

## **Grassroot Soccer and Diffusion of HIV Knowledge: Do Participants Talk to Others about HIV/AIDS?**

**Background:** Grassroot Soccer (GRS) is a games-based HIV/AIDS and life skills curriculum, delivered by trained peer-educators (“coaches”), including professional soccer players, to youth ages 10 – 18. In Botswana, the Youth Health Organization (YHO) has delivered Grassroot Soccer to late primary school students (10 – 14 yrs) in Gaborone and the surrounding villages. Since the first programs in July 2005, 2000 youth have graduated from Grassroot Soccer.

The Grassroot Soccer model is premised on Social Learning Theory, which posits the importance of positive role models in effecting behavior change (Bandura.A. [1997].*Self-efficacy: The exercise of control*. New York: W.H. Freeman.) A key component of this theory is the role of peer opinion leaders in shaping social expectations that govern risk behavior. Not only does GRS seek to improve HIV/AIDS knowledge and attitudes; GRS also encourages youth to speak more openly about HIV/AIDS and to teach others what they have learned. These interpersonal communications are where social norms are created and perpetuated and may be an even more powerful motivator of behavior change than mass media campaigns. The expectation that participants will *share* the knowledge with others is conveyed through the “GRS contract” signed by all participants and coaches at the first session and is reinforced through homework assignments.

A 2004 independent evaluation of the Grassroot Soccer pilot in Bulawayo, Zimbabwe, suggested that knowledge might diffuse from program participants to others in the same school. GRS participants exhibited significant improvements in HIV-related knowledge and attitudes at post test, which were sustained five months later. Strikingly, at five months post-test, a control group of students in the same school “caught up” with the intervention group on several indicators (Clark, Friedrich, Ndlovu, et al., 2006). It is possible that this is evidence of diffusion, though external influences may have also led to this convergence.

Evidence from focus groups also suggests that participants are talking about HIV/AIDS with their peers. At Tlhabologo Primary School, all participants in a post-program focus group reported that they talked about GRS with friends and about half had talked about GRS with family, even though some parents were reluctant to talk about HIV and sex with their children.

- “We shared the games with family and other kids at the school.”
- “I shared what I learned in Find the Ball. I told my friends what happened in the game.”
- “I quizzed my family on the quiz questions. My father said that he did not feel comfortable talking about HIV/AIDS, but I tried to help him.”

With encouragement from their teacher, one class taught the school about peer pressure using GRS role plays at an all-school assembly (29/3/06).

Eight months following their participation in GRS, students at Ithuteng Primary also reported that they had played the GRS games with others (06/06/06):

- “I have played the games I learned from GRS with about five of my friends. We played categories and it was really nice.”
- “I played HIV Dodge with my cousins and neighbors at home. We wrote HIV/AIDS and ARV on a piece of paper and stuck them to our t-shirts.”
- “My classmates and I played Find the Ball in school without our teacher’s supervision.”

In spite of such anecdotal evidence, the diffusion of knowledge from participants in Grassroot Soccer to their family and friends has yet to be quantified.

An important metric of diffusion is the number of people participants talk to or educate about HIV/AIDS as a result of their involvement in the program. Such a number would enable GRS to estimate the total reach of the program. This brief report presents data on how many people participants talked to and who those people were.

**Methods:** Survey data were collected from three primary schools following delivery of YOHO’s Grassroot Soccer program. The program consisted of five to six weekly sessions, each 2.5 hours in length. Programs were delivered at different times during May – August 2006. Students were given written (English) questionnaires to fill out, which were translated verbally into Setswana.

**Site selection:** Sites were selected with a mind towards case comparisons. The survey was administered to GRS participants at two middle-class urban schools in contiguous neighborhoods in downtown Gaborone: Standard 6 students at Ben Thema Primary and to Standard 7 students at Lesedi Primary. Data were also collected from Standard 7 students at Oodi Primary, a rural and lower-income school. Thus, sites are differentiated along two major axes: urban – rural, and Standard 6 – Standard 7. In addition, copies of GRS’s “Extra Time” magazine were given to participants at Oodi and Ben Thema. The magazine is designed to help youth share what they had learned with others.

**Questionnaire:** The questionnaire asked respondents for basic demographic characteristics—gender and age—and whether they play soccer “on a team,” “with friends,” or “not at all.” Participants were then asked a series of questions about whom and how many people they talked to about HIV/AIDS, and about their use of “Extra Time” magazine. For the purposes of this report, we are interested in two questions:

**1) About how many people have you educated or talked to about HIV/AIDS who did not participate in Grassroot Soccer since the Grassroot Soccer programme began? (tick one box)**

|              |               |              |
|--------------|---------------|--------------|
| € None       | € 3-5 people  | € 11-20      |
| € 1-2 people | € 6-10 people | € 21 or more |

**2) Tick the people you have educated or talked to about HIV/AIDS [who did not participate in Grassroot Soccer since the Grassroot Soccer programme began] (Lesedi) / [using “Extra Time” who don’t have “Extra Time” already] (Ben Thema, Oodi). (You may tick more than one box)**

|                   |                             |                          |
|-------------------|-----------------------------|--------------------------|
| € Mother          | € Friends at school         | € Teachers               |
| € Father          | € Friends outside of school | € Neighbors              |
| € Brother(s)      | € Soccer teammates          | € Pastor                 |
| € Sister(s)       | € Other peers               | € Other (please specify) |
| € Other relatives |                             |                          |

The second question unfortunately was not consistent across the questionnaires, asking about sharing with Extra Time at Ben Thema and Oodi, but without the magazine at Lesedi. It is anticipated that this will not hinder the attempt, in this analysis, to paint a picture, with broad brushstrokes, of the profile of the secondary community reached through GRS.

### Limitations:

- The original intent of the surveys was to analyze whether having “Extra Time” led participants to share what they learned with more people. However, this factor may complicate the present analysis.
- The questionnaires were not pre-tested and there appears to have been some confusion about a few of the questions. E.g., at both Oodi and Ben Thema, participants reported using Extra Time to educate more people about HIV/AIDS than the total number that they reported educating with or without the magazine.
- Question order differed between Lesedi and the other schools, with the questions about “number educated” and “people educated” flip-flopped.
- Site characteristics “urban – rural” and “Std 6 – Std 7” are important variables, but with only one school per category, results may be sensitive to idiosyncrasies such as a super-motivated head teacher who is committed to the program.

## Results

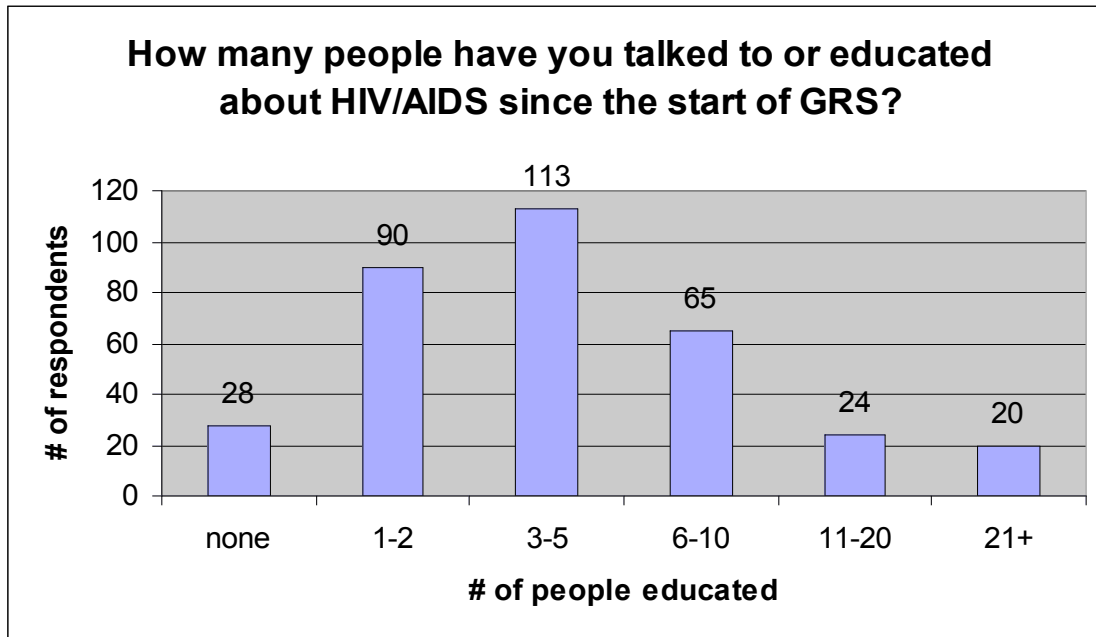
### 1. Demographics of Respondents

The survey was administered to 342 Grassroot Soccer program participants at three schools, including 4 classes at Ben Thema and Lesedi and 2 classes at Oodi. Most participants were 12-13 years old and the respondent pool was gender balanced. Most interesting is the percent of youth who report playing soccer. A full three-quarters of participants play soccer on a team or with friends, indicating that soccer is very popular among Botswana youth, a finding supported by previous GRS research at other schools.

| <b>AGE</b>            | <b>Ben Thema</b> | <b>Oodi</b> | <b>Lesedi</b> | <b>Total</b> | <b>%</b>    |
|-----------------------|------------------|-------------|---------------|--------------|-------------|
| <10                   | 0                | 0           | 0             | 0            | 0%          |
| 10                    | 2                | 0           | 0             | 2            | 1%          |
| 11                    | 45               | 0           | 2             | 47           | 14%         |
| 12                    | 75               | 6           | 27            | 108          | 32%         |
| 13                    | 11               | 27          | 82            | 120          | 35%         |
| 14                    | 4                | 15          | 26            | 45           | 13%         |
| 15                    | 0                | 11          | 1             | 12           | 4%          |
| >15                   | 0                | 5           | 2             | 7            | 2%          |
| <b>GENDER</b>         | <b>Ben Thema</b> | <b>Oodi</b> | <b>Lesedi</b> | <b>Total</b> | <b>%</b>    |
| M                     | 66               | 34          | 71            | 171          | 50%         |
| F                     | 71               | 31          | 68            | 170          | 50%         |
| <b>PLAY SOCCER?</b>   | <b>Ben Thema</b> | <b>Oodi</b> | <b>Lesedi</b> | <b>Total</b> | <b>%</b>    |
| 1 - Yes, on a team    | 15               | 7           | 29            | 51           | 16%         |
| 2 - Yes, with friends | 99               | 19          | 70            | 188          | 60%         |
| 3 - No                | 23               | 9           | 41            | 73           | 23%         |
| <b>TOTALS</b>         | <b>137</b>       | <b>65</b>   | <b>140</b>    | <b>342</b>   | <b>100%</b> |

## 2. Number of People Educated about HIV/AIDS

The student evaluation survey asked participants to report how many people they had talked to or educated about HIV/AIDS since the beginning of the GRS program. The histogram below presents the distribution of responses:

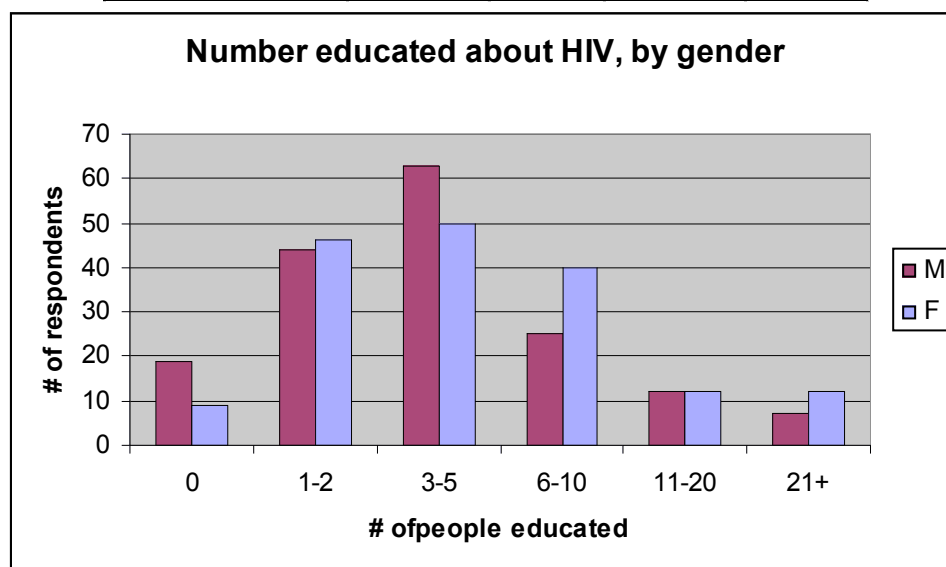


The average student (median) talked to 3-5 people about HIV/AIDS. This was also the most common response. The distribution is positively skewed by a small number of participants (44) who reported educating a lot of people (>10).

How many people are reached by Grassroot Soccer through discussions between program participants and their friends and families? The table below provides estimates of “numbers reached,” disaggregated by school, gender, age, and whether they play football. The “low estimates” are based on the lower-bounds of the responses (0,1,3,6,11,21); “high estimates” are based on the upper-bounds (0,2,5,10,20,25[est.]).

In all, GRS participants at the three schools shared their knowledge with an estimated 1503 – 2375 people. On average, each student educated 5.7 [4.4 – 6.9] other people. We can interpret this estimate as the “per capita diffusion rate.” Diffusion rates varied across schools, with Lesedi (Std 7, urban) outperforming Oodi (Std 7, rural) and Ben Thema (Std 6, urban). Unfortunately, it is hard to draw firm conclusions due to methodological limitations of the survey, notably differences in question order between the schools. Surprisingly, perhaps, girls shared with more people on average than boys. The graph below shows the distribution of responses, disaggregated by gender.

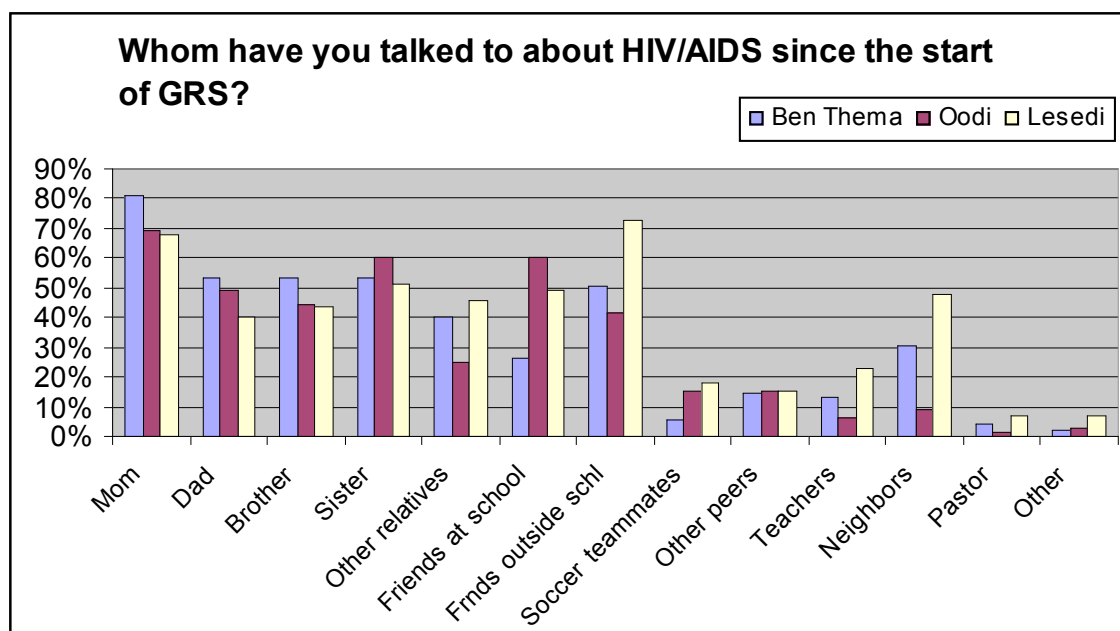
| EST. TOTAL # EDUCATED SINCE START OF GRS |                                          |                             |                                          |                             |
|------------------------------------------|------------------------------------------|-----------------------------|------------------------------------------|-----------------------------|
| Descriptive Variables                    | Est. total # educated since start of GRS | Est. # educated per student | Est. total # educated since start of GRS | Est. # educated per student |
| <b>By School</b>                         | <i>Low Estimate</i>                      |                             | <i>High Estimate</i>                     |                             |
| Ben Thema                                | 492                                      | 3.59                        | 783                                      | 5.72                        |
| Oodi                                     | 223                                      | 3.43                        | 352                                      | 5.42                        |
| Lesedi                                   | 788                                      | 5.63                        | 1240                                     | 8.86                        |
| <b>By Gender</b>                         | <i>Low Estimate</i>                      |                             | <i>High Estimate</i>                     |                             |
| M                                        | 662                                      | 3.87                        | 1068                                     | 6.25                        |
| F                                        | 820                                      | 4.82                        | 1282                                     | 7.54                        |
| <b>By Age</b>                            | <i>Low Estimate</i>                      |                             | <i>High Estimate</i>                     |                             |
| <12                                      | 181                                      | 3.69                        | 280                                      | 5.71                        |
| 12                                       | 465                                      | 4.31                        | 734                                      | 6.80                        |
| 13                                       | 583                                      | 4.86                        | 930                                      | 7.75                        |
| >13                                      | 271                                      | 4.23                        | 426                                      | 6.66                        |
| <b>By Play Soccer?</b>                   | <i>Low Estimate</i>                      |                             | <i>High Estimate</i>                     |                             |
| Yes, on team                             | 209                                      | 4.10                        | 363                                      | 7.12                        |
| Yes, w/ friends                          | 816                                      | 4.34                        | 1265                                     | 6.73                        |
| No                                       | 373                                      | 5.11                        | 578                                      | 7.92                        |
| <b>TOTALS</b>                            | <b>1503</b>                              | <b>4.39</b>                 | <b>2375</b>                              | <b>6.94</b>                 |



While survey limitations make comparisons difficult, taken as a whole, these data indicate that the vast majority of program participants go on to discuss HIV/AIDS with others and some share their knowledge with a lot of people.

### 3. Profile of People Educated

Whom do GRS participants talk to about HIV/AIDS? Students surveyed were given the opportunity to “tick” all those people they educated since the beginning of the program. (Note: At Ben Thema and Oodi, they were asked who they educated using “Extra Time” magazine.) The graph below shows the percent of participants at each school who ticked a certain box.



These data can provide some insight into the nature of community attitudes towards HIV/AIDS, stigma, and social capital. Among Std 7s, there were dramatic differences between the urban middle class school and the lower-income rural school. A full 73% of GRS participants at Lesedi reported talking to friends outside of school and 48% talked with neighbors. At Oodi, the numbers were much lower—only 42% and 9% respectively. It appears that at Lesedi, GRS may have created something of a buzz in the community.

The table below shows responses to “whom did you educate?” disaggregated by gender and age. Data are shown as frequencies and percents. The data reveal some interesting patterns. Participants talked most often to their mothers, significantly more than their fathers. While boys talked evenly to their brothers and sisters about HIV/AIDS, girls tended to talk more with their sisters. Boys were more likely to talk to soccer teammates and girls much more likely to talk about HIV/AIDS with neighbors. There were age-differences as well. Younger students tended to talk more with their parents about HIV/AIDS; older students spoke more with their friends.

Finally, summing the responses to this question provide an alternate, if extremely rough, measure of the *number* of people talked to about HIV/AIDS. These estimates are presented at the far right of the table below. Indeed, the average number of “ticks” per student falls within the bounds of our low/high estimates of “number reached,” suggesting the validity of our estimates.

| People educated with / without extra time magazine |            |            |         |            |                    |                    |                        |                     |                |          |                |        |       | SUM<br>of tx | Per<br>Stud |
|----------------------------------------------------|------------|------------|---------|------------|--------------------|--------------------|------------------------|---------------------|----------------|----------|----------------|--------|-------|--------------|-------------|
|                                                    | Mom        | Dad        | Brother | Sister     | Other<br>relatives | Friends<br>at schl | Fmds out-<br>side schl | Soccer<br>teammates | Other<br>peers | Teachers | Neigh-<br>bors | Pastor | Other |              |             |
| <b>Male</b>                                        | 118        | 71         | 79      | 81         | 66                 | 76                 | 98                     | 30                  | 27             | 27       | 42             | 9      | 9     | <b>733</b>   | <b>4.29</b> |
| % of males                                         | 69%        | 42%        | 46%     | 47%        | 39%                | 44%                | 57%                    | 18%                 | 16%            | 16%      | 25%            | 5%     | 5%    |              |             |
| <b>Female</b>                                      | 132        | 89         | 83      | 103        | 69                 | 68                 | 100                    | 13                  | 24             | 27       | 72             | 8      | 6     | <b>794</b>   | <b>4.67</b> |
| % of females                                       | <b>78%</b> | <b>52%</b> | 49%     | <b>61%</b> | 41%                | 40%                | 59%                    | 8%                  | 14%            | 16%      | <b>42%</b>     | 5%     | 4%    |              |             |
| <b>&lt;12</b>                                      | 42         | 31         | 29      | 26         | 25                 | 15                 | 24                     | 2                   | 11             | 7        | 23             | 4      | 2     | <b>241</b>   | <b>4.92</b> |
| % of <12 yr olds                                   | <b>86%</b> | <b>63%</b> | 59%     | 53%        | 51%                | <b>31%</b>         | 49%                    | 4%                  | 22%            | 14%      | 47%            | 8%     | 4%    |              |             |
| <b>12</b>                                          | 84         | 54         | 48      | 55         | 34                 | 30                 | 60                     | 13                  | 18             | 12       | 30             | 5      | 4     | <b>447</b>   | <b>4.14</b> |
| % of 12 yr olds                                    | <b>78%</b> | <b>50%</b> | 44%     | 51%        | 31%                | <b>28%</b>         | 56%                    | 12%                 | 17%            | 11%      | 28%            | 5%     | 4%    |              |             |
| <b>13</b>                                          | 83         | 47         | 51      | 65         | 57                 | 59                 | 78                     | 16                  | 15             | 22       | 45             | 4      | 8     | <b>550</b>   | <b>4.58</b> |
| % of 13 yr olds                                    | <b>69%</b> | <b>39%</b> | 43%     | 54%        | 48%                | <b>49%</b>         | 65%                    | 13%                 | 13%            | 18%      | 38%            | 3%     | 7%    |              |             |
| <b>&gt;13</b>                                      | 41         | 29         | 35      | 38         | 19                 | 39                 | 36                     | 12                  | 7              | 13       | 17             | 4      | 1     | <b>291</b>   | <b>4.55</b> |
| % of >13 yr olds                                   | <b>64%</b> | <b>45%</b> | 55%     | 59%        | 30%                | <b>61%</b>         | 56%                    | 19%                 | 11%            | 20%      | 27%            | 6%     | 2%    |              |             |
| <b>TOTAL</b>                                       | 251        | 161        | 163     | 184        | 135                | 144                | 198                    | 43                  | 51             | 54       | 115            | 17     | 15    | <b>1531</b>  | <b>4.48</b> |

Notable results in **boldface**.

## Discussion

In summary, the data presented above indicate that participants in GRS *do* talk about HIV/AIDS with others, particularly family and friends. Diffusion is both wide and deep: over 90% of participants educated at least one person about HIV/AIDS; over 10% of participants reported talking to over ten people. These informal conversations about HIV/AIDS constitute the secondary impact of GRS on youth and their communities.

Survey research of this type is straightforward to implement and requires minimal resources. Yet, the results can be valuable to improving our program and spurring innovation in HIV prevention. The “per capita diffusion rate” may be an important outcome indicator for GRS and other programs, a way to estimate the secondary community reached. For example, since July 2005, approximately 2000 youth have graduated GRS in Botswana. Using a conservative “diffusion rate” of 4.5, we would estimate that GRS reached at least 11,000 people in Botswana (including graduates). Estimating “numbers reached” based on this “diffusion rate” is messy: on the one hand, we are overestimating due to double counting (e.g. Kirk and Taylor both educate Tommy); on the other hand, we are underestimating since this number refers only to those reached in the duration of a six week program. Still, it is a valuable statistic that would allow us to compare programs and learn what factors lead to more informal discussion of HIV/AIDS outside of GRS. A revised questionnaire without the methodological limitations described above would give us even more confidence in these estimates. A simple way to collect data on “diffusion rates” would be to include a pair of questions about people educated on the GRS post-quiz (and pre-quiz as a control). Future research efforts should give thought to site pairings and limit the number of variables differentiating sites, in order to draw more robust conclusions.

From a research perspective, one might be concerned that we do not know what GRS participants say when they talk to others about HIV/AIDS. Still: 1) evidence from focus groups indicates that when participants share, they often play the GRS games or discuss the key messages of the games; 2) with post-quiz results averaging 80-90% and

improvements of 10-20% from the pre-quiz, GRS graduates are well informed and likely better informed than their peers; 3) finally, a key component of HIV prevention is breaking down the barriers of silence and stigma that surround the disease. Simply getting youth talking about HIV/AIDS is a significant achievement. It seems that GRS is doing just that. In a focus group at Tlhabologo Primary, one 13 yr old described his experience sharing a personal story about HIV/AIDS that he had written for a homework assignment: "I shared with my classmates about my aunt and her disease. I even cried. But they [my classmates] supported me. I told them that we must fight this horrible disease... As citizens of Botswana, its important that we teach our friends." Another student explained: "Since GRS, we feel comfortable talking about HIV."