

Reducing HIV/AIDS in young people in Sub-Saharan Africa: gaps in research and the role of theory

Kristien Michielsen, Marleen Bosmans, Marleen Temmerman —

International Centre for Reproductive Health, Ghent University

This paper discusses the role of education in preventing HIV in children and young people in sub-Saharan Africa and presents the results of policy advisory research conducted on behalf of the Belgian Development Cooperation. The research consisted of a literature review and a field study in Rwanda. Relative to the high number of HIV prevention activities in sub-Saharan Africa, there is a limited number of scientific data on HIV risk reduction interventions for young people in this region. Longitudinal studies are especially scarce. Preliminary results show that many interventions have only a marginal impact on reducing sexual risk behaviour. Factors influencing programme effectiveness include the consistency and accuracy of messages and information, the provision of life-skills, social support and access to contraceptives, the intensity and duration of the programme, the training of the facilitators and the age of the target population. The HIV/AIDS pandemic has a potentially devastating impact on the education sector. Because few countries have monitoring systems in place that quantify the absenteeism, morbidity and mortality of teachers and students infected with or affected by HIV/AIDS, there is only anecdotal evidence available for illustrating this impact. The final section discusses the current gaps in research and the important role of theory in increasing the impact and improving the evaluations of HIV/AIDS education interventions.

Key words: HIV/AIDS prevention, Adolescents, Sub-Saharan Africa, Behavioural change theories, Evaluation

1. Introduction

About 1.2 billion children and young people are about to enter or have just entered their reproductive age¹. The large majority (85%) of these young people live in developing countries (United Nations Population Fund, 2003). Those children and young people are disproportionately affected by the HIV/AIDS epidemic. UNFPA (United Nations Population Fund, 2008) and UNAIDS (UNAIDS, 2007) estimate that more than half of new HIV infections occur in young people between the ages of 15 and 24 years and that one fourth

¹ Following the Convention on the Rights of the Child, by 'a child' we mean every human being below the age of 18 years unless, under the law applicable to the child, majority is attained earlier. Young people are defined by the United Nations Population Fund as people from the age of 15 to the age of 24 years.

to one third of those living with HIV/AIDS are under the age of 25 years. This means that more than ten million young people are currently living with HIV/AIDS.

Worldwide, adolescence is for young people a period of curiosity and exploration. The combination of this experimental period with other socio-cultural factors and poverty makes youths particularly vulnerable to HIV infection. In many African countries young people are denied access to information, education, and services. Since the existence of premarital sex is often denied family planning services, contraception and condom use are only acceptable and provided for married couples. While the acceptability of talking about HIV/AIDS in schools increases, sex education is still forbidden in many countries because of the belief that it incites young people to have sexual intercourse. Focus group discussions in Rwanda with 84 secondary school pupils revealed that young people are often stigmatized when asking for sexual and reproductive health advice in health centers². Also extreme poverty makes youngsters vulnerable to HIV infection. Poverty may compel them to engage in survival sex (sex in exchange for food and other basic needs), or transactional sex (sex in exchange for other goods, like clothes or a portable phone). The phenomenon of sugar daddies/mommies that have sex with young girls/boys in exchange for financial and material gain is widespread in some regions.

For over two decades now, many organizations have been funding or implementing programmes that promote safer sexual behaviour. Despite all such efforts, the HIV/AIDS pandemic keeps expanding and in most countries there is little prospect of a reduction in the near future. This paper touches upon some of the possible reasons for this apparent lack of effectiveness and highlights gaps in research on HIV prevention through education for young people in sub-Saharan Africa.

2. Methods

This article is the result of policy advisory research conducted for the Belgian Development Cooperation on “Combating HIV/AIDS in children and young people through education and training”. Our main objective was to contribute to making the Belgian policy note “The Belgian contribution to the fight against HIV/AIDS worldwide” operational in the field of HIV/AIDS and education. The policy advisory research consisted of a literature study and field study.

Specific objectives of the literature study were 1) to provide background information to the subject of combating HIV/AIDS in children and youths through education and training in sub-Saharan Africa; 2) to clarify key concepts in the field of HIV/AIDS and education; 3) to study the impact of HIV/AIDS on the education sector; and 4) to study the role that education and training can play in combating HIV/AIDS.

The objective of the field study was to assess the processes of development and implementation of Rwandan policy on HIV prevention through education, with a specific focus on Belgian actors in these processes. The field study was a qualitative study which consisted of 28 in-depth interviews with government officials who work in the field of

2 Focus group discussions were conducted by Kristien Michielsen during field research in Rwanda in April 2007.

HIV and education, as well as with representatives of international organizations, civil society organizations and the bilateral cooperation.

The field study was complemented with visits to five secondary schools in the former province of Gitarama. All five schools participated in the peer education programme of the Rwandan Red Cross. The aim of this part of the field study was (a) to get more insight into activities taking place in the schools; (b) to assess the perceptions of students, teachers and school authorities concerning HIV and sex education; and (c) to detect the main barriers in HIV education. In each school in-depth interviews were conducted with representatives of the school authorities (5) and with teachers (8). Pupils (84) participated in focussed group discussions. The field study took place in April 2007 over a three-week period.

The results of the policy advisory research are complemented with those of an additional literature search that identified evaluations of HIV prevention interventions for young people in sub-Saharan Africa. Articles were sought in the online databases: PubMed, ISI Web of Science, ELIN and Ebscohost (selected databases: Academic Search Elite, ERIC, MLA International Bibliography, MEDLINE, Biomedical Reference Collection, Comprehensive Nursing & Allied Health Collection, Comprehensive Psychology and Behavioral Sciences Collection, SocIndex and Health Business Fulltext Elite). The search terms used were (effectiveness OR evaluation OR impact OR result) AND (HIV prevention OR AIDS education) AND behaviour AND (adolescent OR youth OR student) AND Africa. The search was complemented with a search on Google Scholar, using the same search terms and with searches on websites of international organizations renowned for HIV prevention activities, interventions and research (UNAIDS, UNESCO, Population Services International). The bibliographic information of the selected articles was examined for other relevant publications. Reference lists of recent reviews were consulted to identify additional studies.

3. Results

3.1. The impact of HIV/AIDS on education systems

When discussing the impact of HIV/AIDS on education systems, many authors (Carr-Hill & Peart, 2003; Coombe, 2004; Fall, 2002; Gachuhi, 1999; Jukes & Desai, 2005; Kelly, 2000a) distinguish between the impact on the demand side and the impact on the supply side. As for the demand side, reduced life expectancy, increased condom use and other social factors, result in a reduction of the average number of children per woman (Dorling, Shaw & Smith, 2006; Vandemoortele & Delamonica, 2000). In five countries that currently have adult HIV prevalence rates of over 20 per cent (South Africa, Zimbabwe, Botswana and Swaziland), the under-five mortality rate not only failed to decline between 1990 and 2003, it actually increased during that period (United Nations Department of Economic and Social Affairs, 2005). As a result, there are fewer children to educate than would be the case in a world without HIV/AIDS.

HIV/AIDS puts an important constraint on household economics. Sick parents may no longer be able to work, reducing household resources. Furthermore, in highly

affected regions, a large part of the household budget goes to medication and funeral costs and less is left for sending children to school. A study by the International Labour Association (Cohen, 2002) shows that the epidemic is eroding the saving capacity of households through its direct effects on flows of income and levels of expenditure. School fees and school requisites can become too expensive and children have to leave school in order to work or to take care of family members.

Those who stay in school might need substantial psychological support or flexible learning opportunities. Traumas can affect students' learning ability. Even the environment of morbidity in general, and the visibility of the effects of the disease in the surroundings of the child, can create considerable stress (Vandemoortele & Delamonica, 2000). As a consequence, the education system is now faced with new groups of children and youths whose lives have been marked in some way by HIV/AIDS: orphans, children who are the head of household, street children and youths, children and youths who care for sick parents or relatives and children and youth infected with HIV. These positions and experiences demand different approaches within education.

As for the supply side, HIV/AIDS can affect the quality of education services. Even though the authors in our literature review disagree as to whether or not teachers are more or, on the contrary, less vulnerable to HIV infection than other professional groups, it is clear that they are not immune. Especially in highly affected countries, the impact of teachers' illness and mortality is felt. Due to AIDS-related illness educators become increasingly unproductive and one has to rely increasingly on young teachers with less experience (Coombe, 2004). HIV/AIDS puts a strain on the governments' spending choices. While teacher mortality and absenteeism is costly and education systems need to take up new roles, national budgets for education are often reduced.

Due account must be taken of the fact that articles and reports stating this impact are mostly illustrative. The impact of HIV/AIDS on the education system has not yet been thoroughly calculated, quantified or determined, simply because there is little information available at the country or regional level. Few countries possess monitoring systems that quantify the absenteeism and mortality of teachers infected with or affected by HIV/AIDS. Monitoring absenteeism and drop-out rates of students is even more difficult (Coombe, 2004; Kelly, 2000b). The following results pertain to HIV prevention education in a broader sense, including HIV risk reduction interventions for young people outside schools.

3.2. The impact of HIV risk reduction interventions

From the literature review we gather that the impact of the evaluations of HIV risk reduction interventions is diverse. The most significant changes take place in the field of HIV/AIDS related knowledge: after HIV risk reduction interventions knowledge on the routes of transmission of HIV and the ways of protection against HIV infection almost always increases. The second most noted change is an increase in reported positive attitudes towards people living with HIV/AIDS and towards safe sexual behaviours. Interventions that seek to increase communication about HIV/AIDS also mostly succeed. As for self-reported sexual behaviour, interventions produce notably varied results. Some

articles report no changes at all, some report small but statistically insignificant changes (e.g. Kinsman, Nakiyingi, Kamali, Carpenter, Quigley, Pool *et al.*, 2001) while others report significant changes on one or more behavioural outcomes in certain subgroups. For example, the intervention evaluated by Palekar R. *et al.*, (2007) showed a slight increase of condom use in black youths who knew someone who had died of AIDS. Maticka-Tyndale *et al.*, (2007) show the impact of programme exposure on condom self-efficacy among girls who were virgin before the start of the intervention and not in girls that already had sexual intercourse before the intervention. It also happens that sexual risk behaviour actually increases after the intervention (Visser, 2005).

Several meta-analyses that report on studies in sub-Saharan Africa and beyond identify common characteristics for successful programmes (Gallant & Maticka-Tyndale, 2004; Johnson, Carey, March, Levin & Scott-Sheldon, 2003; Robin, Dittus, Whitaker, Crosby R., Ethier, Mezoff *et al.*, 2004; Speizer, Magnani & Colvin, 2003). Successful programmes provide youths with consistent, accurate messages and information, with the life-skills needed to protect their health and well-being, and with social support and access to contraceptives. They tend to be long and intense programmes: when the content of an intervention is not changed, a reduction in the number of sessions may reduce the efficacy of an intervention even though the overall duration is the same. Teachers must be properly trained for and committed to teaching HIV/AIDS programmes, in order for the programme to be successful. The content of the programme and thorough training of facilitators may be even more important than their demographic characteristics in producing effective interventions. Finally, programmes targeting younger, primary school children have had greater success in influencing sexual behaviour.

On the other hand, factors that can have a negative impact on the effectiveness of HIV risk reduction interventions include certain socio-cultural norms, values and taboos, the lack of participation of stakeholders, the lack of good educational materials and means, the lack of teacher training and insufficient monitoring of the programmes. Programmes that are not successful in changing sexual risk behaviours often treat HIV/AIDS as an isolated problem. A good example of hindering factors is shown in a study by Boler & Jellema (2005) on HIV/AIDS curricula. Almost all countries in sub-Saharan Africa have introduced HIV prevention in the national curriculum. However, the implementation of this curriculum is weak due to insufficient teacher training, lack of participation in the development of the curriculum, lack of educational materials, taboos and the fact that it is often not an examinable and compulsory part of the curriculum.

3.3. General observations concerning evaluations of HIV risk reduction interventions

This section discusses general findings resulting from the review of the literature, which put the rather limited impact of HIV risk reduction interventions in a broader perspective.

Limited number of scientifically published evaluations

Notwithstanding the high number of HIV risk reduction interventions taking place in sub-Saharan Africa, there is little published research data on the role that prevention

education plays in combating HIV/AIDS. For the whole of sub-Saharan Africa, only 39 articles could be identified that report on the outcome evaluation of HIV risk reduction interventions for young people in sub-Saharan Africa, that are published in scientific journals and that use rigorous research designs. In-depth interviews in Rwanda revealed that most governmental and non-governmental actors collect information on the impact of their interventions. However, these actors often do not arrive at the stage of analyzing the data due to a lack of qualified personnel or time shortage and since it is not their core-business. Furthermore, dependence on external funding makes it difficult to make non-convincing results public.

Relying on self-reported behaviour

Evaluation studies of HIV risk reduction interventions mostly rely on self-reported data on sexual behaviour confronting researchers with several challenges. Firstly, several studies have shown that people tend to give socially desirable answers (e.g. McAuliffe T.L. *et al.*, 2007; Lau J.T. *et al.*, 2003). This means under reporting unsafe sexual behaviour and over reporting abstinence and condom use. Secondly, standardized questionnaires aim to assess the sexual behaviour of respondents in the months and year preceding the research. Recalling specific behaviours over longer periods of time can be difficult and problematic. This is an obstacle in the evaluation of HIV risk reduction interventions. Furthermore, researchers often use general concepts such as sexual intercourse, homosexuality and commercial sex. Because of cultural or idiosyncratic reasons individual people may interpret or understand these concepts in very different ways. For example: men who have sex with men do not always identify themselves as homosexual; many people do not consider oral sex as sexual intercourse and might as a consequence under report their hazardous behaviours. For some people, sex with sugar daddies/mommies in exchange for clothes or food is interpreted as commercial sex, while for others it is not.

Several studies show that the evaluation method has an impact on the sexual behaviour reported. Mensch *et al.*, (2008) compared audio computer-assisted self-interview with conventional face-to-face interviews. They provide clear evidence that the mode of interviewing affects respondents' reporting of their sexual activity and not always in accordance with expectations. Another study by Meekers and Van Rossem (2005) shows that condom sales data are a very poor indicator of the level of condom use. Also estimates of both the number of sexual acts and the number of condoms used vary enormously based on the estimation method used. Until now, only one study (Ross D.A., Chagalucha J., Obasi A.I., Todd J., Plummer M.L., Cleophas-Mazige B. *et al.*, 2007) includes biological markers as outcome measure of an HIV risk reduction intervention for young people in sub-Saharan Africa. This study showed that the respondents in the intervention group significantly changed their self-reported behaviour compared to the pre-intervention situation and compared to the control group: fewer men reporting more than one sexual partner in the past year, a significantly higher proportion of men reporting having initiated condom use, more reported condom use at last sex in young men and less reported genital pus or abnormal genital discharge. Nevertheless, no significant

differences occurred in HIV prevalence, STI prevalence and pregnancies.

Difficulties in comparing evaluations

The variety in objectives and desired outcomes of HIV risk reduction interventions makes it difficult to compare different studies. Some articles for instance only report on knowledge (Rusakaniko S., Mbizvo M.T., Kasule J., Gupta V., Kinoti S.N., Mpanju-Shumbushu W. *et al.*, 1997), while others report on knowledge and attitudes (Dalrymple L. & duToit M.K., 1993). Many studies include one or more aspects of sexual behaviour. Other outcomes include interpersonal communication about HIV and beliefs about HIV prevention (Geary C.W., Burke H.M., Castelnuovo L., Neupane S., Sall Y.B., Wong E. *et al.*, 2007), and treatment-seeking behaviour among youths who experience symptoms of sexually transmitted diseases (Okonofua F.E., Coplan P., Collins S., Oronsaye F., Ogunsakin D., Ogonor J.T. *et al.*, 2003). The variety in outcomes and in measured indicators makes it difficult to compare studies and draw general conclusions.

Even when outcomes are similar, comparison of evaluations is difficult due to the use of different indicators. For example 'condom use' is measured through indicators such as 'condom use at last sex' (Stanton B., Li X., Kahihuata J., Fitzgerald A.M., Neumbo S., Kanduumombe G. *et al.*, 1998), 'condom use in the past six months' (Okonofua F.E. *et al.*, 2003) or 'condom use with different types of sex partners' (Kajibu P., Kamya M.R., Kamya S., Chan S., McFarland W. & Hearts N., 2005), making it difficult to compare between studies. Since no standardized methods of measuring exist, researchers tend to develop their own. It is equally important to be aware of outcomes that are not being measured. For example, 'correct condom use' is rarely measured. Nevertheless, consistent condom use is pointless if the condoms are not used correctly.

Lack of longitudinal studies

Little is known about the long-term impact of HIV/AIDS education. Many studies limit themselves to post-measures directly after the intervention (Fitzgerald, Stanton, Terreri, Shipena, Li, Kahihuata *et al.*, 1999; Stanton B. *et al.*, 1998), or one to six months after (Karnell A.P., Cupp P.K., Zimmerman R.S., Feist-Price S. & Bennie T., 2006; Magnani, MacIntyre, Karim, Brown & Hutchinson, 2005). More exceptionally studies report on the impact a year after the intervention (Klepp, Ndeki, Seha, Hannan, Lyimo, Msuya *et al.*, 1994) and only two studies could be identified that measure the impact up to 18 months after the intervention (Brieger W.R., Delano G.E., Lane C.G., Oladepo O. & Oyediran K.A., 2001; Maticka-Tyndale E., Wildish J. & Gichuru M., 2007).

3.4. Alignment and harmonization

In Rwanda the government has identified over 2,000 partners in the fight against HIV/AIDS. The monitoring and evaluation of all their activities is in the first place a responsibility of the intervening organization. However, the large presence of organizations also puts a great burden on government structures responsible for coordination. During the field study, we visited schools where three HIV prevention programmes were

active at the same time. One of the peer educators interviewed was trained by three different organizations. Since not all organizations send out the same messages concerning HIV risk reduction behaviour, young people get contradicting messages. This does not benefit the effectiveness of HIV risk reduction interventions.

3.5. HIV/AIDS and social and cultural heritage

HIV/AIDS prevention efforts are inextricably linked to issues of social and cultural heritage. Social aspects and cultural norms and values have an ambiguous relationship with HIV/AIDS. A number of cultural practices such as widow inheritance, widow cleansing, wife sharing and polygamy are recognized as being directly responsible for the spread of HIV/AIDS. Also female genital mutilation can have adverse effects: it may cause women to bleed during sexual intercourse, increasing the chances of HIV transmission. In many countries social norms dictate that females are inferior to males, especially in sexual relationships. Male youths often learn that it is a sign of manhood to be able to control relationships, while females learn to believe that males are the masters of sexual relationships (IRIN News, 2003).

In highly affected regions, the AIDS pandemic has a disastrous impact on culture. Khanakwa (2003) gives the example of a highly affected region in Uganda where the AIDS epidemic has caused a decline in the importance of rites of passage and of funeral rituals meant to chase away the spirits of the dead and to pass on clan history and social norms. With the AIDS scourge, most people are reluctant to send their families to such functions, which involve staying overnight and are associated with loose sexual behaviour. The Banyankole practiced blood brotherhood to extend social ties beyond biological relations. Incisions were made on the stomachs of two friends who would then rub their blood on coffee berries and ate each others beans. In present times, it is very unlikely that this ritual is performed.

On the other hand, traditional and cultural practices have proven effective in reducing HIV transmission and can be deployed as a prevention strategy. Several aspects of traditional culture offer opportunities for adapting HIV prevention interventions. Muyinda, *et al.*, (2003) trained Sengas (the fathers' sisters who give young girls advice on marriage) in a rural village in Uganda with positive results and male circumcision is being deployed as a successful HIV prevention strategy.

4. Discussion

It cannot be denied that the effectiveness of HIV/AIDS education and training depends to a considerable extent on the quality of the development, implementation and monitoring of the interventions and on the participation of the target population in all these steps. On top of that, our research findings indicate that evaluation methods need to be rethought. Direct observation of sexual behaviour is obviously unethical and using biological markers is an expensive and time consuming method. Therefore researchers must rethink evaluation and find other ways to get round the problem of dependence on self-reported behaviour. Since it aims to explain and sometimes even predict sexual behaviour, behavioural theory could potentially play a role in closing the observational

gap. As a consequence, theoretical determinants can serve as a control mechanism for self-reported sexual behaviour.

A great number of existing health behaviour theories have been adapted to sexual behaviour and even new theories have been developed that try to understand and predict sexual behaviour in the era of AIDS. Most theories describe determinants that influence an individual's sexual behaviour. For example the Health Belief Model developed by Rosenstock (1974) is a psychological model that attempts to explain and predict health behaviours by focusing on the attitudes and beliefs of individuals. The Theory of Planned Behaviour of Ajzen and Fishbein (1980) argues that behavioural, normative and control beliefs influence individual attitudes, subjective norms and perceived behavioural control. These factors shape a person's intention to perform a certain behaviour. According to the Information-Motivation-Behavioural Skills model of Fisher and Fisher (1993) the fundamental determinants of STD/HIV preventive behaviour are information on preventive behaviour, motivation to practice prevention, and behavioural skills for effectively practising prevention. Other theories describe the process of behaviour change, like the Stage of Change theory of Prochaska, DiClemente and Norcross (1992) and the AIDS Risk Reduction Theory of Catania, Kegeles and Coates (1990). The Social Cognitive Theory of Bandura (1997) identifies three main factors that affect the likelihood that a person will change a health behaviour: self-efficacy, goals and outcome expectancies. The combination of these theories provides us with a good understanding of how individuals make decisions concerning sexual behaviour. These theories describe sexual behaviour as a logical consequence of several interacting determinants.

There is a growing awareness that the social and cultural environment as well as the direct environment of the young people should be taken into account and should actually be integrated in HIV risk reduction interventions (by e.g. involving religious leaders, involving community leaders, involving parents, involving school teachers, involving peers). Certain models, like the Ecological Approach of Bronfenbrenner (1979), explicitly draw on the broad social, economic and cultural contexts.

Important challenges remain. First of all, our literature review revealed that the theoretical basis for the role and impact of the social and cultural environment on sexual behaviour has not yet been sufficiently developed in order to be able to support behavioural interventions.

Secondly, the link between theory and practice is hard to make. Despite the wide range of theories available to programme managers, the use of theory in the development of interventions is not self-evident. Programme managers still rely mostly on individual psychological theories developed predominantly in the West. In our literature survey on HIV risk reduction interventions for young people in sub-Saharan Africa less than two out of three articles (59 per cent) identify one or more theories that form the basis for their programmes. In total 12 theories are mentioned 28 times in 23 articles. Five articles mention more than one theory. Social Learning/Cognitive Theory forms the basis for more than a quarter (27 per cent) of the interventions, or make up 36 per cent of the theories mentioned. Other theories that are mentioned more than once are the Health Belief Model (19 per cent of the theories mentioned) and the Theory of Reasoned Action (11 per

cent). We found very little information on why and how the chosen theory is used in the intervention or evaluation. These observations strongly relate to other meta-analysis that report on the use of theory in HIV risk reduction interventions (Pedlow C.T. & Carey M.T., 2003; Jemmott J.B. & Jemmott L.S., 2000; Kirby, Laris & Rolleri, 2007) which confirm the dominance of the Social Cognitive Theory, the Theory of Reasoned Action and the Health Belief Model. They also confirm that it is rarely explained how the theory is used.

Thirdly, HIV/AIDS caused a certain panic: it was more important to act quickly without having a complete understanding of sexual behaviour in the region/culture/age category in which one was working. (Allen T., 2006) argues that “much of what has been claimed [about sexual activity] is based on little more than speculation, and is sometimes affected by very misleading assumptions about a homogeneous African sexuality”.

Fourthly, and following (Delor F. & Hubert M., 2000), a final question should be raised: is there not another step between the individual and the environmental aspects of sexual behaviour (the ‘relational-situational level’) that behavioural theory has not incorporated yet? Sexual behaviour is a social behaviour that takes place between two people and in a certain situation. The same person with the same knowledge, attitudes, perception, intention etc, might perform a completely different behaviour depending on which person he/she is with, in which circumstances the sexual intercourse is taking place and depending on the phase of his personal development. Therefore we should ask ourselves if it is perhaps more important to focus HIV risk reduction interventions on situations that make young people more prone to engage in risky sexual behaviour and on the factors that can draw a person into such a situation. If we want to come to reliable self-reported sexual behaviour all levels should be involved as outcome measures.

5. Conclusion

This paper provides an overview of several aspects of HIV/AIDS prevention and education. Based on a literature review and a field study we can say that in the field of HIV/AIDS and education, there is a need for more research in several domains. The long-term impact of HIV risk reduction interventions is rarely measured. Quantitative and qualitative research is needed to help us to understand the (lack of an) impact on sexual behaviour of many interventions and the impact of HIV/AIDS on education systems. The development of common indicators to measure the impact of interventions would greatly improve comparability. Finally, we saw that theories on individual behaviour are especially well-documented and used in practice. Some theories draw on the broad environment, but they are not sufficiently developed nor do they find their way into the field. As for the relational and situational aspect of sexual behaviour, a major gap exists both in theory and in practice. Complementing and reconciling individual behavioural theories with aspects of the social and cultural environment and with the relational-situational level is essential to truly understanding sexual behaviour. It is only after we understand how sexual identity and behaviour is structured that it is possible to develop mechanisms for promoting safe and responsible sexual behaviour.

References

- AJZEN, I., & FISHBEIN, M. (1980). "Understanding attitudes and predicting social behavior." New Jersey: Prentice-Hall, Inc.
- ALLEN, T. (2006). "AIDS & Evidence: Interrogating some Ugandan myths." *Journal of Biosocial Science*, 38(1), 7-28.
- BANDURA, A. (1997). "Self-efficacy: The exercise of control." New York: Freeman.
- BOLER, T., & JELLEMA, A. (2005). "Deadly Inertia. A Cross-Country Study of Educational Responses to HIV/AIDS." Brussels: Global Campaign for Education.
- BRIEGER, W.R., DELANO, G.E., LANE, C.G., OLADEPO, O. & OYEDIRAN, K.A. (2001). "West African Youth Initiative: outcome of a reproductive health education program." *Journal of Adolescent Health*, 29(6).
- CARR-HILL, R., & PEART, E. (2003). "Understanding the impact of HIV/AIDS on education systems in selected Eastern and Southern African countries." United Kingdom: Department for International Development (DFID).
- CATANIA, J.A., KEGELES, S.M., & COATES, T.J. (1990). "Towards an understanding of risk behavior: An AIDS risk reduction model (ARRM)." *Health Education Quarterly*, 17(1), 53-72.
- COHEN, D. (2002). "Human capital and the HIV epidemic in sub-Saharan Africa." Geneva: International Labour Organization.
- COOMBE, C. (2004). "Confronting the Impact of HIV and AIDS: the consequences of the pandemics for education supply, demand and quality." A global review from a Southern African perspective. *Policy Feature in Education*, 2(1), 102-140.
- DALRYMPLE, L., & DUTOIT, M.K. (1993). "The evaluation of a drama approach to AIDS education." *Educational Psychology*, 13(2).
- DELOR, F., & HUBERT, M. (2000). "Revisiting the concept of 'vulnerability'." *Social Science & Medicine*, 50(11), 1557-1570.
- DORLING, D., SHAW, M., & SMITH, G. (2006). "Global inequality of life expectancy due to AIDS." *BMJ*, 332(7542), 662.
- FALL, A.G. (2002). "De l'impact du VIH/SIDA dans les systèmes éducatifs en Afrique subsaharienne." Dakar: Adea.
- FISHER J.D. & FISHER W.A. (1993). "A general psychological model for changing AIDS risk behavior." In: J. Pryor & G. Reeder (Eds.) *The social psychology of HIV infection*. (pp. 127-153). Hillsdale NJ: Erlbaum.
- FITZGERALD, A.M., STANTON, B.F., TERRERI, N., SHIPENA, H., LI, X., KAHIHUATA, J., RICARDO, I.B., GALBRAITH, J.S., & DE JAEGER, A.M. (1999). "Use of Western-based HIV risk-reduction interventions targeting adolescents in an African setting." *The Journal Of Adolescent Health: Official Publication Of The Society For Adolescent Medicine*, 25(1), 52-61.
- GACHUHI, D. (1999). "The impact of HIV/AIDS on education systems in the eastern and southern Africa region and the response of education systems to HIV/AIDS: Life skills programs." Paris, UNESCO.
- GALLANT, M., & MATICKA-TYNDALE, E. (2004). "School-based HIV prevention programmes for African youth." *Social Science & Medicine*, 58(7), 1337-1351.
- GEARY, C.W., BURKE, H.M., CASTELNAU, L., NEUPANE, S., SALL, Y.B., WONG, E. & TUCKER, H.T. (2007). MTV's "Staying Alive" global campaign promoted interpersonal communication about HIV and positive beliefs about HIV prevention." *Aids Education and Prevention*, 19(1).
- IRIN NEWS (2003). "Traditional culture spreading HIV/AIDS."
- VANDEMOORTELE, J. & DELAMONICA, E. (2000). "The "Education Vaccin" against HIV." *Current Issues in Comparative Education*, 3(1), 6-13.
- JEMMOTT, J.B. & JEMMOTT, L.S. (2000). "HIV risk reduction behavioural interventions with heterosexual adolescents." *AIDS*, 14(suppl 2), S40-S52.
- JOHNSON, B., CAREY, M., MARCH, K., LEVIN, K., & SCOTT-SHELDON, L. (2003). "Interventions to reduce sexual risk for the human immunodeficiency virus in adolescents, 1985-2000." *Archives of Pediatrics & Adolescent Medicine*, 157(4), 381-388.

- JUKES, M., & DESAI, K. (2005). "Education and HIV/AIDS."
- KAJIBU, P., KAMYA, M.R., KAMYA, S. CHAN, S., MCFARLAND, W. & HEARTS, N. (2005). "Increasing condom use without reducing HIV risk: results of a controlled community trial in Uganda." *J Acquir Immune Defic Syndr*, 40(1).
- KARNELL, AP, CUPP, PK, ZIMMERMAN, RS, FEIST-PRICE, S. & BENNIE, T. (2006). "Efficacy of an American alcohol and HIV prevention curriculum adapted for use in South Africa: results of a pilot study in five township schools." *AIDS Education & Prevention*, 18(4).
- KELLY, M.J. (2000a). "Standing Education on its Head: Aspects of Schooling in a World with HIV/AIDS." *Current Issues in Comparative Education*, 3(1), 28-38.
- (2000b). "The encounter between HIV/AIDS and education." In: UNESCO (Ed.).
- KHANAKWA, P. (2003). "Cultural Implications of the HIV/AIDS Epidemic and the Need to Preserve Our Oral Traditions." *International Council on Monuments and Sites*.
- KINSMAN, J., NAKIYINGI, J., KAMALI, A., CARPENTER, L., QUIGLEY, M., POOL, R., & WHITWORTH, J. (2001). "Evaluation of a comprehensive school-based AIDS education programme in rural Masaka, Uganda." *Health Education Research*, 16(1), 85-100.
- KIRBY, D.B., LARIS, B.A., & ROLLERI, L.A. (2007). "Sex and HIV education programs: Their impact on sexual behaviors of young people throughout the world." *Journal of Adolescent Health*, 40(3), 206-217.
- KLEPP, K.I., NDEKI, S.S., SEHA, A.M., HANNAN, P., LYIMO, B.A., MSUYA, M.H., IREMA, M.N., & SCHREINER, A. (1994). "AIDS education for primary school children in Tanzania: an evaluation study." *AIDS*, 8(8), 1157-1162.
- LAU, J.T., TSUI, H.Y., WANG, Q.S. (2003). "Effects of two telephone survey methods on the level of reported risk behaviours." *Sexually Transmitted Infections* 79(4), 325-331.
- MAGNANI, R., MACINTYRE, K., KARIM, A.M., BROWN, L., & HUTCHINSON, P. (2005). "The impact of life skills education on adolescent sexual risk behaviors in KwaZulu-Natal, South Africa." *Journal of Adolescent Health*, 36(4), 289-304.
- MATICKA-TYNDAL, E., WILDISH, J. & GICHURU, M. (2007). "Quasi-Experimental evaluation of a national primary school HIV intervention in Kenya." *Evaluation Program Planning*, 30(2).
- MCAULIFFE, T.L., DIFRANCEISCO, W., REED, B.R. (2007). "Effects of question format and collection mode on the accuracy of retrospective surveys of health risk behavior: a comparison with daily sexual activity diaries." *Health Psychology*, 26(1), 60-67.
- MEEKERS, D. & VAN ROSSEM, R. (2005). "Explaining inconsistencies between data on condom use and condom sales." *BMC Health Serv Res*, 5(5).
- MENSCH, B. HEWETT, P., GREGORY, R. & HELLIRINGER, S. (2008). "Sexual Behavior and STI/HIV Status Among Adolescents in Rural Malawi: An Evaluation of the Effects of Interview Mode on Reporting." *Population Council*.
- MUYINDA, H., NAKUYA, J., POOL, R. & WHITWORTH, J. (2003). "Harnessing the senga institution of adolescent sex education for the control of HIV and STDs in rural Uganda." *AIDS Care*, 15(2).
- OKONOFUA, FE, COPLAN, P., COLLINS, S., ORONSAYE, F., OGUNSAKIN, D., OGONOR, JT, KAUFMAN, JA & HEGGENHOUGEN, K. (2003). "Impact of an intervention to improve treatment-seeking behavior and prevent sexually transmitted diseases among Nigerian youth." *International Journal of Infectious diseases*, 7(1).
- PALEKAR, R., PETTIFOR, A.E., BEHETS, F. & MACPHAIL, C. (2007). "Association Between Knowing Someone Who died of AIDS and Behaviour Change Among South African Youth." *AIDS & Behavior*, e-pub.
- PEDLOW, C.T. & CAREY, M.T. (2003). "HIV Sexual Risk-Reduction Interventions for Youth: A Review and Methodological Critique of Randomized Controlled Trials." *Behavior Modification*, 27(2), 135-190.
- PROCHASKA, J.O., DICLEMENTE, C.C. & NORCROSS, J.C. (1992). "In search of how people change applications to addictive behaviors." *American Psychologist*, 47(9), 1102-1114.
- ROBIN, L., DITTUS, P., WHITAKER, D., CROSBY, R., ETHIER, K.A., MEZOFF, J., MILLER, K., & PAPPAS-DELUA, K. (2004). "Behavioral interventions to reduce incidence of HIV, STD, and pregnancy among adolescents: A decade in review." *Journal of Adolescent Health*, 34(3), 3-26.

- ROSENSTOCK, I. (1974). "Historical Origins of the Health Belief Model." *Health Education Monographs*, 2(4).
- ROSS, D.A., CHANGALUCHA, J., OBASI, A.I., TODD, J., PLUMMER, M.L., CLEOPHAS-MAZIGE, B. ANEMONA, A. EVERETT, D., WEIS, H.A., MABEY, D.C., GROSSKURTH, H. & HAYES, R.J. (2007). "Biological and Behavioural Impact of an Adolescent sexual health intervention in Tanzania: a community-randomized trial." *AIDS*, 21(14), 1943-1955.
- RUSAKANIKO, S., MBIZVO, M.T., KASULE, J., GUPTA, V., KINOTI, S.N., MPANJU-SHUMBUSHU, W., SEBINA-ZZIWA, J., MWATEBA, R. & PADAYACHI, J. (1997). "Trends in reproductive health knowledge following a health education intervention among adolescents in Zimbabwe." *Central Africa Medical Journal*, (43), 1.
- SPEIZER, I., MAGNANI, R. & COLVIN, C. (2003). "The effectiveness of adolescent reproductive health interventions in developing countries: a review of the evidence." *Journal of Adolescent Health*, 33(5), 324-348.
- STANTON, B., LI, X., KAHIHUATA, J., FITZGERALD, A.M., NEUMBO, S., KANDUUMBE, G., RICARDO, I., GALBRAITH, J.S., TERRERI, N., GUEVARA, I., SHIPENA, H., STRIJDOM, J., CLEMENS, R. & ZIMBA, R. (1998). "Increased protected sex and abstinence among Namibian youth following a HIV risk-reduction intervention: a randomized, longitudinal study." *AIDS*, 12(18).
- UNAIDS (2007). "UNAIDS": *AIDS Epidemic Update 2007*.
- UNITED NATIONS DEPARTMENT OF ECONOMIC AND SOCIAL AFFAIRS, S.D. (2005). "Millennium indicators database." New York, United Nations.
- UNITED NATIONS POPULATION FUND (2003). "State of the World Population 2003: making 1 billion count: investing in adolescents' health and rights."
- (2008). "Young People: The Greatest Hope for Turning the Tide."
- VISSER, M.J. (2005). "Life skills training as HIV/AIDS preventive strategy in secondary schools: evaluation of a large-scale implementation process." *SAHARA J: Journal Of Social Aspects Of HIV/AIDS Research Alliance/SAHARA, Human Sciences Research Council*, 2(1), 203-216.

