ABSTRACT

Objectives: To determine if AIDS education can change the sexual behaviour of high school students.

Design: Randomized controlled trial.

Setting: Kwaggafontein, a rural township in KwaNdebele, Mpumalanga Province, South Africa.

Participants: 352 students from the three high schools in the township were allocated to study and control groups. The study group received an AIDS education package developed by the Medical Research Council of South Africa, while the control group received education on general hygiene.

Main outcome measures: Awareness of AIDS, knowledge about AIDS and self-reported sexual behaviour before and after the study.

Results: The study group showed a dramatic increase in awareness of AIDS as a problem in their community (44% to 74% P<0.00) and knowledge about AIDS as a preventable (48% to 88% P<0.00) and an incurable disease (41% to 87% P<0.00). The control group did not show any significant change. The study group reported a decrease in reported sexual intercourse from 14% to 10% (P=0.00) and there was a decrease in reported sexual intercourse with more than one partner (15% to 5% P=0.01) and a decrease in casual sex from 20% to 10% (P=0.03). The control group did not report any significant changes in their sexual behaviour.

Conclusion: An AIDS education programme such as the one tested in this study can significantly increase awareness and knowledge of AIDS and decrease high-risk sexual behaviour. The use of this package on a national scale is highly recommended.

Acquired immunodeficiency syndrome (AIDS) was first described as a clinical entity in 1981. The causative agent — the human immunodeficiency virus (HIV) was discovered in 1984. AIDS is one of the most serious conditions threatening health worldwide, with Africa being the most severely affected. In South Africa, sero-prevalence studies in sentinel groups such as pregnant women and blood donors have shown a rapidly rising prevalence of HIV infection, with the spread generally attributed to heterosexual transmission. By June 1994, the HIV sero-prevalence for the country was estimated to be about 600 000 and in May 1995 the figure had increased to about 1 200 000. Internationally, it has been concluded that adolescent sexual activity is characterized by early onset, multiple partners and a low incidence of contraceptive use.

Although data on the prevalence of AIDS and HIV infection among this group are sparse, the pattern of sexual behaviour has relevance for HIV transmission, because many HIV-infected adolescents will be diagnosed only in their 20s. In spite of the fact that several studies on AIDS knowledge, attitudes and beliefs in high school students (mostly adolescents) have demonstrated general awareness about AIDS, there is concern that specific knowledge on the mode of transmission of HIV infection is lacking and riddled with misconceptions. AIDS education is therefore considered to be an important strategy in improving knowledge about AIDS, in order to limit the spread of the disease through the promotion of safer sexual behaviour.

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Dept of Family Medicine, PO Box 222, MEDUNSA 0204

Methods

The study was carried out in Kwaggafontein, a rural township of KwaNdebele, Mpumalanga Province, South Africa, because of the high prevalence of sexually transmitted diseases (STDs) reported among the high school students and the absence of a school health programme to address issues on AIDS/STDs. Students aged 10 to 19 years from the three high schools in the township were stratified for sex and standard and then randomly allocated to study and control groups using the class numbers in the student registers. The sample size required for the study, as calculated by Donner's formula for a probability of 0.05, a power of 90%, and a clinically significant difference of 30% between study and control groups, was 88 students for each of the four standards (44 each for study and control groups) with a total of 352 students.

Students in both study and control groups were assembled at the beginning of the study to complete a self-administered questionnaire which assessed their awareness of AIDS, knowledge about AIDS and sexual behaviour. Thereafter, the control group received information on general hygiene from school health nurse A, while the study group received the AIDS education package developed by the Medical Research Council of South Africa. All information on general hygiene by school health nurse B. The AIDS education package tested was composed of a video, a photo-novella comic book and a series of seminars. Both nurses underwent training sessions with the researcher, who was not directly involved in teaching the students on the content of the study materials used. In addition, the nurses had no prior knowledge of the students selected for the study and had no relatives amongst them.

Each session took place weekly and comprised a feedback period, topic of the day and question time. The education package was completed after five months, after which both study and control groups reassembled to complete a second self-administered questionnaire. This assessed the impact of the AIDS education programme on the awareness of AIDS, knowledge about AIDS and reported sexual behaviour. Subject bias was considerably minimized by exposing both groups to a similar pattern of events, where the only difference was the testing of the AIDS education package in the study group. All materials used by the study group were retrieved at the end of each session with strict instructions not to inform anyone outside the group, so as to minimize "contamination" of the data. This was agreed to by the study group.

The data were analyzed using EPI 6 computer programme. The proportion of the respondents in both study and control groups was compared for the various components of the questionnaire pre- and post-study and expressed in percentages. The statistical test used to detect differences between the study and control groups was the Chi-square (with Yates correction as applicable). P-values <0.05 were considered to be statistically significant.

Results

Participant characteristics

As shown in Table 1, 352 students were stratified for sex and standard, then randomly allocated to study and control groups. The vast majority of the students were between the ages of 15 and 19 years, single and living with their parent(s)/guardian. There was no significant difference between the study and control groups with respect to age, sex and marital status.

Awareness of AIDS

Less than 50% of the students indicated having received any information about AIDS before the study, with a slightly lower percentage in the study group when compared with the control group;
Can AIDS education change sexual behaviour?

Table I: Participant characteristics

<table>
<thead>
<tr>
<th>Age</th>
<th>Study Group (n=176)</th>
<th>Control Group (n=176)</th>
<th>( x^2 )</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-14 years</td>
<td>4.5%</td>
<td>4.0%</td>
<td>( x^2 = 0.00 )</td>
<td>P=1.00</td>
</tr>
<tr>
<td>15-19 years</td>
<td>95.5%</td>
<td>96.0%</td>
<td>( x^2 = 0.00 )</td>
<td>P=1.00</td>
</tr>
</tbody>
</table>

Table II: Awareness of AIDS

<table>
<thead>
<tr>
<th>AIDS is a problem in your community</th>
<th>Pre-study</th>
<th>Post-study</th>
<th>( x^2 )</th>
<th>df</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study Group</td>
<td>6%</td>
<td>7%</td>
<td>19.9</td>
<td>1</td>
<td>0.00</td>
</tr>
<tr>
<td>Control Group</td>
<td>4%</td>
<td>4%</td>
<td>0.48</td>
<td>1</td>
<td>0.49</td>
</tr>
</tbody>
</table>

Discussion

In the absence of a cure or vaccine for AIDS, health education campaigns advocate changes in sexual practices in an attempt to reduce HIV transmission. Quantitative data on sexual behaviour in Africa are sparse and such data are relevant to an epidemiological understanding of AIDS and to efforts to check HIV infection. In South Africa, most of the studies on AIDS have focused on the knowledge, attitudes and beliefs about AIDS, with very little information on the impact of AIDS education on the sexual behaviour of people. Therefore, this study is one of the earliest in South Africa to measure the impact of AIDS education on the reported sexual behaviour of high school students.

The decision to use self-administered questionnaires may give rise to some concern on how valid the responses of the students were, in terms of accuracy and honesty. By its very nature, risky sexual behaviour is private behaviour and under-reporting of high-risk sexual behaviour may arise out of fear of being exposed and the subsequent embarrassment that may follow. In particular, the study group may have felt compelled to under-report high-risk sexual behaviour following their exposure to the AIDS education programme. Hopefully the results indicate that informal choices based on awareness and knowledge of AIDS represent a true reflection of the impact of the AIDS education programme. However, every effort was taken to ensure confidentiality by ensuring the anonymity of the respondents and their responses.

Over-reporting arises out of the awareness of their participation in the study, which in itself produces the desired change—the "Hawthorne effect". This bias was also markedly reduced by having an identical control group which was exposed to a similar pattern of events as the study group, and in which very little change was reported. Several techniques were employed to make it less likely that the students minimized or exaggerated reports of their sexual experiences:

(a) code numbers rather than names were used on the questionnaires;
(b) the researcher was not involved in any way with the administration of the questionnaires;
(c) the importance of responding honestly was emphasized; and
(d) participants were assured that their responses would be kept confidential.

Results

Awareness of AIDS

The study group reported a significant increase in awareness of the existence of AIDS as a problem in their community. However, while the control group did not. This finding points to the fact that this AIDS education programme addressed the fact that AIDS is a problem that affects every community to varying degrees. The lower percentage of the control group that was aware of the disease in their community shows that whatever the messages about AIDS in the country, these had not helped people to perceive the disease as a problem within their communities. This is supported by Mathews et al., in which 52.6% of their respondents believed that people in other parts of South Africa had AIDS and not themselves.
Can AIDS education change sexual behaviour?

The knowledge about AIDS The knowledge that AIDS is both a preventable and an incurable disease increased significantly in the study group from 48% to 88% and from 41% to 87% respectively. This was not unexpected, as the AIDS programme was designed with input from adolescents which made it more acceptable and appropriate for them to understand. In a Djibouti study\(^1\), a remarkable feature was the much better understanding of AIDS among the 18-year-old students who received special lectures on AIDS as part of a national campaign a month previous to the study — illustrating the positive impact of AIDS education on knowledge about the disease. The dramatic increase in the percentage of the students in the study group who knew by the end of the study that other STDs facilitate the spread of AIDS further strengthens the positive impact of the AIDS education programme on the knowledge about AIDS.

<table>
<thead>
<tr>
<th>Pre-study</th>
<th>Post-study</th>
</tr>
</thead>
<tbody>
<tr>
<td>n=147</td>
<td>n=149/151</td>
</tr>
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</table>

**% Who used condoms when sexual intercourse was anticipated**

<table>
<thead>
<tr>
<th>Study group</th>
<th>Control group</th>
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<tr>
<td>Study group</td>
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<tr>
<td>Study group</td>
<td>Control group</td>
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**% Who used condoms to prevent pregnancy**

<table>
<thead>
<tr>
<th>Study group</th>
<th>Control group</th>
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<tr>
<td>Study group</td>
<td>Control group</td>
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**% Who used condoms to prevent AIDS**

<table>
<thead>
<tr>
<th>Study group</th>
<th>Control group</th>
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<tbody>
<tr>
<td>Study group</td>
<td>Control group</td>
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**Reported sexual behaviour**

AIDS education programmes directed at educating high school students about safer sexual behaviour are yet to be implemented nationally in South Africa. But the findings of this study on the self-reported sexual behaviour of high school students are very encouraging, given the widely recognized potential risk of sexually transmitted diseases, including AIDS, in this target group.

One common argument against AIDS education programmes for adolescents has been that exposing them to information about AIDS/sex will encourage them to engage in sexual activity\(^2\). On the contrary, data from this study on the self-reported sexual behaviour provide evidence that the opposite is likely to be the case. The study group reported a significant decrease in high-risk sexual behaviour at the end of the study. This was demonstrated by the decrease in the percentage of the students who reported having had sexual intercourse with more than one partner and having had sexual intercourse with a partner known less than seven days at last sexual intercourse. These findings are even more significant when compared with those of the control group in which the percentage who reported having had sexual intercourse with more than one partner increased slightly. Analyses of other data on the self-reported sexual behaviour of the students revealed that the study group engaged in less risky sexual behaviour at the end of the study. The reported use of condoms to prevent pregnancy or AIDS dramatically increased when sexual intercourse was anticipated.

These findings are supported by a study done in the United States of America, which found an association between AIDS education and (i) increase in the consistency of condom use and (ii) decrease in the frequency of sexual intercourse and in the number of sexual partners among adolescents\(^3\). AIDS knowledge was also found to be positively correlated with behavioural change in an earlier study of inner city school students\(^4\). These results cannot be explained as a simple result of any special attention received by the study group, as both study and control groups were given equal attention and had to undergo a similar pattern of events. HIV is transmitted to a large extent by behaviour that can be modified through educational programmes. Therefore, AIDS education should not be seen as mere transmittal of knowledge, but also as having persuasive and motivational properties to effect change in sexual behaviour, especially when properly designed with input from the intended target group.

This study has demonstrated that AIDS education can promote change in the sexual behaviour of high school students towards low-risk sexual behaviour. It also demonstrates that the school is an ideal place to impart this knowledge, as more adolescents can be reached in this setting.

**Conclusion**

An AIDS education programme, such as the one tested in this study, can significantly increase awareness and knowledge of AIDS. It can also decrease self-reported high-risk sexual awareness in high school students through the increased use of condoms and a decrease in the number of sexual partners.

**References**

BOOKS FOR THE GP

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2. **Teaching and earning communication skills in medicine** by Suzan Kurts, Jonathan Silverman and Juliet Draper
   This book provides essential skills material to facilitators and programme directors to plan, develop and facilitate communication programmes and for learners to participate more effectively. It presents the individual skills that form a core content of communication skills programmes, explores in-depth specific teaching and learning methods and the evidence that substantiates the use, and examines how to construct communication skills curricula in practice.

3. **Research Methods in Primary Care** Editted by Yvonne Carter and Catharina Thomas
   This book has numerous contributors and deals with questions such as why research must be undertaken in primary care, how to identify a research question, writing a research proposal and getting funded. It explores different research methods as well as questionnaire design. Decoding and analysis of data and the interpretation of research studies are also discussed. The importance of the establishment of research ethics committees and the role of the nurse and primary care research is well-presented.

4. **Relating to the Relatives - Breaking Bad News, Communication and Support** by Thurstun Brewin, Margaret Sparrow
   This book is intended for all those who not only have to give bad news but who are also keen to give as much help and support as possible to participants families - both immediately and during remission, relapse, terminal illness, dying or grieving. Although it concentrates on the somewhat neglected interests of relatives, much of it is very relevant to the care of patients. It is of use in a hospital environment and in primary care, and readers including doctors, nurses, social workers and spiritual advisors will evaluate both when they are in training and perhaps especially in the years after qualification.

5. **Sexual Abuse of Children - Understanding, Intervention and Prevention** Editor Diana Richly
   Public horror at the realisation that children are so widely abused is coupled with demands for appropriate action by those responsible for their care. Very few professionals are trained to cope with the distress it can cause, but society is now expecting them to do so. This book will help parents who are confused and concerned, but it is aimed primarily at doctors, nurses, social workers and hospital staff in hospital environments and in primary care. It is relevant to the care of patients. It will help them to understand the problem and develop the necessary skills and sensitivity to deal with the victims of abuse.

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