 41.7% are to women aged 20 to 24 years [3]. In Nigeria, 80% of pregnancies to unmarried girls were unintended [11].

Only 28% of Ghanaian and 27% of Nigerian girls are enrolled in secondary school [1]. Access to education provides opportunities to girls that would not otherwise be available to them, and schoolgirls who become pregnant frequently seek abortions. A study by Nichols et al. found that 30.2% of secondary school girls surveyed reported having had an induced abortion [12]. In Nigeria, abortion is illegal except to save a woman's life, yet 80% of all complications from unsafe abortion are to women under the age of 19 years [13]. In a recent study conducted in a rural community in Rivers State, Nigeria, 42.1% of sexually active adolescents interviewed had experienced either an abortion or an STI, yet community services for treating postabortion complications or STIs were non-existent [14].

The majority of sexual interactions among adolescents take place without the use of modern contraception. Many young women indicate that they do

not want to become pregnant, yet only 5.9% of 15 to 19 year-old Nigerian females currently use a contraceptive method. Of this number, two-thirds report the use of traditional methods. Only 1% report oral contraceptive use and less than 1% reported using condoms, foaming tablets, or intrauterine devices (IUDs) [2]. A survey of female students in Enugu showed that 76% of those who were sexually active did not use contraception at first intercourse, 42% of the respondents objected to contraception, and 61% believed contraceptives cause infertility [15].

Only 13% of Ghanaian women aged 15-19 years have ever used a contraceptive method, and only 5% reported use of a modern method the last time they had sex [3]. Non, or low use, of contraceptives may be related to social norms and stigmas associated with premarital sex and contraceptive use. Young people report that they often feel a great deal of pressure to have sex, but no support or encouragement to use contraceptives [9]. In one project in Nigeria, a team of adolescents was trained to pose as clients to assess the quality of clinical services provided to young people. The team found clinic services unsatisfying, reporting that the attitudes of service providers were often hostile or moralistic, and only limited information was provided [16].

To slow population growth, reduce the morbidity, mortality, and socioeconomic problems associated with early childbearing and unsafe abortion, and inhibit the spread of HIV and other STIs, programs and policies should encourage young men and women to practice abstinence or increase their use of contraceptives, particularly condoms.

One of the most popular strategies for providing information and services to young people is the peer-based approach. Peer programs have been identified by the World Health Organization (WHO) as effective in promoting behavior change, and have become a major component of HIV/AIDS prevention programs around the world, particularly those targeted to youth [Fee N, Youssef, unpublished observations].

The West African Youth Initiative Project

The West African Youth Initiative (WAYI) was developed to improve knowledge of sexuality and reproductive health, and promote safer sex behaviors and contraceptive use among sexually active adolescents in Nigeria and Ghana. The WAYI project had two broad goals:

1. To determine whether or not adolescent reproductive health peer education programs could be

successfully implemented in Nigeria and Ghana; and,

2. To assess the overall impact of such programs on adolescent knowledge, attitudes, and practices in different settings.

In conceptualizing WAYI, the collaborators tried to minimize opposition to the perceived sensitive nature of project activities by implementing several community-based youth projects simultaneously, or a "critical mass" of projects. The support of a group of youth-serving organizations (YSOs) provided the YSOs with political support for their activities, and also strengthened the evaluation. To select the projects, Advocates and the Association for Reproductive and Family Health (ARFH) surveyed nearly 200 Nigerian YSOs in Advocates' database to determine their interest and experience in implementing adolescent reproductive health programs, as well as their potential for expansion. Site visits by ARFH identified eight YSOs. These eight organizations were invited to participate in a 3-week youth program and proposal development workshop in September 1992. Two Ghanaian projects that had submitted proposals to Advocates' Seed Grants program (which no longer exists) were also invited to participate, with the idea that there would be an exchange of experiences between the two countries.

Upon securing adequate funding support, the project finally began in November 1994 at a follow-up workshop at which the YSOs had the opportunity to review the baseline information collected in their communities. Project staff used the data to finalize the design of their projects, including the development of objectives, strategies, and indicators. The YSOs decided to adopt a standard intervention of peer education. Each YSO selected its own target population of youth, either secondary school, post-secondary school or out-of-school settings, and developed their projects accordingly. The YSOs trained adolescent peer educators to reach their target populations with information, education and counseling on reproductive health through one-on-one and group activities; to create awareness of available services; and to make appropriate referrals for the services that the peer educators could not provide (such as prescriptive contraceptives, STI diagnosis and treatment, or in-depth counseling).

The YSO partners represented a fairly wide geographical and cultural spread within mostly urban communities in the two countries. The YSOs themselves had a broad range of experience. Some were newly formed grassroots organizations, whereas oth-

ers were local chapters of well-established organizations with wide networks. Nine of the original 10 YSO partners completed the project; one YSO was dropped from the project in 1996 owing to documented management problems.

Figure 1 identifies key activities in the implementation of the project, as well as evaluation tools used to monitor the process and measure the outcomes. Basic features of WAYI included: an intervention design based on adolescent peer educators, local responsibility for project implementation vested in grassroots YSOs including the development of site-specific health education materials and strategies, and the promotion of community-level networks of individuals and organizations concerned with adolescent reproductive health for purposes of referral and advocacy.

Table 1 outlines specific intervention activities at each type of site. Youth involvement in all aspects of the project was stressed, such as in the selection of peer educators, and in program planning, implementation, and evaluation. Before commencement of project activities, training was conducted by ARFH staff at each project site for the YSO staff, who in turn conducted the training of peer educators. The training was developed from Advocates' *Life Planning Education* manual [17]. Peer educators were trained on anatomy and physiology, pregnancy, STIs, including HIV, and contraceptive methods, as well as communication and basic counseling skills. Peer educators were also trained on the use of data collection forms.

Each project site developed its own mix of educational strategies, using peer education as the foundation. In general, peer educators provided information and counseling through one-on-one sessions, group talks and presentations, and distribution of print materials. ARFH also provided drama training to the peer educators of seven of the YSOs, and the peer educators developed and presented their own dramas on salient reproductive health topics in their own communities, including abortion, drug use, and parent-child communication, which were followed by facilitated discussions.

Between March and July of 1995, the YSOs launched project activities. ARFH staff, with technical guidance from Advocates and the African Regional Health Education Centre (ARHEC), began monitoring; each project site received at least two visits from ARFH each year. A mid-project workshop in February 1996 provided an opportunity for projects to share their successes and constraints, and to make mid-course corrections in activities and

ACTIVITY	RESPONSIBLE PARTIES				EVALUATION INSTRUMENTS
Technical Assistance	Association For Reproductive And Family Health Advocates For Youth African Regional Health Education Centre				Review of YSO Plans and Reports Field Trip Reports YSO Staff Interviews
	Curriculum Development	Training of Trainers	Financial Monitoring	Evaluation Design	
Program Planning and Management	Community Based Youth Serving Organizations				Organizational Development Checklist Financial and Other Reports In-Depth Interviews Opinion Leader Interviews
	Training	Advocacy	Community & Youth Involvement	Links with Other Services	
Program Implementation	Youth Peer Health Educators				MIS Forms Discussion Groups IEC Reports
	Counseling	Referral	Group Education	IEC Material Development	
Program Outcomes	Client Population: In- and Out-of-School Youth				Surveys Client FGDs
	Knowledge	Self-Efficacy	Service Satisfaction	Contraceptive Utilization	

Figure 1. The West African Youth Initiative (WAYI) Intervention and Evaluation Schema.

management. YSOs continued through the third and final year of the project, and assembled in April 1997 to share their accomplishments and plans for continuing and expanding activities, findings from monitoring and evaluation instruments, and suggestions for advancing youth programming. The preliminary findings of the WAYI project and key lessons learned are presented in this article.

Methods

The WAYI evaluation was designed and implemented from the outset of the project using a fairly rigorous quasi-experimental operations research design. The evaluation was intended to document the process of developing peer education programs and to quantitatively and qualitatively assess the outcomes of the peer education approach.

A cross-sectional baseline survey was developed from focus group discussions (FGDs) that were held with youth at each project site in mid-1994. Baseline

data were collected between October 1994 and January 1995, in designated intervention and control communities. For the in-school interventions, control schools were identified in similar socio-economic neighborhoods in different parts of the same city or in a neighboring town. Out-of-school sites were neighborhood-based, and control areas were similar neighborhoods in other noncontiguous parts of the same city.

The survey instrument examined indicators such as levels of sexual activity in the previous 3 months, knowledge of reproductive health issues, prevalence of STIs, attitudes toward contraception, and contraceptive use. Given the short-term nature of many adolescent relationships, contraceptive use is often sporadic and oriented toward the prevention of pregnancy or disease at a specific moment in time. Because the evaluation was interested in obtaining the most recent and most reliable information about current levels of contraceptive use, the survey asked if adolescents who had been sexually active in the 3

Table 1. The West African Youth Initiative

Type of site	Location	Key Project Activities				
		Peer Counseling	Youth Involved in IEC Material Development	Drama	Providing Contraceptives	Other
Secondary school	Atebubu	✓	✓	✓		TV, radio, Youth center, nurse Parent workshops
	Owerri	✓	✓	✓	✓	
	Calabar	✓	✓	✓		
Postsecondary	Kebbi	✓	✓	✓		Clinic Youth center, clinic
	Bauchi	✓	✓	✓	✓	
Out-of-school	Osogbo	✓	✓	✓	✓	Street campaign
	Lagos	✓			✓	
	Kaduna	✓		✓	✓	
	Kumasi	✓	✓	✓	✓	

months before the survey had used a modern method of contraception to prevent pregnancy, to gauge use of modern contraceptive methods.

Data were collected from samples of the intervention and control groups. Random sampling was employed in each project site to obtain interviews from 100 youth in the intervention and 100 youth in the control sites, and samples were equally divided between males and females. The survey was self-administered at schools, where respondents were easily sampled from class registers and assembled in a classroom to complete the survey. Modified cluster sampling was undertaken in the community-based sites. Interviewers of about the same age as the respondents were recruited and trained, maps of the community were obtained or sketched, and major junctions were pinpointed. At each junction, directions were randomly selected, and interviewers progressed along the selected streets identifying youth in shops and workplaces. Once in a workplace, workers or apprentices below the age of 25 years were identified, and balloting was done to choose a respondent if there was more than one young person. Staff from ARFH's Research and Evaluation Unit managed all data collection operations in the field, and routinely reviewed and coded data before data entry.

Projects were monitored over an 18-month period using a management information system (MIS) and an organizational development and management checklist designed by ARFH, ARHEC and the YSOs. Final process evaluation activities included in-depth interviews of YSO staff, peer educators, and community leaders, and FGDs with client youth. The primary emphasis of this article is on the outcome measures from survey data, and process issues will be reported elsewhere.

The follow-up cross-sectional survey took place between September and December of 1996, using the same procedures as the baseline survey. Since most YSOs completed their staff and peer educator training between March and July of 1995, the projects had been functional for at least 18 months before the final survey. It should be noted that the samples drawn at each site were not the same at each point in time. It was assumed that the intervention was provided to the whole target population, therefore each survey was a cross-sectional look at the total population at a given point in time. This decision was based on the reality that a young population is mobile. Students would graduate or drop out from school, whereas apprentices would gain their "freedom" and set up their own workshops, often in other towns and communities.

In total, 3585 interviews were analyzed, including 911 respondents at baseline and 908 at follow-up in the intervention sites, and 873 at baseline and 893 at follow-up in control communities. The number of respondents sampled per site was relatively small, which did not encourage individual site-by-site analysis. This decision was based in part by time and logistical constraints, but mainly by the desire to holistically examine the peer education approach. Data were analyzed using the EPI INFO software package of the U.S. Centers for Disease Control and Prevention. Chi-square, analysis of variance and regression analysis was performed.

Six key outcome variables were studied. Reproductive health knowledge was scored on a 20-point scale based on questions concerning types of STIs, HIV/AIDS prevention, pregnancy prevention methods, and reproductive anatomy and function. An opinion scale on contraceptive use ranged from 3 to 15 points. Respondents who had been sexually active

Table 2. Comparison of Knowledge Scores Between Study Groups Before and After Intervention

Time	Group						<i>t</i> value (<i>p</i> value)
	Intervention			Control			
	#	SD	Mean Score	#	SD	Mean Score	
Baseline	911	3.111	6.415	873	2.858	7.014	4.23 (.000025)
Follow-up	908	2.888	8.713	893	2.822	7.934	5.79 (.000000)
<i>t</i> value	16.32			6.81			
<i>p</i> value	.000000			.000000			

in the previous 3 months were asked if they had used any modern methods to prevent pregnancy and/or STIs. Three additional variables were added to the final survey: self-efficacy in undertaking safer sex practices, and willingness to purchase both condoms and foaming tablets. An 8-point scale was developed to measure respondents' feelings of confidence and competence in acquiring, negotiating, and using contraceptives. Because condoms and foaming tablets were made available at no, or very low, cost in seven of the nine project sites, (either from peer educators or adult project staff), the final survey attempted to determine young people's degree of willingness to purchase contraceptives, on a 3-point scale. The final survey also inquired about respondents' awareness of peer educator activities.

Results

At baseline, respondents were asked to select from among seven choices (parents, friends, older siblings, teachers, health workers, religious leaders, and indigenous healers) with whom they would feel most comfortable discussing 11 issues related to sexuality and reproductive health. Friends were most often mentioned for seven of the issues (menstruation, body changes, sexual feelings, dating, kissing, when to start having sex, and how pregnancy occurs). Health care workers were the next more frequently mentioned source, particularly for information on child spacing, childbirth, abortion, and STIs. Overall, friends were identified as a preferred source of information, with a score of 4.6 out of a potential 11, followed by health care workers (2.7), parents (1.7) and other sources (<1). Males and females were equally likely to say that they were most comfortable talking with their friends and peers about sexuality and reproductive health. This finding led the planners to assume the peer education would be an acceptable and appropriate approach for reproductive health education.

Project outputs. The MIS developed by the project was integral to the evaluation of WAYI. The MIS focused primarily on the activities of the peer educators and documented their contact with young people and the types of services provided including individual counseling sessions, distribution of contraceptives and referrals. Five projects allowed peer educators to distribute contraceptives, two provided contraceptives at YSO offices, and two elected not to distribute contraceptives.

Owing to a desire to maintain confidentiality as well as the possibility that a young person might meet with more than one peer educator, it was not possible to distinguish old from new contacts. Even with this limitation, (based on estimated client population figures), it appears that at most sites, (especially in school settings), contact at the individual level was high. The proportion of males in the overall population served was similar to the female; however, more male youth were reached in both in- and out-of-school settings. There were approximately 135 counseling sessions with male youth for every 100 with females.

Project outcomes. Six key outcome variables were the focus of analysis as described above. Table 2 shows that although both groups demonstrated an increase in reproductive health knowledge over baseline, the gain for intervention youth was greater. Their final mean knowledge score (8.7 points) was significantly greater than that of youth in the control areas (7.9). The mean contraceptive opinion score among intervention youth rose from 9.6 to 10.0 points from baseline to follow-up ($t = 3.54$, $p = .0004$). Likewise, the mean scores for control students rose from 9.6 to 9.9 points ($t = 2.48$, $p = .013$), but at neither point in time were the scores of the two groups significantly different from each other.

Overall, approximately one-third of youth reported previous sexual activity. At baseline, 33.9% of 911 intervention youth and 30.9% of 873 control

Table 3. Stratified Comparison of Outcome Variables by Type of Project Site

Variable	Location	Score/Value by Group		Statistic Value	<i>p</i>
		Intervention	Control		
Knowledge	in-school	8.693	7.313	<i>t</i> = 8.204	.0001
	out-of-school	8.747	9.057	<i>t</i> = 1.471	.1418
Contraceptive opinion	in-school	10.072	9.857	<i>t</i> = 1.228	.2196
	out-of-school	10.028	10.085	<i>t</i> = 0.259	.7955
Contraceptive self-efficacy	in-school	3.277	2.197	<i>t</i> = 6.683	.0001
	out-of-school	3.375	3.648	<i>t</i> = 1.183	.2371
Willing to buy condoms	in-school	0.806	0.578	<i>t</i> = 4.429	.0001
	out-of-school	0.873	0.773	<i>t</i> = 1.832	.0675
Willing to buy foaming tablets	in-school	0.841	0.585	<i>t</i> = 4.987	.0001
	out-of-school	0.838	0.759	<i>t</i> = 1.059	.2899
Used modern contraceptives	in-school	62.1%	45.8%	$X^2_{\text{Yates}} = 7.53$.0061
	out-of-school	46.6%	40.7%	$X^2_{\text{Yates}} = 0.70$.4035

youth said that they had sex in the 3 months before the survey (Fisher's exact *p* value = .16). There was no significant change in reported sexual activity between baseline and follow up surveys in either group. The slight drop reported among the 893 control youth (28.4%) and the slight increase in the 908 intervention youth (34.7%) resulted in a significant difference between groups and follow-up (Fisher's *p* = .005).

Reported contraceptive use information (including condoms, pills, and foaming tablets) was gathered from those who reported sexual activity in the 3 months before each survey. The proportion of youth in the intervention group who reported use of a modern contraceptive method increased significantly from 47.2% of 309 at baseline to 55.6% of 315 at follow-up (Fisher's exact *p* value = .045). Reports from control areas showed a slight decrease from 4% of 270 at baseline to 43.3% of 254 at follow-up. When comparing the groups at baseline, the Fisher's exact *p* value was .80, whereas at follow-up it was .004.

Comparisons were also made between intervention and control youth for the three variables added to the follow-up survey. Perceived self-efficacy in contraceptive use was 3.3 points for intervention youth, which was significantly higher than the 2.7 points scored by control youth (*t* = 4.37, *p* = .000013). Willingness to buy condoms was scored on a 0- to 2-point scale. The 0.8 average scored by intervention youth was significantly higher than the 0.6 mean score of the control group (*t* = 4.57, *p* = .000005). Similarly, scores for willingness to purchase foaming tablets were significantly different between groups, with intervention youth scoring an average of 0.8 points and control youth scoring 0.6 (*t* = 4.51, *p* = .000007).

A question on the follow-up survey asked

whether respondents were "aware of any programs that serve the needs of youth in this community." Not surprisingly, 60.4% of 905 youth that responded in the intervention community were aware, compared to 19.4% in the control areas. Further analysis, however, showed that only 34.9% of the 324 youth surveyed in the out-of-school setting were aware of any program compared to 74.7% of 581 youth in the in-school sites. This prompted the stratified analysis depicted in Table 3. In the out-of-school setting, there were no significant differences between intervention and control youth at follow-up on any of the six variables. In contrast, the in-school intervention youth scored significantly higher on five of the six variables than their control counterparts.

In summary, it was observed that although out-of-school youth had higher scores on reproductive health knowledge and contraceptive self-efficacy than in-school youth, only the in-school intervention youth group displayed significantly higher scores than control students.

Regression analysis was performed on the knowledge score variable using the whole group at follow-up. Separate analyses by type of site were also conducted. As can be seen in the overall analysis in Table 4, knowledge score was positively influenced by the intervention design, age, out-of-school status, and media use. Gender did not influence knowledge score. When looking at out-of-school youth separately, only age and media use were positively associated with knowledge score. In contrast, for the in-school youth, design, age and media were all positively associated with knowledge.

Finally, because the MIS results showed gender differences in the total number of youth reached, additional analysis was performed among the intervention youth at follow-up to examine any gender

Table 4. Regression Model of Factors Associated With Reproductive Health Knowledge Scores for In- and Out-of-School Youth

Independent Variables	Reproductive Health Knowledge Scores at Follow-up					
	All respondents		Out-of-School Youth Only		In-School Youth Only	
	Beta ± SE	<i>p</i>	Beta ± SE	<i>p</i>	Beta ± SE	<i>p</i>
Design	0.74 ± 0.130	.0001	-0.247 ± 0.202	.2226	1.343 ± 0.167	.0001
School	-0.418 ± 0.140	.0029	n/a		n/a	
Age	0.241 ± 0.022	.0001	0.279 ± 0.037	.0001	0.214 ± 0.027	.0001
Gender	-0.108 ± 0.131	.4089	-0.072 ± 0.202	.7201	-0.141 ± 0.169	.4018
Media	0.292 ± 0.067	.0001	0.269 ± 0.099	.0068	0.344 ± 0.089	.0001
<i>N</i>	1743		639		1104	
<i>r</i> ²	0.11		0.09		0.12	

Dummy Variables:

Design: 1 = intervention; 0 = control

School: 1 = in-school; 0 = out-of-school

Gender: 1 = male; 0 = female

differences in outcome variables. No gender difference in knowledge was documented. Table 5 shows that although males had significantly higher scores on contraceptive self-efficacy, opinions about contraceptives, and willingness to buy condoms, there was no difference concerning use of modern methods and willingness to buy foaming tablets.

Discussion

When conducting the final analysis, several limitations to the data became apparent. Owing to increasing awareness of adolescent reproductive health in both Nigeria and Ghana, youth in both intervention and control communities were routinely exposed to extra-project educational messages from the mass media and other sources. For example, there was an ongoing national social marketing effort specifically targeted to youth to provide low-cost condoms through small-scale retailers. There were also examples of sampling errors, particularly in the failure to screen for age by some of the interviewers. Analysis excluded those outside the appropriate age range.

Such limitations were not unexpected, because the role of the consultants from AFY and ARHEC was

the guide the local partner, ARFH in designing and conducting program evaluations, as part of an overall effort of organizational strengthening, not to simply conduct the evaluation for them. It was further envisioned that, should the evaluation results appear promising for adolescent reproductive health education in Africa, particularly as indicated by the establishment of functional, community-based YSOs, follow-up research-oriented projects would be undertaken with those YSOs and their communities.

Peer education is increasingly a favored strategy in African adolescent reproductive health programs. Peer education is perceived as being effective and inexpensive, and meets a key recommendation for successful youth programming: youth involvement. The results of this project show that peer education is possible in West African communities, and it can enhance the reproductive health knowledge, self-efficacy, and practices of youth.

Evaluations of peer programs, although limited, have documented positive outcomes among youth. Townsend et al. compared a Mexican program of trained youth promoters providing sexuality education in the community, with a program providing services and education through Integrated Youth

Table 5. Stratified Comparison of Outcome Variables Among Intervention Youth by Gender

Variable	Score/Value		Statistic Value	<i>p</i>
	Male	Female		
Contraceptive opinion	10.242	9.863	<i>t</i> = 2.018	.0438
Contraceptive self-efficacy	3.960	2.654	<i>t</i> = 7.148	.0001
Willing to buy condoms	0.950	0.704	<i>t</i> = 3.961	.0001
Willing to buy foaming tablets	0.878	0.801	<i>t</i> = 1.255	.2096
Used modern contraceptives	56.4%	54.4%	$\chi^2_{Yates} = 0.06$.8090

Centers. The evaluation found that peer education, reached larger numbers of youth and documented greater increases in contraceptive users, when compared to the center-based approach, and at a lower cost [18].

An evaluation of a U.S.-based peer-led AIDS education program also found that peer educators could positively influence adolescent attitudes [19]. Adolescents in peer-led sessions were more likely to engage in interactive discussions after the session, compared with those led by adults. Peer educators also produced the greatest attitudinal changes in adolescents' personal perception of risk of HIV infection. These findings are supported by Klein et al. [20], who found that health discussions facilitated by peer educators promoted better understanding of health information, and appeared to be more likely to lead to behavior change.

A cautionary note into the positive findings of peer education programs: Milburn argues that although the appeal of peer sex education is because it has always existed on an informal basis, health educators should be cautious in harnessing these naturally occurring processes in promoting positive health outcomes. Milburn points out that research dating from 1941 shows that peer modeling is a basic process in the socialization of children. More recent attempts to apply social learning theories in peer education, however, have resulted in a multiplicity of working hypotheses or rationales, many of which have yet to be rigorously tested and investigated. Milburn recommends the development of a stronger theoretical framework for peer education that addresses the existing social and cultural influences, a greater understanding of the process involved in implementing peer education interventions, and more rigorous evaluations of peer education programs [21].

Thus, peer education should not be identified as a "magic bullet." At one level, peer education, like any program strategy that relies on volunteers, is not easy to organize. At another level, peer education is not the only, or even the best, educational strategy to reach all youth. The WAYI project found that even though young people in both in- and out-of-school settings rely heavily on their friends for reproductive health information, peer education was not effective in the out-of-school setting.

For out-of-school, working youth, the issues of maturity, experience, and exposure, including greater media exposure (for example, it is common to find radios playing in young peoples' workplaces) may explain some of the differences in program

effect between in-school and out-of-school settings. Having started on a course of future employment, working youth are viewed by society as being more mature than those still in school, and are thus "permitted" to initiate sexual contacts, especially those that could develop into marriages. Therefore, the reproductive health education and service needs of out-of-school youth, as well as the program strategies must be different. Greater use of electronic media and point-of-purchase education in the small shops that sell condoms should be considered. This provides fertile ground for future intervention research.

Further research may also provide better insights into the structure and function of the social networks of both in- and out-of-school youth. In-school settings have clearly delineated internal social structures as well as physical and time boundaries. Classroom settings place relatively large numbers of youth together for fairly long periods of time. School assemblies, sports events and other common activities bring many youth together on a regular, usually scheduled, basis. Similar findings have been reported by Dark [22] in the use of peer education on U.S. college campuses and among high school students by O'Hara et al. and Reding et al. [23,24], as well as in prison populations in Mozambique [25]. The commonality of these populations is that they are institution-based. The structure of a school or prison provides peer educators with access to clients, and the confined nature of these populations creates social networks that are larger and denser than those that may exist in the general community. Thus, 20 peer educators in a school setting would have more frequent and sustained contact with a school-based population than would a similar number of peer educators in a community setting, where individual social networks are smaller.

Qualitative data collected in interviews and focus groups with youth and community members indicate that adolescent reproductive health remains a sensitive issue, particularly the provision of contraceptives to adolescents. Some clients blamed sexual risk-taking among youth on the information and services provided by the peer educators, yet many community leaders recognized that reproductive health education provided by the programs met a great need. YSOs must develop strategies to involve the community to build broad support for their activities. For example, in conservative areas, projects stressed abstinence and skills development, over the promotion of family planning methods. Making sure that the program is seen to address

other health and social needs of youth, not just reproduction and sexuality may enhance community acceptance and involvement. Such community support is also necessary for the creation of an enabling environment for behavior change, as well as the long-term sustainability and institutionalization of projects.

An important focus for programs and interventions to consider may be efforts to normalize sexuality, and to develop education materials from the perspective of young people's interests instead of what adults feel young people should be permitted to know. Balmer et al. [26] documented that Kenyan adolescents have a great desire for reproductive health information. Out of 18 topics discussed by youth, the broad issue of their emerging sexuality was a primary concern. It is therefore somewhat ironic that the final mean knowledge scores recorded in the WAYI project were less than 50% of the 20 maximum points. A closer look at the components of the score point to areas for future educational emphasis.

Although youth were less likely to demonstrate improved knowledge around contraceptive method, types of STIs and pregnancy-related topics, they were most knowledgeable concerning the prevention of HIV/AIDS. This topic received a great deal of attention in the mass media, which may explain why knowledge in this area is higher. Also, peer educators primarily promoted only two contraceptive methods that could be provided without clinical supervision (condoms and foaming tablets), which may explain why more methods were not known. These findings imply that greater attention is needed to ensure young people's interests are effectively represented in the development of educational materials, as well as the manner in which they are delivered. It is important to address young people's questions and concerns about their basic sexuality before programs can begin to discuss the specific aspects of sexual behavior and their associated outcomes.

Although gender differences were not as pervasive as site differences, they do deserve attention, especially for the design of future projects and research. A skeptical opinion about contraceptives was expressed by female focus group members before baseline, which appears to have persisted in the final survey. Young women had three concerns, namely that: (a) contraceptives might cause infertility; (b) condoms could break and become lodged inside the body; and (c) there is often a need to demonstrate one's fertility before marriage. Further, Nigerian and

Ghanaian women usually defer to men in decisions about contraceptive use, especially condoms, which might explain the lower levels of contraceptive self-efficacy and willingness to buy condoms among females. These results indicate a need to tailor both information and educational methods to the needs of female youth.

Young women also reported on the baseline survey that they felt comfortable consulting with their peers on reproductive health issues. This however does not mean that they will necessarily speak with any young person who volunteered or was chosen as a peer educator. Research conducted in North Carolina among rural African-American women aged 18-34 years found that this group often turned to certain women in the community several years older than themselves who were perceived as "natural helpers" before they sought assistance from "professionals" [27]. Programs for young women may need to identify the individuals in the community that young women are most likely to seek out for assistance and recruit them into the health education process. For young women, trust is a critical issue, and more in-depth study is needed in school and community settings to locate people who would be naturally acceptable as sources of information and help.

Although the greatest affect was seen in the secondary schools, a significant number of Nigerian and Ghanaian youth (especially girls), do not go on to secondary schools or drop out of school. Intervening with older children in the primary schools to provide health and life skills education with the overall goal of delaying sexual initiation and promoting greater use of contraceptives upon sexual initiation is a strategy worth investigating, based on the experiences of Howard and McCabe [28].

The results from the WAYI evaluation provide valuable information on the process of implementing peer education programs, and, importantly, strong documentation on where peer education appears to be most effective. As with any health education program, there are no easy answers. Youth have different and multiple needs, based on their gender, social status, economic situation, levels of education, ethnicity, and place of residence, among others. Program planners must take the complexity of youth into consideration, and not assume that one strategy will meet the needs of many. Adults must listen to what youth are saying, and design programs that appeal to what youth want, not what adults think they need. The experience of WAYI should thus assist program planners to more carefully consider

how best to integrate peer education activities into their overall youth-focused programs.

Funding for program implementation in Nigeria was provided by the Ford Foundation. The Public Welfare Foundation provided assistance for program activities in Ghana. The Rockefeller Foundation funded the evaluation component of the total project. Wallace Global Fund supported the implementation activities and technical assistance provided by Advocates for Youth.

The authors also wish to acknowledge Dr. Asha Mohamud, former Director of the International Division at Advocates for Youth, Ms. Susan Rich of the Wallace Global Fund, Dr. Jane Hughes of the Rockefeller Foundation and Dr. Natalia Kanem of the Ford Foundation - Nigeria for their efforts in conceptualizing and supporting the project. Finally, the project would not have been possible with the active involvement of the seven Nigerian and two Ghanaian youth-serving organization partners.

References

1. Population Reference Bureau. *The World's Youth*. Washington, DC: Population Reference Bureau, 1996.
2. Federal Office of Statistics (Nigeria) and IRD/Macro International. *Nigeria Demographic and Health Survey 1990*. Columbia, MD: Demographic Health Survey, IRD/Macro International, 1992.
3. Ghana Statistical Service. *Ghana Demographic and Health Survey, 1993*. Accra: The Service; Calverton, MD: Macro International, 1994.
4. Bongaarts J, Cohen B. Introduction and overview. *Stud Fam Plann* 1998;29:99-105.
5. Feyisitan B, Pebley AR. Premarital sexual activity in urban Nigeria. *Stud Fam Plann* 1989;20:343-353.
6. UNAIDS/WHO Working Group on Global HIV/AIDS and STD Surveillance. Report on the global HIV/AIDS epidemic. Available at: http://www.who.int/emc-hiv/global_report/data/globrep_e.pdf.
7. It's even worse than they thought. *AIDS Analysis Africa* 1997;7:1-2.
8. Center for International Research, U.S. Bureau of the Census. *HIV/AIDS surveillance database*. Washington, DC: Bureau of Census, 1993.
9. Nabila JS, Fayorsey C, Pappoe M. *Assessment of Adolescent Reproductive Health in Ghana*. Washington, DC: Centre for Development and Population Activities (CEDPA), 1997.
10. Makinwa-Adebusoye P. Sexual behaviour, reproductive health knowledge and contraceptive use among young urban Nigerians. *Intern Fam Plann Perspect* 1992;18:67-9.
11. Okonofua F. *Factors Associated With Adolescent Pregnancy in Rural Nigeria*. Cambridge, MA: Harvard School of Public Health, 1993.
12. Nichols D, Ladipo O, Paxman J, Otolorin E. Sexual behavior, contraceptive practice and reproductive health among Nigerian adolescents. *Stud Fam Plann* 1986;17:100-6.
13. Federal Ministry of Health and Social Services, Federal Government of Nigeria. *Nigeria country report for International Conference on Population and Development*, Cairo, Egypt, September, 1994.
14. Brabin L, Kemp J, Obunge OK. Reproductive tract infections and abortion among adolescent girls in rural Nigeria. *Lancet* 1995;345:300-4.
15. Ozumba BC, Amaechi FN. Awareness and practice of contraception among female students at the Institute of Management and Technology, Enugu. *Public Health* 1992;106:460-1.
16. Olosu F. Quality and cost of family planning as elicited by an adolescent mystery client trial in Nigeria. *African J Reproduct Health* 1998;2:49-60.
17. Hunter-Geboy C. *Life Planning Education: A Youth Development Program*. Washington, DC: Advocates for Youth, 1995.
18. Townsend JW, Diaz de May E, Sepulveda Y. Sexuality education and family planning services for young adults: alternative urban strategies in Mexico. *Studies Fam Plann* 1987;18:103-8.
19. Rickert VI, Jay MS, Gottlieb A. Effects of a peer-counseled AIDS education program on knowledge, attitudes, and satisfaction of adolescents. *J Adolesc Health* 1991;12:38-43.
20. Klein NA, Sondag KA, Drolet JC. Understanding volunteer peer health educators' motivations: Applying social learning theory. *J Am Coll Health* 1994;43(3):126-30.
21. Milburn K. A critical review of peer education with young people with special reference to sexual health. *Health Ed Res, Theo Pract* 1995;10:407-20.
22. Dark LS. Peer approaches for increasing HIV awareness on a college campus. *ABNF J* 1996;7:54-6.
23. O'Hara P, Messick BJ, Fichtner RR, Parris D. A peer-led AIDS prevention program for students in an alternative school. *J School Health* 1996;66:176-82.
24. Reding DJ, Fischer V, Gunderson P, Lappe K. Skin cancer prevention: A peer education model. *Wisc Med J* 1995;94:77-81.
25. Vaz RG, Gloyd S, Trindade R. The effects of peer education on STD and AIDS knowledge among prisoners in Mozambique. *Intern J STD & AIDS* 1996;7:51-4.
26. Balmer DH, Gikundi E, Billingsley MC, et al. Adolescent knowledge, values, and coping strategies: implications for health in sub-Saharan Africa. *J Adolesc Health* 1997;21:33-8.
27. Thomas J, Eng E, Clark M, et al. Lay health advisors: sexually transmitted disease prevention through community involvement in North Carolina. *Am J Pub Health* 1998;88:1252-3.
28. Howard M, McCabe J. Helping teenagers postpone sexual involvement. *Fam Plann Perspect* 1999;22:21-26.