



Randomised controlled trial of an adolescent sexual health programme in rural Mwanza, Tanzania

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Abstract

Between 1994 and 1998, several baseline studies were conducted in the Mwanza region and neighboring Mara region in Tanzania to look into the status of HIV infection in primary schools. They found that youth in their early 20s were most at risk of becoming infected. A program was in 62 primary schools and 18 health facilities in Mwanza region of Tanzania in January 1999. Its main objective was to improve reproductive health knowledge among 12- to 19-year-olds and decrease the rate of sexually transmitted infections (STIs) and HIV infection as well as the number of unwanted pregnancies. The program uses teacher-led peer educators use informal and participatory techniques to teach young people about reproductive health among other approaches. In this regard, the program showed the possibility of implementing large-scale trials geared towards monitoring behaviour change. Nonetheless, it is recommended that sufficient time should be allowed to show change while allowing for multiple interventions to guarantee impact.

Background

Between 1994 and 1998, preliminary studies were conducted in Mwanza Region and neighbouring Mara Region in Tanzania to investigate the importance of HIV infection in primary school students. To address this, MEMA kwa Vijana¹ was designed as a research and development project. As part of this programme, the African Medical and Research Foundation (AMREF), the London School of Hygiene & Tropical Medicine (LSHTM), and the Tanzanian National Institute for Medical Research (NIMR) and the Government of Tanzania's Health and Education Departments developed a multi-sectoral adolescent sexual and reproductive health (ASRH) intervention, which was rigorously evaluated during its first phase (1997-2003) within a community randomised trial.

Intervention

The main target group is 12 to 19 year-olds, and the main objective of the intervention is to improve their reproductive health knowledge and attitudes and to decrease risky sexual behaviours and hence rates of sexually transmitted infections (STIs), HIV infection and unwanted pregnancies.

The intervention had four major components:

- **In-school sexual & reproductive health education** through a teacher-led, peer-assisted programme of participatory lessons that include the use of drama, stories and games,
- **Youth-friendly reproductive health services**, through education of health workers about the needs and methods of providing sexual & reproductive health services to youth,
- **Community-based condom promotion and distribution**, for and by, youth,
- **Community activities** to create a supportive environment for the adolescent sexual health interventions.

The program reaches approximately 2,850 new adolescent participants a year. An independent review of the programme found that it had successfully met 13 of the 16 UNAIDS benchmarks for effective programs, and partially met 2; 1 was not applicable.

¹ *Mema Kwa Vijana* is Swahili for "Good things for Young People".





Lessons Learnt

- A combined approach involving both teachers and class peer educators in teacher-led, peer-assisted sessions ensured sustainability,
- Support from the Ministry of Education and Culture, and inclusion within normal school hours, ensured high coverage of the schools intervention,
- Peer educators performing culturally appropriate dramas both within classes and in community events provide a popular mechanism for influencing attitudes and behaviours,
- Detailed lessons plans within teacher's guides, supported by flip charts, a teacher's resource book, and other materials ensure quality of content and session delivery,
- Annual reproductive health exams were requested by the teachers and reinforced the importance of the topic in the school curriculum,
- Interactive training of health providers improved the youth friendliness of health services, as shown by the results of simulated patient visits.

Methodology

The impact of the intervention on HIV, other sexually transmitted infections, unintended pregnancies, and changes in the sexual behaviour of adolescents, and their cost-effectiveness, were evaluated within a community-randomised trial. A cohort of 9,645 adolescents, half from the 62 schools in the 10 intervention communities and half from the 59 schools in the 10 comparison communities, was recruited in late 1998, when they were about to enter Years 5 through 7 of the primary schools. Allocation of communities was done using restricted randomisation, based on an initial population-based survey of 15-19 year-olds in the same communities. The trial's primary outcomes were predefined as HIV incidence and genital herpes (HSV-2) prevalence at the final survey in late 2001/early 2002. Secondary outcomes included biological indicators of other sexually transmitted infections and pregnancy, and respondents' knowledge, reported attitudes, and reported sexual behaviours. Overall, data and specimens were collected from 7,040 (73%) of the cohort at the final survey, by which time they had all left primary school from 2-33 months previously.

Key Findings (see Table 1)

1. Knowledge and reported attitudes:

In the intervention communities, 84% of the pupils passed the 2002 Standard 7 reproductive health exam as compared to 50% in the control communities. Similarly, 26% from the intervention community scored more than 80% compared less than 1% from the control communities. Similarly, within the trial cohort, the proportions reporting the correct or desired answers for all three composite knowledge scores, and for the composite sexual attitudes score in both males and females, were substantially and statistically significantly higher in the intervention communities at the final survey (see Table 1).

2. Reported behaviour:

About two-thirds of respondents, who reported never having had sex at baseline, reported having sexual intercourse during the three-year follow-up period. There was a tendency for fewer male respondents in the intervention communities to report having sexual intercourse since the start of the follow-up, though this was not the case among females, and was only of borderline statistical significance in the males. Similarly, males, but not females, in the intervention communities reported significantly fewer sexual partners.

Among those who reported having ever had sex, in intervention communities there was a substantial and statistically significant higher proportion of both males and females who reported that they had used a condom for the first time during the follow-up period, and also in those who reported using a condom the last time they had had sex.





3. Biological outcomes:

The primary outcomes of the trial were both based on biological outcomes, measured using laboratory tests on serum: HIV incidence, and HSV2 prevalence. There were six predefined biological outcomes; four related to sexually transmitted infections and two related to pregnancy.

The incidence of HIV in the comparison communities was lower at 2.2/1,000 person-years, than had been estimated in advance, and there were only 45 new HIV cases during the follow up period. Only 5 were in males, so it was not possible to do a meaningful analysis of the impact of the interventions on male HIV incidence. The adjusted incidence of HIV in females was 24% lower in the intervention communities, but this was not statistically significant (RR=0.76, 95% CI 0.35,1.65).

There was no evidence of any impact on HSV2 prevalence in either direction either for boys (Prevalence ratio: Males=0.92, 95% CI 0.69,1.22) or for girls (Prevalence ratio =1.05, 95% CI 0.83,1.32).

In males, the prevalence of syphilis was lower in the intervention communities, while the prevalence of CT was higher. Neither difference approached statistical significance. There were too few cases of NG (10) for analysis to be valid.

In females, there was a tendency for the prevalence's to be higher in intervention communities than in comparison communities, but this difference only approached statistical significance for NG and CT. However, there was a slightly higher prevalence of CT in the intervention communities at baseline (NG was not measured at baseline), and the difference was in the opposite direction for HIV incidence. Furthermore, the higher prevalence of NG in females was only among those who were in Standard (School Year) 6 at recruitment; the group who only had the potential to receive one year of the in-school sexual health education programme. It is therefore very likely to have occurred by chance.

Conclusions and Recommendations

1. The trial has shown that innovative, participatory, multidisciplinary interventions can be scaled up and replicated whilst maintaining high quality and coverage.
2. It is possible to conduct large-scale trials of sexual behaviour change interventions to evaluate the effectiveness and cost-effectiveness of multi-component interventions using rigorous evaluation methods.
3. Considerable caution is needed when extrapolating from evidence of a beneficial impact on sexual health knowledge, attitudes & reported behaviour to health impact on HIV, STIs & unwanted pregnancy in adolescents.
4. Some biological outcomes were lower in intervention communities, while others were higher, and only one difference (NG prevalence) was statistically significant - a finding that could easily have occurred by chance given the large number of outcomes being examined. Other potential explanations are that such Interventions only change knowledge and skills, but not risk-taking behaviour, at least in the short-term and therefore need more time to work.
5. Additional interventions might be needed to achieve an impact on HIV, other STIs and pregnancy rates in the short-term.
6. More work is needed to explore whether, in the longer term, benefits on health outcomes can be demonstrated sustained and enhanced.

Other available Technical Briefing Papers

Enhancing HIV Voluntary Counselling and Testing - Experiences and lessons learned from the AMREF "ANGAZA" Initiative. Tanzania. Daraus Bukunya and Anne Kisesa. No. 1, March 2003

Challenges to Youth Behaviour Change in a Slum Area of Addis Ababa - Implications for HIV Prevention. Tsedaniya Delnessa and John Nduba. No. 2, September 2003

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Empowering youth to fight HIV/AIDS: the effects of the Soroti school health and AIDS prevention project in Uganda. Peter M. Ngatia and Sam Omat. No 3, November 2003

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Table 1. Impact of the MEMA kwa Vijana intervention by sex

Outcome	Male				Female			
	Frequency ¹		Adjusted Ratio ²		Frequency ¹		Adjusted Ratio ²	
	Intervention (N=2,076) %	Comparison (N=2,024) %	Ratio	95% CI	Intervention (N=1,448) %	Comparison (N=1,492) %	Ratio	95% CI
Knowledge (% with all 3 responses correct)								
HIV acquisition	65.3%	44.9%	1.44	1.25,1.67	57.5%	40.3%	1.41	1.14,1.75
STD acquisition	51.8%	39.9%	1.28	1.07,1.54	36.1%	25.2%	1.41	1.06,1.88
Pregnancy prevention	84.1%	50.3%	1.66	1.55,1.78	72.3%	46.1%	1.58	1.26,1.99
Reported Attitudes (% with all 3 responses correct)								
Attitudes to sex	21.9%	12.2%	1.77	1.42,2.22	26.5%	19.0%	1.42	1.11,1.81
Reported Sexual Behaviour								
Sexual debut during follow-up ³	59.7%	71.5%	0.84	0.71,1.01	67.9%	67.1%	1.03	0.91,1.16
More than 1 partner in last 12 months	19.0%	27.5%	0.69	0.49,0.95	8.5%	7.8%	1.04	0.58,1.89
Ever used condom during follow-up ⁴	38.7%	27.6%	1.41	1.15,1.73	38.1%	28.3%	1.30	1.03,1.63
Used condom at last sex ⁵	29.3%	20.3%	1.47	1.12,1.93	27.2%	22.1%	1.12	0.85,1.48
Went to health facility for most recent STI symptoms within the last 12 months ⁶	28.6%	34.7%	0.84	0.50,1.41	35.5%	33.8%	1.02	0.62,1.70
Primary outcomes								
HIV incidence (/1,000py)	0.41	0.33	NA	NA	3.18	4.73	0.75	0.34,1.66
HSV-2 prevalence	11.3%	12.5%	0.92	0.69,1.22	21.3%	20.8%	1.05	0.83,1.32
Secondary outcomes								
Syphilis prevalence	1.4%	1.8%	0.78	0.46,1.30	3.3%	3.6%	0.99	0.67,1.46
Chlamydia prevalence	0.5%	0.5%	1.14	0.53,2.43	4.9%	3.6%	1.37	0.98,1.91
Gonorrhoea prevalence	0.4%	0.1%	NA	NA	2.4%	1.2%	1.93	1.01,3.71
Trichomonas prevalence ⁷	-	-	-	-	28.6%	25.8%	1.13	0.92,1.37
Pregnancy (test) prevalence ⁷	-	-	-	-	19.2%	18.0%	1.09	0.85,1.40
Reported first pregnancy during follow-up ^{7,8}	-	-	-	-	46.9%	45.5%	1.03	0.89,1.20

Key:

1. Prevalence, risk or rate (as appropriate)
 2. Adjusted for: Age group (≤ 17 , 18, ≥ 19 years at final survey), stratum, tribe (Sukuma vs non-Sukuma), number of lifetime partners at baseline (0, 1, 2, ≥ 3)
 3. Among those reporting never having had sex at baseline
 4. Among those who reported having ever had sex at final round, but who reported never having used a condom at baseline
 5. Among those who reported having ever had sex at final round
 6. Among those reporting STI symptoms within last 12 months
 7. Females only
 8. Among those who reported never having been pregnant at baseline
- NA Number of cases too small to justify comparison (<10 in each group)

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