

Teen Web Nairobi:

Results of a Web-Based Project to Survey and Educate Students about Health

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About Ipas

Ipas works globally to increase women's ability to exercise their sexual and reproductive rights and to reduce abortion-related deaths and injuries. We seek to expand the availability, quality and sustainability of abortion and related reproductive-health services, as well as to improve the enabling environment. Ipas believes that no woman should have to risk her life or health because she lacks safe reproductive-health choices.

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The digital divide separates the world into two camps: those with access to the Internet and its myriad resources and ideas and those without. The information available on the Internet helps shape our political views, our health-care decisions, and even helps to keep our families united, by keeping us more easily in touch with relatives abroad.

Once a novelty, the Internet is now also becoming an indispensable tool for people in Africa. Nevertheless, many African youth are unlikely to have access to it, either to communicate or gather information. Some evidence suggests that the digital divide may be widening the information gap between people with and without resources, threatening to further isolate poor youth from the economic and educational opportunities that the worldwide web offers. The TeenWeb Study sought to reach Nairobi adolescents through Internet technology; in exchange for students' willingness to let researchers learn about their lives, the study helped them participate in this rich, global, digital culture.

The TeenWeb project combines social and scientific goals to maximize benefits and explore new paths for global learning and exchange on matters of adolescent health. The project represents a revolution in research ethics and equity, offering "research subjects" computer skills in exchange for their cooperation over a two-year period. Instead of the traditional t-shirt or key chain incentive, students in the TeenWeb study received benefits in the form of digital information-transfer.

The field of adolescent sexual and reproductive health (ASRH) emerged on the global stage during the International Conference on Population and Development (ICPD, Programme of Action, paragraph 8.41 Cairo 1994). Youth from around the world voiced the barriers that prevent them from gaining access to information and services that can help them understand their sexuality and protect them from the health consequences of risky behaviours. Governments responded with international agreements designed to foment a safe atmosphere for learning. This international consensus served as an impetus for the TeenWeb project.

The
TeenWeb
Study
sought to
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Nairobi
adolescents
through
Internet
technology.

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Sexuality and reproduction are fundamental to our very existence and engage us at some level from the cradle to the grave. Yet they are among the least talked about issues. We have lived in a world where young people were left to discover things for themselves. As a consequence, many youth ended up with misinformation, learning important lessons far too late. Young people have not been systematically offered the factual information and skills that they need to make healthy, life-enhancing choices.

There are more young people in Kenya than ever before. The choices that they make regarding their sexual and reproductive health will dramatically affect everyone's future welfare and will shape Kenya's destiny as a nation. The time to teach them is now.

This report summarizes the results of the pioneering TeenWeb Kenya study, which used the Internet as a research and educational tool in low-resource settings. We hope these results will galvanize further action among those who support policies and interventions to improve adolescents' access to reproductive-health information and services. We welcome input and ideas about how these findings can best stimulate and inform policies and practices aimed at the advancement of youth. This study paints a detailed portrait of the students of Nairobi's public secondary schools. They are both very keen and yet rather unprepared to join the adult world with its attendant responsibilities. We think you will find the results tell a compelling story that cannot be ignored.

Ambassador Dr. Eunice Brookman-Amissah (MB.ChB, FWACP, FRCOG)
Ipas Vice President for Africa

TeenWeb is an innovative, school-based Internet study that involved over 1000 youth in five public secondary schools in Nairobi. Schools participated for 18 months during 2002 and 2003, either as *web* or *control* schools. Web schools were given computers so that students could answer questions about their lives and health via the Internet. As students finished answering the questions presented in each of a series of five modules, they were given the option of learning about health via the Internet. Websites featured content from *You, Your Life, Your Dreams: A Book for Adolescents* by Family Care International. At the end of the project, the computers were donated to the schools. Students in the control schools did not have Internet access, and only answered questions at the beginning and end of the study via traditional paper questionnaires. Questions were the same as those presented to students in web schools, but of more limited scope. Control schools were given electronics (TV or VCR) in exchange for their participation.



The study had four main objectives:

1. To better understand the social, educational and sexual-health needs of urban secondary school students aged 12-21 years.
2. To share this knowledge to improve policy and services for adolescents.
3. To test a new research modality (the Internet) for collecting data over time.
4. To test a new teaching modality (the Internet) for health education.

This report presents the results of preliminary analyses directed at objectives 1 and 4. Students from Forms 1–4 participated, with 85% enrolled in Forms 2 and 3 at the start of the project. The mean age at study entry was 16.5 years. Girls comprise almost 40% of the study sample.

Websites featured content from *You, Your Life, Your Dreams: A Book for Adolescents* by Family Care International.

TeenWeb involved over 1000 youth in five public secondary schools in Nairobi.

How do students feel about school and school safety?

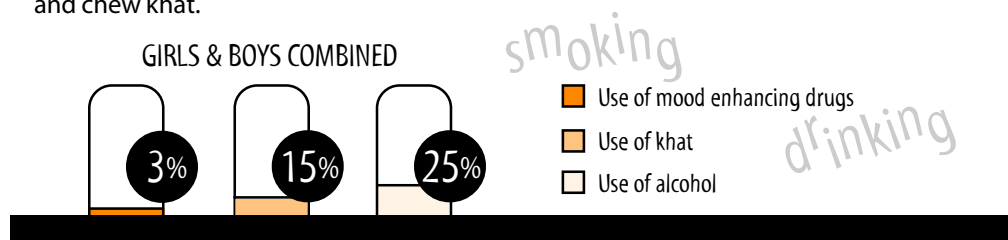
Most students (84%) enjoy attending secondary school. Ninety-five percent report that they try hard in their schoolwork, and almost nine out of ten think there is a good or “almost certain” chance that they will graduate from secondary school. Ironically, although low-income students are the most enthusiastic about school attendance, they are most likely to miss school at least once each month because of a lack of resources (54% of students were of low versus 12% of high socioeconomic status (SES)). Virtually all students (96%) feel safe attending school. However, despite the fact that few feel personally threatened, more than a third of students report the presence of “gangs” in their school, more than half report fights and harassment of certain segments of the student body, and more than a quarter report fights necessitating medical care. Fortunately, relatively few students report that students carry weapons in school (10%).

How is the health and health care of students?

The majority of students describe their health as “excellent” or “very good,” and relatively few (12%) report “feeling depressed a lot or most of the time” in the past week. However girls are more likely than boys to report feeling depressed frequently (16% versus 8%, respectively). On average, both boys and girls play games and engage in physical exercise for over 30 minutes 5 days per week. However only 37% of students have had a medical exam in the last year, and about one in ten report never having had a medical exam. Use of reproductive-health services by girls is low. Although 95% of adolescent girls in our survey have had their first menstrual period, only 22% have ever had a gynaecological exam.

How common is substance use?

Students’ reported use of mood enhancing drugs such as marijuana, inhalants (glue, paint thinner, and petrol), crack, khat, barbiturates, tranquillisers, cocaine, LSD, PCP, ecstasy, heroin and steroids is low (3%). However, use of alcohol is common. Over one third (25%) have used alcohol in the last 30 days, and about one student in five has gotten drunk. About 20% of students report tobacco use at some time in their lives, and about 15% chew khat. Boys are more likely than girls to get drunk, smoke tobacco, and chew khat.



I am a teenager in Form 3 and know the problems we go through. Some of us get bad peer groups and some go further taking drugs such as alcohol, mirra, bhang and other kinds of drugs.

~ male, age unknown



How common is partner violence in adolescent romantic relationships?

Fifty-eight percent of students have had at least one romantic relationship. Unfortunately verbal and physical aggression and sexual coercion are common in these partnerships. Of students who have had at least one romantic relationship, 22% report verbal victimization, 19% report physical victimization, and 27% report having suffered sexual coercion. Reports of verbally threatening others are similar to victimization, but fewer students report carrying out physical violence or sexual coercion than report being victimized. Boys tend to report somewhat higher levels of both victimization and assault than do girls; sex differences are especially large regarding perpetration of sexual coercion, with 27% of boys and 6% of girls enacting coercive sexual behaviour.

What is the sexual experience of students?

Almost half (47%) of boys participating in the TeenWeb study say they have had vaginal intercourse at least once, whereas only 9% of girls report intercourse experience. This figure for girls is substantially lower than those reported in other surveys. Of adolescents in the TeenWeb survey who have had sex, about three-quarters of the boys and half of the girls had their first experience by age 15. Eight out of ten sexually experienced adolescents have had sex more than once, but about half the sample (53%) has had only one or two partners.

How common are coercive or transactional sexual experiences?

More than a quarter of sexually experienced respondents (28%) report that their first sexual experience was unwanted. Twenty-two percent report they “weren’t able to say no or get out of it” and almost 6% say their sexual debut was a result of being verbally threatened or physically forced to comply. Four out of ten sexually experienced girls report their first intercourse was unwanted compared to about one of five boys. Eleven percent of students received gifts, favours, or money in exchange for their first intercourse, and over a third of girls’ (36%) sexual debut involved an exchange. Items exchanged for sex included: money, chocolate, jewellery, alcohol, and unspecified favours.

Most of them believe that if you have never done it, you are unsophisticated.

~ male, age 17

The most important issue facing teenagers in Kenya is poverty whereby a teenager lacks the basic needs like food and clothing. This leads one to engage in immoral behaviour to get money to meet the needs.

~ female, age 15

Do students feel they can refuse unwanted sex?

Students feel vulnerable to sexual coercion from persons in authority positions, such as those with financial control, or those with the ability to restrict access to transportation or academic promotion. Less than a third of students feel confident about successfully refusing unwanted sexual advances. Most students who report specifically being pressured to have sex have talked about this experience with friends (60%) or siblings (25%), but few have talked to mothers (12%), fathers (6%), teachers (15%), or health professionals (9%) about it. Fifteen percent of males and 25% of females who experienced pressure to have sex have never reported or discussed it with anyone.

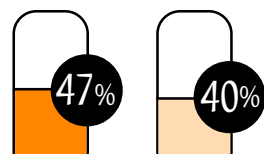
How common is condom use among sexually experienced students?

About one third of sexually experienced adolescents say they used condoms during their first intercourse experience, and half used condoms during their most recent experience. Forty-three percent of adolescents say they never use condoms, and only 17% report using them all the time. Students who are older, male, and of higher SES are more likely to report regular condom use.

What are students' opinions about condom effectiveness and perceptions about barriers to condom use?

Less than half of adolescents agree that condoms are useful to prevent pregnancy, and only about 1 in 5 agree condoms are useful to prevent HIV/AIDS. One in five does not know or have an opinion about condom effectiveness. Boys are more likely than girls to think condoms are effective. Believing that condoms often break or that buying them would be embarrassing are the most commonly reported barriers to condom use, with about 40% of teens agreeing. However, a similar percentage say they "don't know" whether condoms often break and a slightly higher percentage (45%) report they don't know if condoms are difficult to use.

GIRLS & BOYS COMBINED



- Condoms are useful in preventing pregnancy.
- Condoms break and are embarrassing to purchase.

Teenagers [sic] in Kenya are encouraged [sic] to have sex because they think that use of condoms will save them from not having Aids [sic] which is not true.

~ male, age 17

I have refused the use of pills, condoms, diaphragms and [sic] coils since they are not GODLY and have bad side effects.

~ female, age 17

What are students' opinions about when condoms should be used?

Virtually all students report that HIV/AIDS is a problem in Nairobi. The majority of students agree that it is all right for a woman to ask her partner to wear a condom (63%), and that it is all right to decline sex if no condoms are available (58%). However, almost half believe that if someone trusts their partner they do not need to use a condom, and one in five believes that only people with many partners need to use condoms. Despite being more likely to question condom effectiveness, females are more likely to endorse condom use across multiple relationship contexts.

How good is students' access to low-cost condoms and voluntary HIV counselling and testing?

Despite the low overall prevalence of regular condom use, three quarters of all teens in the survey believe it would be "somewhat easy" or "very easy" to obtain condoms at a low cost. About 40% of teens agree that the government should provide condoms for free to all adolescents, but there is a large difference of opinion between boys and girls. Forty-eight percent of boys versus twenty-four percent of girls favour government-subsidized distribution. More than four in ten students think it would be "somewhat hard" or "very hard" to get a free and confidential test for HIV.

What do students know about emergency contraception?

About half of TeenWeb participants know that emergency contraception (EC) includes "pills taken after sex to prevent pregnancy." However, fewer than one in three correctly reports even one place to obtain EC in Nairobi, and less than 5% know that EC can be taken up to 3 days after sex and still be effective in preventing pregnancy.

What is the school climate for pregnant girls?

Among students of schools with female pupils, 48% report that pregnant girls endure harassment at school. One in five students believes that schools should expel girls who get pregnant. Boys and girls differ in opinions about disciplinary consequences for boys. Almost half of girls (48%) believe that boys who impregnate girls should be expelled from school, compared to only 25% of boys who favour expulsion of boys.

if pregnancy is encouraged in school then many will engage in sexual intercourse.

~ male, age 15

... a girl can still go to school after giving birth and have a bright future. It also does not give ideas to others since everyone has their own mind.

~ female, age 16

If it was a must then they could have used [a] condom although the best thing was to abstain from having sex.

~ male, age 15

I think in some cases it might be fair and in some it may not be fair. This is due to, some girls who do it intentional but some do it by mistake e.g. like some girls are normally forced into sex which is not good.

~ male, age 17

Abort it.
This would
be against
my
principles
but if I told
my parents
they would
throw
me out.

~ male, age 16

What would students do if faced with an unintended pregnancy?

Over half of students (56%) have known an adolescent with an unintended pregnancy. Despite the fact that pregnancy no longer legally disqualifies girls from continuing in secondary education, practically speaking, many adolescents continue to perceive pregnancy as a barrier to school attendance. More than 1 in 10 students say they would resolve an unintended pregnancy through abortion.

Other common responses to unintended pregnancy included:

Running away from home

I surely don't know but I would probably run away to a place where nobody knows me.

~ female, age 16

Prayer and appeals for divine intervention

I'd pray very hard for a miracle.

~ female, age 16

Appeals for parental or grandparents' financial support and child care.

I would report it to both parents, so that they could decide on how to go about that issue and i would propose to marry her.

~ male, age 17

Denial of paternity

I would not do anything because it's not my problem.

~ male, age unknown

Adoption

I would decide to take the chid[sic] to a children's home so that they can take care of him coz I'm still in school and I can't take [care] of him.

~ male, age 16

Postponement of all decisions until delivery is imminent

Keep it a secret until I am confronted.

~ female, age 16

Marriage

If, I love her very much, I will marry her and raise the baby together. But only if.

~ male, age 16

What do students know about Kenya's abortion law?

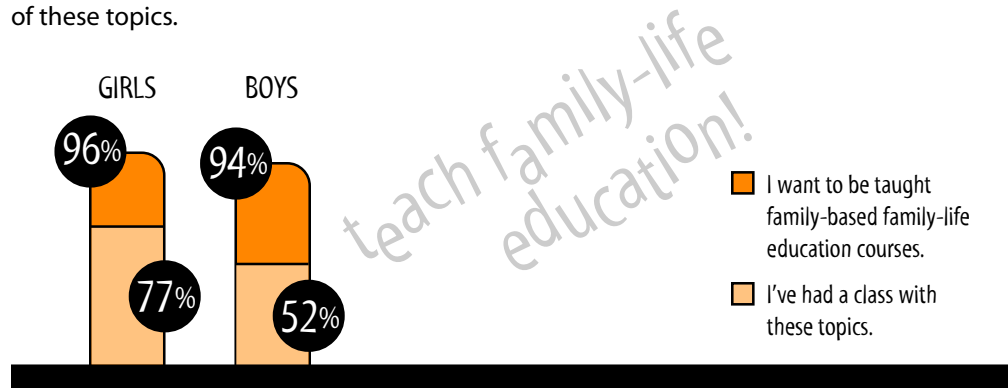
Although pregnancy can be legally terminated in Kenya in order to preserve a woman or girl's health, only 14% of students know this. Almost a third of students (29%) believe that abortion is never legal in Kenya under any circumstances, and another 14% report that they do not know whether it is legal or not.

What do students say about abortion among adolescents?

More than 40% of adolescents report that it is "very common" or "somewhat common" for girls to "try to bring their periods back" when menses have stopped due to pregnancy. Forty-five percent of students report knowing of a peer who has had an abortion. Although few students see abortion as a desirable option, some see it as a necessary solution to no-win situations. For example, students often articulate a fundamental incompatibility between pregnancy and continued education. Fears associated with incurring parental anger or discontinuing school often appear to trump fears of the health risks of unsafe abortion.

Do students want sexual and reproductive-health information? Are the schools offering family-life education?

Students overwhelmingly favour receiving accurate, fact-based family-life education. Ninety six percent of girls and ninety four percent of boys in this survey believe that schools should teach family-life education classes with content on reproduction, contraception, and prevention of sexually transmitted infections (STI). However, only 77% of adolescent girls and 52% of adolescent boys report having had a class that included any of these topics.



The most important problem facing teenagers is that they lack people to teach them about sex and it's effects [sic] to them. They just take it for granted. Young people need to know more about sex and not just a mare [sic] practice. My advice is that older persons to take time to be with the youth.

~ male, age 19

Well what i think is that things like AIDS... should be taught in school."

~ male, age 18

What are students most concerned about?

Although Kenyan teens mention many different issues as the biggest concerns facing Kenyan adolescents in the year 2002, drugs and peer pressure are the top concerns reported by both girls and boys. According to the students, peer pressure and the struggle to fit into a peer group are what lead teens to experiment with drugs and other things like sex, alcohol, and smoking. Students also see sex as a major temptation facing teens partly because they see sexual activity as an important way to fit in. Students describe premarital sex as having major consequences such as teenage pregnancy, HIV/AIDS, and other STIs. HIV/AIDS was also frequently listed as the biggest problem facing Kenyan teens today. Finally, poverty was noted as a central problem; teens note that poverty and a poor economy can lead to prostitution, drug abuse, and school dropout.

What were the challenges in collecting these data?

The TeenWeb study faced a number of significant challenges that were overcome with creativity and perseverance.

Some of the challenges were related to the technological component of the research. The geographic constraints on leased line access to the Internet required negotiation and flexibility on the part of schools and service providers. The price of Internet bandwidth in Kenya was also an obstacle that was overcome with the help of partnerships and subsidies. However, even this well-funded project, which benefited from generous subsidizing partnerships, was hampered by the high cost and limited accessibility of satellite Internet services, including periodic Internet shutdowns. This limited the amount of the information that could be collected as well as the interactivity of the educational site.

The need for software that allowed for individualized and unsupervised web navigation, yet shielded students from inappropriate web content, was another technical challenge faced by TeenWeb. Few commercial web-filtering programmes can differentiate between youth-appropriate reproductive-health information and pornography, so a customized filter configuration had to be developed.

In general, the project required more time from researchers and others involved in the project (for example, school teachers and administrators) than anticipated. Although the data were automatically encrypted and transmitted via satellite to the server, review and cleaning of the data received were still needed. There were also significant logistical hurdles. The practical challenges of bringing the Internet into the schools and bringing the students to the Internet were more formidable than the study design implies. For example, Internet shutdowns and lack of electricity were common.

I hated the fact that we were being hurried so much.

~ female, age 15

It has consumed most of my time because of the congestion in the lab.

~ male, age 17

TeenWeb was also subject to the traditional impediments that hamper other types of studies, including periodic floods, teacher strikes, theft and vandalism, personnel turnover, student attrition, and fatigue. The success of the TeenWeb study rests squarely on the shoulders of a very dedicated group of staff, teachers, administrators, students and technical partners at Swift Global, TAF, Nairobi, IAT and Telkom Kenya, who overcame the obstacles with grace and patience to make this pioneering study a reality.

Did students' knowledge or opinions change as a result of TeenWeb?

When a student finished a web module, he or she was automatically forwarded to the project's educational web pages. Although students were encouraged to access web-based health information, they could access other web content as well.

Perceptions about condoms

Preliminary analyses suggest that providing access to TeenWeb's educational website did not change students' perceptions about the utility of condoms to prevent pregnancy or HIV/AIDS, perceptions about barriers to condom use, or attitudes about when condoms should be used.

Knowledge about EC

There was a slight improvement in students' knowledge about EC, but this change was unfortunately limited to boys. For example, among boys who had no correct answers to the three questions about EC at study entry, those boys with web access had an average of 1.13 correct answers at the end of the study versus 0.97 correct answers from those boys without access.

Knowledge about availability of HIV testing

Students were asked how hard it would be for "someone your age" to get a free and confidential test for HIV. At the beginning of the study, about 40% of students felt it would be "somewhat" or "very hard." By the end of the study, 19% of students with web access and 26% of students without web access thought it would be "somewhat" or "very hard." However, the difference between web and control students in their attitude change over time is not statistically significant, and is not attributable to web access.

Knowledge about abortion law

There was modest improvement associated with the likelihood of knowing that abortion is legal in Kenya to preserve a woman or girl's health. By the end of the study, students with web access were about twice as likely to know this compared to those without web access. However, even at study completion, only about one in five students with web access knew about this legal condition compared to 14% at study entry.

There was modest improvement associated with the likelihood of knowing that abortion is legal in Kenya to preserve a woman or girl's health.

It has helped me practise my typing skills.

~ male, age 16

It has helped me search myself deeper."

~ female, age missing

It has made me think about who I really am and the realities of life.

~ female, age 16

some questions are for married guys.

~ male, age 18

Other knowledge and opinion changes

Although the preliminary evaluation found only modest or no improvement in reproductive-health knowledge and attitudes, many students self-reported survey benefits, such as increased self-knowledge, critical thinking, communication and computer skills. The following quotes are indicative of the study benefits cited by students.

It has really helped me in making the right choices and i've known how to deal with guyz who ask for sex and i've known not to get involved in alcohol or drug abuse. It has taught me to face my parents courageously and talk out my problem with them.
~ female, age 16

Although responses to the Teen Web survey were largely positive, there were challenges for students including loss of class time and difficulty in answering questions about their future, which some felt was impossible to predict. A small proportion of students felt the questions were too personal or not strictly relevant to their life experience.

I think the questionnaire is ok though some of the questions may have been a tiny bit too personal. I dont think i would know how to react if I got HIV/AIDS. So i didnt answer.
~ female, age 16

What implications does the TeenWeb Study have for Kenya's Adolescent Reproductive Health and Development Policy (ARH&D)?

The ARH&D policy represents an important milestone in Kenya's history, reflecting a broad consensus between diverse constituencies on how to best protect and support youth. Many of the findings in the TeenWeb study bolster the recommendations and action plans elaborated in the 2003 ARH&D Policy. In particular, our findings echo the policy's advocacy for the empowerment of girls, the need for adolescent-friendly reproductive-health services, the greater involvement of parents schools and community agencies in adolescent health and sexuality issues, and the importance of gender equity in education as keys to improved health.

The policy is a robust and compelling call to action, but there are a number of technical content areas that would benefit from further clarification. We advocate several additions that we believe will better enable stakeholders to realize the policy's vision of adolescent well-being.

1. Kenya's national policy acknowledges youth's right to appropriate and relevant information, but stops short of calling for school-based programs to educate youth on sexual and reproductive rights and health. Our findings point to the need for comprehensive fact-based family-life education based on a gender and human rights perspective. Implementation of such programs is consistent with international recognition of the "evolving capacities" of adolescents (UN Convention on the Rights of the Child, 1989). Many adolescents are intellectually capable of making sound decisions about reproductive-health services, but capacity is hindered by inadequate education about sexual and reproductive health. Our findings indicate that adolescents want this information and they need it.
2. The policy acknowledges that women younger than 25 years are more likely to engage in unsafe abortion to end unwanted pregnancies, but the ARH&D Policy stops short of encouraging the establishment of safe legal abortion services for adolescent pregnancies. Given adolescents' descriptions of the pervasiveness of both forced sex and unsafe abortion, the review of the legal restrictions on safe abortion is warranted.
3. The frequency of forced or coerced sex reported by students in the TeenWeb study indicates an urgent need to realize ARH&D *Priority 4.2: Harmful Practices*, which outlines policies and eight strategic actions to address sexual abuse, violence, and child trafficking. The ARH&D target of increasing the median age of sexual debut to 18 years by 2015 cannot be accomplished without addressing the high prevalence of coerced or forced sex among youth. The ARH&D policy asserts

Many of the findings in the TeenWeb study bolster the recommendations and action plans elaborated in the 2003 ARH&D Policy.

that sexual abuse is three times more common among girls than boys. Our study findings do not corroborate this statement. Kenyan boys report unwanted sex and pressure for sex at rates that approach their female peers. The susceptibility of Kenyan boys to sexual abuse must not be ignored. Interventions to shelter all youth from exposure to unwanted sexual advances are needed.

4. The ARH&D policy action plan calls for the enforcement of a return to school policy for girls who become pregnant. Although the policy focuses on a social support system for girls after pregnancy, our research suggests that girls also need early social supports to manage unintended pregnancy while in school. Almost half (48%) of students in schools with female pupils report harassment of pregnant girls at their schools, and students themselves suggest that a hostile climate can demoralize girls, leading to attrition and unsafe abortion.
5. The ARH&D target of increasing national contraceptive prevalence among 15 to 19 year-olds from 4% to 8% by 2015 is ambitious in that it represents a doubling of prevalence. However, it is quite modest in absolute terms. Our results suggest that this increase will not address the needs of the in-school adolescent population, one-third of whom are already sexually active.
6. The ARH&D does not advocate condom use for HIV prevention among sexually active adolescents. Given the myths surrounding condom use identified in this study and the prevalence of HIV in the adolescent population, there is a need to supplement important messages about sexual abstinence with promotion of condom use among sexually active adolescents.
7. Many of the indicators in Kenya's ARH&D policy address birth preparedness, pregnancy and delivery. These are important aspects of adolescent reproductive health. Although a few of the indicators address delay of sexual debut, there are no indicators to assess Kenya's progress on prevention of HIV, STIs, or unsafe abortion among adolescents. In addition, there are few indicators that enable individual schools to track their progress in creating an environment supportive of sexual and reproductive rights and health. Unfortunately, some of the recommended indicators (for example, reducing age-specific maternal mortality by 50%) are predicated on data that do not currently exist and hence cannot be used as a benchmark. A stronger evaluation framework would help Kenya to reach its goals.

APPENDIX 1



Sociodemographics of the Sample

The following tables are based on the 1,179 adolescents who participated in TeenWeb through the entire length of the study.

Table 1: Sample Characteristics

	MALES n=696	FEMALES n=452	TOTAL n=1,148
KENYAN BORN	96%	97%	96%
ETHNICITY			
Luo	31%	27%	29%
Kikuyu	30%	33%	31%
Luhya	13%	14%	13%
Kamba	4%	6%	5%
Kisii	4%	3%	4%
Somali	3%	2%	3%
Mijkenda/Swahili	2%	2%	2%
Nubian	2%	2%	2%
South Asian	2%	—	1%
Kalenjin	1%	1%	1%
Masai	1%	1%	1%
Meru/Embu	1%	4%	2%
Taita/Taveta	1%	2%	2%
Other	5%	3%	4%
RELIGION			
Catholic	28%	28%	28%
Protestant/Christian	60%	66%	62%
Muslim	10%	6%	8%

Table 2: Sociodemographics and Computer Experience

	MALES n=722	FEMALES n=457	TOTAL n=1,179
AGE (years)			
12-15	14%	25%	18%
16-17	63%	65%	64%
18-22	23%	11%	18%
SCHOOL FORM			
Form 1	5%	5%	5%
Form 2	44%	41%	42%
Form 3	44%	47%	45%
Form 4	8%	7%	7%
MARITAL STATUS			
Single	77%	89%	82%
Cohabiting	6%	1%	4%
Married	2%	1%	1.5%
Refused to answer	12%	8%	10%
SOCIOECONOMIC STATUS (SES)			
Low	35%	20%	29%
Med	39%	39%	39%
High	26%	41%	32%
MOTHER'S EDUCATION			
Finished Primary	13%	9%	12%
Some Secondary	16%	14%	15%
Finished Secondary	39%	49%	42%
Some College	12%	14%	13%
FATHER'S EDUCATION			
Finished Primary	9%	7%	9%
Some Secondary	10%	7%	9%
Finished Secondary	47%	48%	47%
Some College	12%	14%	12%
EVER USED A COMPUTER:			
YES	60%	68%	64%
EVER CONNECTED TO INTERNET:			
YES	37%	42%	39%



APPENDIX 2

Study Methods

Ethics Approval

The Kenya Ministry of Education and the University of North Carolina School of Public Health Institutional Review Board for the Protection of Human Subjects (UNC IRB) reviewed and approved all TeenWeb protocols and questionnaire content. The UNC IRB stipulated that questions about sensitive content (for example, personal risk-taking behaviours) could be asked only of students who returned a written parental consent form. TeenWeb is one of the few studies of adolescents in Kenya to actively involve parents.

Study Design

We constructed a comprehensive school sampling frame with the goal of randomly selecting from among larger public schools that included substantial proportions of low-income students. We were also interested in a male/female mix of students, and required schools that were geographically situated to permit the installation of stable E1 Internet connections. However, because Internet access was limited to certain higher-income neighbourhoods, the school recruitment process and the assignment of schools to *web* and *control* groups could not be completely random.

We recruited five secondary schools in Nairobi, Kenya. Three large public schools signed a Memorandum of Understanding to become web schools—a boys' school, a girls' school, and a mixed-sex school. A total of 1024 students entered the study as participants in the web group. For web schools, we contracted with local companies to install Internet lease lines, installed computer hardware and software, constructed a privacy cubicle for each computer, configured a LAN, and provided four hours of training to students and teachers on the basics of computer operation and web navigation. Two additional schools were selected – a boys' and a girls' – to be control schools with 496 participants. These students resembled the socioeconomic characteristics of web students as closely as possible. Having a control group for comparison allowed us to make stronger statements about whether web students' change in reproductive-health attitudes over time were attributable to exposure to the educational web pages or to other unmeasured factors.

Students in all schools first completed a self-administered paper module (Module #1) tapping sociodemographic information and baseline knowledge and attitudes related

to condoms, HIV testing, emergency contraception, and Kenyan abortion law. Following completion of Module 1, students in web schools were assigned a unique user ID that allowed them access to a series of five web-based questionnaire modules. Web students completed one web-based module approximately every six to eight weeks, and in return, had access to the Internet for at least 30 minutes after completing each module. When a student finished a web module, he or she was automatically forwarded to the project's educational pages, which included age-appropriate health information developed for African youth that was tied to the topics addressed in the questionnaire module. Although students were encouraged to access other web-based health information, they could access other Internet content as well.

After the first paper module, students in control schools completed a second (and final) paper module at the end of the study, at about the same time that web-students were completing their final web-based module. The final paper (control) and web modules repeated questions related to knowledge and attitudes about condoms, HIV testing, emergency contraception, and abortion legislation to examine changes over time in knowledge and attitudes in conjunction with Internet access. Web students also re-took these same questions in Module 4 to examine any differences associated with the passage of time, etc. prior to exposure to the reproductive-health information available on the project's web page. Study retention was 79%.

Our use of a traditional school-based recruitment strategy is one of the advantages of the TeenWeb design over other web-based surveys in which subjects are self-selected. We can analyse the generalizability of our sample and calculate the effectiveness of student recruitment.

Upon study completion, web schools retained the computers and all other hardware and software. Control schools received electronics (TV or VCR) in exchange for participation, but had no Internet access.

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Schools

Jamhuri High School

Mr Kenneth K. Kingori, (H/M), Mrs Joyce Ndiangui, Mrs Josca Ongoro, Mr Noah Oyieke

State House Girls

Mrs Sarah K. Ndege (H/M), Mrs Julie Mbae, Mrs Ruth Wanjema, Mr Zachary Sukari

Lang'ata High School

Mrs Joyce Muli (H/M), Mr Paul Ojera, Mr Wily Muliro, Mrs Margaret Mugo

Nile Road Girls School

Mrs Lucy Musyoka (H/M) , Mrs Catherine Musuku

Pumwani Boys School

Mr Eric Kibinu (H/M), Mrs Jennifer Birechi

More Information



For a more detailed discussion of the methods and findings, consult the final technical report entitled *TeenWeb Nairobi: Using the World Wide Web to Survey and Inform Urban Adolescents about Health*, available from the Ipas Africa Alliance office:

P.O. Box 1192
00200 City Square
Nairobi, Kenya
(20) 577-239

or from the organizations' websites www.ipas.org or <http://www.cpc.unc.edu/>

Results from a parallel cohort in Rio de Janeiro, Brazil will be available in September of 2004.



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