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Africaid is an HIV Children’s Trust. It is registered in South Africa (Trust Reg. No. IT 153/2006, NPO Reg. No. 051-379-NPO, PBO No. 930 020 093), and in the UK (Charity Reg. No. 1045461).

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1. Background

The HIV and AIDS has had a devastating impact on South Africa over the past 30 years. Nowhere has this impact been more pronounced than in the province of KwaZulu-Natal, where in 2008 it was estimated that 25.8% of people in the 15-49 age group are infected with HIV (Shisana et al, 2008). Of the 52 district municipalities of South Africa, five reported an HIV prevalence rate greater than 40% among women attending antenatal clinics in 2010. All five of these districts are in KwaZulu-Natal, and they include eThekwini Metropolitan Municipality (41.1%), where the target area of this project is located (Department of Health, 2011).

eThekwini Municipality also had the third highest STI incidence rate of any district at 6.5 new infections per 100 persons per year (Day et al, 2012). With these disturbing figures in mind, the need for tailored interventions to prevent sexual transmission of HIV is unquestioned.

The ‘On the Ball’ intervention is a behavioural HIV prevention curriculum for adolescents using soccer as an educational medium. It is a component of WhizzKids United, a comprehensive HIV prevention package for adolescents. In late 2010, Africaid partnered with Medical Care Development International as a sub-grantee of the Northern eThekwini Youth Friendly Clinics Project funded by the Canadian International Development Agency. The motto of this project is Siyanakekela, which means “We care” in Zulu.

Africaid’s role as sub-grantee on this project was to run the ‘On the Ball’ curriculum in primary schools in the Northern eThekwini area. Consequently, in the latter part of 2010, Africaid recruited and trained four facilitators (known as Life Skills Trainers) and prepared to launch the programme at the beginning of 2011. The curriculum was run at a total of seven primary schools in the Northern eThekwini area over sixteen months (Zenzeleni, Trenance Park, Hambanathi, Ogunjini, Mbonisweni, Mjoji, and Oakford). It was also run at an orphanage called Haven of Rest.

This document describes an outcome evaluation that was conducted with a random sample of children who participated in this programme.

Before getting into our methodology it would be worthwhile to consider some background on evaluation of behavioural HIV prevention interventions. There are a number of possible approaches to evaluating this kind of intervention. The ideal would be a randomized controlled trial (RCT) design in which individuals were randomly assigned either to the intervention group (to participate in the programme) or the control group (who would not participate in the programme) and then followed over a period of years. The primary variable of interest would be HIV serostatus. Over time, the HIV incidence rate in the intervention group would be compared to that in the control group to see if there is a difference. If the incidence rate were significantly lower in the intervention group, we could infer that the On the Ball intervention had been effective in preventing HIV.

Within the context of this project, with limited time and resources (both human and financial), such a rigorous approach is not feasible. We do not have the means to measure the ultimate variable of interest (HIV infection rate) directly, and even if we did we would not have the capacity to ensure it was done in accordance with biomedical ethics standards.
Furthermore, the project’s beneficiaries are very young (median age in the sample was 12). Previous studies have found a median age at first sex of 19 years in the South African context (McGrath et al, 2009). Only a tiny minority of children are already sexually active by age 12 or even 14. Therefore, it is too early in their lives for us to be able to show an impact on sexual risk behaviour in the short term.

Instead, like other recent evaluations (Gallant and Maticka-Tyndale, 2004; Harrison et al, 2010), our evaluation focused on short-term change in behavioural predictors, i.e. in psychological and social factors which social scientists believe predict HIV risk behaviour.

2. Methodology

The evaluation uses a pre-test post-test approach with a random sample of beneficiaries. The sample was generated using clustered random sampling, with school classes serving as the cluster units for logistical reasons. The pre-tests were conducted prior to the WhizzKids United programme’s commencement at each of the three schools, with one class in each Grade that was participating in the programme. The table below describes the sample of the pre-tests:

<table>
<thead>
<tr>
<th>School</th>
<th>Date of Pre-Test</th>
<th>Date of Post-Test</th>
<th>Sample Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trenance Park</td>
<td>27/01/2011</td>
<td>24/06/2011</td>
<td>113</td>
</tr>
<tr>
<td>Zenzeleni</td>
<td>07/02/2011</td>
<td>12/05/2011</td>
<td>110</td>
</tr>
<tr>
<td>Hambanathi</td>
<td>02/03/2011</td>
<td>14/09/2011</td>
<td>101</td>
</tr>
<tr>
<td>Ogunjini</td>
<td>22/07/2011</td>
<td>13/10/2011</td>
<td>80</td>
</tr>
<tr>
<td>Mjoji</td>
<td>13/10/2011</td>
<td>26/01/2012</td>
<td>116</td>
</tr>
<tr>
<td>Mbonisweni</td>
<td>17/08/2011;</td>
<td>27/02/2012</td>
<td>81</td>
</tr>
<tr>
<td></td>
<td>10/10/2011</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Oakford</td>
<td>09/02/2012</td>
<td>26/04/2012</td>
<td>109</td>
</tr>
<tr>
<td>Haven of Rest</td>
<td>11/10/2011</td>
<td>30/11/2011</td>
<td>27</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>737</td>
</tr>
</tbody>
</table>

Upon completion of the programme, an identical questionnaire (the post-test) was run with the same classes sampled for the pre-test. Analysis then consisted of comparing the pre-test and post-test results. This can only be done collectively, not by individual, since the questionnaires are anonymous. This approach sacrifices some statistical power, but improves the fidelity of the data especially when the topics under consideration (such as sex and HIV/AIDS) are so sensitive and personal.

We chose in our questionnaire to focus on five behavioural predictors: HIV/AIDS knowledge, HIV/AIDS attitudes, gender norms, self-efficacy, and future orientation. In order to measure each of these we developed a multi-item scale. The knowledge scale consisted of nine yes or no questions and one multiple choice question, while the other four scales consisted of five questions which measured opinions using a Likert scale (Agree, disagree, no opinion).
Some questions are original, but most were borrowed or adapted from the behavioural science literature. Stigma questions were borrowed from Kalichman et al (2005). Gender norms questions were invented or adapted from unpublished community health questionnaires developed by Prof. Seth Kalichman and research associates. Self-efficacy questions were borrowed from Chen, Gully, and Eden (2001). Future orientation questions were borrowed from Steinberg et al (2009).

Several methods were used to reduce error and bias in the responses. Acquiescence bias was countered by putting “Disagree” on the left and “Agree” on the far right. The wording of questions was varied (albeit avoiding double negatives which could confuse the respondent) so that in some cases the ‘desired’ answer was Yes, or Agree, while in others it was No, or Disagree. The language and literacy barriers were countered by having all questions written and read aloud in both English and Zulu.

3. Demographics

Demographic information is represented in the graphs below. Although the participants were nearly all in Grades 5 to 7 (except for 14 individuals in Grades 2, 3, 4 or 8 from Haven of Rest), the ages ranged from 9 up to 20. This illustrates the high variability in rates of educational development within the South African context. A 9 year old and a 20 year old are at very different levels of physical, psychological and social development. To have them sitting in one classroom participating in the same programme represents a challenge which facilitators and educators must meet with flexibility and adaptability.

The participants in the programme were almost evenly split between Grades 5, 6 and 7. The gender breakdown in the sample was very evenly split as is representative of the learner population.

Ethnically, six of the schools consisted almost entirely of Zulu-speaking learners of African descent, while one school (Trenance Park Primary) had a majority of English-speaking learners of Indian descent, along with a minority of African Zulu-speaking learners.

In terms of caregivers, almost half of the learners were living with both parents, while about a third were living with a single parent, and the remaining one-sixth were being raised by someone other than a parent – most commonly a grandmother. This shows the high rate of orphanhood in South Africa.
Responses to the first ten questions on the questionnaire are pooled to form the HIV & AIDS Knowledge Scale (with all the body fluids being weighted as one question). The other scales are formed by pooling five questions each: HIV & AIDS Attitudes, Gender Norms, Self-Efficacy, and Future Orientation respectively. The questions comprising each scale are as follows:

**Knowledge Scale**

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Answer Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Which of the following body fluids can pass on HIV? Blood, sweat, tears,</td>
<td>Yes, No, Do Not Know (for each fluid)</td>
</tr>
</tbody>
</table>
2. Can a person get AIDS by sharing kitchens and bathrooms with someone who has AIDS?  
   Yes, No, Do Not Know

3. Can a pregnant woman give HIV to her baby?  
   Yes, No, Do Not Know

4. Is abstaining from sex a young person's best defence against HIV?  
   Yes, No, Do Not Know

5. Does using a condom during sex protect you from getting HIV?  
   Yes, No, Do Not Know

6. If you have multiple lovers, does this increase your risk of getting HIV?  
   Yes, No, Do Not Know

7. Does alcohol abuse put you at greater risk of getting HIV?  
   Yes, No, Do Not Know

8. Do you know a place where young people can get free HIV testing?  
   Yes, No, Do Not Know

9. Can a person get rid of HIV by having sex with a virgin?  
   Yes, No, Do Not Know

10. Are ARV's an effective treatment for people with HIV?  
    Yes, No, Do Not Know

### Attitudes Scale

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Answer Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.</td>
<td>AIDS is a serious problem in my community.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>12.</td>
<td>People who have AIDS are nasty.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>13.</td>
<td>People who have AIDS can be trusted.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>14.</td>
<td>A person with AIDS must have done something wrong and deserves to be punished.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>15.</td>
<td>I am willing to be friends with someone who has AIDS.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
</tbody>
</table>

### Gender Norms Scale

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Answer Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>16.</td>
<td>Having many women is a sign of manhood.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>17.</td>
<td>If a boy makes a girl pregnant, he must help her to raise the child.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>18.</td>
<td>There are times when a woman deserves to be beaten.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>19.</td>
<td>It is the man's decision whether or not to use a condom; the woman must obey him.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>20.</td>
<td>Football is a sport for both boys and girls.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
</tbody>
</table>

### Self-Efficacy Scale

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Answer Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>21.</td>
<td>I feel like I have control over my life.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>22.</td>
<td>I am able to discuss my personal problems with my friends.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>23.</td>
<td>I would be able to resist if someone pressured me to have sex.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>24.</td>
<td>When my friends pressure me I end up making bad choices.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>25.</td>
<td>I have the confidence to go to a clinic for an HIV test.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
</tbody>
</table>

### Future Orientation Scale

<table>
<thead>
<tr>
<th>No.</th>
<th>Question</th>
<th>Answer Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>26.</td>
<td>I spend a lot of time thinking about my future.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>27.</td>
<td>I just focus on today and don't worry about the future.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>28.</td>
<td>Before I do something I always make a plan.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>29.</td>
<td>I usually do things without thinking about the consequences.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
<tr>
<td>30.</td>
<td>I have set goals for myself that I want to achieve in my life.</td>
<td>Disagree, No opinion, Agree</td>
</tr>
</tbody>
</table>
The scales were scored as follows. For the body fluids question, a respondent received one point for each ‘Yes’ fluid correctly identified, and then lost one point for each ‘No’ fluid wrongly identified, but could only go as low as a zero score. The score for this question ranged from 0 to 4 but was then divided by 4 so that it was weighted equally with the other knowledge questions. For the other nine knowledge questions, the correct answer was worth one point and an incorrect answer or ‘I don’t know’ was worth zero points. Each respondent thus received a knowledge score between 0 to 10, which was then divided by 2 to weight it from 0 to 5 like the other four scales.

For the Attitudes, Gender Norms, Self-Efficacy and Future Orientation scales, each question was scored from 0 to 2 with 2 representing the desirable answer, 1 representing ‘No opinion,’ and 0 representing the undesirable answer. Each respondent thus received a score from 0 to 10, which was divided by 2 to weight it from 0 to 5. For every scale, a score of 5 would represent the best possible outcome, corresponding to the lowest probability of engaging in sexual risk behaviour; while a score of 0 would represent the worst possible outcome, corresponding to the highest probability of engaging in sexual risk behaviour.

The five scores were added up and divided by 5 to get a pooled overall estimate of the probability of engaging in sexual risk behaviour, called the Risk Behaviour Prediction Index (RBPI).

5. Analytical Methods

Statistical methods were used to compare the five scale scores and the overall RBPI scores of the sample before and after participating in the On the Ball intervention. Since the data were not normally distributed, a non-parametric statistical test called Kendall’s Rank Correlation Test was used to test for a significant improvement from pre-test to post-test for each scale and the RBPI. Another method we could have used is logistic regression.

We applied the conventional significance level (or Type I Error) of 0.05; thus a p-value of less than 0.05 allows us to infer that there was an improvement (that is, a reduction in the probability of participants engaging in sexual risk behaviour). Because there was no control group, we cannot rigorously say that such improvements were caused by the On the Ball intervention; but this is highly probable since there is no other known cause that could have produced the same effects in this short timeframe.
6. Results and Conclusion

Overall Results

The tables below show the results for each scale, and the overall Risk Behaviour Prediction Index which is created by aggregating the results of all five scales.

<table>
<thead>
<tr>
<th>Scale</th>
<th>Median (Pre)</th>
<th>Median (Post)</th>
<th>P-Value</th>
<th>Statistically Significant Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV/AIDS Knowledge</td>
<td>2.75</td>
<td>3</td>
<td>5.075e-06</td>
<td>Yes</td>
</tr>
<tr>
<td>HIV/AIDS Attitudes</td>
<td>2.5</td>
<td>3</td>
<td>1.01e-05</td>
<td>Yes</td>
</tr>
<tr>
<td>Gender Norms</td>
<td>3.5</td>
<td>3.5</td>
<td>0.006285</td>
<td>Yes</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>3</td>
<td>3.5</td>
<td>0.001717</td>
<td>Yes</td>
</tr>
<tr>
<td>Future Orientation</td>
<td>4</td>
<td>4</td>
<td>0.04708</td>
<td>Yes</td>
</tr>
<tr>
<td>Overall (RBPI)</td>
<td>3.175</td>
<td>3.35</td>
<td>1.741e-06</td>
<td>Yes</td>
</tr>
</tbody>
</table>

The results show that overall, there was a statistically significant improvement in the Risk Behaviour Prediction Index (RBPI). This is quantifiable evidence that the programme has reduced the probability that participants will engage in sexual risk behaviour. When broken down by scales, we find that a statistically significant impact was observed in all five scales. The impact was most pronounced in HIV/AIDS knowledge, HIV/AIDS attitudes, and self-efficacy.

Results by Gender

<table>
<thead>
<tr>
<th>Boys</th>
<th>Median (Pre)</th>
<th>Median (Post)</th>
<th>P-Value</th>
<th>Statistically Significant Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV/AIDS Knowledge</td>
<td>2.75</td>
<td>3</td>
<td>0.0003416</td>
<td>Yes</td>
</tr>
<tr>
<td>HIV/AIDS Attitudes</td>
<td>2.5</td>
<td>3</td>
<td>0.04839</td>
<td>Yes</td>
</tr>
<tr>
<td>Gender Norms</td>
<td>3</td>
<td>3.5</td>
<td>0.04156</td>
<td>Yes</td>
</tr>
<tr>
<td>Self-Efficacy</td>
<td>3</td>
<td>3.5</td>
<td>0.02413</td>
<td>Yes</td>
</tr>
<tr>
<td>Future Orientation</td>
<td>4</td>
<td>4</td>
<td>0.1986</td>
<td>No</td>
</tr>
<tr>
<td>Overall (RBPI)</td>
<td>3.15</td>
<td>3.275</td>
<td>0.003625</td>
<td>Yes</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Girls</th>
<th>Median (Pre)</th>
<th>Median (Post)</th>
<th>P-Value</th>
<th>Statistically Significant Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIV/AIDS Knowledge</td>
<td>2.75</td>
<td>3</td>
<td>0.004919</td>
<td>Yes</td>
</tr>
<tr>
<td>HIV/AIDS Attitudes</td>
<td>2.5</td>
<td>3</td>
<td>5.217e-06</td>
<td>Yes</td>
</tr>
<tr>
<td>Gender Norms</td>
<td>3.5</td>
<td>4</td>
<td>0.05744</td>
<td>No</td>
</tr>
</tbody>
</table>
There was a significant RBPI improvement for both genders. When examined by individual scales, the attitudes improvement was more noticeable among girls, while the gender norms improvement was more pronounced among boys.

We also analysed the data individually by grade to see if the programme’s impact varied with grade level.

Our overall conclusion is that the On the Ball intervention did have a statistically significant impact on the risk of HIV infection amongst learners in Grades 5 to 7 at these schools in Northern eThekwini.

7. Appendix – Individual Question Graphs

The following graphs show results for each individual question, in the pre-test and the post-test. A p-value below 0.05 indicates that a statistically significant improvement occurred in the responses to that particular question. Note that the first eleven graphs are body fluid sub-questions which were analyzed collectively as one question.
Can saliva pass on HIV?
P-value: 2.22e-16

Pre
- Yes: 27.7%
- No: 52.5%
- Don't Know: 19.8%

Post
- Yes: 64.1%
- No: 17.9%
- Don't Know: 18%

Can snot pass on HIV?
P-value: 2.22e-16

Pre
- Yes: 13.2%
- No: 65.3%
- Don't Know: 21.4%

Post
- Yes: 75.2%
- No: 18%
- Don't Know: 6.9%

Can vomit pass on HIV?
P-value: 2.22e-16

Pre
- Yes: 15.9%
- No: 58.2%
- Don't Know: 25.9%

Post
- Yes: 69.7%
- No: 20.3%
- Don't Know: 10%
Can urine pass on HIV?
P-value: 2.22e-16

Can faeces pass on HIV?
P-value: 2.22e-16

Can semen pass on HIV?
P-value: 2.22e-16
Is abstaining from sex a young person’s best defence against HIV? 

Pre: 48.7% Yes, 28% No, 23.3% Don’t Know 
Post: 52.3% Yes, 18.8% No, 28.9% Don’t Know 

P-value: 0.0851

Does using a condom during sex protect you from getting HIV? 

Pre: 79.6% Yes, 9.7% No, 10.8% Don’t Know 
Post: 84.4% Yes, 7.3% No, 8.3% Don’t Know 

P-value: 0.00941

If you have multiple lovers, does this increase your risk of getting HIV? 

Pre: 78.9% Yes, 10.5% No, 10.6% Don’t Know 
Post: 81.9% Yes, 6.3% No, 11.8% Don’t Know 

P-value: 0.0751
Does alcohol abuse put you at greater risk of getting HIV?

Pre

Yes: 35.1%
No: 37.4%
Don't Know: 27.5%

Post

Yes: 36.9%
No: 32.4%
Don't Know: 30.7%

P-value: 0.24

Do you know a place where young people can get free HIV testing?

Pre

Yes: 38.5%
No: 27.2%
Don't Know: 34.3%

Post

Yes: 52.3%
No: 19.2%
Don't Know: 28.5%

P-value: 1.27e-07

Can a person get rid of HIV by having sex with a virgin?

Pre

Yes: 60.2%
No: 24.3%
Don't Know: 15.5%

Post

Yes: 60.6%
No: 28.5%

P-value: 0.441
Are ARVs an effective treatment for people with HIV?
P-value: 0.191

AIDS is a serious problem in my community.
P-value: 0.043

People who have AIDS are nasty.
P-value: 0.218
People who have AIDS can be trusted.

P-value: 0.00716

A person with AIDS must have done something wrong and deserves to be punished.

P-value: 0.00138

I am willing to be friends with someone who has AIDS.

P-value: 7.3e-06
Having many women is a sign of manhood.  
\[ P\text{-value: 0.168} \]

If a boy makes a girl pregnant, he must help her to raise the child.  
\[ P\text{-value: 0.118} \]

There are times when a woman deserves to be beaten.  
\[ P\text{-value: 0.630} \]
It is the man's decision whether or not to use a condom; the woman must obey him.

P-value: 0.0147

Football is a sport for both boys and girls.

P-value: 0.00155

I feel like I have control over my life.

P-value: 0.0361
I am able to discuss my personal problems with my friends.

Pre: 32% Disagree, 19.1% No opinion, 48.9% Agree

Post: 23.1% Disagree, 20.8% No opinion, 56.1% Agree

P-value: 0.00036

I would be able to resist if someone pressured me to have sex.

Pre: 33.8% Disagree, 21.9% No opinion, 44.3% Agree

Post: 25.3% Disagree, 19.9% No opinion, 54.7% Agree

P-value: 1.9e-05

When my friends pressure me I end up making bad choices.

Pre: 42.5% Disagree, 24.4% No opinion, 33.1% Agree

Post: 35.6% Disagree, 26.7% No opinion, 39.7% Agree

P-value: 0.957
I have the confidence to go to a clinic for an HIV test.
P-value: 0.473

I spend a lot of time thinking about my future.
P-value: 0.193

I just focus on today and don't worry about the future.
P-value: 0.0237
Before I do something I always make a plan.

- **Pre**: 12.8% Disagree, 14.9% No opinion, 72.3% Agree
- **Post**: 9.7% Disagree, 16% No opinion, 74.3% Agree

**P-value**: 0.137

I usually do things without thinking about the consequences.

- **Pre**: 50.7% Disagree, 26.4% No opinion, 22.9% Agree
- **Post**: 49.1% Disagree, 27.6% No opinion, 23.4% Agree

**P-value**: 0.703

I have set goals for myself that I want to achieve in my life.

- **Pre**: 8.2% Disagree, 9.4% No opinion, 82.4% Agree
- **Post**: 5.7% Disagree, 10.5% No opinion, 83.9% Agree

**P-value**: 0.182
References


Unpublished ‘Community Health Questionnaire’ by Professor Seth Kalichman of the University of Connecticut and Professor Leickness Simbayi of the Human Sciences Research Council.