HIV prevention studies for young people in Africa often of poor quality and show limited effect

MICHAEL CARTER

The quality of research examining HIV prevention programmes targeted at young people in Africa is poor, according to the authors of a systematic review and meta-analysis published in the online edition of *AIDS*. Moreover, evidence that such prevention programmes had an effect was limited and confined to sub-groups.

'Surprisingly little information was available on youth interventions in sub-Saharan Africa: only 28 studies were identified with as few as two studies collecting biological endpoints, and many studies had suboptimal design,' write the investigators.

Young people are one of the focuses of the HIV pandemic. In South Africa, 4% of young women aged between 15 and 24 are HIV positive, with 2% of men in this age group also having HIV infection.

A large number of prevention programmes are targeted at younger people with the aim of reducing their sexual risk behaviour.

It's important to know if these interventions work. Therefore, investigators conducted a systematic review and meta-analysis to assess the effectiveness of prevention programmes for the young. They noted that 'this is the first meta-analysis of the impact of behaviour interventions for youth in sub-Saharan Africa.'

To be included in the review, the studies had to have a control group, focus on young people (ages 10 - 25), have been undertaken after 1990, and report on the behavioural interventions aimed at preventing HIV transmission by reducing sexual risk taking.

The investigators' search identified 758 articles. However, only 31 studies reporting on 28 interventions met their inclusion criteria.

Eleven of these studies were randomised trials, 15 used a cross-sectional design, and 13 were cohort studies.

Most (16) were conducted in schools, 8 were undertaken in the community, and 4 in both schools and the community. The duration of interventions ranged from 1 hour to 3 years.

Outcome measures included condom use, behavioural change, and biological outcomes, such as infection with HIV or a sexually transmitted infection.

Condom use

A total of 18 studies measured condom use. Their results were highly variable. Generally, the interventions had a greater impact on condom use by males than females.

In the meta-analysis, condom use was 46% higher during last sex among the males who received the intervention than those who did not. Interventions also increased general condom use among young men (RR=1.32; 95% CI 1.25 - 1.40).

Three studies examined participants' intention to use condoms. One study had a positive effect, one had negative results, and the intervention in the third study had no impact at all.

Sexual behaviour

The most common measure of sexual behaviour (11 studies) was ever having sex. Generally, there was no evidence that participation in HIV prevention programmes increased sexual activity.

Sexual abstinence was examined in 3 studies. Reported rates increased in 2 of these, but fell in the third.

Recent sexual activity was evaluated in 7 studies. One study found a reduction, whereas 3 identified an increase.

Information of 9 studies was available with regard to their effects on multiple sexual partnerships. Once again, there was little evidence that these increased among those who received the HIV prevention intervention. In the 5 studies where the intervention was successful, in 3 the effects were more pronounced in young men than young women.

Biological outcomes

Only 2 studies examined biological outcomes. Rates of HSV-2 were lower in the intervention group in a South African study, but the intervention had no impact on the incidence of HIV or pregnancy.

A Tanzanian study also showed that the intervention had no impact on rates of HIV or pregnancy.

The investigators express their surprise and concern about the paucity of high-quality studies examining the effectiveness of HIV prevention interventions for young people in Africa. They write that 'this is particularly concerning given the extent of the vulnerability of HIV infection faced by the 125 million young people in sub-Saharan Africa, and the presence of numerous HIV prevention initiatives and funding opportunities in the region.'

Moreover, the investigators note that there was little consistency in the prevention approaches of the studies they identified and that few 'have built upon previous knowledge in a linear fashion. In addition, no two studies used the same methods of analysing or reporting data, and outcome indicators very markedly diverse.'

They therefore recommend that 'there should be more studies that use a strong evaluation design and measure biological outcomes.'

As regards the outcome of the studies, the investigators found it 'encouraging' that interventions did not increase sexual risk taking. They comment: 'The effectiveness of HIV prevention interventions on sexual behaviour overall, to date, however, appears relatively small.'

Michielsen K, *et al.* Effectiveness of HIV prevention for youth in sub-Saharan Africa: systematic review and meta-analysis of randomized and nonrandomized trials. *AIDS,* online edition, DOI: 10.1097/QAD.0b13e3283384791, 2010.

Article courtesy of www.aidsonline.com

HIV counselling increases condom use in TB patients

LESLEY ODENDAL

TB patients who have knowledge regarding the relationship between TB and HIV or have been counselled on HIV are more likely to report having used a condom during sexual intercourse, according to a study presented at the 2nd South African TB conference held recently in Durban.

Researchers also reported that unmarried TB patients or those who have completed secondary level education were more likely to report condom use during last sexual encounter.

TB patients are a key group for HIV prevention because of the high rate of HIV co-infection in this group, but the study found that only 334 of the 533 (62.7%) TB patients in the study had been counselled for HIV, despite HIV counselling for all TB patients being part of the South African national guidelines.

In addition, 386 of the 533 (73.5%) had no knowledge of the relationship between TB and HIV. These findings show that activities to strengthen HIV counselling and TB/HIV treatment literacy are necessary for TB patients.

Those who had not been counselled on HIV were half as likely to report condom use at last sexual encounter compared with those who had been counselled on HIV ($p<0.01$).

Those who had been on TB treatment for more than 60 days were 50% more likely to report condom use than those who had been on such treatment for less than 60 days ($p<0.05$).

Unmarried patients were twice as likely to use condoms ($p<0.01$) and patients who had completed secondary schooling were 80% more likely to report condom use compared with those who had completed primary school or less ($p<0.01$).

Women who had knowledge of the relationship between TB and HIV were half as likely to have reported condom use. According to researchers this is consistent with the previously reported inability of women to negotiate condom use owing to gender inequalities in power within relationships.

The study by Drs Gladys Kigozi and Christo Heunis from the Centre for Health Systems Research and Development of the University of the Free State identified factors associated with condom use during most recent sex as reported by TB patients in 4 sub-districts of the Free State, South Africa.

No prior research about condom use of TB patients in South Africa exists. The TB/HIV co-infection rate among registered TB patients for the Free State province was 60.3% in 2007.

Six hundred TB patients were recruited from February to March 2008 from 61 primary health care facilities in 2 districts (1 urban, 1 rural) in the Free State.

Patients were conveniently recruited when exiting TB consultation rooms and a structured questionnaire was used to identify if a condom had been used the last time they had had sexual intercourse, serving as a proxy for condom use over prolonged periods of time.

Of the 600 patients, 52 indicated that they had never been sexually active, 13 could not remember whether condoms were used at their last sexual encounter, and 2 refused to respond to this question.

The study was limited by the fact that convenience sampling at the patient level was used.

However, it was found that the sample was not different from the general South African population on key variables such as age and sex. Social desirability bias may also have been present where participants may have provided false information regarding condom use. Attempts were made to reduce this by assuring patients that all information gathered would be treated confidentially.

'Our study shows that TB patient categories who should be targeted for more aggressive condom promotion include those who are older, married, less educated and newly initiated on TB treatment,' said Dr Heunis.

Kigozi G, Heunis C. Determinants of tuberculosis patients' condom use at most recent sexual activity: A survey in four sub-districts in the Free State province. 2nd SA TB Conference, Durban, 1 - 4 June 2010, Abstract no. 226.

Article courtesy of www.aidsmap.com

Doubts about the value of nutritional supplementation in HIV

MICHAEL CARTER

Two studies have cast doubt on the value of nutritional supplements for patients with HIV. The first study, published in the 1 July edition of *Clinical Infectious Diseases,* showed that the provision of nutritional support has only modest benefits for HIV-positive adults without severe wasting. A separate study conducted among HIV-positive children in Uganda, and published in the *Journal of the International AIDS Society,* showed that doubling doses of vitamins and minerals did not affect disease progression or boost weight or CD4 cell count.

A total of 636 antiretroviral-naïve patients were enrolled in the adult study and on a three-to-one basis were given nutritional supplementation or standard care. 'We observed an improvement in various nutritional parameters in the supplement group, but this was not statistically significantly different from the members of the control group,' comment the investigators.

Nevertheless, the investigators believe that their study has made a number of important contributions, most especially that they showed that it was feasible to deliver nutritional support to a food-insecure population via clinics.

Nutritional supplements and outcomes among HIV-positive adults in India

Food insecurity is widespread in the world regions hardest hit by HIV. Malnutrition is common in people with HIV in these areas, and this has been associated with faster disease progression.

Investigators hypothesised that supplementation with added calories and fat would improve the nutritional status of patients with HIV, and possibly their body composition and CD4 cell count.

They therefore conducted a prospective, 6-month study in southern India between 2005 and 2007.

At the first baseline visit patients provided details of their diet to a nutritionist who calculated their daily intake of calories, protein and fat. The patients' height and weight were assessed and their body mass index (BMI) was calculated. Individuals' mid-arm circumference was also measured.

Blood samples were obtained to assess the patients' CD4 cell count and levels of haemoglobin, serum albumin, triglycerides, and cholesterol.

All the patients were given multivitamins and prophylaxis against opportunistic infections. Nutritional supplementation providing 400 calories per day, 15 g of protein and 6 g of fat was given to three-quarters of patients. The other 25% of patients constituted a control group.

After 6 months, the effect of supplementation on weight, BMI, body composition, CD4 cell count and blood chemistry was measured.

There was a high rate of discontinuation (30%), and 10% of patients died. The patients who did not complete the study had more advanced HIV disease, having significantly lower CD4 cell counts ($p<0.001$) and lower serum albumin ($p<0.001$) than individuals who completed the study.

The investigators comment that 'patients who were severely ill, who were about to initiate antiretroviral therapy, or who required hospitalisation were not included in the study, and this may have been the group most likely to benefit'.

Of the 361 patients who completed the study, 282 received supplementation. The mean age was 31 years and the mean weight was 50 kg. Approximately one-third of patients were severely malnourished.

Although patients in the control group had a lower daily calorific intake (1 616 v. 1 911, $p<0.001$), they nevertheless had a higher baseline CD4 cell count than patients who received supplementation (488 v. 365 cells/mm^3).

The investigator's first set of analysis showed that supplementation had a number of benefits. Compared with the control group, the individuals who received 6 months of nutritional supplements had significant gains in weight, BMI, mid-arm circumference, and albumin levels (all $p<0.001$).

However, after adjusting for baseline differences in CD4 cell count, age and sex

between the two study arms, none of these changes remained statistically significant.

Next, the investigators categorised the patients who received supplementation according to their CD4 cell count: below 200 cells/mm^3; 201 - 499 cells/mm^3; and above 500 cells/mm^3. Regardless of CD4 cell count, 6 months of supplementation increased weight, BMI and mid-arm circumference (p<0.001). Improvements were greatest in patients with the lowest CD4 cell counts.

'In summary,' write the investigators, 'an energy-dense oral micronutrient supplement did not have additional benefits on nutritional parameters or immune function among antiretroviral therapy-naïve HIV-infected individuals in South India, compared with high-quality standard of care. The effect of supplementation on specific subsets of patients and on preserving immune function needs further research.'

Micronutrients and disease progression in children

A separate study conducted in HIV-positive children in Uganda found that increased doses of key micronutrients did not reduce the risk of disease progression.

A total of 847 children aged between 1 and 5 years were recruited to the study, which is published in the *Journal of the International AIDS Society.*

The children were randomised to receive double the recommended daily allowance of 14 vitamins and minerals, which were taken daily for 12 months, or the standard daily dose of 6 vitamins, which were taken for 6 months.

After 12 months, 6% of the children who received increased amounts of vitamins and minerals had died compared with 7% of those who received the standard dose.

Mortality rates were also similar between the two groups when the investigators restricted their analysis to those taking antiretroviral therapy (7% v. 7%).

In addition, increased amounts of vitamins and minerals did not have any benefits for either weight or CD4 cell count.

Swaminathan S, *et al.* Nutritional supplementation in HIV-infected individuals in South India: a prospective interventional study. *Clin Infect Dis* 2010; 51: 51-57.

Ndeezi G, *et al.* Effect of multiple micronutrient supplementation on survival for HIV-infected children in Uganda: a randomised, controlled trial. *J Int AIDS Soc* 2010; 13: 18.

Single Suture
Booze wars

A global plan to tackle unhealthy drinking has been backed by almost every country in the world. On 21 May 2010, the World Health Organization's 193 member states agreed to reduce 'the harmful use of alcohol' using a strategy put together over the last 2 years.

This provides a list of suggested actions and laws for combating alcohol abuse, which accounts for 2.5 million deaths a year worldwide. Much of the impetus for the plan comes from the growing realisation that heavy drinkers don't just wreck their own health, but harm others, e.g. through car accidents or violence – called 'passive drinking'.

Suggestions include increasing the price of alcohol and limiting its availability. However, the emphasis on such measures has been reduced compared with a draft circulated last year, even though there is evidence to suggest that price restrictions are an effective way to drive down consumption.

Unsurprisingly, the drinks industry is vehemently opposed to enforced price hikes.

New Scientist 29 May 2010.

Single Suture
First cancer vaccine

The latest weapon in the war against cancer is a patient's own cells. A prostate cancer vaccine that the US Food and Drug Administration rejected in 2007 has now won the regulator's approval, making it the first cancer vaccine to do so.

Provenge, made by Dendreon of Seattle, does not prevent or cure prostate cancer, which killed 27 000 men in the USA last year and more than 10 000 in the UK in 2008. Rather, in its largest study yet, the therapy extended the lives of 512 people with aggressive prostate tumours by 4 months compared with patients who did not receive it.

Administering Provenge involves harvesting a patient's immune cells and exposing them to a protein produced by the prostate tumour. These 'primed' cells are then re-injected into the patient, where they attack tumours.

Though modest, the latest result shows that harnessing the immune system is a viable way of fighting cancer. Oncologist Philip Kantoff at the Dana-Faber Cancer Institute in Boston led the trial. He expects similar approaches to other cancers such as melanoma, kidney cancer and lymphoma to be approved in 5 - 10 years and that tweaks in Provenge will see it further extend people's lives.

New Scientist 8 May 2010.