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Understanding where and why Senegalese adolescents and young adults access health information: A mixed methods study examining contextual and personal influences on health information seeking

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Abstract

Background—Adolescent and young adult years are critical to the development of behaviors that influence health across the life course. To reveal which health communication channels should be used to effectively reach and influence younger populations in Senegal, we used a mixed methods approach to identify and interpret the multifaceted influences surrounding where and why this population accesses health information.

Methods—We conducted 16 focus group discussions among adolescents and young adults in Senegal in September 2012. We then collected survey data from a larger, more diverse sample of Senegalese youth in October–November 2014.

Results—Our results demonstrate that information sources vary by health topic, differential access, age, and other demographics. While there is a greater perception of credibility and usefulness in information received from health professionals, stigma remains a barrier for obtaining information about HIV/AIDS from health centers. Older youth are also less likely to seek health information from adults, which may be influenced by preferred use of information technologies, especially for information about taboo health topics.

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Disclaimer statements

Contributors

None.

Conflicts of interest

None.

Ethics approval

The University of California Los Angeles Institutional Review Board and the Senegalese National Ethics Committee for Health Research (CNERS) approved both the qualitative and quantitative studies prior to data collection.

Conclusions—Our findings support multi-pronged, targeted approaches to health communication efforts. We recommend that doctors continue to provide actionable information about preventing or treating specific diseases, whereas teachers should educate youth about general health topics and health promotion behaviors. The results suggest that traditional mass media, such as radio and television, are the best communication channels for information about HIV and sexual/reproductive health, especially for older adolescents and young adults.

Keywords

Health information; Health communication; Information sources; Information technology; Adolescent health; Youth audiences; sub-Saharan Africa; Senegal

Introduction

Prevention of illness and promotion of health among adolescent and young adult populations are increasingly gaining attention within the global health arena due to demographic and epidemiological transitions occurring worldwide.^{1–3} The present generation of 10–24 year olds is the largest in history and coincides with the increasing burden of non-communicable diseases, many of which originate during adolescence.³ As children transition into adulthood, they experience physical, psychological, and emotional changes which shape health trajectories across the life course. It is a time for adaptation to the social environment when many risky behaviors are initiated (e.g. sexual activity and drinking).⁴ It is also a period when youth are increasingly independent and able to care for themselves. To facilitate optimal health and well-being, it is critical that adolescents and young adults have accurate, relevant, and accessible health information and that they are capable of utilizing this information to engage in health-promoting behaviors.

In comparison to youth populations in other settings, 10–24 year olds living in sub-Saharan Africa suffer from the highest disability-adjusted life years (DALYs).^{5,6} Injuries contribute to the highest DALYs among males in this age group and maternal conditions among females.⁵ HIV/AIDS, other infectious diseases, as well as maternal, neonatal, and nutritional illnesses remain the dominant causes of years of life lost, while the rates of alcohol use disorders, cancers, and other non-communicable diseases are increasing.^{7,8} The persistence of conditions related to poverty and health care access amid the global epidemiological transition contributes to a multi-burden of disease afflicting this population.¹

One of the key barriers to preventing premature morbidity and mortality among youth living in sub-Saharan Africa is the lack of knowledge about practices that influence disease exposure and transmission.^{9–13} Beliefs and attitudes surrounding risk reduction or wellness practices, including social stigmas, also hinder preventive behaviors.^{9,14,15} Public health agencies aim to address these barriers through the implementation of health communication campaigns and programs that highlight prominent disease risks and promote protective health practices. Understanding where and why African youth populations currently access health information can help to identify the most effective delivery methods for these efforts.

The scope of research investigating health information seeking among youth in sub-Saharan Africa is limited. Most studies have focused on identifying popular information sources

rather than examining the larger context that influences health information seeking. In a 2008 study in Uganda, Ybarra et al.¹⁶ found that adolescents seek health information from a variety of sources and that these sources vary according to respondents' age and health topic. The majority of respondents turned to parents, teachers, and other adults to discuss general health and disease, but older teenagers were less likely to cite these sources for sexual health.¹⁶ Other studies set in Ghana¹⁷ and Nigeria¹⁸ similarly found that both in-school and out-of-school adolescents access multiple sources for health information. Participants listed health care providers, parents, and books as the top three sources for sexual and reproductive health.^{17,18} Out-of-school youth also increasingly relied on the Internet for information about these topics.^{17,18} In another study that assessed the relevance of information sources for HIV/AIDS among Nigerian university students, the majority of participants rated the Internet as useful, but considered radio/television and doctors to be essential sources.¹⁹

While these past studies highlight some of the trends of obtaining health information among sub-Saharan African youth, they lack relevant detail about why certain sources are used to access different types of information. We, therefore, attempt to expand on these previous studies by further elucidating the contextual and personal influences on these choices, including demographic characteristics, barriers, and beliefs about different health information channels. Our study's focus is especially salient to the sub-Saharan Africa region, where the rapidly evolving information technology environment^{20,21} has recently granted access to new health information sources. Senegal is one of the region's leading adopters of new media technologies²² and thus represents an important model for the study of how younger audiences are currently accessing health information and the reasons they use these different sources. Using a mixed methods approach that integrates qualitative insights with quantitative statistics, we interpret the multifaceted influences of health information seeking in Senegal and help reveal which communication channels should be used to effectively reach and influence younger populations.

Methods

Our mixed methods approach consisted of focus group discussions and a cross-sectional survey. We first conducted focus group discussions so that we could identify contextual factors surrounding health information seeking and better understand why certain health information sources are used. We then collected survey data from a larger sample of Senegalese youth so that we could confirm qualitative trends by health topic and further assess how sources of health information vary by participant demographics.

Focus group discussions

In September 2012, we conducted 16 same-sex focus group discussions among adolescents and young adults in Senegal. At least one study author (Dieng, Glik, or Massey) was present during each focus group discussion along with one of four Senegalese moderators of the same sex who was trained by Dieng's local research team. Participants were recruited from 26 high schools and community centers across the country and sampled according to gender and urban or rural residence (in Dakar vs. outside Dakar). Of the 26 identified sites, 16 (8 in Dakar and 8 outside of Dakar) were included in the final study sample. Each focus group

consisted of 8–12 French-speaking adolescent and young adult males or females between the ages of 15–25 years old. The focus group discussions were conducted at the high schools and community centers where participants were recruited. All focus group discussions were recorded with audio equipment, transcribed in French and later translated into English by a bilingual transcriber. Consent was obtained for all participants aged 18 years or older, and both parental consent and participant assent were obtained for those younger than 18. The University of California Los Angeles Institutional Review Board and the Senegalese National Ethics Committee for Health Research approved this study prior to data collection.

Instrument and measures

The focus group discussion guide was developed to understand access and use of traditional and newer forms of media among adolescent and young adult populations in Senegal, with a particular emphasis on the use of media for health-related purposes.²² When developing the guide, we assumed an expanded health and media literacy framework conceptualized as the skills and competencies needed to obtain, evaluate, and apply health-related information.²³ Health information seeking was one of the dimensions included in this framework.²³

The first section of the guide asked about general media access and use and was unrelated to health information. We did not include the first section of the focus group transcripts in our analysis as it was outside the scope of our study objective. The remaining sections focused on health information and included questions about health concerns, sources of health information, as well two hypothetical scenarios related to a respiratory infection and youth development, which allowed participants to describe the deliberate use of media and other sources for health-related purposes (Appendix A).

Data analysis

To first understand the content of the focus group discussions, two members of the research team read through all of the transcripts. Then, using the focus group discussion guide, as well as media use models²⁴ and the uses and gratification theory,²⁵ they developed a code book that included the following five codes to help organize and analyze the data: (1) major health issues/concerns, (2) sources of health information, (3) quality of information (credibility, trust, or other evaluative comments about information), (4) barriers to health information and care, and (5) action related to seeking/processing health information. A color code was assigned to each of these categories so that the coders could highlight the text whenever the code was encountered in the transcript. Data that did not fall within these general categories were not coded nor included in the analysis.

Together, two members of the research team coded the first transcript and defined clear inclusion and exclusion criteria for each of the code categories. They then each coded seven separate focus group transcripts, as well as two transcripts in common as a consistency check. The coding was almost identical between the transcripts coded by both researchers as the codebook included very general category codes, which also largely coincided with the format of the focus group discussion guide. After the transcripts were coded, the study team conducted a descriptive thematic analysis. Each of the code categories was examined so that

we could identify and summarize trends and themes related to where respondents access health information and why they use different sources.

Survey data

The survey was administered in October–November 2014 to a total of 2440 participants (95% response rate) sampled from six high schools ($n = 2140$) and five community centers in Senegal ($n = 300$). Sampling for the high schools consisted of a two-step process. First, a sample of classes was randomly selected from a school list. Within each of the selected classes, students were then stratified by gender and randomly selected from each stratum until 30 students were chosen. The stratification allowed for equal gender composition per class. The five community centers were selected based on existing partnerships with the research team. In each setting, administrative staff first explained the study to the adolescents and young adults and invited them to participate in the survey with an opt-out option. The participants then completed the questionnaire individually within the school or community center classroom. Project staff were present to address any questions or provide clarification. If respondents did not speak French, the survey was administered orally by study staff in the participant's preferred language (e.g. Wolof and Jola).

Instrument and measures

When developing the survey, we assumed a health literacy framework that emphasizes measures related to accessing, processing, and applying health information.²⁶ This framework guided the development of a multi-dimensional questionnaire (Appendix B). Questions were adapted from several sources, including the Senegal Demographic and Health Survey (DHS),²⁷ a study focusing on media utilization among South African youth,²⁸ and a national survey investigating access, sources, and trust of cancer-related information.²⁹ The survey instrument was approved by the University of California Los Angeles Institutional Review Board and the Senegalese Ministry of Health's National Ethics Committee, with authorizations signed by the Minister of Education and Ministry of Youth.

For this analysis, we focused on the section of the survey that asks participants about sources of health information. Questions from this section were informed by data from the previously conducted focus group discussions and a conceptual model developed by the study team that identifies determinants and supporting factors of media utilization³⁰ and health information seeking.²⁹ Specific questions were adapted from the 2007 Health Information National Trends Survey, which includes measures of different sources of general health information.³¹ Participants were asked to list their two primary sources of information for several health topics (malaria, drugs and alcohol, reproductive health, and HIV/AIDS). The sources of information were chosen from a list of available options that included health professionals, teachers, parents, guardians, relatives, siblings, friends, radio, newspapers or magazines, television, Internet, and mobile phones.

Data analysis

We first calculated frequencies for all sources of health information listed as the top two sources across each health category. To facilitate interpretation of results, several categories were combined. Teachers, parents, and guardians were grouped together as 'adults' and

siblings and friends as ‘peers’. We created a new category called traditional mass media to represent newspapers, magazines, radio, and television. Mobile phones were not included due to the ambiguity as to whether the information was sought from an interpersonal source or through the phone’s web applications. While 84% of Senegalese have mobile devices at this time, only 15% are Internet enabled.³²

We ran multiple logistic regression models for the three most popular sources of health information: health professionals, adults, and traditional mass media. The following covariates were included in these models: household wealth, highest level of paternal education, age, gender, residence, and health status. Household wealth was calculated using household possession indicators based on the methods used by Senegal’s DHS.²⁷ The total household wealth scores were then divided into quintiles (low, medium–low, medium, medium–high, and high). Highest level of self-reported paternal education was dichotomized at secondary school (less than secondary vs. secondary and above). Residence was measured as living in Dakar or not. Living in Dakar acted as a proxy measure for urban location as it is Senegal’s main metropolitan area and differs substantially in size and density in comparison to other regions in the country. Health status was measured by asking respondents to rank their general health based on a 5-point Likert scale ranging from 1 ‘excellent’ to 5 ‘poor’. Owing to low counts across response levels, they were collapsed into three categories: excellent–very good, good, and fair–poor. All statistical analysis was conducted using STATA v. 14 (STATA, 2015).

Results

Focus group discussions

Focus group data were collected from 169 Senegalese youth between the ages of 15–25 years. There was a nearly equal sex distribution (50.3% male and 49.7% female) and the mean age of participants was 19.8 years. The majority of participants were from Dakar (54.4%), followed by rural and peri-urban areas of Ziguinchor (21.3%), Fatick (13.6%), and Mbour (10.7%) (Table 1).

Several trends and themes related to where and why the respondents access health information were encountered in the coded data. They are described within each of the code categories presented below.

Major health issues/concerns

When asked about the major health issues that youth face today, the participants provided a broad array of conditions. Among the most common responses included HIV/AIDS, malaria, and unplanned pregnancy. Cancer was also discussed within the context of lung cancer caused by smoking tobacco. The all-female focus groups largely concentrated on reproductive health issues, with many participants referencing menstrual pain, unwanted pregnancy, and sexually transmitted infections. Several focus group discussions also mentioned the increasing trends of drug and alcohol abuse.

Sources of health information

Discussions about where they obtain health information varied by health topic. Radio and television were the most popular sources for general health information and HIV/AIDS. Several participants also mentioned the Internet and newspapers as other media sources. When seeking information about an undiagnosed condition, on the other hand, they almost exclusively listed doctors and other health care providers. Some participants even made the distinction between using media to obtain general health knowledge, but relying on a doctor for information related to diagnosis and treatment.

Some say that they would go on the internet or that they would read the newspaper, but when they have someone close to them who is sick, they rarely act in the way they indicate in the information they have received. When we go to the doctor, it's because we're sick and it's for a consultation and not to search for information.
(Dakar, School, Male)

For information related to puberty and reproductive/sexual health, participants indicated that home economics courses provided some information related to these topics, though participants reported mostly relying on interpersonal relationships. Some felt that parents could provide the best advice, while others felt more comfortable with friends and older siblings.

Quality of information

Several themes were noted surrounding the quality of different types of information. When asked about what they considered to be good information, the respondents described it within the context of its intended outcome, using words such as 'applicable', 'actionable', and permitting one to 'find a solution'. In terms of credibility, they frequently mentioned doctors, health posts, and hospitals as providing the most accurate information. They considered information from health care providers to be more trustworthy than other sources due to their specialized training.

For me, each with their work, you cannot give a piece of cloth to a mechanic and ask him to sew you a dress. This is to say that in this case, we must call the medical expertise and everything that he will say is the truth. (Not Dakar, Community, Male)

For good information, we must go to the big hospitals or health districts and sit with a doctor or a specialist in health information. They'll give you information that is sure and clear, and whatever the environment or situation will not be challenged.
(Dakar, Community, Male)

Barriers to health information and care

The focus group discussions revealed several barriers to obtaining health information. Access was one of the themes that was highlighted, and included discussions surrounding inconsistent Internet access and difficulty navigating hospitals and other health centers. Discomfort in discussing certain topics was another theme we encountered. Many participants considered sexual and reproductive health issues to be taboo, finding it difficult to openly discuss these topics, especially with their parents and other adults. Some of the

respondents referenced religious beliefs when describing why asking questions about these topics makes them uncomfortable.

For me, being with our parents does not mean that we know everything. Because there are things which we believe, we are Muslims, sometimes there are movies put on television that make us feel uncomfortable in front of our parents and we cannot always ask what is this or that? We are sometimes limited, sometimes they respond to us ‘shut up you should not pose those questions’. It depends on the subject we touch on. (Dakar, School, Male)

Fear was another type of barrier that was discussed. Several respondents were scared of obtaining information about HIV/AIDS prevention, as well as seeking a diagnosis or treatment due to the stigma surrounding the disease. Many respondents even expressed not wanting to go to the health centers in fear of being associated with HIV/AIDS.

[...] Young people are scared to get tested because of stigma which has made the person ignorant to the disease. But we should not overlook that many people do not know methods of prevention. (Not Dakar, Community, Female)

Action related to seeking/processing health information

One of the themes surrounding actively seeking information was the responsibility to inform and educate. When asked about what they would do if their friend had an infectious respiratory infection, many respondents discussed their duty to find medical information so that they could advise them on treatment. When seeking information about sexual health, many participants highlighted the responsibility and need for parents to discuss sexual health with their children.

[...] Parents should emphasize communication with their daughters, because the instant that the mother finds that her daughter is beginning to grow breasts, her hips begin to develop and she sees her menstruation, the mother should talk to her to explain to her what is happening and remove from the beginning this taboo so that the girl can confide in her mother each time. (Not Dakar, Community, Female)

I think that the majority is not well informed. The work of informing adolescents, it's the duty of the parent, but today, parents don't want to talk to their kids about this stuff. It's why kids are misinformed. (Dakar, School, Male)

Survey data

After data cleaning, responses from 2286 participants were included in the analysis. The average respondent age was 17.1 years, and the majority were female (55.2%), had a father who completed higher education (29.7%), and were living in Dakar (28.8%) (Table 1).

The primary sources of health information across each topic are presented in Fig. 1. Across all health categories, adults were the most common information source, followed closely by traditional mass media and health professionals. Similarly, information on reproductive health and drugs and alcohol was primarily sought from adults followed by traditional mass media, though much fewer respondents indicated that they consult health professionals on these topics. Information on HIV/AIDS and malaria, on the other hand, was primarily

sought from health professionals. Many respondents also received information about HIV/AIDS from traditional mass media. Internet and peers were the least frequently cited sources across all health topics.

Results from the logistic regression models, examining whether the respondents listed a health professional as a primary source of information, are presented in Table 2. In comparison to the lowest household wealth group, wealthier respondents had lower odds for citing health care providers as important informants on drugs and alcohol and reproductive health. For information on malaria, females (OR = 1.266; 95% CI = 1.035, 1.549) had higher odds of consulting a health professional than males. Paternal education, age, interview location, and health status were not statistically significantly associated with this outcome.

Table 3 presents the results from the logistic regression models examining whether the respondents listed adults as primary sources of health information. In comparison to the lowest household wealth level, there was a positive association with citing adults as important informants on drugs and alcohol for the highest wealth category (OR = 1.497, 95% CI = 1.048, 2.138) and malaria for the medium-to-high wealth category (OR = 1.439; 95% CI = 1.033, 2.005). Age was negatively associated with this outcome for malaria (OR = 0.927; 95% CI = 0.882, 0.976), drugs and alcohol (OR = 0.937; 95% CI = 0.891, 0.985), and reproductive health (OR = 0.910; 95% CI = 0.866, 0.956), with older participants possessing lower odds of consulting adults about these health topics.

Results from the logistic regression models, examining whether the respondents listed traditional mass media as a primary source of information, are presented in Table 4. For every 1-year increase in age, participants had higher odds of using printed media, TV, or radio to access information on malaria (OR = 1.075; 95% CI = 1.023, 1.130), drugs and alcohol (OR = 1.081; 95% CI = 1.029, 1.136), and reproductive health (OR = 1.114; 95% CI = 1.061, 1.169). Although most odds ratio values were not significant for the household wealth variable, there was a decreasing trend across these same health topics, with higher wealth categories associated with reduced odds in comparison to the lowest level. Females possessed higher odds of citing traditional mass media as a primary information source for drugs and alcohol than males. Being interviewed in Dakar was also positively associated with accessing these media sources, but only significantly associated for information on reproductive health (OR = 1.347; 95% CI = 1.090, 1.666) and HIV/AIDS (OR = 1.434; 95% CI = 1.149, 1.790).

Discussion

Our study provides evidence that sources of health information utilized by Senegalese adolescents and young adults vary by health topic and demographic characteristics. This supports findings from previous studies conducted in sub-Saharan Africa.^{16–18} By integrating both qualitative and quantitative results, we were additionally able to interpret why certain sources are used to access different types of health information and identify appropriate communication channels to deliver health messages.

The focus group data revealed that information sources are highly dependent on the characteristics and outcomes of the health topic. Respondents frequently listed teachers, parents radio, and television as their main sources of general health information, including reproductive and sexual health. Several participants expressed their beliefs that it is the role of the parent to teach their children about natural changes in the body. Alternatively, participants mentioned doctors as their trusted source for disease-specific diagnoses and other 'actionable' guidance. Many respondents highlighted the enhanced credibility and usefulness of diagnostic information received from health professionals. Results from the survey further support these findings across a larger, more diverse study population. Health professionals were cited most frequently for malaria and HIV/AIDS, two distinct conditions requiring diagnosis and treatment, whereas more general information about drugs and alcohol and reproductive health was more frequently obtained from adults and mass media. These findings suggest that communication campaigns should use multiple platforms tailored to the health topic. For example, health centers could facilitate information seeking by offering pamphlets that outline specific disease symptoms and treatment options. On the other hand, health education programs taught by teachers in schools may be better for educating students about general health topics and health promotion behaviors.

As it is documented in the literature,^{33–35} the focus group discussions demonstrated that stigma is a major barrier to obtaining information about HIV/AIDS. Several of the respondents discussed how their peers would avoid seeking information from health posts, despite expressing the greater credibility of information received from doctors. To address this barrier, we suggest integrating different information platforms to enhance the strategy and effect of the communication efforts. First, mass media channels can address HIV/AIDS stigma by disseminating information to a wide audience while maintaining anonymity of the information seeker. The survey data found traditional mass media to be a popular information source for HIV/AIDS, supporting the use of radio, television, and printed media. Second, to increase the credibility of this information, health care professionals could be involved in these mass media messages. For instance, doctors could be featured on television and radio programs to communicate information about HIV/AIDS. Together, these efforts could improve the reach and impact of health messages.

The age of the respondent was an important predictor of where they obtained health information. Older survey participants had lower odds of consulting parents, teachers, and other adults about malaria and drugs and alcohol. Age was also negatively associated with seeking reproductive health information from adults, a finding that coincides with previous research conducted in Uganda.¹⁶ One possible explanation is that older youth have greater access to other information sources outside their interpersonal relationships. This may be especially salient for taboo health topics, such as reproductive health, which several focus group participants described as difficult to discuss with adults and other authority figures. The greater odds of obtaining reproductive health information from traditional mass media among older survey respondents additionally support this explanation. Public health efforts targeting older teenagers and young adults may, therefore, benefit from continued use of mass media to disseminate sexual and reproductive health information.

Several other demographic factors were significantly associated with information seeking among survey respondents. In general, wealthier participants were less reliant on health care providers for information on drugs and alcohol and reproductive health. This may be a result of differential access to health care, though further research is warranted. Living in Dakar was also positively associated with accessing traditional mass media for information on reproductive health and HIV/AIDS. Both of these health issues contribute to substantial mortality in Senegal and are the focus of a number of communication efforts including the radio show 'A Toi!' and the television series 'C'est La Vie'.³⁶ Those living in Dakar, Senegal's major metropolitan hub, may have better access to popular media outlets than youth living in more suburban or rural areas. These data further support multiple delivery methods for health communication campaigns and programs in order to reach the diverse youth populations living in Senegal.

The survey data demonstrated that across all health topics, Internet remained the least popular information source. This was surprising as Senegal is a regional leader in new media technology adoption, with the government supporting policies, programs, and resources to enhance Internet connectivity.³⁷ Currently over a fifth of the population uses the Internet,³⁸ with Internet penetration reaching 70% in Dakar.³⁷ Despite the promise of this new information technology, it appears that radio and television remain more popular platforms for health information. This may be due, in part, to differences in access between traditional and new media outlets, but could also be a reflection of beliefs or practices surrounding the Internet. For instance, those living in Dakar who have greater Internet access are still more likely to use traditional media to obtain information on reproductive health and HIV/AIDS. The continued reliance on older communication technologies suggests that Senegalese youth are not yet taking advantage of the Internet's information capabilities. Further research is, therefore, needed to understand how to best utilize the Internet for future health communication campaigns.

Limitations

Although this study provides practical insights into the complexities of health information seeking among Senegalese adolescents and young adults, there are a number of limitations that should be acknowledged. First, we used data from two separate study populations, so the findings from each analysis are not directly comparable. However, we sampled populations from similar regions and settings to enhance their comparability, allowing us to triangulate general findings and better interpret the personal and contextual influences of health information seeking of our target population. Second, while the survey participants were sampled from both school and community-based settings in order to gain information about in-school and out-of-school adolescents and young adults, the vast majority of participants (95.2%) indicated that they were still enrolled in formal education. We were, therefore, unable to provide additional insights about differences between in-school and out-of-school youth and also recognize that our results may not be generalizable to the country's out-of-school youth population. Third, although our survey instrument collected data on the ratings of accessibility, confidentiality, credibility, and usefulness of information sources, the questions were limited to the two primary sources listed. Given their inherent preference for these sources, the vast majority of respondents rated these variables as 'high'. The lack of

variation between responses, therefore, prevented us from further analyzing these contextual factors in regression models. Finally, both our focus group discussion guide and survey were developed with a broader health and media literacy focus and were thus guided by more generalized communication theories and models. This limited our ability to utilize conceptual models that are more specific to health information seeking in our analyses. Future research on this topic would benefit from incorporating these models to inform question development and analysis of results.

Conclusion

Our mixed methods study found that health information seeking, among Senegalese adolescents and young adults, varies by the health topic examined, differential access to information sources, differences in age and other demographic characteristics, as well as beliefs about information credibility, the role of the parent in educating the child, stigma surrounding HIV/AIDS, and taboo health topics. These findings support multi-pronged, targeted approaches to health communication efforts in Senegal. We recommend that health professionals continue to communicate information about preventing or treating specific illnesses, while teachers should educate youth about more general health promotion. Traditional mass media channels are more appropriate for communicating information about HIV and sexual/reproductive health, especially for older adolescents and young adults.

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Biographies

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Dr Deborah C. Glik is a professor in the Department of Community Health Sciences at the UCLA Fielding School of Public Health. Her areas of interest include health and risk communication.

Appendix A. Focus Group Discussion Guide

Introduction (8-10 minutes)
To begin the discussion, let's go around the table and everyone say what his favorite musician is.
Why?
[Probe: entertaining music, romantic, educational]
Section 1 : Questions about Media (15-20 minutes)
In your opinion, what are the media?
What media do you use?
[If necessary: For example, television? Radio? Newspapers? The Internet?]
In your opinion, what are communication technologies?
Which communication technologies do you use?
[Computer? Cell phone? Radio station? TV?]
Is there another method or type of communication that we have not already discussed?
[Probe: Facebook? Twitter? MySpace? Social Networks?]
What media do you prefer? [Why? Probe: a broadcast? A program? A website?]
[Organize the questions in response to the answers to the questions above]
TV: When? At what time? Frequency? Location? With whom? What are you watching or doing? How?
Describe any problems you encountered in trying to watch a program or a television channel.
What usually causes you to watch television?
Radio: When? At what time? Frequency? Location? With whom? What do you listen to? What methods do you use?
Describe any problems you encounter trying to listen to a radio program.
What usually causes you to listen to the radio?
Newspapers and Magazines: When? At what time? Frequency? Location? With whom? What do you read/watch? What methods do you use?
Describe any problems you encounter in trying to read a newspaper/magazine.
What newspapers or magazines do you usually read?
Internet: When? At what time? Frequency? Location? With whom? What are you doing? What methods do you use?
Describe any problems you encounter in trying to use the internet.
What usually causes you to use the internet?
Cell Phone: When? At what time? Frequency? Where? With whom? What are you doing? What kind do you use?
Describe any problems you encounter in trying to use a cell phone?
What usually causes you to use the cell phone?

Section 2 : Health Questions (10-15 minutes)
How do you receive information about health? [Why?]
What is the best way to find health information? [Why?]
What are the major health challenges young people face today?
What are the two most important health problems among young people?
[Probe by health problem – Why are these problems the most important? Knowledge, Attitude, Experience, Prevention, Treatment, Rights, Access to Services]
Section 3 : Scenario 1 : Respiratory Infection (15 minutes)
A) One of your friends asks your help to understand a new type of respiratory infection that you are unfamiliar with. How will you help him understand this infection? [Probe: Describe the steps to get the information. Do you think this is easy? Difficult?]. What difficulties/ barriers do you face in accessing information? How do you solve these problems?
B) Your friend found different information from what you found about this infection. What would make you check the accuracy of this information? [Probe: In your opinion, what is good information? Precise, true/false, valid, understandable, useful, applicable]
C) From the information you found, you think your friend has been infected by the infection. What do you do to help?
D) The infection is contagious and you think you and your family were exposed. How do you inform your relatives? Your community? Or protect yourself? Your loved ones? Your community?
Section 4 : Scenario 2: Growing Up (10-15 minutes)
A) During adolescence, there are many changes that occur, regarding your body, your relationships with your parents and friends, your feelings, your moods, how you are attracted to others, etc. Do you think that you are sufficiently informed or aware about these issues that have to do with how your body, relationships, feelings, etc.?
B) How would you look for or get information about these topics? Who? Where? (Friends? Parents? Internet? Teacher?)
C) What difficulties/barriers do you face in getting information? How do you solve these problems?
D) Your little brother or sister tells you that he or she experiences changes that you yourself did not experience when you were his or her age. How will you help him or her understand and manage these events?
Section 5: Summative question (5-10 minutes)
Now that we have discussed health, information, finding information, evaluating information – do you have anything else to say about this issue? About how adolescents get information, about how they decide if it about how they use the information?

Appendix B. Survey Instrument

NO	QUESTIONS	Responses and Codes
SECTION I. Sociodemographic Questions		
To begin, we will start with questions about yourself		
101.	How old are you ?	Age [] years I don't know 88 I don't want to respond 89
102.	In what month and year were you born?	Write month number [] month I don't know the month 88 Write year here [] year I don't know the year 89
103.	In what type of environment have you spent most of your life ?	Urban 1 Suburban 2 Rural 5
104.	Gender	Male 1 Female 2
105.	What is your ethnicity ?	Wolof 1 Pular 2 Serere 3 Mandingue/Bambara 4 Diola 5 Soninké 6 Autres 7
106.	What religion do you consider yourself ?	Muslim 1 Christian 2 Animalist 3 No religion 4 Other 5

NO	QUESTIONS	Responses and Codes
107.	How religious are you ?	Very religious 1 Somewhat religious 2 Not at all religious 3
108.	How regularly do you engage in religious practices?	Every day 1 A few times a week 2 Once a week 3 Once a month 4 Rarely 5 Never 6
109.	What language do you speak at home ?	Wolof 1 Pular 2 Serere 3 Mandingue/Bambara 4 Diola 5 Soninké 6 French 7 Autre 8
110.	What other languages do you speak ? (Mark all that apply)	Wolof 1 Pular 2 Serere 3 Mandingue/Bambara 4 Diola 5 Soninké 6 French 7 Autre 8
111.	What is the highest level of school that you completed ?	Primary 1 Secondary 1 st cycle 2 Secondary 2 nd cycle 3 Higher education 4 Professional training 5
112.	Do you currently attend school ?	Yes 1 No 2
113.	What is the highest level of education that your father obtained?	He did not attend school 1 Primary 2 Secondary 3 Higher education 4 I don't know 5

NO	QUESTIONS	Responses and Codes
114.	What is the highest level of education that your mother obtained ?	She did not attend school 1 Primary 2 Secondary 3 Higher education 4 I don't know 5
115.	In your home, do you have :	Yes and it works Yes but it doesn't work No
	Electricity ?	1.....2.....3
	A radio ?	1.....2.....3
	Television ?	1.....2.....3
	A satellite for TV5 ?	1.....2.....3
	A subscription to CANAL ?	1.....2.....3
	A landline ?	1.....2.....3
	A cellphone ?	1.....2.....3
	A washing machine ?	1.....2.....3
	A refrigerator ?	1.....2.....3
	A portable cooking device ?	1.....2.....3
	A modern stove ?	1.....2.....3
	A video player ?	1.....2.....3
	An air conditioner?	1.....2.....3
	A computer?	1.....2.....3
	Internet at your house ?	1.....2.....3

NO	QUESTIONS	Responses and Codes
116.	How many people do you live with in your house? (Not counting yourself)	Number of persons [1]
117.	With whom do you currently live? (mark all that apply)	Father 1 Mother 2 Brother 3 Sister 4 Aunt 5 Uncle 6 Cousins 7 Spouse 8 Your children 9 Alone 10
SECTION 2 : Media Access		
201.	Please tell us about some technological devices - Which of the following have you ever used before? (Mark all that apply)	Normal/Desktop computer 1 Laptop computer 2 Cell phone 3 TV 4 Radio 5 Digital camera 6
202.	Which did you use yesterday? (Mark all that apply)	Normal/Desktop computer 1 Laptop computer 2 Cell phone 3 TV 4 Radio 5 Digital camera 6
203.	Which ones do you have at home? (Mark all that apply)	Normal/Desktop computer 1 Laptop computer 2 Cell phone 3 TV 4 Radio 5 Digital camera 6
204.	In general, with whom do you most often use a computer? (Mark all that apply)	I do not use a computer 1 By myself 2 Parents 3 Siblings 4 Friends 5 Teachers 6

NO	QUESTIONS	Responses and Codes					
205.	When you use a computer, how often do you do so...	Several times a day	Once a day	About once a week	Every few weeks	Less often	Never
	At school	1.....2.....3.....4.....5.....6.....					
	At home	1.....2.....3.....4.....5.....6.....					
	At a community/youth center	1.....2.....3.....4.....5.....6.....					
	At a friend's home	1.....2.....3.....4.....5.....6.....					
	At an internet café	1.....2.....3.....4.....5.....6.....					
206.	In general, with whom do you use a cell phone? (Mark all that apply)	I do not use a cell phone..... 1 By myself..... 2 Parents..... 3 Siblings..... 4 Friends..... 5 Teachers..... 6					
207.	In general, with whom do you listen to the radio? (Mark all that apply)	I do not use a radio..... 1 By myself..... 2 Parents..... 3 Siblings..... 4 Friends..... 5 Teachers..... 6					
208.	What do you generally listen to on the radio? (Mark all that apply)	Music – traditional..... 1 Music – hip hop..... 2 Talk shows..... 3 News..... 4 Sports shows..... 5 Community broadcast shows..... 6 Other?? 7					
209.	When you listen to the radio, how often do you do so...	Several times a day	Once a day	About once a week	Every few weeks	Less often	Never

NO	QUESTIONS	Responses and Codes					
	On a computer at school	1.....2.....3.....4.....5.....6.....					
	On a computer at home	1.....2.....3.....4.....5.....6.....					
	On a cell phone	1.....2.....3.....4.....5.....6.....					
	On a computer at a community/youth center	1.....2.....3.....4.....5.....6.....					
	On a radio at home	1.....2.....3.....4.....5.....6.....					
	On a radio at your friends	1.....2.....3.....4.....5.....6.....					
	At an internet café	1.....2.....3.....4.....5.....6.....					
210.	In general, with whom do you most often watch television? (Mark all that apply)	I do not use a television..... 1 By myself..... 2 Parents..... 3 Siblings..... 4 Friends..... 5 Teachers..... 6					
211.	What do you generally watch on television? (Mark all that apply)	News..... 1 Documentary..... 2 Fiction dramas..... 3 Sitcoms..... 4 Talks shows..... 5 Sports..... 6 Religious shows..... 7 Music..... 8 Foreign channel (which channels)..... 9 Kids channel? 10					
212.	When you watch television, how often do you do so...	Several times a day	Once a day	About once a week	Every few weeks	Less often	Never

NO	QUESTIONS	Responses and Codes
	On a computer at school	1.....2.....3.....4.....5.....6.....
	On a computer at home	1.....2.....3.....4.....5.....6.....
	On a cell phone	1.....2.....3.....4.....5.....6.....
	On a computer at a community/youth center	1.....2.....3.....4.....5.....6.....
	On a television at home	1.....2.....3.....4.....5.....6.....
	On a television at your friends/family member's	1.....2.....3.....4.....5.....6.....
	At an internet café	1.....2.....3.....4.....5.....6.....
213.	Have you ever used the Internet?	Yes.....1 No.....2
214.	Did you use the Internet yesterday?	Yes.....1 No.....2
215.	In general, with whom do you use the internet? (Mark all that apply)	I do not use the internet.....1 By myself.....2 Parents.....3 Siblings.....4 Friends.....5 Teachers.....6
216.	When you use the Internet, how often do you do so...	Several times a day Once a day About once a week Every few weeks Less often Never
	On a computer at school	1.....2.....3.....4.....5.....6.....
	On a computer at home	1.....2.....3.....4.....5.....6.....
	On a cell phone	1.....2.....3.....4.....5.....6.....

NO	QUESTIONS	Responses and Codes
	On a computer at the library	1.....2.....3.....4.....5.....6.....
	At an internet café	1.....2.....3.....4.....5.....6.....
	At a computer at someone else's house	1.....2.....3.....4.....5.....6.....
	Where else do you use the internet?	Specify here:
217.	Do you own or use a mobile phone?	I own a mobile phone with SIM card.....1 I own a SIM card, but not a mobile phone.....2 I use a mobile phone, but don't have my own cell phone or SIM card.....3 I never use a mobile phone.....4 Other.....5
218.	With your mobile phone, is it possible to...	YES NO DON'T KNOW
	Take pictures	1.....2.....3
	Play music or MP3 files	1.....2.....3
	Send and receive text messages or SMS	1.....2.....3
	Access the internet	1.....2.....3
	Send and receive email	1.....2.....3
	Record videos	1.....2.....3
	Play videos	1.....2.....3
	Play games	1.....2.....3
	Listen to radio programs	1.....2.....3
	What else ?	Write response here:

NO	QUESTIONS	Responses and Codes		
219.	Who pays for your mobile phone airtime or contract?	My parents or legal guardian.....	1	
		My family member other than my parents.....	2	
		Myself.....	3	
		Boyfriend or girlfriend.....	4	
		I don't spend any money on airtime.....	5	
		Friends.....	6	
		Other.....	7	
220.	What are the three activities you do most often on a CELL PHONE?	Most often 1	Second	Third
	Calls	o	o	o
	Music	o	o	o
	SMS / Text messaging	o	o	o
	Games	o	o	o
	Internet	o	o	o
	Pictures / photos	o	o	o
	Videos	o	o	o
	Radio	o	o	o
	Check time	o	o	o
	Use calculator	o	o	o
	Send/receive email	o	o	o
	Alarm clock			
	Facebook?			
221.	What are the three activities you do most often on a COMPUTER?	Most often 1	Second	Third

NO	QUESTIONS	Responses and Codes				
	Games	o	o	o		
	Music	o	o	o		
	Internet	o	o	o		
	School	o	o	o		
	Information	o	o	o		
	Typing	o	o	o		
	Movies/Videos	o	o	o		
	Emails	o	o	o		
	Pictures	o	o	o		
	Cellphone related tasks	o	o	o		
	Printing	o	o	o		
	Instant message					
	Facebook?					
222.	How much, if at all, has your cell phone helped you to do any of the following things? (Cape 18)	A lot	Some	Only a little	Not at all	I don't know
	Keep in touch with family	1.....2.....3.....4.....5				
	Keep in touch with friends	1.....2.....3.....4.....5				
	Do well in school	1.....2.....3.....4.....5				
	Learn new things	1.....2.....3.....4.....5				
	Share ideas and creations with others	1.....2.....3.....4.....5				
	Find important information	1.....2.....3.....4.....5				
	Work with others in the community	1.....2.....3.....4.....5				
	Follow your hobbies or interests	1.....2.....3.....4.....5				
	Transfer or get money	1.....2.....3.....4.....5				
	Watch tv or movies	1.....2.....3.....4.....5				
	Listen to music	1.....2.....3.....4.....5				

NO	QUESTIONS	Responses and Codes
	For entertainment	1.....2.....3.....4.....5
223.	When you use the internet on a computer, how much , if at all, has it helped you to do any of the following things?	<p>A lot Some Only a little Not at all I don't know</p> <p>Keep in touch with family 1.....2.....3.....4.....5</p> <p>Keep in touch with friends 1.....2.....3.....4.....5</p> <p>Do well in school 1.....2.....3.....4.....5</p> <p>Learn new things 1.....2.....3.....4.....5</p> <p>Share ideas and creations with others 1.....2.....3.....4.....5</p> <p>Find important information 1.....2.....3.....4.....5</p> <p>Work with others in the community 1.....2.....3.....4.....5</p> <p>Follow your hobbies or interests 1.....2.....3.....4.....5</p> <p>Transfer or get money 1.....2.....3.....4.....5</p> <p>Watch tv or movies 1.....2.....3.....4.....5</p> <p>Listen to music 1.....2.....3.....4.....5</p>
	For entertainment	1.....2.....3.....4.....5
224.	When you are not able to use the Internet when you want to, what is the reason? (Mark all the apply)	<p>I don't have a computer at my house 1</p> <p>Not enough money 2</p> <p>My parents won't let me go to the cybercafe 3</p> <p>Cybercafe is too far away 4</p> <p>Cybercafes do not interest me 5</p> <p>My school doesn't allow me to stay after hours 6</p> <p>I don't know how to use the computer 7</p> <p>I don't know how to operate a computer 8</p> <p>Other reasons 9</p>

NO	QUESTIONS	Responses and Codes
225.	How much money do you spend to use the Internet each week?	<p>None 1</p> <p>Entre 25 F et 100 F CFA 2</p> <p>Entre 105 F et 500 F CFA 3</p> <p>Entre 505 F et 1000 F CFA 4</p> <p>Entre 1005 F et 2000 F CFA 5</p> <p>Entre 2005 F et 3000 F CFA 6</p> <p>Entre 3005 F et 4000 F CFA 7</p> <p>Entre 4005 F et 5000 F CFA 8</p> <p>Plus de 5000 F CFA 9</p>
SECTION 3^a : Exposure to health information		
Now let's talk about health and how you get information about health.		
301.	Thinking about what you know about general health (meaning, what you do when you are sick or how to stay healthy), from what source did you receive that information? Mark all that apply:	<p>A health professional 1</p> <p>A teacher or other educator 2</p> <p>Parents 3</p> <p>Relatives 4</p> <p>Siblings 5</p> <p>Guardian 6</p> <p>Friends 7</p> <p>Radio 8</p> <p>A newspaper 9</p> <p>Television 10</p> <p>Internet 11</p> <p>Mobile phone 12</p> <p>Other (specify) 13</p>
302.	From the sources you just marked about general health information, what are the two most important sources and tell us what you think about them.	
	Source 1 for general health (write in answer) : _____	<p>A lot Somewhat Rarely</p> <p>How accessible? 1.....2.....3</p> <p>How confidential? 1.....2.....3</p> <p>How trustworthy or credible?? 1.....2.....3</p> <p>How useful? 1.....2.....3</p>
	Source 2 for general health (write in answer) : _____	<p>A lot Somewhat Rarely</p> <p>How accessible? 1.....2.....3</p> <p>How confidential? 1.....2.....3</p> <p>How trustworthy or credible?? 1.....2.....3</p> <p>How useful? 1.....2.....3</p>

NO	QUESTIONS	Responses and Codes
303.	Thinking about what you know about malaria , from what source did you receive that information? Mark all that apply from following list.	A health professional1 A teacher or other educator2 Parents3 Relatives4 Siblings5 Guardian6 Friends7 Radio8 A newspaper9 Television10 Internet11 Mobile phone12 Other (specify)13
304.	From the sources you just marked about malaria, what are the <u>two most important sources</u> and tell us what you think about them.	
	Source 1 for malaria (write in answer) : _____	A lot Somewhat Rarely How accessible? 1.....2.....3 How confidential? 1.....2.....3 How trustworthy or credible?? 1.....2.....3 How useful? 1.....2.....3
	Source 2 for malaria (write in answer) : _____	A lot Somewhat Rarely How accessible? 1.....2.....3 How confidential? 1.....2.....3 How trustworthy or credible?? 1.....2.....3 How useful? 1.....2.....3
305.	Thinking about what you know about drug and alcohol use , from what source did you receive that information? Mark all that apply from following list.	A health professional1 A teacher or other educator2 Parents3 Relatives4 Siblings5 Guardian6 Friends7 Radio8 A newspaper9 Television10 Internet11 Mobile phone12 Other (specify)13

NO	QUESTIONS	Responses and Codes
306.	From the sources you just marked about drug and alcohol use, what are the <u>two most important sources</u> and tell us what you think about them.	
	Source 1 for drug and alcohol use (write in answer) : _____	A lot Somewhat Rarely How accessible? 1.....2.....3 How confidential? 1.....2.....3 How trustworthy or credible?? 1.....2.....3 How useful? 1.....2.....3
	Source 2 for drug and alcohol use (write in answer) : _____	A lot Somewhat Rarely How accessible? 1.....2.....3 How confidential? 1.....2.....3 How trustworthy or credible?? 1.....2.....3 How useful? 1.....2.....3
307.	Thinking about what you know about reproductive health , from what source did you receive that information? Mark all that apply from following list.	A health professional1 A teacher or other educator2 Parents3 Relatives4 Siblings5 Guardian6 Friends7 Radio8 A newspaper9 Television10 Internet11 Mobile phone12 Other (specify)13
308.	From the sources you just marked about reproductive health, what are the <u>two most important sources</u> and tell us what you think about them.	
	Source 1 for reproductive health (write in answer) : _____	A lot Somewhat Rarely How accessible? 1.....2.....3 How confidential? 1.....2.....3 How trustworthy or credible?? 1.....2.....3 How useful? 1.....2.....3

NO	QUESTIONS	Responses and Codes		
	Source 2 for reproductive health (write in answer) :	A lot	Somewhat	Rarely
	How accessible?	1.....2.....3		
	How confidential?	1.....2.....3		
	How trustworthy or credible??	1.....2.....3		
	How useful?	1.....2.....3		
309.	Thinking about what you know about HIV/AIDS, from what source did you receive that information? Mark all that apply from following list.	A health professional1 A teacher or other educator2 Parents3 Relatives4 Siblings5 Guardian6 Friends7 Radio8 A newspaper9 Television10 Internet11 Mobile phone12 Other (specify)13		
310.	From the sources you just marked about HIV/AIDS, what are the two most important sources and tell us what you think about them.			
	Source 1 for HIV/AIDS (write in answer) :	A lot	Somewhat	Rarely
	How accessible?	1.....2.....3		
	How confidential?	1.....2.....3		
	How trustworthy or credible??	1.....2.....3		
	How useful?	1.....2.....3		
	Source 2 for HIV/AIDS (write in answer) :	A lot	Somewhat	Rarely
	How accessible?	1.....2.....3		
	How confidential?	1.....2.....3		
	How trustworthy or credible??	1.....2.....3		
	How useful?	1.....2.....3		
SECTION 4 : La santé				
401.	In the last 12 months, have you been sick?	Yes.....1	No.....2	

NO	QUESTIONS	Responses and Codes
402.	In general, how would you rate your health ?	Excellent1 Very good2 Good3 Fair4 Poor5
403.	In the past 12 months, how many times have you gone to a doctor, nurse, or other health provider to get care?	Never0 1 time1 2 times2 3 times3 4 times4 5-9 times5 10 times or more6 I don't know7
404.	The last time you got care for your health, how satisfied were you with the care ?	Very satisfied1 Somewhat satisfied2 Not very satisfied3 Not satisfied at all4
405.	In the last 12 months, what illness have you had? (Mark all that apply)	A cold1 The flu2 Malaria3 Upset stomach4 STI5 Urinary tract infection6 Other (specific)7 I don't know8 I was never sick9

NO	QUESTIONS	Responses and Codes
406.	Where did you go to get advice or treatment? (Mark all that apply)	<i>Public sector:</i> Government hospital 1 Govt health center 2 Govt health post 3 Mobile clinic 4 Health worker 5 Other public service (specify) 6 <i>Private medical sector:</i> Private hospital 7 Pharmacy 8 Private doctor 9 Mobile clinic 10 Health worker 11 Other private service (specify) 12 <i>Other places:</i> Clinic 13 Traditional doctor 14 Market 15 Other (specify) 16
407.	Have you ever heard of HPV? HPV is the human papillomavirus?	Yes 1 No 2 I don't know 3
408.	Where have you heard of HPV?	Doctor, nurse or health care provider 1 Family or friends 2 Newspaper or magazine 3 Ad on television 4 Television news 5 Internet 6 Radio 7 Don't remember 8
409.	Have you ever been told by a health care provider that you had human papillomavirus or HPV infection?	Yes 1 No 2 I don't know 3
410.	Has a health care provider ever talked to you about a HPV vaccine or shot?	Yes 1 No 2 I don't know 3

NO	QUESTIONS	Responses and Codes
411.	Has a health care provider ever talked to you about a HPV test?	Yes 1 No 2 I don't know 3
412.	Do you think HPV can cause cervical cancer?	Yes 1 No 2 I don't know 3
413.	Do you think that you can get HPV through sexual contact?	Yes 1 No 2 I don't know 3
414.	A vaccine or shot that protects against HPV, a virus that can cause cervical cancer, was recently recommended for girls and boys. Would you get the shot?	Yes 1 No 2 It depends 3 I don't know 3
415.	Based on the results from your most recent search for medical or health information, do you agree or disagree with the following:	Strongly Disagree Disagree Neutral Agree Strongly Agree
	It took a lot of effort to get the information that I needed	1.....2.....3.....4.....5
	I was frustrated during the search	1.....2.....3.....4.....5
	I was worried about the quality of information that I found	1.....2.....3.....4.....5
	The information that I found was difficult to understand	1.....2.....3.....4.....5
Section 5 : Health care literacy		

NO	QUESTIONS	Responses and Codes				
501.	As you answer the following questions, please tell us how confident you feel about:	Not at all confident	Not very confident	Neutral	Somewhat confident	Very confident
	You can speak privately to a doctor or other health provider about your health needs?	1 2 3 4 5				
	You can make an appointment to see a health care professional about your health issue	1 2 3 4 5				
	You are able to get medications filled at a pharmacy	1 2 3 4 5				
	That a health professional will keep what you say to them confidential	1 2 3 4 5				
	That a health professional will provide you with information that will help you stay healthy	1 2 3 4 5				
	That you are positively welcomed at the health post, regardless of your health concern	1 2 3 4 5				
502	How important is it to you that your doctor or health care provider:	Not at all	Not very important	I don't know	Somewhat important	Very important
	Listens to you ?	1 2 3 4 5				
	Explains things so that you can understand?	1 2 3 4 5				
	Shows respect to you ?	1 2 3 4 5				

NO	QUESTIONS	Responses and Codes				
	Spends enough time with you ?	1 2 3 4 5				
	Speaks with you without judging you ?	1 2 3 4 5				
	Satisfies your needs without questioning you ?	1 2 3 4 5				
	Gives you moral, social, or religious advice?	1 2 3 4 5				
503.	How much do you agree or disagree with the following :	Strongly disagree	Disagree	I don't know	Agree	Strongly agree
	It is my responsibility to get a medical checkup each year, even if I am not sick.	1 2 3 4 5				
	It is my parent's responsibility to make sure that I get a medical checkup each year, even if I am not sick.	1 2 3 4 5				
	When I need medical care, it is my responsibility to contact a health professional or have someone do it for me.	1 2 3 4 5				
	It is my right to speak with a doctor or health professional privately.	1 2 3 4 5				
	If I need advice, it is my right to receive free advice from a health professional.	1 2 3 4 5				
	If I need care, it is my right to receive free care from a health professional.	1 2 3 4 5				
504.	When you get care for your health, how important are the following?	Not at all	Only a little	Somewhat	A lot	

NO	QUESTIONS	Responses and Codes
	Easy to make an appointment	1.....2.....3.....4
	Can walk in and see someone that day	1.....2.....3.....4
	Short waiting times	1.....2.....3.....4
	Free/low cost	1.....2.....3.....4
	Can get many things done at one place	1.....2.....3.....4
	Gets that help I need	1.....2.....3.....4
	Privacy and confidentiality are assured	1.....2.....3.....4
	See the same health care provider	1.....2.....3.....4
	Like the staff	1.....2.....3.....4
	Other	
505.	What do you think are the major barriers for adolescents when accessing (sexual and reproductive) health care?	Paying for services.....1
		Lack of transportation2
		Don't know where to go.....3
		Services are unavailable.....4
		Fear of clinic procedures.....5
		Finding a health care provider to trust.....6
		Hard to talk about these issues.....7
		Don't want parents to find out.....8
		Don't want friends to know.....9
		Don't want to be judged10
		No place specific for teens11
*Section 3 includes questions on health information sources that used in the analysis

Figure 1.
Two most important sources of information across health topic.

Table 1Sample characteristics of focus group and survey participants ($n = 169$)

Variable	Focus group participants (n = 169)	Survey participants (n = 2286)
Age, mean (SD)	19.8 (1.2)	17.1 (2.0)
Gender, n (%)		
Female	84 (49.7)	1261 (55.2)
Male	85 (50.3)	1025 (44.8)
Father's education, n (%)		
None	12 (7.1)	431 (18.9)
Primary school	29 (17.2)	314 (13.7)
Secondary school	26 (15.4)	419 (18.3)
Higher education	24 (14.2)	679 (29.7)
No response/don't know	78 (46.2)	443 (19.4)
Region, n (%)		
Dakar	92 (54.4)	658 (28.8)
Ziguinchor	36 (21.3)	655 (28.7)
Fatick	23 (13.6)	357 (15.6)
Mbour	18 (10.7)	312 (13.7)
Thiès	—	304 (13.3)

Table 2

Multiple logistic regression models for listing health professional as a primary source of information across health topics

	Malaria (<i>n</i> = 1800)	Drugs and alcohol (<i>n</i> = 1806)	Reproductive health (<i>n</i> = 1811)	HIV/AIDS (<i>n</i> = 1797)
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Household wealth				
Low	Reference	Reference	Reference	Reference
Medium–low	0.952 (0.699, 1.297)	0.679 ^a (0.489, 0.942)	0.844 (0.616, 1.157)	1.077 (0.787, 1.474)
Medium	0.957 (0.707, 1.294)	0.637 ^a (0.461, 0.878)	0.761 (0.558, 1.037)	0.847 (0.626, 1.145)
Medium–high	1.242 (0.889, 1.735)	0.663 ^a (0.468, 0.938)	0.656 ^a (0.467, 0.923)	1.334 (0.952, 1.870)
High	0.895 (0.629, 1.273)	0.733 (0.505, 1.063)	0.649 ^a (0.448, 0.939)	1.013 (0.710, 1.444)
Paternal education				
Less than secondary	Reference	Reference	Reference	Reference
Secondary and above	1.006 (0.815, 1.243)	1.032 (0.823, 1.296)	0.959 (0.770, 1.194)	1.104 (0.893, 1.365)
Age	1.012 (0.961, 1.065)	1.006 (0.952, 1.062)	0.962 (0.912, 1.014)	1.040 (0.987, 1.095)
Gender				
Male	Reference	Reference	Reference	Reference
Female	1.266 ^a (1.035, 1.549)	0.958 (0.771, 1.189)	1.098 (0.890, 1.356)	1.122 (0.916, 1.375)
Interviewed in Dakar?				
No	Reference	Reference	Reference	Reference
Yes	1.044 (0.835, 1.305)	1.243 (0.981, 1.574)	1.000 (0.792, 1.262)	0.835 (0.668, 1.044)
Health status				
Fair–poor	Reference	Reference	Reference	Reference
Good	0.950 (0.715, 1.263)	0.920 (0.673, 1.257)	0.831 (0.615, 1.124)	1.084 (0.813, 1.446)
Excellent–very good	1.009 (0.784, 1.298)	1.207 (0.923, 1.580)	1.069 (0.825, 1.384)	0.995 (0.773, 1.280)

CI, confidence interval.

^a*P* 0.05.

Table 3

Multiple logistic regression models for listing adults as a primary source of information across health topics

	Malaria (<i>n</i> = 1800)	Drugs and alcohol (<i>n</i> = 1806)	Reproductive health (<i>n</i> = 1811)	HIV/AIDS (<i>n</i> = 1797)
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Household wealth				
Low	Reference	Reference	Reference	Reference
Medium–low	1.149 (0.846, 1.560)	1.000 (0.740, 1.352)	1.066 (0.788, 1.441)	1.146 (0.842, 1.559)
Medium	1.013 (0.752, 1.363)	0.857 (0.639, 1.149)	0.920 (0.686, 1.234)	1.125 (0.833, 1.520)
Medium–high	1.439 ^a (1.033, 2.005)	1.342 (0.970, 1.858)	1.193 (0.866, 1.643)	1.116 (0.806, 1.544)
High	1.056 (0.743, 1.500)	1.497 ^a (1.048, 2.138)	1.054 (0.747, 1.487)	0.992 (0.697, 1.412)
Paternal education				
Less than secondary	Reference	Reference	Reference	Reference
Secondary and above	1.188 (0.964, 1.456)	1.034 (0.841, 1.272)	0.840 (0.684, 1.032)	0.979 (0.795, 1.206)
Age	0.927 ^a (0.882, 0.976)	0.937 ^a (0.891, 0.985)	0.910 ^a (0.866, 0.956)	0.982 (0.934, 1.033)
Gender				
Male	Reference	Reference	Reference	Reference
Female	1.160 (0.948, 1.418)	0.964 (0.791, 1.177)	1.202 (0.988, 1.461)	0.975 (0.798, 1.191)
Interviewed in Dakar?				
No	Reference	Reference	Reference	Reference
Yes	0.895 (0.718, 1.116)	1.008 (0.810, 1.255)	0.903 (0.729, 1.119)	0.910 (0.730, 1.134)
Health status				
Fair-poor	Reference	Reference	Reference	Reference
Good	0.964 (0.727, 1.279)	1.021 (0.770, 1.352)	0.997 (0.756, 1.315)	0.779 (0.586, 1.036)
Excellent-very good	1.004 (0.782, 1.289)	0.910 (0.711, 1.164)	0.901 (0.707, 1.149)	1.026 (0.802, 1.311)

CI, confidence interval.

^a*P* 0.05.

Table 4

Multiple logistic regression models for listing traditional mass media as a primary source of information across health topics

	Malaria (<i>n</i> = 1800)	Drugs and alcohol (<i>n</i> = 1806)	Reproductive health (<i>n</i> = 1811)	HIV/AIDS (<i>n</i> = 1797)
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)
Household wealth				
Low	Reference	Reference	Reference	Reference
Medium–low	1.004 (0.744, 1.354)	1.392 ^a (1.033, 1.877)	1.106 (0.821, 1.488)	0.851 (0.628, 1.154)
Medium	1.023 (0.763, 1.371)	1.288 (0.962, 1.726)	1.029 (0.770, 1.375)	0.992 (0.736, 1.337)
Medium–high	0.712 ^a (0.515, 0.985)	0.955 (0.695, 1.313)	1.023 (0.747, 1.399)	0.822 (0.597, 1.131)
High	0.834 (0.589, 1.181)	0.756 (0.533, 1.073)	0.908 (0.647, 1.274)	1.170 (0.823, 1.665)
Paternal education				
Less than secondary	Reference	Reference	Reference	Reference
Secondary and above	0.888 (0.724, 1.090)	1.006 (0.821, 1.234)	1.018 (0.832, 1.245)	0.835 (0.678, 1.028)
Age	1.075 ^a (1.023, 1.130)	1.081 ^a (1.029, 1.136)	1.114 ^a (1.061, 1.169)	0.972 (0.925, 1.022)
Gender				
Male	Reference	Reference	Reference	Reference
Female	0.948 (0.778, 1.155)	1.278 ^a (1.051, 1.555)	0.916 (0.755, 1.111)	0.991 (0.812, 1.209)
Interviewed in Dakar?				
No	Reference	Reference	Reference	Reference
Yes	1.131 (0.911, 1.404)	1.038 (0.838, 1.286)	1.347 ^a (1.090, 1.666)	1.434 ^a (1.149, 1.790)
Health status				
Fair–poor	Reference	Reference	Reference	Reference
Good	1.084 (0.821, 1.432)	1.057 (0.802, 1.392)	1.100 (0.839, 1.443)	1.127 (0.852, 1.492)
Excellent–very good	1.095 (0.856, 1.399)	1.159 (0.910, 1.476)	1.134 (0.892, 1.440)	1.051 (0.823, 1.343)

CI, confidence interval.

^a*P* 0.05.