The Impact of Risk Information on Adolescent Sexual Behavior and Knowledge in Cameroon

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Sector(s): Gender, Health

Location: Cameroon

Sample: 3,154 8th grade girls in 318 middle schools

Target group: Students Women and girls

Outcome of interest: HIV/AIDS Sexual and reproductive health Women's/girls' decision-making Aspirations

Intervention type: Information Preventive health Training

AEA RCT registration number: AEARCTR-0000609

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Research Papers: Risk Information, Risk Salience, and Adolescent Sexual Behavior: Experimental E...

Partner organization(s): Agence Française de Développement (AFD), Institut de Recherche pour le Développement (IRD), Institut pour la Recherche, le Développement Socio-économique et la Communication (IRESCO), William and Flora Hewlett Foundation, National Science Foundation (NSF), Centre pour la recherche économique et ses applications (CEPREMAP)

In sub-Saharan Africa, girls and young women are more likely to be HIV positive than young men, in part because of physiological differences that make females more vulnerable to HIV transmission, but also because girls and young women have unprotected sex with older men who have a higher prevalence of HIV. In Cameroon, researchers evaluated the impact of various HIV prevention interventions delivered through schools on girls and young women's exposure to risk. The interventions decreased the incidence of pregnancy (a marker for unprotected sex) in the following nine to twelve months by over 25 percent. The results did not differ substantially across the various interventions, suggesting sexual behavior of adolescent girls in Cameroon is highly responsive to risk information and salience.

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At the end of 2021, an estimated 38.4 million people were living with HIV,[1] with a vast majority of these cases in sub-Saharan Africa. Women aged 15–24 years are at particularly high risk of HIV infection, accounting for 20 percent of these new HIV infections among adults, despite accounting for only 11 percent of the adult population.

In order to minimize their risk of contracting HIV, it is crucial for girls and women to adopt safe sexual behaviors. Increasing awareness about the consequences of risky behavior could influence the choices girls and women make, but there has been mixed evidence on how best to present risk information and engage youths in critically assessing the risks they face. For instance, systematic reviews of the effects of school-based HIV education programs in sub-Saharan Africa reveal varied results and point to

the difficulty in translating knowledge into concrete behavioral changes. Research also indicates that awareness interventions led by teachers could face limitations due to teachers' status in relation to pupils, discomfort in discussing sensitive topics, and lack of adequate teaching methods to effectively deliver HIV risk education. A possible alternative is to use external professionals or education technology: a previous study in Kenya found that young girls were responsive to risk information delivered by outside facilitators through a video-based approach. How can the type of risk information provided and the delivery of this information affect adolescents' knowledge, perceived risks, and sexual behavior?

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In 2009, at the time of the study, Cameroon was the country with the highest rate of HIV prevalence in the Central and West Africa region, at 5.3 percent of the population aged 15-49.[2] Moreover, HIV prevalence was more than five times higher among girls and women aged 15-24 than among men in that age group. This may be partially attributed to girls becoming sexually active at a younger age as well as the physiological differences that make male-to-female transmission more likely than female-to-male transmission.

In response to this, the government of Cameroon authorized school-based HIV prevention programs in 2004 and incorporated teacher trainings as part of a strategy to improve sexual education. However, at the time of this study in 2009, the HIV/AIDS program had not been integrated into the standard curriculum for either primary or secondary schools and only 2.6 percent of schools had trained teachers. A 2010 survey administered to school staff in the study area conducted by partner organization Institute for Research, Socio-economic Development and Communication (IRESCO), suggested that while teachers had a relatively good knowledge of HIV, they did not know how to teach the material and felt that they needed special training.

The study took place in three French-speaking regions of Cameroon, Yaoundé (urban), South, and West (mostly rural). Awareness of HIV among girls in the study was almost universal; however, knowledge on transmission and risk factors was quite poor. Less than a third of girls were aware that men above 25 have a higher chance of having HIV than men below 25, and virtually none of them reported considering partner choice as a strategy to avoid infection. HIV education was more prominent in Yaoundé compared to the South and West regions, with 23 percent of girls having been exposed to HIV education led by external consultants in Yaoundé, compared with 16 percent in the more rural South and West regions. Meanwhile, teen pregnancy was much more frequent in these rural areas (12 percent versus 4 percent in Yaoundé), and the same was true for school dropouts (9 percent versus 3 percent in Yaoundé), and sexual activity (34 percent versus 17 percent in Yaoundé).



Scene from an educational video to inform students of HIV risk.

Photo credit: Juliette Seban, IRESCO

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Researchers partnered with IRESCO to evaluate school-based HIV prevention interventions for girls in the eighth grade. They tested a series of interventions to understand the importance of both (1) the content of the message and (2) the identity of the messenger. The content was either a *basic message*, which focused on abstinence, faithfulness, and condom use; or a *basic + relative risk message*, which used this same curriculum but added information on infection rates by sex and age (particularly highlighting the risks associated with "sugar daddy" or "sponsor" relationships and their responsibility for cross-generational transmission of HIV). The content was delivered face-to-face by either permanent school staff or a one-time visit by external consultants. They also benchmarked these interventions against a "salience" intervention: asking youths to participate in a one-time, self-administered in-class quiz.

In each of 318 public schools, one eighth grade class was randomly assigned to one of four groups:

1. *Basic message by permanent school staff (80 schools):* One staff member from each school in this group completed a two-day training focused on how to teach the HIV prevention curriculum. The training encouraged teachers to promote all modes of avoiding infection (abstinence, faithfulness and condom use). After the training, the school staff could hold as many sessions in their school as they wanted, prioritizing the targeted eighth grade class. Seventy percent of the trained staff members were men.

2. *Basic message by external consultant (79 schools):* A trained, female external professional conducted a single hour-long session that included two short videos and a discussion in selected eighth grade classes with the basic message. Consultants provided only one session and could only deliver the messaging to the class that they were assigned to.
3. *Basic + relative risk message (79 schools):* A trained, female external professional delivered a single hour-long presentation with the basic message as well as a longer video with the relative risk message.
4. No intervention (*80 schools)*.

In addition, half of the schools in each of the four groups were randomly assigned to the *In-Class Quiz* intervention: a facilitator from IRESCO visited the class at the beginning of the year (before any other intervention) and had students complete an hour-long anonymous in-class quiz that asked about HIV knowledge, the sexual behavior of one's peers, beliefs about the risks of pregnancy and HIV infections from unprotected sex, and one's own sexual behavior.

This research design created eight groups (seven program groups and one comparison) and allowed the research team to study the effect of the *In-Class Quiz* intervention alone, the effect of each of the three face-to-face HIV education interventions alone, as well as whether the in-class quiz augments the effect of subsequent HIV education interventions. The interventions took place January to April 2010, and follow-up surveys were conducted nine to twelve months later. The questionnaires measured the girls' exposure to HIV education, their knowledge about HIV, their own HIV prevention plans, self-reported sexual behavior, and pregnancy.

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On average, the HIV prevention programs reduced the incidence of teen pregnancy in the following nine to twelve months by 2.9 percentage points (a 30 percent decrease) from a base of 9.5 percent in the comparison group. While the results did not differ substantially across the individuals exposed to the various programs (including for those only offered the *In-Class Quiz*), heterogeneity analysis by geography shows that the programs had no detectable effects among urban schoolgirls.

Knowledge and HIV prevention plans: Both the teacher and consultant interventions increased awareness of HIV infection rates by gender, and the relative risk message was additionally successful in increasing the understanding of the relationship between HIV risk and partner's age. The interventions increased the prevalence of the belief that condoms are very effective; however, they did not increase the salience of condoms as a way to avoid HIV, which may be related to the fact that condoms were already the most common method used prior to the intervention. The interventions also increased the likelihood that girls reported one rather than multiple strategies they planned to use to prevent HIV, suggesting that they helped girls focus on a concrete HIV prevention plan. Girls who received HIV programs were 6-10 percentage points more likely to report abstinence as their sole strategy from a base of 15.2 percent in the comparison group.

Sexual behavior and pregnancy: The interventions reduced the incidence of unprotected sex and hence the likelihood of having started childbearing within one year of the intervention by 2.4 to 4.6 percentage points, from an average of 9.5 percent in the comparison group (a 25 to 48 percent decrease). The relative risk message did not have a higher impact on actual pregnancies than the other interventions, suggesting that, in the Cameroon context, the sugar daddy risk message did not seem to be particularly important above and beyond the basic message. The *In-Class Quiz* alone had an effect comparable to those of the face-to-face education programs, implying that being surveyed alone can cause behavioral change. Additionally, there was no further reduction from combining the quiz with the education programs, suggesting that the quiz could substitute for more intensive education programs.

Urban vs. rural impacts: All of the impacts were concentrated in rural areas. Presumably in urban Yaoundé, teenagers already had more exposure to information and experienced lower rates of unwanted pregnancy, and would thus experience smaller impacts from such interventions.

Cost-effectiveness: These interventions can be inexpensive to implement. All of the interventions cost about US$300, or US$13 per student. With an average of three pregnancies averted for every 100 students, each averted pregnancy cost around US$430.

Together, these results suggest that simple and short HIV prevention interventions can be effective at reducing risky sexual behavior and reducing the incidence of teen pregnancy in areas where behaviors are most at risk. Further, teenage response to educational interventions does not vary significantly with the format and identity of the messenger, and in fact simply asking teenagers to think through risk, options and their own behavior and strategy in a self-administered quiz can influence teenage perceptions and behaviors.

"Impacts of School-Based HIV Education on Reported Behavior and Knowledge of Adolescent Girls," Final Report on the ISAS Study in Cameroon, December 2012.

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1. WHO. 2022. "Global Health Observatory Database"
2. UNAIDS. 2010. “Global Report: UNAIDS Report on the global AIDS epidemic 2010.”