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**SEX EDUCATION: ACCESS AND IMPACT ON SEXUAL
BEHAVIOUR OF YOUNG PEOPLE¹**

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A. BACKGROUND

As many countries throughout the world develop economically, young people spend more years in school, seek jobs or careers and delay marriage. In some countries, improved nutrition and possibly other factors lead to earlier onset of physical development, menarche and spermarche. In some countries societal values about sex prior to marriage have changed and access to contraception has increased. For these reasons and others, in many countries, the duration of time between when young people develop physically, have an increased interest in sexual relations and begin having sex and when they marry has increased. This means that higher percentages of young people have sex prior to marriage, have more sexual partners before marriage, and are more likely to have unintended premarital pregnancies and sexually transmitted infections (STIs), including HIV. These unintended pregnancies, STIs and in particular HIV and AIDS have huge personal and societal costs that should be prevented, if at all possible.

In addition to these public health needs for effective sex and STI/HIV education programs that delay or reduce sexual risk behavior, there is an expressed need from young people to have their many questions and concerns about sexuality addressed. They want additional information about sexuality more generally and about relationships.

Consequently, there is a growing international movement supporting adolescents' right to accurate and balanced information about sexuality that is relevant to their lives and can help them make better decisions about relationships and sexual behavior. This movement is supported by international human rights standards that recognize that adolescents have the right to access adequate information essential for their health and development and these standards state that it is the obligation of countries to ensure that all adolescent girls and boys, both in and out of school, are provided with accurate and appropriate knowledge and skills to protect their sexual and reproductive health. (Convention on the Rights of the Child General Comment 4, 2003; Committee on Economic Social and Cultural Rights General Comment 14, 2000).

Accordingly, throughout the world, many adolescent reproductive health professionals, schools, clinics and other youth serving organizations have developed and implemented a wide variety of sex and STI/HIV education programs to reduce unintended pregnancy and STIs among young people. Some of these programs are based on a written curriculum and are implemented with groups of young people.

These programs are particularly well designed to be implemented in schools, where they can potentially reach large numbers of youth. In many societies schools are the one institution that is regularly attended by many young people. Of those youths who attend school, most do so before they begin having sexual intercourse, and many are enrolled in school when they actually initiate sex. Thus, schools provide an opportunity for interventions to reach most young people from diverse social backgrounds before or around the time they become sexually active. This means they offer the opportunity to encourage young people to delay their onset of sexual activity and increase their use of condoms and contraceptives after sexual initiation. Moreover, if trained, teachers can be a skilled and trusted source of information for young people and school classes can provide the needed educational structure in which to implement effective programs. Thus, schools can provide a practical means of reaching large numbers of young people in ways that are replicable and sustainable.

However, these programs can also be implemented in other community and clinic settings where they can reach other youth, including potentially higher risk youth who have dropped out of school or who are older. For example, programs can be implemented in STI clinics when young people come for STI tests. Those occasions may be “teachable moments” because the clinic attendees are more keenly aware of their past risk behavior and their risk for STIs.

Typically, sex and STI/HIV education programs strive to delay the initiation of sex, reduce the number of sexual partners (less commonly), or increase condom or other contraceptive use. Sometimes they also strive to increase STI and HIV testing or reduce sexual violence (less commonly).

B. IMPACT OF PROGRAMS ON BEHAVIOR AND MEDIATING FACTORS

This paper summarizes the results of a review of the impact of sex, and STI/HIV education programs conducted for UNESCO in 2008-2009 (UNESCO, 2009). To be included in that review, each study had to meet the following criteria:

1. The evaluated program had to:

- be a sex or STI/HIV education program which is curriculum-based and group-based (as opposed to an intervention involving only spontaneous discussion, only one-on-one interaction, or only broad school, community, or media awareness activities).
- focus primarily on sexual behavior (as opposed to covering a variety of risk behaviors such as drug use, alcohol use, and violence in addition to sexual behavior).
- encourage more than abstinence as methods of protection against pregnancy and STIs.
- focus on adolescents up through age 24 outside of the US or up through age 18 in the US.
- be implemented anywhere in the world.

2. The research methods had to:

- include a reasonably strong experimental or quasi-experimental design with well-matched intervention and comparison groups and both pre-test and post-test data collection.
- have a sample size of at least 100.
- measure program impact on one or more of the following sexual behaviors: initiation of sex, frequency of sex, number of sexual partners, use of condoms, use of contraception more generally, composite measures of sexual risk (e.g., frequency of unprotected sex), STI rates, pregnancy rates, and birth rates.
- measure impact on those behaviors that can change quickly (i.e., frequency of sex, number of sexual partners, use of condoms, use of contraception, or sexual risk taking) for at least 3 months or measure impact on those behaviors or outcomes that change less quickly (i.e., initiation of sex, pregnancy rates, or STI rates) for at least 6 months.

3. The study had to be completed or published in 1990 or thereafter. In an effort to be as inclusive as possible, the criteria did not require that studies had been published in peer-reviewed journals.

1. Impact on sexual behaviour

The results of the impact of 87 programs on different sexual behaviors are summarized in Table 1. (All references are at the end of this paper.)

Of 63 studies that measured the impact of sex education programs upon the initiation of sexual intercourse, 37 per cent of programs delayed the initiation of sexual intercourse among either the entire sample or an important sub-sample, while 63 per cent had no impact. Notably, none of the programs hastened the initiation of sexual intercourse. Similarly, 31 per cent of the programs led to a decrease in the frequency of sexual intercourse (which includes reverting to abstinence), while 66 per cent had no impact and 3 per cent increased the frequency of sexual intercourse. Finally, 44 per cent of the programs decreased the number of sexual partners, 56 per cent had no impact in this regard, and none led to an increased number of partners. The small percentages of results in the undesired direction are equal to, or less than, that which would be expected by chance, given the large number of tests of significance that were examined. Also by the same principle, a few of the positive results were probably the result of chance.

Taken together, these studies provide strong evidence that programs that emphasize not having sexual intercourse as the safest option and that also discuss condom and contraceptive use do not increase sexual behavior. On the contrary, either among the entire sample or in important sub-samples, more than a third of programs delayed the initiation of sexual intercourse, about a third of programs decreased the frequency of sexual intercourse, and more than a third of programs decreased the number of sexual partners.

2. Impact on condom and contraceptive use

Of the 58 studies that measured impact on condom use, forty per cent of programs were found to increase condom use, while sixty per cent had no impact and none decreased condom use. Of the 15 studies that measured impact on contraceptive use, forty per cent increased contraceptive use; 53 per cent had no impact, and 7 per cent (a single program) reduced contraceptive use.

Some studies assessed measures that included both the amount of sexual activity as well as condom or contraceptive use in the same measure. For example, some studies measured the frequency of sexual intercourse without condoms or the number of sexual partners with whom condoms were not always used. These measures were grouped and labeled 'sexual risk-taking'. Of the 30 studies that assessed impact on these measures, fifty-three per cent of the programs decreased sexual risk-taking; 43 per cent had no impact and three per cent were found to increase it.

In summary, these studies demonstrate that more than a third of the programs increased condom or contraceptive use, while more than half reduced sexual risk-taking, either among entire samples or in important sub-samples.

The positive results on the three measures of sexual activity, condom and contraceptive use and sexual risk-taking, are essentially the same when the studies are restricted to large studies with rigorous experimental designs. Thus, the evidence for the positive impacts upon behavior is quite strong.

3. Impact on one or more behaviors

The results presented above have examined the impact of these programs on each behavior. However, these results understate the positive impact of programs, because a program may have a positive impact on one or even two behaviors but not on all behaviors. When multiple behaviors are considered at one time:

- About two-thirds of the studies demonstrate positive results on one or more behaviors among either the entire sample or an important sub-sample.
- More than one-fourth of the programs improved two or more sexual behaviors among young people.

4. *Impact on STI, pregnancy and birth rates*

Because STI, pregnancy and childbearing occur less frequently than sexual activity, condom or contraceptive use, the distributions of the outcome measures of STI, pregnancy or childbearing require that considerably larger samples are needed to measure adequately the impact of programs upon STI and pregnancy rates. Because many studies present results without having adequate statistical power, these results are not presented in Table 1. While a small number of studies did evaluate programs that had a significant reduction in STI and/or pregnancy rates, a greater number did not. Of the 18 studies that used biomarkers to measure impact on pregnancy or STI rates, 5 showed significant positive results and 13 did not.

5. *Magnitude of impact on behaviour*

Even the effective programs did not dramatically reduce risky sexual behavior; their effects were more modest. The most effective programs tended to lower risky sexual behavior by, very roughly, one-fourth to one-third. For example, if 30 per cent of the control group had unprotected sex during a period of time, then only 20 per cent the intervention group did so, a reduction of 10 percentage points or a proportional reduction of one-third. Forthcoming meta-analyses in the United States demonstrate that behavior change of this magnitude can lead to programmatically meaningful reductions in pregnancy and STI rates.

6. *Breadth of behavior results*

Sex and STI/HIV education programs that emphasized both abstinence and use of condoms and contraception were effective in changing behavior when implemented in school, clinic and community settings and when addressing different groups of young people: e.g. both males and females, sexually inexperienced and experienced youth, and young people at lower and higher risk in disadvantaged and better-off communities.

7. *Universality of effectiveness*

Notably, these programs have been found to be effective in 16 countries in different regions of the world (in the US, South America (e.g., Chile and Mexico) in Europe (United Kingdom), in Africa (e.g., Kenya and Tanzania) and in Asia (e.g., China)). Thus, their effectiveness is not limited to any one particular region or culture.

However, this does not necessarily mean that they will be effective in all countries and all cultures.

8. *Results of replication studies*

Results from several replication studies in the United States are encouraging (Kirby, 2009). These studies demonstrate that when programs found to be effective at changing behavior in one study were replicated in similar settings, either by the same or different researchers, they consistently yielded positive results. Programs were less likely to remain effective when their duration was shortened considerably, when they omitted activities that

focused on increasing condom use, or when they were designed for and evaluated in community settings, but were subsequently implemented in classroom settings.

9. *Impact on cognitive factors*

Nearly all sexuality education programs that have been studied increased knowledge about different aspects of sexuality and risk of pregnancy or HIV and other STIs. This is important, because increasing knowledge is a primary role of schools. Programs that were designed to reduce sexual risk and employed a logic model also strove to change other factors that affect sexual behavior. Those programs that were effective at either delaying or reducing sexual activity or increasing condom or contraceptive use typically focused on:

- Knowledge of sexual issues such as HIV, other STIs and pregnancy, including methods of prevention;
- Perceptions of risk e.g. of HIV, other STIs and of pregnancy;
- Personal values about sexual activity and abstinence;
- Attitudes about condoms and contraception;
- Perceptions of peer norms e.g. about sexual activity, condoms and contraception;
- Self-efficacy to refuse sexual intercourse and to use condoms;
- Intention to abstain from sexual intercourse or to restrict sexual activity or number of partners or to use condoms; and
- Communication with parents or other adults and potentially with sexual partners.

It should be emphasized that some studies demonstrated that particular programs improved these factors (Kirby, Obasi & Laris, 2006; Kirby, 2007). Other studies have demonstrated that these factors, in turn, have an impact on adolescent sexual decision-making (Blum & Mmari, 2006; Kirby & Lepore, 2007). Thus, there is considerable evidence that effective programs actually changed behavior by having an impact on these factors, which then positively affected young people's sexual behavior.

C. STRENGTHS, LIMITATIONS AND GAPS IN THESE STUDIES

or several reasons, these studies provide very strong evidence that some of these programs are effective at reducing sexual risk behavior of young people: 1) 87 studies, all with experimental or quasi-experimental designs, is a large number of studies; 2) more than half of the studies employed strong research designs (randomized controlled trials) and their results were similar to those with weaker evaluation designs; 3) when the same programs were studied multiple times, often the same or similar results were obtained; and 4) the programs that were effective at changing sexual behavior often shared common characteristics (see next section below).

However, there were also a number of limitations to the studies and, by implication, to the review. Too few of the studies were conducted in developing countries. Some studies suffered from an inadequate description of their respective programs. Some studies had only barely adequate evaluation designs and many were statistically underpowered. Most did not adjust for multiple tests of significance. Few studies measured impact upon either STI or pregnancy rates and fewer still measured impact on STI or pregnancy rates with biological markers. Few measured long term results. In addition, there were inherent biases that affect the publication of studies: researchers are more likely to try to publish articles if positive

results support their theories. Also, program and journals are more likely to accept articles for publication when the results are positive.

And, there were complete gaps in the studies: None of the studies examined programs for gay or lesbian or other young people engaging in same-sex sexual behavior. None examined the impact of large scale roll out of such programs on population-level changes in adolescent behavior.

D. CHARACTERISTICS OF EFFECTIVE PROGRAMS

As demonstrated by the results above, some of the programs were effective at changing behavior, while others were not. To better understand the characteristics that distinguished between those programs that were effective and those that were not, an in-depth coding of the effective curricula and a smaller number of ineffective curricula was conducted. It led to the identification of common characteristics of effective programs. The methods used to identify these characteristics are discussed in Kirby, Laris, & Rolleri (2006). The characteristics of effective curricula describe their development, content, and implementation. The large majority of the effective programs reviewed here incorporated most of these characteristics and programs that incorporated these characteristics were much more likely to change behavior positively than were programs that did not incorporate these characteristics. The characteristics are briefly summarized in Table 2.

E. ACCESS TO PROGRAMS WITH EFFECTIVE CHARACTERISTICS

There do not exist any good data on the implementation of effective sex and STI/HIV education programs in schools, clinics or other community organizations in most countries. However, anecdotal observations and impressions of many people in the field strongly suggest that few adolescents in most countries have access to effective programs, and there is very little evidence of the country-wide role of effective programs. In fact, in many countries, detailed prescriptive curricula incorporating the characteristics of effective curricula do not even exist or have not been adopted by schools or other organizations.

F. CONCLUSIONS

These results support several conclusions about the impact of programs and access to them:

- Curriculum-based sex and STI/HIV education programs implemented in schools or communities can delay sex, reduce the frequency of sex, reduce the number of partners, increase condom use, increase overall contraceptive use and reduce unprotected sex.
- They do not increase any measure of sexual activity, as some people fear.
- Their positive impact on behavior is modest, but programmatically meaningful. If implemented on a large scale, they represent a cost-effective method of changing behavior and thereby reducing unintended pregnancy and STIs.
- Thus, they should be viewed as an important component in a larger more comprehensive initiative to reduce unintended pregnancy and STIs, including HIV.
- Nearly all studies of sexuality education programs demonstrate increased knowledge.
- Comparative analysis of effective and ineffective programs provides especially strong evidence that those incorporating the characteristics of effective programs can change the behaviors that put young people at risk of STIs and pregnancy.

In sum, in many countries there currently exists an unfortunate combination of events:

- Adolescents and young adults engage in a great amount of sexual risk-taking prior to or after marriage and both they and their societies at large incur huge costs in terms of unwanted pregnancy and childbearing, STIs including HIV and AIDS, and greater poverty and diminished well being as a result;
- There exists strong evidence that programs with known characteristics are effective at delaying sexual activity and reducing sexual risk behavior that place young people at risk of unintended pregnancy and STIs including HIV; but
- These programs are not implemented widely or with fidelity.

Consequently, there should be a greater international effort to implement effective programs more widely. This should involve adapting (as necessary) and implementing programs that have been demonstrated to be effective with similar populations and cultures. If such proven programs do not exist for countries (or regions and cultures within countries), then programs should be developed and implemented that incorporate the characteristics of effective programs. And, of course, there should be on-going rigorous evaluation and research to assure the continued effectiveness of programs, to make them more effective, to assess the large scale roll out of programs and to help provide support and technical assistance to programs. When this is done, the programs can help reduce unintended pregnancy and STI rates and when implemented on a large scale, they can be implemented cost effectively.

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TABLE 1. THE NUMBER OF SEXUALITY EDUCATION PROGRAMS DEMONSTRATING EFFECTS ON SEXUAL BEHAVIORS

	<i>Developing Countries (N=29)</i>	<i>United States (N=47)</i>	<i>Other Developed Countries (N=11)</i>	<i>All Countries in the World (N=87)</i>
Initiation of Sex				
<i>Delayed initiation</i>	6	15	2	23 (37%)
<i>Had no sig impact</i>	16	17	7	40 (63%)
<i>Hastened initiation</i>	0	0	0	0 (0%)
Frequency of Sex				
<i>Decreased frequency</i>	4	6	0	10 (31%)
<i>Had no sig impact</i>	5	15	1	21 (66%)
<i>Increased frequency</i>	0	0	1	1 (3%)
# of Sexual Partners				
<i>Decreased number</i>	5	11	0	16 (44%)
<i>Had no sig impact</i>	8	12	0	20 (56%)
<i>Increased number</i>	0	0	0	0 (0%)
Use of Condoms				
<i>Increased use</i>	7	14	2	23 (40%)
<i>Had no sig impact</i>	14	17	4	35 (60%)
<i>Decreased use</i>	0	0	0	0 (0%)
Use of Contraception				
<i>Increased use</i>	1	4	1	6 (40%)
<i>Had no sig impact</i>	3	4	1	8 (53%)
<i>Decreased use</i>	0	1	0	1 (7%)
Sexual Risk-Taking				
<i>Reduced risk</i>	1	15	0	16 (53%)
<i>Had no sig impact</i>	3	9	1	13 (43%)
<i>Increased risk</i>	1	0	0	1 (3%)

Source: UNESCO, 2009, p.13

TABLE 2. SUMMARY OF CHARACTERISTICS OF EFFECTIVE PROGRAMS

Characteristics of the process of developing the curriculum

1. Involve experts in research on human sexuality, behavior change and related pedagogical theory in the development of curricula.
2. Assess the reproductive health needs and behaviors of young people in order to inform the development of the logic model.
3. Use a logic model approach that specifies the health goals, the types of behavior affecting those goals, the risk and protective factors affecting those types of behavior, and activities to change those risk and protective factors.
4. Design activities that are sensitive to community values and consistent with available resources (e.g. staff time, staff skills, facility space and supplies).
5. Pilot-test the program and obtain on-going feedback from the learners about how the program is meeting their needs.

Characteristics of the curriculum itself

6. Focus on clear goals in determining the curriculum content, approach and activities. These goals should include the prevention of HIV, other STIs and/or unintended pregnancy.
7. Focus narrowly on specific risky sexual and protective behaviors leading directly to these health goals.
8. Address specific situations that might lead to unwanted or unprotected sexual intercourse and how to avoid these and how to get out of them.
9. Give clear messages about behaviors to reduce risk of STIs or pregnancy.
10. Focus on specific risk and protective factors that affect particular sexual behaviors and that are amenable to change by the curriculum-based program (e.g. knowledge, values, social norms, attitudes and skills).
11. Employ participatory teaching methods that actively involve students and help them internalize and integrate information.
12. Implement multiple, educationally sound activities designed to change each of the targeted risk and protective factors.
13. Provide scientifically accurate information about the risks of having unprotected sexual intercourse and the effectiveness of different methods of protection.
14. Address perceptions of risk (especially susceptibility).
15. Address personal values and perceptions of family and peer norms about engaging in sexual activity and/or having multiple partners.
16. Address individual attitudes and peer norms toward condoms and contraception.
17. Address both skills and self-efficacy to use those skills.
18. Cover topics in a logical sequence.

Characteristics of the process of implementing the curriculum

19. Implement virtually all activities with reasonable fidelity
20. If implement in schools, implement programs that include at least 12 sessions
21. If not taught in schools, implement activities to recruit and retain youth
22. Select educators to implement the curriculum who can relate to the youth and are comfortable with the topic
23. Provide training to the educators
24. Provide on-going support, supervision and oversight from the appropriate authorities