

Kicking AIDS in Africa: Soccer Players as Educators in Adolescent-Targeted HIV Prevention

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The devastation of HIV demands effective prevention programs that target early adolescents. 50% of new HIV infections in 2004 occurred among persons aged 15 to 24 years old. Recent meta-analyses and reviews show that HIV interventions can successfully promote the adoption of protective sexual behaviors among adolescents in the United States.¹ HIV has had a disproportionate effect in Zimbabwe, with over 200,000 HIV-related deaths² and an estimated 1.8 million infections.³ Yet in Zimbabwe, only 10% of sexually active males and 11% of sexually active females aged 15 to 19 years old use condoms.⁴

While African youth are at enormous risk, too few programs exist to tell which factors lead to successful interventions in these high-risk populations.⁵ A review of published studies assessing the effectiveness of HIV prevention programs in developing

countries found only two that were rigorously evaluated and aimed at adolescents.⁶ The most common approach to reaching youth is through school-based health education programs. However, evaluations of typical school-based interventions have noted the following limitations of using regular curriculum teachers: fear of community disapproval, reluctance to discuss sex and HIV, curriculum overload, and preference for doctrinaire instruction.⁷ These factors have been cited as global barriers to successful HIV prevention interventions for youth.⁸

How can interventions dismantle these cultural barriers to effective HIV prevention? If sexually maturing adolescents remain reluctant to discuss sexual behavior and fear community disapproval, they will neither be motivated to learn about nor protect themselves from a virus that infects and kills thousands of their peers every

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Thomas S. Clark, MD, founded Grassroot Soccer, a not-for-profit dedicated to using soccer and soccer players to educate African youth about HIV/AIDS prevention. In recognition of his social justice work, he has received the Annie Dyson Child Advocacy Award from the American Academy of Pediatrics and the Martin Luther King, Jr. Award from Dartmouth College. Zachary Kaufman is pursuing a degree in Latin American and Caribbean Studies from Dartmouth College. He works for Grassroot Soccer as a research and outreach intern.

year. Yet, there is hope for a brighter future in sub-Saharan Africa—and it may exist, of all places, in a soccer ball. Soccer is the king of sports in most African countries and in much of the world. Could incorporating a widely popular sport into HIV prevention improve effectiveness? This question spurred the foundation of Grassroot Soccer, a non-profit organization that trains professional soccer players—cultural icons in a sport embraced by millions of young Africans—to deliver an interactive HIV prevention curriculum that targets at-risk adolescents. Despite soccer's popularity, professional soccer players have never been formally employed as health educators for HIV prevention. In this article, we present an evaluation of an innovative school-based program that capitalizes on the celebrity of African professional soccer players to prevent HIV among youth in Zimbabwe.

Social Learning Cognitive Theory offers the theoretical framework for the Grassroot Soccer program. This theory states that role models are highly effective at generating self-efficacy in others, one of the most critical steps toward behavior change.⁹ In addition, using soccer players as educators addresses many of the problems noted above with traditional school-based programs. During the school day, professional soccer players generally have free time to devote to this program. Trained specifically for the program without external teaching commitments, they develop comfort with the content and are able to embrace an interactive teaching style. While not immune to fear of community disapproval, professional soccer players are in a position to change community norms. In addition, professional, school and after-

school soccer teams provide a sustainable infrastructure upon which to build future interventions.

This paper presents data collected on HIV-related knowledge, attitudes and intended behaviors in Zimbabwean school children 12 to 14 years old. Stressing the importance of initiating prevention programming in primary schools, intervention reviews have concluded that those conducted prior to sexual debut are the most effective in reducing rates of sexually transmitted infections.¹⁰ Focusing on 12–14-year-olds heightens the likelihood that most participants are approaching sexual activity, are currently HIV-negative, but are at high risk of becoming HIV-positive in the next decade. Moreover, it is likely that some of the adolescents in this age group are already sexually active. Some data suggest that 80% of in-school youth in Bulawayo had their first sexual experience between ages 11 and 15.¹¹

We compare responses of students experiencing the new curriculum led by professional soccer players to those in classrooms with the traditional curriculum. This evaluation aims at assessing the curriculum's feasibility, effectiveness, and cultural appropriateness. In addition, student surveys conducted before, immediately after, and five months after the intervention provide evidence with which to evaluate the curriculum's effectiveness in changing HIV-related knowledge, attitudes and intentions. Lastly, since the curriculum encourages peer-to-peer discussion following the classes, the five month follow-up also provides a measure of how the program's lessons diffused to control students.

Methods

Overall Study Design. The soccer-based HIV prevention curriculum was implemented as a pilot project in four schools. Our analysis uses data collected to evaluate the pilot project compared to an existing health education curriculum. To gauge the impact of the intervention and the diffusion of the program information through adolescent students, a quasi-experimental design was used. Students from four schools in the Bulawayo area of Zimbabwe participated, while comparable students from the same schools served as controls. The main measured outcomes were HIV/AIDS knowledge, attitudes, and intentions. Data include qualitative and quantitative components collected before, immediately after, and five months after the two-week intervention. There are no identifiers linking data to students.

Setting. The program was conducted in Bulawayo, Zimbabwe's second largest city. While Ndebele is the primary language, English is widely spoken. The schools that participated in the project are located in high-density townships characterized by high levels of poverty and unemployment.^{12,13} Economically, the country is struggling, in part due to the devastation caused by HIV/AIDS.

Curriculum Development and Formative Research. To develop the HIV/AIDS curriculum, we conducted formative research comprising interactive teaching sessions with feedback from professional soccer players and in-depth interviews and discussion groups with schoolteachers, headmasters, parents and community members. The discussion groups' somewhat large size proved a limitation, notably

curbing our findings' validity. One discussion group included twenty-two teachers and headmasters; a second comprised a mix of community members from the township of Luveve, a high-density, low socio-economic suburb of Bulawayo.

We recruited soccer player educators from two professional teams in Bulawayo. Five players—including two who also played on the Zimbabwean men's national team and one on the Zimbabwean women's national team—underwent several initial training sessions. Professional soccer players were paid \$1 per hour, a rate equivalent to that of local teachers. A headmaster of a prominent local high school took a six-month sabbatical to help develop the curriculum. Two research team members developed the initial curriculum with the consultation of SCT and the five professional soccer players. In addition, we obtained assistance and feedback from several HIV/AIDS prevention organizations, including the US Centers for Disease Control and Prevention (CDC) office in Harare, the Matabeleland AIDS Council, and local community-based organizations. The current paper presents pilot test results of the curriculum in four schools.

Participants. Participating students were seventh graders enrolled in one of four selected township primary schools. These schools had pre-existing HIV/AIDS education incorporated into a general health education curriculum. The intervention consisted of incorporation of the Grassroot Soccer HIV/AIDS-specific curriculum delivered to four classrooms in each of the four schools. The control comprised the HIV/AIDS content of the general health education curriculum in four other classrooms. Headmasters were not willing to

have their schools act as controls without some of their students receiving the perceived benefit of the intervention. Therefore, we had only intervention classes and control classes within the same school and no separate control schools. During the study period, both intervention and control groups received the standard health education curriculum. Of note, the schools were selected by convenience – each headmaster chose the control and intervention classrooms.

Intervention Activities

The intervention group participated in four two-hour sessions over two weeks. The sessions were interactive and game-based, emphasizing every student's participation. Four soccer player/educators led each session and worked with approximately forty students. Smaller breakout groups during the intervention allowed students more focused time with the player/educators. Covered topics included basic knowledge about HIV transmission and ways to protect oneself, understanding personal risk, AIDS stigma, and ways to facilitate peer-to-peer education. At the conclusion of the intervention, a graduation ceremony took place at which participants were awarded certificates and T-shirts. Family members and friends were encouraged to attend. This provided an opportunity to reach others in the community with prevention messages and also to let participants feel family and community support for their involvement in the program.

Measures

Quantitative and qualitative measures were based on SCT. Data were collected from a total of 304 students, 155 subjects and 149 controls. Students from both the control and intervention groups completed a self-administered questionnaire before, immediately after, and five months after the intervention. The quantitative component was comprised of survey items examining a range of HIV related topics including basic knowledge on condom effectiveness, social support networks (e.g. "List 3 or more people you can talk to about HIV."), knowledge of local HIV prevention services (e.g. "Do you know where to get help for HIV-related problems?"), and stigma (e.g. "Would you support a classmate who is HIV-positive?"). The rationale for this approach is based in the SCT: for an individual to change, he or she must feel supported by his or her community. In addition to basic knowledge, these survey questions assessed the individual's perception of environmental support or lack thereof (stigma, social support, HIV-related social services). Qualitative measures were collected from five discussion groups. Three were conducted prior to the intervention (with five soccer players, twenty-four teachers, and twenty-two community members) to assist in curriculum development and to ensure the intervention's cultural and social appropriateness (see above). These discussion groups consistently found barriers to directly asking students of this age and community about their sexual activity. After the intervention we had two additional discussion groups with five soccer players

and with five teachers for evaluation and feedback. Qualitative data were also collected from students in open-ended survey items.

Data Analysis

The primary analysis focuses on differences between intervention and control student responses to the quantitative surveys at baseline, immediately post-intervention, and five months post-intervention. Key compared outcomes include belief in condom effectiveness at preventing HIV, social support, HIV stigma, and awareness of HIV prevention services in the community. Differences were assessed using logistic regression analysis, adjusting for the clustering effect of the classroom. The framework for our analysis is that students will show no differences at baseline, significant differences immediately post-intervention, but a decrease in differences after five months as information diffuses from one classroom to another in each school. We also anticipate overall measures to be low at baseline, higher for the intervention group immediately after the delivery of the content, followed by a period of increase for the control group to five months post-intervention with slight tapering in effect among the intervention group. We have assessed these patterns or trends qualitatively and substantiated our interpretations with information collected from the focus group discussions, key informant interviews, and student responses to open-ended survey questions.

Results and Implications

This pilot study demonstrated that incorporating Zimbabwean professional soccer players – local heroes – in HIV education was innovative, feasible, affordable, and culturally appropriate. Not only was the curriculum well received by students and teachers in this demonstration project, but also, subsequently, Grassroot Soccer received and continues to receive many new requests to extend its program. In addition, data collected during implementation of the pilot suggest that the program was effective at improving knowledge and attitudes above baseline and above students in the control curriculum immediately post intervention. These effects were generally sustained at five months.

As noted, a total of 304 students were enrolled, 155 students in the intervention group and 149 in the control. At baseline, intervention and control participants did not significantly differ with respect to gender, grade, and father's education level (see Table 1). More control students had mothers with high school educations, but among intervention students the mothers' education levels were more likely to be unknown. Prior to the education program, the control and intervention students did not significantly differ on three of the four key HIV-related knowledge and attitude outcomes (see Figure 1). Students in the intervention group reported having more social support than students in the control group. Of the 304 students who participated in the study and completed the initial survey, 302 (99%) completed the post-intervention survey and 156 (51%) completed the five month follow-up sur-

Table 1. Study subjects: Adolescent-targeted HIV prevention project using African professional soccer players to teach 7th grade students in Bulawayo, Zimbabwe.

Variable	Intervention N (%)	Control N (%)
Total	155	149
Number of schools	4	4
Number of classrooms	4	4
7 th Grade (age 12 to 14 years)	155 (100%)	149 (100%)
Female	79 (51%)	74 (50%)
Male	76 (49%)	75 (50%)
Mother's highest level of education:		
Unknown	34 (22%)	20 (13%)
Grade school	16 (10%)	26 (17%)
High school	92 (59%)	96 (64%)
University	13 (8%)	7 (4%)
Father's highest level of education:		
Grade school	12 (8%)	10 (7%)
High school	89 (57%)	94 (65%)
University	19 (12%)	14 (9%)
Retention immediately post intervention	153 (99%)	149 (100%)
Retention five months post intervention	79 (51%)	77 (52%)

vey. No significant difference in attrition was noted between the intervention and control groups. Effects of the intervention on the four key outcomes are presented in Figure 1. Relative to participants in the standard curriculum (control), participants in the HIV intervention led by professional soccer players demonstrated significantly higher levels of belief in condom effectiveness, social support, and awareness of HIV prevention services and lower levels of stigma immediately post-intervention. (Girls and boys demonstrated similar responses for all items at all time points.) The percentage of students in the intervention group who could correctly answer that condoms are effective in preventing HIV increased from 53% to 78%; the percentage who could list three

people who they could talk to about HIV increased from 48% to 64%; the percentage who reported they would not avoid a classmate who is HIV positive increased from 49% to 60%; and the percentage of students who reported that they knew where to turn for help for HIV-related problems increased from 51% to 78%. During this same time interval, students in the control group showed little or no change in responses to these items. These results suggest that the two-week intervention significantly improved students' HIV related knowledge, attitudes, and intended behaviors.

After five months, these effects had been generally sustained for the intervention students, although there were slight decreases in belief in condom effective-

Figure 1a. Belief in condom effectiveness, before and after HIV educational program led by professional soccer players, Zimbabwe primary school students, 2004.

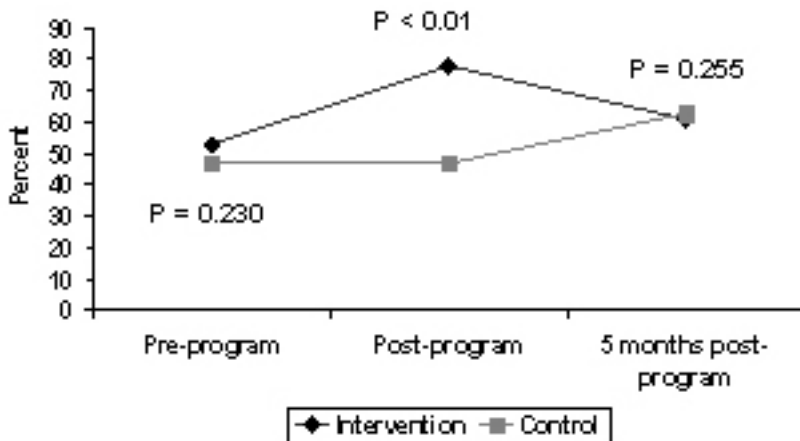


Figure 1b. Social support (knowing 3 or more persons with whom they are able to talk about HIV), before and after HIV educational program led by professional soccer players, Zimbabwe primary school students, 2004.

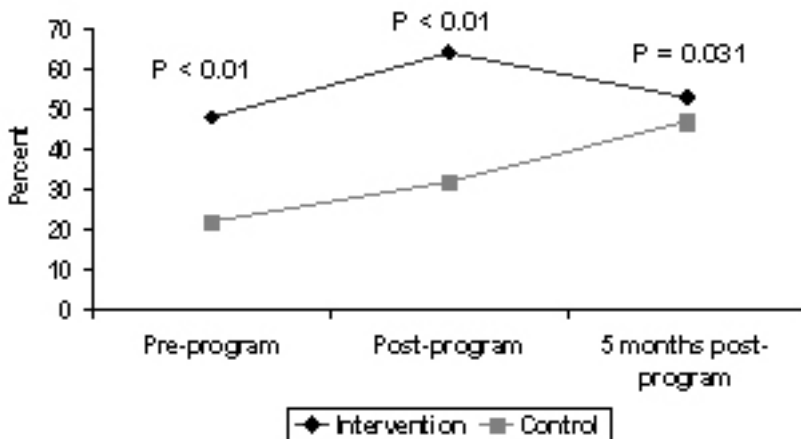


Figure 1c. Awareness of HIV prevention services in community, before and after HIV educational program led by professional soccer players, Zimbabwe primary school students, 2004.

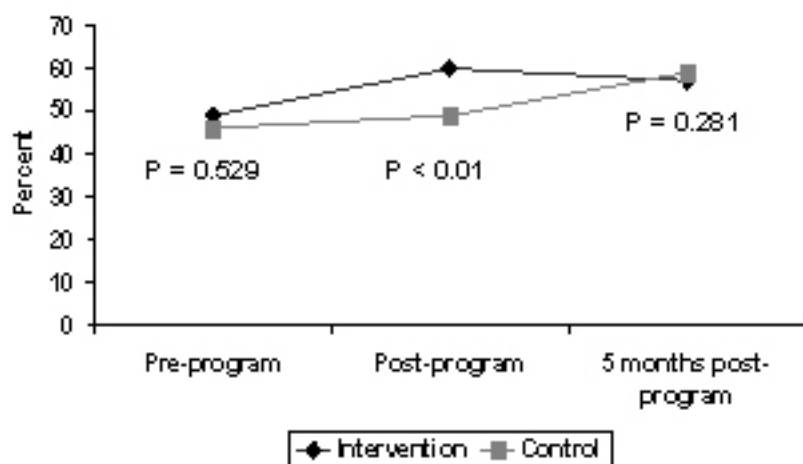
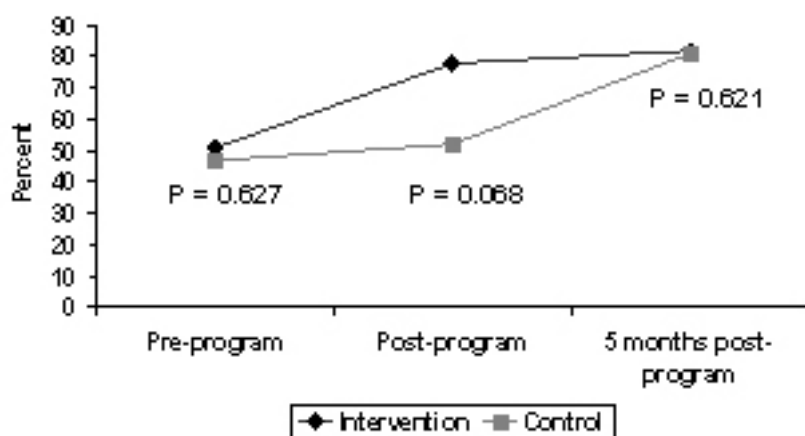


Figure 1d. HIV stigma (not endorsing avoidance of persons with HIV), before and after HIV educational program led by professional soccer players, Zimbabwe primary school students, 2004.



ness and social support between immediate post- to five months post-intervention. Notably, we found that the control group had “caught up” with intervention group in all items as measured by the five month post-intervention survey. While it is possible that this other educational messages caused this improvement, we feel that it is likely that the information from the intervention subsequently diffused to the controls via peer-to-peer interaction. The curriculum itself supports this diffusion, encouraging students to educate others as part of their “take home” activities. Qualitative data from teachers and students further corroborate this effect. In fact, at the five month follow-up, 22% of students specifically reported teaching others what they had learned—consistent with a 20% “tipping point” for innovation diffusion. This finding has encouraging implications in maximizing the reach of HIV prevention to large numbers of children with limited resources. As this intervention evolves, we will seek to further augment this peer educator effect.

Answering open-ended survey questions five months after the intervention, nearly all of the intervention students reported remembering what they had learned. Additionally, a large majority reported liking what they had learned and having used the knowledge in some way. More than half of the students reported that they would not change anything about the program. Girls reported identifying most strongly with the women’s national team player who conducted the intervention, suggesting the importance of training more professional women soccer players as health educators.

Focus and discussion groups not only shed light on the program’s strengths but


also on areas for its future improvement. Discussion groups with soccer players revealed that players felt comfortable with the content and interactive curriculum, increasing in teaching confidence with experience in the program. All players report that Grassroot Soccer is a meaningful activity and that they wish to continue with the program. Reflecting the positive opinions of the soccer players/health educators involved, these discussion groups speak to value and cultural appropriateness of the intervention in Bulawayo, Zimbabwe.

Meanwhile, discussion groups with teachers and health administrators also revealed high levels of satisfaction with the intervention program. All teachers reported that students had increased concern about HIV as well as increased openness to discussing HIV-related matters. They also reported that they had “consistently seen” graduates of the Grassroot Soccer program teaching other seventh grade students and younger students what they had learned. Moreover, in some classes teachers noted that students started “AIDS Clubs” without assistance from teachers or Grassroot Soccer staff. Nevertheless, teachers expressed concern that the program was not sustained well enough, suggesting that Grassroot Soccer could provide “simple reading materials with pictures and facts” to help students reflect on what they had learned and as a useful resource for other students. In further commentary, teachers requested that the professional soccer players that constituted the Grassroot Soccer staff become involved in the students’ AIDS Clubs. In the focus group, teachers emphasized the importance of teacher education. This represents a major concern for sustainability, as teachers were often

unable to answer students' follow-up questions or would provide misinformation. While this problem could be addressed by involving the teachers and headmasters in this intervention, teachers noted that students were more willing to discuss sex in their absence. Since this openness is crucial to the curriculum's success, independent steps must be taken to improve teacher education in order to increase the intervention's sustainability.

We recognize the limitations in evaluating this pilot program. This demonstration project was not designed as a large, community-based randomized controlled trial, but rather represents our effort to evaluate an innovative educational curriculum as rigorously as possible within a practical time frame. While students were not randomly assigned to intervention or control groups, both groups were matched for similarities. Second, as in many group and community education studies, blinding was impossible. Third, cross-contamination likely occurred as control and intervention groups came from the same school and part of the intervention was to tell others what you had learned. The benefit to cross-contamination, however, was the spread of information from peer-to-peer over time. Admittedly, we did not expect this diffusion to have a measurably powerful effect as early as five months post-intervention. Nonetheless, the overall temporal pattern of no baseline difference, difference immediately post-intervention, and increase in control by five months is encouraging and supports a cause-effect association with the intervention. Without further study, however, we cannot exclude the possibility of this effect originating from some external influence. A final

limitation was that we did not ask directly about sexual risk behavior, in accordance with expressed community concerns.

Given the overwhelmingly positive reception of the program by students and teachers, the overall positive results of this program, and lack of effective alternative HIV prevention programs for youth in sub-Saharan Africa, we feel that collaboration with soccer players for HIV prevention education is very promising. The approach should be replicated on a larger scale with improved rigor in study design and powered to detect significant differences in attitudinal change and, where possible, behavioral change. Increasing efforts to recruit and train women's national team soccer players as HIV educators would provide many adolescent women with powerful female role models. The results of this study should encourage not only the replication of the Grassroot Soccer program, but also the exploration of similar innovative, culturally appropriate, role-model-based methods to target at-risk adolescents with HIV prevention education. For example, professional musicians who are role models may also have great potential as inspirational health educators. Nevertheless, given the results of this pilot study, the magnitude of the problem, and the intense popularity of soccer in Africa, a remarkably promising opportunity exists to create effective, innovative, and large-scale interventions that use soccer to reach adolescents with effective HIV prevention education. 

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