A process evaluation of a school-based adolescent sexual health intervention in rural Tanzania: the MEMA kwa Vijana programme

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Abstract

This study is a process evaluation of the school component of the adolescent sexual health programme MEMA kwa Vijana (MkV), which was implemented in 62 primary schools in rural Mwanza, Tanzania from 1999 to 2001. The MkV curriculum was a teacher-led and peer-assisted programme based on the Social Learning Theory. Process evaluation included observation of training sessions, monitoring and supervision, annual surveys of implementers, group discussions and 158 person-weeks of participant observation. Most teachers taught curriculum content well, but sometimes had difficulty adopting new teaching styles. Peer educators performed scripted dramas well, but were limited as informal educators and behavioural models. The intervention appeared successful in addressing some cognitions, e.g. knowledge of risks and benefits of behaviours, but not others, e.g. perceived susceptibility to risk. MkV shared the characteristics of other African school-based programmes found to be successful, and similarly found significant improvements in self-reported behaviour in surveys. However, a substantial proportion of MkV survey self-reports were inconsistent, there was no consistent impact on biological markers and extensive process evaluation found little impact on several key theoretical determinants of behaviour. Improvements in self-reported survey data alone may provide only a very limited—and perhaps invalid—indication of adolescent sexual health programme success.

Introduction

Behavioural interventions to delay first intercourse, reduce sexual partners and/or promote condoms are seen as important to reduce high rates of human immunodeficiency virus (HIV) infection in young people in sub-Saharan Africa [1]. To ensure effectiveness, such programmes are sometimes evaluated through the quantitative measurement of outcomes such as self-reported knowledge, attitudes or behaviour [2, 3]. Process evaluations are however also critical. A process evaluation examines the quality of programme implementation (i.e. its integrity or fidelity), the completeness of its delivery, the extent to which participants engaged with and were satisfied by it and its general context. In so doing, it can help explain the programme’s outcomes and identify ways to improve and/or replicate it [3–6]. For example, if there are unsatisfactory outcomes, it is important to understand whether this could be due to poor programme design, inadequate implementation or special contextual factors [4, 7].
In order to minimize cost and achieve broad coverage, adolescent health programmes are often based in schools and involve teachers as facilitators. This can have unique implications for programme implementation, which can be impaired by poor teacher training, teachers being unconvinced of the programme’s importance and practicality and/or insufficient time for its delivery [4, 8]. These issues can be even more challenging when the subject matter is considered private and sensitive, and teachers may see sex education as beyond their academic role [8].

Published process evaluations of school-based adolescent sexual and reproductive health (ASRH) programmes are rare [4, 9–11], particularly in sub-Saharan Africa [8, 12, 13]. Reviews of drug abuse or maladjustment prevention programme research found that some elements of programme fidelity were best assessed by relatively independent measures (e.g. classroom observation or pupil interviews), in addition to, or instead of, teacher self-reports, which were prone to bias [4, 14]. A few ASRH programme evaluators have drawn upon community-based research, which may reduce the potential for reporting bias related to the school setting [15, 16].

This paper draws upon extensive participant observation (PO) and other qualitative and quantitative research to provide a process evaluation of the school component of an ASRH programme, MEMA kwa Vijana (MkV), in rural Mwanza, Tanzania. It complements a randomized controlled trial that was conducted from 1998 to 2002 [17].

**Background**

The MkV trial took place in 20 communities in rural Mwanza, Tanzania, and involved all primary schools (62 intervention, 63 comparison) and government health centres in those communities [17, 18]. The MkV intervention consisted of three components: a teacher-led, peer-assisted primary school programme, training of health workers to encourage youth friendliness, youth condom promotion/distribution and community mobilization [19, 20]. This paper focuses on the school programme; general conditions in Mwanza schools are described in a companion paper [21].

In 1998–99, four 1-week training courses were held for 62 head teachers and 122 other teachers, 35% of whom were female. All were trained in the use of detailed, illustrated and simply worded Swahili flip charts and curriculum guides that addressed sexual and reproductive biology, sexual negotiation and refusal skills, pregnancy prevention, condom use and the importance of treatment for sexually transmitted diseases (STDs) [22]. Local policy prevented teachers from showing condoms or pictures of condoms in the schools, but they could describe them. MkV teaching methods included question and answer, story reading, guided discussions, flip chart illustrations, a scripted drama serial performed by class peer educators (CPEs) and role-plays in which all pupils were encouraged to participate.

In 1999, three 2-week training courses were held for 63 young, out-of-school trainers-of-peers, who then assisted intervention staff in leading ten 3-day CPE training courses, in which a total of 1124 CPEs were trained (i.e. six per class for Years 5–7 or 18 per school). CPEs were primarily trained to perform the drama serial and assist teachers in class. Training courses were conducted annually for both new and experienced MkV teachers and CPEs. Specifically, 1–2 additional teachers per school ($n=67$) were trained prior to the second year of the intervention, and six new Year 5 CPEs were trained annually ($n=372$).

Once or twice per year, teachers took their pupils to the local health centre to familiarize them with the services and to see a condom demonstration. Schools and health facilities also arranged an annual Youth Health Week during which schools competed against one another in sports, as well as in dance, drama and songs with ASRH themes.

MkV was primarily based on the Social Learning Theory (SLT), which identifies a core set of behavioural determinants [23]. MkV addressed these determinants in multiple ways. For example, ‘knowledge of risks and benefits’ of specific behaviours was promoted through teacher explanations and illustrations in stories and the peer educator...
drama serial. ‘Self-efficacy’ was promoted through the development of negotiation and problem-solving skills in role-plays and condom demonstrations at health centres. Pupils were encouraged to anticipate outcomes of their behaviour (‘outcome expectations’), and set ‘goals’ for themselves, through reflective exercises. The peer education component was intended to promote ‘environmental facilitation’ of behaviour change through observational learning and modelling. Real and perceived ‘environmental impediments’ to condom access were addressed through class visits to health centres, where free condoms were available, and through out-of-school youth condom promotion and distribution.

The 2001–02 MkV final survey showed that knowledge of HIV acquisition, STD acquisition and pregnancy prevention and sexual attitudes were significantly better in the intervention group than the comparison group, for both sexes [24]. In addition, significantly more sexually active intervention participants reported initiation of condom use during the course of the trial (both sexes), fewer sexual partners in the last 12 months (males only) and use of a condom at last sex (males only). However, at an individual level, a substantial proportion of sexual behaviour reports were found to be unreliable across and within different trial surveys [25, 26, H. K. Tan, personal communication]. In addition, no statistically significant impact was found for the primary trial biological markers, HIV incidence and the seroprevalence of Herpes simplex virus type 2 at final follow-up, and there was also no consistent impact on the secondary trial biological markers [27].

The MkV trial was complemented by a qualitative process and impact evaluation. To reduce potential bias [5], prior to the analysis of the trial outcomes the qualitative research team wrote a summary report of its process and impact findings. This predicted that MkV survey participants would have significantly more knowledge than their comparison counterparts, and might report more desirable attitudes and behaviours, but that they were unlikely to have substantially changed their actual attitudes and behaviours. Specifically, qualitative research found that most pupils >14 in both intervention and comparison communities had had sexual intercourse [26], although encounters were highly secretive and opportunistic [28]. During participant observation and in-depth interviews, sexually active pupils reported that it was too difficult to give up the pleasure (for boys) or material gain (for girls) associated with sex, and very few reported that they had reduced their sexual partners or had used a condom.

#### Methods

This study was approved by the Tanzanian Medical Research Coordinating Committee and the London School of Hygiene and Tropical Medicine Ethics Committee.

Each year, intervention staff and/or district education officials made both pre-scheduled and unannounced visits to every school, at which time teachers were observed teaching MkV sessions, and curriculum coverage was estimated, primarily based on a review of pupils’ exercise books. At annual training courses, all MkV teachers also completed confidential pre- and post-training questionnaires, and sub-groups of teachers participated in a series of group discussions (GDs) with intervention staff. GDs were transcribed, translated and read in full.

Trial researchers conducted annual process evaluation surveys in which clinicians from every health facility and teachers from one randomly selected school in each trial ward were interviewed. Qualitative researchers also observed a total of 4 weeks of teacher and CPE training courses from 1998 to 2000. In addition, young qualitative researchers held eight GDs with CPEs and other pupils from two randomly selected schools in each of the four project districts. The main source of qualitative data was from PO conducted by six young East African researchers for 158 person-weeks in four intervention and five comparison villages. The PO method and analysis are described in detail in a companion paper [21].

In this paper, PO field note excerpts are a researcher’s reconstruction of what was said at an earlier time, so when they are offset, quotation
Teacher and CPE training

Observation of training courses found that they were implemented with a high quality and consistency across the four project districts. The teacher training courses were based on the MkV curriculum, which was very detailed and included seemingly spontaneous discussion prompts, to facilitate consistent delivery between teachers despite differences in experience and ability. Both training observation and pre- and post-training questionnaires indicated that most teachers were enthusiastic about the material and training. In the first year, 83% of teachers reported feeling ‘good’ or ‘very good’ about ASRH prior to the first training, compared with 93% afterwards ($P = 0.2$). In the second year, of those who had taught MkV classes the year before, 72% reported being very happy to continue being an MkV teacher, while 16% reported being moderately happy to do so. Teacher knowledge and reported attitudes improved significantly with initial training. For example, correct responses to a question about the prevention of HIV, STDs and pregnancy increased from 75 to 99% ($P < 0.001$), and reports that there were circumstances in which a girl must have sex (e.g. after taking money or gifts) fell from 36% to none ($P < 0.001$).

Challenges observed during teacher training included variable baseline teaching ability, some teachers falling back into patronizing terminology or lecturing mode and some teachers occasionally making undesirable personal statements (e.g. judgemental comments about traditional medicine or abortion). Reported sexual behaviour in the training questionnaires also indicated challenges for some teachers to act as role models. For example, of the 81% of teachers who were married, 27% reported that they had a hawara (non-marital sexual partner).

The main CPE training focused on drama line memorization, acting skills and character practice. This successfully resulted in very similar character portrayal and drama themes across the four project districts. Training observation suggested that some CPEs were confused about some basic ASRH information, particularly that to do with condoms, as local education policy had restricted the discussion of condoms during the training. In late 1999, this led to the distribution of a simply worded information booklet to all CPEs.

Later CPE training courses contained more (i) information about HIV/acquired immune deficiency syndrome (AIDS) and other STDs, risk behaviours and risk reduction and (ii) exercises designed to improve CPE's personal risk assessment, self-efficacy and communication skills. While the CPEs seemed to receive the information well, trainers and observers reported that their skills building exercises often confused the CPEs, and were above their conceptual level.

School programme delivery

In the 62 intervention schools, routine monitoring and supervision by intervention supervisors found that the quality of curriculum teaching was good. Teachers often demonstrated mastery of the content of the curriculum while teaching, and also attempted to use participatory teaching methods in class, although their success in the latter was quite variable. Curriculum coverage was also high. The vast majority of sessions was taught during the January–December academic year. For pupils in Year 7, for example, on average 87% of sessions had been taught by November 1999, 80% by August 2000 and 93% by August 2001. Similarly, in 2000, 89% of teachers reported that health workers had visited their school to discuss MkV activities and 92% said that pupils had been taken to visit the health facilities.

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lessons were taught in all 11 surveyed intervention schools, but only in five of 10 surveyed comparison schools, and in those it probably consisted of a brief mention in science classes. Teacher reports of health worker visits to primary schools differed considerably between intervention and comparison arms, including the number of centres which had provided visits (10/11 versus 3/10, respectively), inclusion of sexual and reproductive health content (9/11 versus 2/10), invitations to pupils to attend health facilities (5/11 versus 1/10) and health worker involvement in teaching pupils (8/11 versus 2/10). Surveyed health workers reported similar patterns.

The teacher-led curriculum

In the first year of the intervention, 1416 (51%) of the total possible session report forms were returned by 109 (89%) of the MkV teachers. For the majority of these recorded sessions, teachers reportedly did not skip or change any part of the sessions (95%), they themselves (92%) and their pupils (82%) enjoyed the sessions, they had enough time to teach the sessions (78%) and pupils were not embarrassed (68%). None of these findings varied significantly by class year. In the first year’s session report forms, the most common responses to a free-text question about problems were pupils were embarrassed (8%), pupils did not participate (4%) and the content was too difficult (3%). In contrast, the most common responses about good experiences were pupils enjoyed the session (22%), pupils asked and answered questions (13%), the content was good (9%), the dramas were effective (5%), girls liked the session (5%) and pupils wanted to know more (4%). In the second year of the intervention the results were similar, but somewhat improved, e.g. 84% of teachers reported that they did not think their pupils were embarrassed by the sessions.

During PO and GDs, pupils in intervention schools universally reported that they had participated in MkV classes once per week for a large part of the school year. When describing MkV, pupils consistently reported being taught about sexual and reproductive biology, general STDs and HIV/AIDS; and they could describe specific examples. For example, a 16-year-old girl who had recently left school said she had been taught at school during MkV lessons that if they have [genital] itchiness, sores or discharge, they should go to the dispensary for free treatment [PO-01-I-1-2f].

During both GDs and PO, intervention participants also consistently mentioned that teachers encouraged abstinence or, if sexually active, a reduction of partners, condom use and/or pregnancy prevention. When doing so, they often cited key intervention slogans or key lines from dramas. Some teachers, CPEs and general pupils reported being initially uncomfortable, shy or shocked by the MkV subject matter, but then becoming increasingly accustomed to it over time and more relaxed speaking about it.

During PO, researchers frequently observed that intervention participants had better reproductive and sexual health knowledge than their comparison counterparts or other villagers. For example, two researchers witnessed the following discussion involving several MkV participants:

One of them correctly explained how pregnancy can occur. Three simultaneously said, “Millions of sperm are ejaculated, but only one fertilizes an egg”. The whole group laughed ... They mentioned the STDs they have been taught about are gonorrhoea, syphilis, and Kabambalu [lymphogranuloma inguinale caused by Chlamydia] [PO-01-I-7-5f].

Occasionally, participants also reported learning incorrect information or experiencing undesirable practices in their MkV classes. For instance, in most PO villages, and in one pupil GD, it was reported that pregnant schoolgirls would be punished and expelled. Male CPEs described another undesirable practice:

R: Some pupils agreed [to participate in an MkV role-play], but others refused. A boy and a girl were appointed. The teacher had to hit them ... The girl agreed, the boy refused.
I: Until the teacher hit him?
R: He had to hit him before he agreed [GD-99-I-14-m].
Corporal punishment was officially sanctioned in schools [21], but was strongly discouraged by MkV. There was no other report of force being used in an MkV class. Instead, there were several pupil reports that teachers were patient and less likely to use corporal punishment in MkV classes than usual. For example, in a different GD, one respondent said, ‘No one was forced to step forward [to participate in role plays], because some felt shy. The experienced ones stepped forward and began to conduct plays without fear or trembling’ [GD-99-I-15-m].

Other reports of undesirable information learned in MkV classes might have resulted from a specific teacher’s discomfort with the subject matter and/or pupil rationalization of risky behaviour. For example, in one PO village, an MkV teacher reportedly told pupils that they could not discuss the curriculum material except in class, and that pupils were too young to use condoms, even if they were sexually active. In other PO villages, there was no evidence of teachers forbidding the discussion of MkV materials outside of class, and MkV teachers were generally more open to the idea of pupil condom use than most other adults.

Most pupils expressed positive but somewhat ambivalent feelings about their MkV classes, although a few were unconditionally positive about them. For example, after describing his MkV classes in some detail, an 18-year-old recent school leaver reported, ‘MkV teachers teach well, and other people in the class are happy about them, including the CPEs’ [PO-01-I-7-3m]. Most commonly, pupils reported appreciating the information that they learned in their MkV classes, and the unusual ways they were taught it, but they felt some aspects of the programme were unrealistic (e.g., believing it is too difficult to abstain, particularly if one had already had sex) or irrelevant (e.g., believing young people are not really in danger of AIDS). For example, in one female pupil GD discussion, two participants debated the relevance of lessons about AIDS:

R1: In my view, only a few pupils used to like [learning about AIDS], but the majority didn’t like it.

R2: In my view, the majority liked learning about AIDS. ... Why [do you think] they didn’t like learning about AIDS?

R1: Because they are afraid of sexually transmitted diseases.

R2: So, AIDS is not a disease?

R1: It’s a disease, but most are suffering from [other] STDs [GD-99-I-14-f].

In both GDs and PO, some pupils and CPEs reported that MkV could be useful for certain types of pupils, but not others. For example, a former CPE and secondary school student:

... said that MkV education helps people with good behaviour. He said pupils with good behaviour are those who sit down and contemplate the importance of what they are being taught, even in other lessons. But when taught this MkV lesson, there are some pupils who want to have sex, because that lesson arouses their sexual feelings [PO-01-I-4-5f].

In most PO intervention villages, there were rumours among adults and out-of-school youth that MkV taught immoral behaviour. While some pupils also stated this, they were more likely to defend MkV lessons, arguing that MkV lessons might involve private or embarrassing topics, but were nonetheless important.

In eight of the nine PO villages (four comparison, four intervention) there were first- and third-person reports of male teachers having sexual relationships with female pupils, some of which preceded the intervention [21]. This issue also came up in a GD, where in a response to the question, ‘How do teachers treat you differently since you became CPEs?’, one female CPE volunteered:

R: Teachers used to ... they used to have sex with schoolgirls, but since MkV came, they stopped doing so [GD-99-I-15-f].

In one village, there were multiple, independent reports of sexual abuse by each of five male teachers, though some instances preceded the trial. Notably, one pupil in that village reported that she
resisted her MkV teacher’s sexual pressure by referring to his own teachings:

She said that the teacher has become a bother and when he meets her along the path, he keeps asking her for sex. ... [The last time] she sang a song that he had taught them for MkV week competitions. The song had the theme, “Refuse by body and actions” [PO-01-I-1-2f].

Notably, pupils in that village tended to be less enthusiastic and more ambivalent about MkV than intervention participants in other villages. A number of them criticized the programme because they believed their teachers and CPEs did not follow the behaviours which they themselves promoted.

Peer education

In both PO and GDs, CPEs and other pupils universally reported that CPEs conducted in-class dramas and role-plays well, and, in some schools, assisted teachers in answering pupils’ questions in class or conducting special events. Most pupils and CPEs enjoyed and appreciated the drama serial. An example from a male CPE GD:

R1: MkV dramas teach us. If one didn’t understand the lesson before, he/she will [see the drama] and know that I shouldn’t do this thing. So the drama also carries a lesson. ...

R2: I think that they are good, because ... if some pupils were about to fall asleep, they will become active, and the lesson continues [GD-99-I-13-m].

CPEs also developed some confidence through their training and experience. For example, during PO, a female CPE said that she felt very shy when she first performed the drama, but her shyness disappeared over time. During the GDs, CPEs demonstrated a detailed knowledge of the drama serial, and both PO and GDs consistently found that CPEs had a stronger grasp of the other intervention material than their classmates.

However, pupil reports occasionally revealed misunderstanding or misuse of drama content. For example, in two GDs and several PO villages, some male respondents reported that MkV dramas demonstrated techniques that they or other boys used to better seduce girls or to deny responsibility for a pregnancy.

In most villages, CPEs and other pupils reported that CPEs rarely engaged in peer education beyond what happened in teacher-led activities. Some CPEs reported no other activities at all, while others reported only occasionally having informal, one-on-one discussions with same-sex peers outside school. The following example is from a GD with unusually active female CPEs:

R1: We help [educate] our younger sisters, and our elder sisters. Even at the farm, when you and your sister are cultivating. ...

R2: For example, at school, whatever time, and at any hour. Or on any day you want to tell family members, if parents are not present.

I: If parents are not present?

R2: Yes.

I: ... Why can’t you tell them in the presence of parents?

R2: Those are secret issues.

I: What do [other GD participants] say about what she has said?

R3: In my case, I tell them even if parents are present [GD-99-I-16-f].

CPE ability to communicate educational information beyond acting out dramas and answering pre-scripted questions seemed limited. Other young people sometimes attached no more importance to CPEs’ opinions than those of other youth, and sometimes CPEs’ opinions were aggressively rejected. The following example was observed by a researcher, after a number of pupils accurately described MkV material:

Then they said that only adults are supposed to use condoms. One CPE objected, saying, “Even we can use condoms, if we can’t resist having sex”. About eight others objected that pupils were not allowed to use condoms. One said, “We
pupils are taught how to refuse seduction, ‘verbally and physically - by saying “NO” in capital letters’” [a key intervention message]. They all laughed ... and repeated that they were not advised to use condoms, as they are only for adults [PO-01-I-7-5f].

In describing a more hostile response, a 14-year-old, Year 6 CPE:

... said they were never taught about [specific] STDs as a class. Only CPEs were taught and told to teach the rest. She said she tried to teach regular pupils about those STDs in their free time, but most resisted by telling her, “Hey! Take your uhuni [immoral behaviour] away from here!” [PO-99-I-1-2f].

The topic of condom use was particularly difficult for both male and female CPEs to discuss with their peers. In two of the four GDs, CPEs were confused or frustrated by this topic. For example:

R1: [A pupil] asked me if a pupil is allowed to use condoms. I told him/her that a pupil is not allowed to use condoms, but an adult is allowed to use condoms. ...

R2: If you begin counselling [pupils] to abstain from having sex, they begin murmuring, and some of them even leave the classroom. In our outside discussions ... they say that abstinence requires too great a sacrifice, so we tell them to use condoms. And finally they ask us, “Should we use condoms?! Now where are the condoms?” We fail to tell them [GD-99-I-3-m].

Despite the challenges involved, CPEs consistently reported being glad to be CPEs, and other pupils often said that they would like to have such an opportunity. In most villages, CPEs seemed not only to be admired and respected for their role but also sometimes envied (e.g. for their project T-shirts) and/or criticized (e.g. for being similarly or more sexually active than other young people).

In GDs, CPEs always reported that they had been abstinent since becoming CPEs. In contrast, in all four PO intervention villages, first- and third-person reports suggested that CPEs were engaged in as much or more risky sexual behaviour as their peers. For example, in two of the villages, female CPEs were reported to have dropped out of school due to pregnancy. In PO rumours about CPE sexual activity, it was difficult to discern whether CPEs were particularly sexually active prior to being selected, increased their sexual activity after becoming CPEs and/or were more subject to close scrutiny or false rumours because of their positions.

**Extracurricular activities and community perceptions of the school programme**

For the annual MkV Youth Health Week, young people were intended to develop their own dramas, ngonjera (poetry recitation), songs and dance, but in practice almost all such activities were developed and led by teachers, so they depended on the teacher’s enthusiasm and skill. PO research found that generally pupils and parents were supportive of the MkV Youth Health Week activities, although sometimes parents kept their children at home to do domestic or farm work. MkV provided awards for the school that won the competitions, such as a football/volleyball or a few MkV T-shirts. These were highly prized in a context where pupils might only have two to three sets of clothes and balls usually consisted of rags sewn together. For example, an informant:

... said it is true that some parents don’t allow their children to go to schools when there are MkV games. ... [But eventually] some parents agree, as they can’t buy their children those special T-shirts [PO-01-I-4-5f].

In addition to MkV week participation, many MkV classes met the intervention goal of at least one visit to the local health centre per year. For example, a 12-year-old Year 5 pupil reported:

One day they went to a health centre, where they were taught how to use condoms. She said there is something made in the form of a penis upon which the condom is rolled when they are teaching. ... Those who wanted to take condoms and contraceptive pills were allowed to take the quantity they wanted [PO-01-I-4-5f].
However, a widespread unofficial practice of taking groups of schoolgirls for mandatory pregnancy examinations at the nearest health facility continued in one intervention and two comparison PO villages during the trial [21]. Schoolgirls reported strongly disliking such experiences. This practice was also reported during training courses and GDs conducted with MkV teachers and health workers during the first year of the intervention. It was actively discouraged in subsequent training courses, and it was reported less frequently in subsequent GDs.

Given limited resources, broader community mobilization only consisted of a 1-week visit to each intervention community for introductory meetings with parents and community leaders; the creation of an MkV advisory committee for each ward and (in the latter half of the trial) quarterly public HIV/AIDS-related video shows and discussions. This was successful in broadly ensuring parental permission for pupil participation in MkV. At the third teacher’s training, for example, only 8% of teachers reported having had a pupil withdraw from MkV classes due to parental concern about the subject matter. However, at the same training course, 51% of teachers reported that, if they taught more about condoms in class, parents would believe they were encouraging pupils to have sex.

During PO, some parents also expressed confusion about the purpose of MkV or were concerned that it was immoral. One head teacher explained:

... parents complain that the students are too young [and] that their children are being taught prostitution. He said that the details taught about sexual organs ... make parents uncomfortable ... [and they say] that when you teach about sex, the children become eager to experiment and try what they are taught practically [PO-99-I-6-1m].

Discussion

In the MkV trial’s final survey, intervention participants reported some significant and favourable attitude and behaviour changes relative to their comparison counterparts. However, substantial individual-level inconsistencies raise questions about social desirability or intervention bias. In addition, there was no consistent impact on the trial’s biological markers, and PO results suggest that the intervention had little impact on sexual risk reduction, at least during the 3 years of the trial. This process evaluation allows us to explore whether these outcomes are due to poor implementation, limitations of the intervention and/or overriding contextual factors [4, 7].

A review of 162 prevention programmes with children found that programme fidelity was enhanced by good training manuals, facilitator training courses and implementer supervision [4], all of which MkV achieved. Almost all MkV teachers delivered the overwhelming majority of sessions. Similarly, most CPEs performed in the drama serial well, and sometimes also assisted in other aspects of the intervention. Overall, teachers and CPEs closely followed the new curriculum with remarkable detail and consistency. Finally, most intervention schools were visited by a health worker who specifically addressed ASRH issues with MkV pupils; many classes also visited the local health facility. In terms of outcomes, both qualitative and quantitative research methods found that intervention participants had substantially better ASRH knowledge than their comparison counterparts.

These findings suggest that, despite great resource limitations, it is feasible to implement such interventions through existing government structures when they are incorporated into the school curriculum. This is promising given that other research in sub-Saharan Africa found problems with less formal implementation in school systems [8, 13].

Limitations of the intervention and contextual impediments may best be examined using the proximal determinants of behaviour identified by the SLT. Intervention participants (and particularly CPEs) were generally more comfortable than their comparison counterparts in talking openly about sexual activity and risk reduction, and this is often considered to be a first step towards positive behaviour change [1]. However, in this study, it did not often seem to translate into greater perceived self-efficacy to reduce risk behaviours.
A primary influence was the widespread belief that it is too difficult to abstain from sex once young people have already experienced it [28]. Many participants were already sexually active at the start of MkV, which may argue for an ASRH intervention that begins in earlier school years [1, 30].

MkV was clearly successful in increasing participants’ ‘knowledge of risks and benefits’ of the targeted behaviours. However, this did not appear to generally increase perceived susceptibility to risk or negative outcome expectations. Other ASRH school programmes in Africa have had similar findings [1]. Early adolescents may have limited ability to anticipate behavioural outcomes, particularly long-term outcomes, and their exploratory behaviours may have an impulsive component; this may be a weakness in using SLT-based interventions in such populations [31, 32]. In addition, realistic risk perception may have been hindered by widespread secrecy about sexual relationships and ignorance about partners’ past and current partners [28]. MkV might better address this by personalizing risk more, e.g. through games illustrating transmission of infections, and visits by HIV-infected individuals.

Low expectation of long-term negative outcomes was further complicated by positive, short-term expectations, e.g. pleasure, material gain and/or peer esteem [28]. The widespread practice of material exchange for sex may have been a particularly strong ‘environmental impediment’ to risk reduction, as it had both emotional and financial importance for girls (J. Wamoyi, in preparation). The MkV curriculum acknowledged the temptation and negative consequences of such material exchange in the drama serial, but it would benefit from more attention, both in the existing curriculum and in potential new intervention components, e.g. income-generation projects for girls.

When MkV was introduced, there were widespread misconceptions and negativity towards condoms [19], both in the school system and the broader community. In that context, the programme was successful in obtaining permission to discuss condoms in the classroom, increasing pupil knowledge of the benefits of condom use, providing pupils with condom demonstrations in health facilities and, to a lesser extent, increasing pupil access to condoms [19]. As part of a long-term process, these are important achievements, but further effort is required to improve school policies, community attitudes and pupil access to condoms.

The creation of positive role models as ‘environmental facilitators’ of behaviour change also proved very challenging. The peer education component was successful in creating a consistent and entertaining drama serial, contributing towards the goal of modelling desirable behaviours. However, CPE ability to informally educate their peers and be role models for them seemed very limited. Brief CPE training was unlikely to overcome (i) their low literacy and education levels; (2) their subservience within a hierarchical, punitive and didactic school setting and (iii) powerful and contradictory adolescent sexual norms and expectations [21, 28]. Peer education is often promoted within ASRH programmes in both developed [33–35] and developing countries [36, 37]. However, its feasibility and effectiveness may be limited in the extremely disadvantaged setting described here and in the companion paper [21], particularly when the programme is intended to go to scale, so the potential for training is limited.

MkV teachers were valuable facilitators of behaviour change in developing more positive attitudes about teaching ASRH topics and providing pupils with important information. However, as has previously been reported in Africa [16, 38] and elsewhere [39], they were less successful in adopting the active-learning and inquiry-based teaching techniques promoted within global adolescent health education [30], as those often involved a radical departure from local teaching practices [21]. Further, some undesirable practices may have reduced by the MkV training (e.g. corporal punishment or discouragement of condoms), but it is less clear that others were (e.g. forced pregnancy examinations or sexual abuse of pupils). Fundamental changes to teacher–pupil relations may require substantial reform in training and supervision within the broader school system.
Finally, parents, siblings and out-of-school friends and sexual partners had marginal exposure to the intervention, and many remained wary and/or uninformed about its content, and were thus unlikely to understand or support participants’ behaviour change. This may have been particularly challenging for girls with older, out-of-school sexual partners who tended to determine the conditions of sexual encounters. Broader social norms may be especially important in African cultures in which decisions and behaviours are largely collective and individualism is discouraged [40]. Ideally, any in-school ASRH intervention would be integrated with broader, community-wide interventions to promote collective efficacy as well as self-efficacy [30, 41]. Unfortunately, this was not possible during the MkV trial due to financial and logistical constraints. Nonetheless, the MkV curriculum has been implemented in intervention schools for the last eight years, so many out-of-school youth have now been exposed to it, and it is possible that greater time and broader population exposure have had a greater impact on attitudes, behaviours and biological outcomes. A follow-up survey of intervention participants is thus planned for 2007 to evaluate this question.

Conclusion

A review of the limited published literature on evaluated school-based ASRH programmes in Africa identified a number of attributes shared by the two most successful programmes, all of which were present in MkV: relatively young participants, integration in the school curriculum, use of peer educators as well as teachers, multiple participatory approaches, implementation over a prolonged period (e.g. >1 year) and a cascade approach to teacher training [1]. Like the two programmes mentioned above, MkV also found significant and favourable impacts on self-reported attitudes and behaviour in surveys. However, unlike those interventions, the MkV programme additionally evaluated (i) participant biological markers, (ii) consistency of survey sexual behaviour reports at an individual level and (iii) intervention processes through extensive qualitative data collection. That additional research suggests that self-reported survey data alone may provide only a very limited—and perhaps inaccurate—assessment of intervention impact.

Intentional sexual behaviour change can be an unwelcome, complex and long-term process, requiring great motivation on the part of individuals. When introducing an intervention into a context in which both implementers and participants have very limited educational levels and resources, basic standards of teaching and information must first be established before more complex and interactive work can be done. MkV demonstrated that it is possible to achieve that first step with quality and to scale. MkV is now being expanded to all 103 wards of the four project districts, and the findings presented here are being used to improve it further.

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Conflict of interest statement

None declared.

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