

# EVALUATION OF THE AFRICAN YOUTH ALLIANCE PROGRAM IN GHANA, TANZANIA, AND UGANDA



## Impact on Sexual and Reproductive Health Behavior among Young People

By Tim Williams, Stephanie Mullen, Ali Karim, Jessica Posner

Summary Report  
2007





EVALUATION OF THE  
AFRICAN YOUTH ALLIANCE PROGRAM  
IN GHANA, TANZANIA, AND UGANDA:

Impact on  
Sexual and Reproductive Health Behavior  
among Young People

By Tim Williams, Stephanie Mullen, Ali Karim, Jessica Posner

Summary Report  
2007



# Acknowledgments

The impact evaluation of the African Youth Alliance program (AYA) in Ghana, Tanzania, and Uganda was a collaborative activity funded by the Bill & Melinda Gates Foundation through a subcontract with JSI Research and Training Institute, which is part of John Snow, Inc. (JSI). The evaluation benefited from the support of many organizations and individuals, of whom the following is but a partial list.

First and foremost, JSI would like to thank the young people and heads of households in the three countries who agreed to participate in the evaluation. Their willingness to respond to important questions about adolescent health has increased understanding of the complexity of adolescent sexual and reproductive health (ASRH) programming and of the strategies for reaching young people with important services and resources. It is our hope that the findings of this evaluation will contribute to better ASRH programming and to increased recognition of the importance of meeting the sexual and reproductive health needs among youth.

The fieldwork and data entry were carried out by the Institute for Statistical, Social, and Economic Research (ISSER) at the University of Ghana–Legon in Ghana; the Institute of Resource Assessment (IRA) of the University of Dar es Salaam in Tanzania; and Makerere University Institute of Statistics and Applied Economics (MUISAE) in Uganda. JSI is very appreciative of the technical and managerial oversight of the evaluation provided by each of those institutions, as well as the contributions of the young men and women who served as research assistants, data collectors, and supervisors.

This evaluation would not have been possible without the support of AYA staff and AYA partners. Special thanks go to AYA program officers and other partners in the United States, including Lisa Mueller from the Program for Appropriate Technology in Health (PATH), Gwyn Ainsworth and Carolyn Boyce from Pathfinder International, and Ugochi Daniels from the United Nations Population Fund (UNFPA). JSI especially wishes to acknowledge the staff members at the in-country UNFPA and AYA offices in Ghana, Tanzania, and Uganda and the many implementing partners (IPs) who provided input on program activities. Their insights on program implementation provided information for sampling strategies, exposure measures, interpretation of findings, and many other aspects of the evaluation. JSI would also like to thank the many government officials and community leaders who responded to questions on ASRH, gave approval for the fieldwork, and helped identify households at the district and subdistrict levels.

In addition, thanks are offered to the AYA technical advisory committee on monitoring and evaluation, which advised the team on evaluation design and analysis. In particular, JSI would like to thank Dr. Robert Magnani and Dr. Doug Kirby, who reviewed various drafts of the evaluation proposal and report and who offered valuable insights on the methodology.

Finally, JSI would like to thank the Bill & Melinda Gates Foundation for providing the funding for this evaluation, as well as for guidance and support. In particular, the JSI team wishes to thank Jacqueline Darroch and Susan Rich for their technical input at various stages of the evaluation.

### **AYA Evaluation Team Members**

<b>Country</b>	<b>Institution</b>	<b>Team Members</b>
United States	JSI Research and Training Institute	Disha Ali Charlotte Colvin Ali Karim Natasha Kanagat Anne LaFond Michael McQuestion Stephanie Mullen Leslie Patykewich Jessica Posner *Tim Williams
Ghana	Institute for Statistical, Social, and Economic Research	Clement Ahiadeke John Anarfi Nana Akua Anyidoho * Ernest Aryeetey Kojo Dovlo Gertrude Owusu
Tanzania	Institute of Resource Assessment	Hilda Kiwasila * Ndalakwa F. Madulu Claude Mung'ong'o Godwin Naimani Florian Silangwa
Uganda	Makerere University Institute of Statistics and Applied Economics and Uganda Bureau of Statistics	Johnson Kagugube * Gideon Rutaremwa Emanuel Sekatawa Godwin Turyasingura

\* principal investigator

# Table of Contents

Acknowledgments .....	v
List of Abbreviations and Acronyms .....	ix
Executive Summary .....	xi
Introduction .....	1
Country Settings .....	5
Methodology .....	7
Results .....	13
Discussion .....	29
Recommendations and Considerations .....	33
Conclusions.....	39
Bibliography .....	41





# List of Abbreviations and Acronyms

ASRH	adolescent sexual and reproductive health
AYA	African Youth Alliance
BCC	behavior change communication
DHS	Demographic and Health Survey
GSS	Ghana Statistical Service
HIV/AIDS	human immunodeficiency virus/acquired immune deficiency syndrome
IP	implementing partner
IRA	Institute of Resource Assessment (Tanzania)
ISSER	Institute for Statistical, Social, and Economic Research (Ghana)
IV	instrumental variable
JSI	John Snow, Inc. (Research and Training Institute)
LPS	life-planning skills
MOH	Ministry of Health
MUISAE	Makerere University Institute of Statistics and Applied Economics (Uganda)
NBS	National Bureau of Statistics
NMIMR	Noguchi Memorial Institute for Medical Research
NGO	nongovernmental organization
PATH	Program for Appropriate Technology in Health
PRB	Population Reference Bureau
PSM	propensity score matching
STI	sexually transmitted infection
TACAIDS	Tanzania Commission for AIDS
UNFPA	United Nations Population Fund
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
WHO	World Health Organization
YFS	youth-friendly services



# Executive Summary

The African Youth Alliance (AYA) program was established in 2000 by the Bill & Melinda Gates Foundation as a comprehensive, integrated, and potentially scalable program that was designed to improve adolescent sexual and reproductive health (ASRH) and to prevent transmission of the human immunodeficiency virus (HIV). AYA was innovative in that it collaborated with public and private sector organizations to implement behavior change communication (BCC) programs, it provided youth-friendly services (YFS) at clinics, it built on local capacity, and it integrated ASRH with livelihood skills training. AYA also coordinated policy and advocacy activities for ASRH at local and national government levels while providing institutional capacity building for its implementing partners.

AYA represented a unique partnership between the United Nations Population Fund, Pathfinder International, and the Program for Appropriate Technology in Health. The project was implemented between 2000 and 2006, with most field interventions finished by 2005.

In 2005, the Research and Training Institute of John Snow, Inc., was contracted to evaluate the impact of AYA on sexual and reproductive behavior among youth in Ghana, Tanzania, and Uganda. The main objective of the evaluation was to determine whether exposure to AYA's comprehensive, integrated program resulted in improved ASRH knowledge, attitudes, and sexual behaviors among male and female youth age 17–22 in areas where AYA worked. Using a post-test-only evaluation design, the evaluation compared knowledge, attitudes, and behavioral outcomes between (a) intervention sites and control sites and (b) youths who were exposed to AYA programs and those who were not exposed to AYA. The evaluation did not attempt to address issues such as program scale, cost analysis, sustainability, or the impact of individual components of the AYA strategy.

Results from the evaluation show that a significant number of young people in AYA implementation areas were reached by AYA programs and were able to recall ASRH messages, although the degree of exposure varied by country and by type of intervention. Results further demonstrated a significant positive impact of AYA on several variables, most notably condom use, contraceptive use, partner reduction, and several self-efficacy and knowledge antecedents. Overall, the impact of AYA on ASRH behaviors and their antecedents was greater for young women than for young men, especially in Ghana and Uganda.

The evidence from this impact evaluation suggests that multicomponent programs can be an effective approach to addressing young people's ASRH needs when the programs combine strategies such as the following:

- BCC that would address risk behaviors,
- YFS (for HIV and other sexually transmitted infection counseling and testing and for use of modern contraceptives, including condoms), and
- Outreach services such as peer education and other activities in the community.

The results of this three-country study are intended to contribute to a better understanding of ASRH in general and specifically in the context of youth programs in Ghana, Tanzania, and Uganda, programs that should lead to improved future programming and, ultimately, to improved sexual and reproductive health among the youth populations of those countries.

# Introduction

## The AYA Program

In sub-Saharan Africa, young people age 10–24 account for approximately 33 percent of their countries' populations (Population Reference Bureau 2006). They represent hope and future aspirations at the individual, family, peer, and societal levels. At the individual level, adolescents face an array of sexual and reproductive health challenges, including avoidance of unwanted, coerced, or forced sex; unintended pregnancies; unsafe abortions; and sexually transmitted infections, including human immunodeficiency virus and acquired immune deficiency syndrome (HIV/AIDS). Young people's circumstances and needs evolve rapidly as they age. Sexual and reproductive health programs, therefore, must endeavor to address a diverse array of needs among a heterogeneous group of adolescents, a group that is continuously replenished by new entrants.

Sexual and reproductive health programs increasingly recognize the importance of approaching young people as clients with diverse and vital needs, many of which are not effectively addressed through traditional services. In the past, young people's needs were often neglected because of societal norms against sex in that age group before marriage and because of a lack of well-formed constituencies to advocate on behalf of young people's rights. It is increasingly understood, however, that youth is a key period of individual and social development and is when sexual and reproductive health behaviors are learned that carry on into adulthood. Programs that help youth navigate through the challenges and choices of this period can form a valuable bridge to improved outcomes in the future.

Recent research confirms that comprehensive, multicomponent programs are more effective than narrowly focused programs in improving adolescent sexual and reproductive health (ASRH) outcomes (WHO 2006, 2007; Focus on Young Adults Program 2001; UNICEF 2006; Lloyd 2006). Comprehensive programs combine strategies and interventions to address the multiple risk and protective factors that influence the sexual and reproductive health behavior of young people and, ultimately, their health status (Senderowitz 2000; Kirby 1997, 2001; Karim et al. 2003). Such multicomponent programs typically work in both schools and communities, include a clinical services component, use mass media to promote positive ASRH messages, and work with both youths and parents.

In 2000, drawing on this growing body of knowledge and practice, the Bill & Melinda Gates Foundation established the African Youth Alliance (AYA). AYA was designed

to be an innovative, collaborative, and comprehensive prevention program for improving ASRH among young people age 10–24 in Botswana, Ghana, Tanzania, and Uganda. In partnership with governments, nongovernmental organizations (NGOs), and community-based and youth-serving groups, AYA set out to provide resources and technical interventions to encourage healthy ASRH behaviors and, ultimately, to improve and protect ASRH status. AYA represented a unique partnership between the United Nations Population Fund (UNFPA), Pathfinder International, and the Program for Appropriate Technology in Health (PATH). The project was implemented between 2000 and 2006; most field interventions ended in 2005.

## AYA Strategy

The AYA strategy focused on implementing and scaling up a comprehensive set of integrated ASRH interventions using existing local institutions. In each country where AYA operated, the three lead agencies formed a secretariat and assembled a group of implementing partners (IPs). AYA chose IPs that had at least some experience in implementing ASRH programs and adhered to AYA's technical criteria, or AYA selected IPs that were well-placed to implement such programs. Further, the IPs had to be capable of scaling up ASRH activities in particular geographic areas, as specified by AYA, and of working collaboratively with other AYA IPs.

In each country, AYA focused on six key program components<sup>1</sup> (see table 1) that formed the integrated package of interventions for addressing ASRH needs. The overall approach was unique in its intention to implement all components simultaneously, while building capacity and fostering coordination among established partners to scale up ASRH services and to encourage their sustainability. AYA was designed to leave a legacy of behavior change among young people who have been reached directly by the program, as well as a supportive policy environment and the institutional capacity that would enable government, NGOs, and the private sector to sustain and expand AYA's interventions in years to come.

Table 1 lists the objectives associated with each AYA component and the lead agencies responsible for implementation. The first three components focus on developing an enabling environment and local capacity for ASRH programming. The last three components represent program activities that have a direct link to youth through education, communication, and service delivery (youth-friendly services [YFS], behavior change communication [BCC] and life-planning skills [LPS], and livelihood programs).

AYA also pursued the following cross-cutting objectives that set a standard for program implementation across partners and intervention areas:

- Internal and external partnerships established for effective and integrated program design and implementation
- Active participation of youth in program design and implementation
- AYA programs designed to reflect and address issues of gender equity and sexuality (including the rights of adolescents in terms of sexuality and reproductive health)

---

1. AYA Uganda's efforts were concentrated in five of the six key intervention areas. The integration of ASRH content with livelihood skills training was not included as a strategy because of local priorities and context.

**Table 1. AYA Program Components, Objectives, and Lead Partners**

AYA Component	Objective	Lead Partner
Policy and advocacy coordination	Create an improved enabling and supportive environment.	UNFPA
Institutional capacity building	Strengthen IP institutional capacity to sustain ASRH outcomes.	Pathfinder
Coordination and dissemination	Establish, strengthen, or both, coordination and dissemination mechanisms for improved ASRH partnerships.	UNFPA
BCC, including LPS and enter-education activities <sup>a</sup>	Increase knowledge, skills, norms, and positive attitudes toward adoption of safer sexual practices.	PATH
YFS	Increase use of quality, youth-friendly ASRH services.	Pathfinder
Integration of ASRH with livelihood skills training <sup>b</sup>	Improve integration of ASRH into livelihood programs.	PATH

a. Enter-education is entertainment directed to youth that is also educational. AYA used events such as drama, poetry, rap, choir, and sports as opportunities to promote ASRH enter-education messages.

b. In Uganda, the integration of ASRH content with livelihood skills training was not included as a strategy for improving ASRH owing to local priorities and context.

- Increased sustainability of ASRH programs
- Increased number of youth reached in a broader geographic area by institutionalizing effective programs

### AYA Impact Evaluation

In November 2005, the Bill & Melinda Gates Foundation awarded a contract to the Research and Training Institute of John Snow, Inc. (JSI), to evaluate the impact of AYA on sexual and reproductive behavior among youth in Ghana, Tanzania, and Uganda. Botswana was not included in the evaluation because of resource constraints and the long period between the end of country program operations and the initiation of the JSI impact evaluation.<sup>2</sup> This report is a synthesis of the results from the Ghana, Tanzania, and Uganda evaluations, which appear in separate reports. The full reports with more detail on the methodologies and results are available for each of the three countries as part of this four-part AYA impact evaluation and may be obtained from JSI.<sup>3</sup>

The main objective of the evaluation was to determine whether exposure to AYA's comprehensive, integrated program resulted in improved ASRH knowledge, attitudes, and behaviors among male and female youth age 17–22 in areas where AYA worked. The evaluation focused on youth exposure to three program components—(a) YFS, (b) BCC/LPS, and (c) livelihood skills training—in geographic areas where all six program components were implemented simultaneously (that is, those three plus (d) policy and advocacy coordination, (e) institutional capacity building, and (f) coordination and dissemination for strengthening partnerships). Using a post-test-only evaluation design, the evaluation compared knowledge, attitudes, and behavioral outcomes between

2. The AYA program ceased operating one year earlier in Botswana than in other countries.

3. PDF versions of all reports are on the JSI website at <http://www.jsi.com>.

(a) the intervention sites and control sites and (b) the youth who were exposed to AYA programs and those who were not exposed to AYA. This evaluation does not attempt to address issues such as program scale, cost analysis, sustainability, or the impact of individual components of the AYA strategy.

In each country, JSI awarded a subcontract to a local research institution so it could gather information on AYA program implementation, finalize the evaluation design and sampling methodologies, implement the data collection strategy, and perform data entry and data cleaning. This role was carried out by the Institute for Statistical, Social, and Economic Research at the University of Ghana–Legon in Ghana, the Institute of Resource Assessment of the University of Dar es Salaam in Tanzania, and the Makerere University Institute of Statistics and Applied Economics in Uganda.

This evaluation complements other program evaluations that were carried out by AYA partners and that examined factors such as institutional performance and program effectiveness for each key program component in each country.



# Country Settings

## Youth Population and HIV/AIDS

In each of the African Youth Alliance (AYA) countries, young people represent approximately one-third of the population. National-level data, which are shown in table 2, reveal education patterns, marital status, and sexual and reproductive health knowledge and behaviors that are key to understanding this young population in the countries under evaluation. Of particular note are the small percentages of young males and females enrolled in secondary school, particularly in Tanzania and in Uganda. In Uganda, one in three women age 20–24 had given birth to at least one child by the time she was 18 years old. Approximately a third of all unmarried teens age 15–19 in those three countries have had sex; in Tanzania, more than 50 percent of the males those ages had had sex. This sexual activity is cause for concern, given

**Table 2. Select Demographic Data for AYA Countries**

Variable	Ghana	Tanzania	Uganda
Population, mid-2006 <sup>a</sup>	22,600,000	37,900,000	27,700,000
Population of youth age 10–24, 2006 <sup>a</sup> (%)	33.0	34.0	34.0
Young people enrolled in secondary school, latest year 2000/2004, female/male <sup>b</sup> (%)	38.0/47.0	5.0/6.0	18.0/22.0
Ever married, age 15–19, female/male <sup>b</sup> (%)	14.0/1.0	24.0/2.0	32.0/7.0
Women, age 20–24, giving birth by age 18 <sup>b</sup> (%)	15.0	26.0	42.0
Unmarried teens age 15–19 who have had sex, female/male <sup>b</sup> (%)	31.0/19.0	37.0/56.0	32.0/34.0
Single, sexually active women using modern contraception, age 15–19/age 20–24 <sup>b</sup> (%)	36.0/30.0	19.0/46.0	48.0/50.0
Young people age 15–24 with HIV/AIDS, 2001 <sup>c</sup> (%)	2.2	5.8	3.3
Young people age 15–24 with comprehensive HIV and AIDS knowledge (2001–2005), female/male <sup>d</sup> (%)	38.0/44.0	44.0/49.0	29.0/35.0
Young people age 15–24 reporting the use of a condom the last time they had sex with a nonregular partner (2001–2005), female/male <sup>d</sup> (%)	33.0/52.0	42.0/47.0	53.0/55.0

a. PRB 2006a.

b. PRB 2006b.

c. UNFPA and PRB 2003.

d. GSS, NMIMR, and ORC Macro 2003; TACAIDS, NBS Tanzania, ORC Macro 2005; MOH (Uganda) and ORC Macro 2006.

(a) that comprehensive knowledge about HIV (identified here as knowing two ways to prevent AIDS and rejecting three misconceptions about AIDS) is relatively low for both males and females and (b) that condom use at last sex with a nonregular partner remains below 50 percent for males and females age 15–24 years.

### Adolescent Reproductive Health Environment

Over the past decade, health policymakers in Ghana, Tanzania, and Uganda have placed increased importance on safeguarding the reproductive health of youth. In 2000, the Ghana National Population Council issued the country's first set of adolescent health policies (Awusabo-Asare, Abane, and Kumi-Kyereme 2004). The government of Uganda has developed a number of policies that target adolescents. Those policies focus on health—particularly sexual and reproductive health and HIV/AIDS, gender, and education (K2–Consult Uganda Limited 2001). Uganda's current Health Sector Strategic Plan includes activities that focus on adolescent-friendly health services (Ministry of Health [Uganda] 2007). Although the Tanzanian government created national policy guidelines and standards for family planning provisions that made adolescent sexual and reproductive health (ASRH) information and services accessible to the youths in 1994, it took many years to quell concerns that providing information on sexuality and health to young people might provoke irresponsible sexual behavior (African Youth Alliance 2005a, 2005b). In the past decade, government agencies, donors, nongovernmental organizations, and other groups have dramatically expanded efforts to address ASRH needs in all three countries.

### AYA in Ghana, Tanzania, and Uganda

AYA was officially launched in 2000. Each AYA country was selected to participate in the program on the basis of existing positive ASRH policies and commitment to expand programs to improve ASRH status (African Youth Alliance 2007). The AYA program-wide model was then contextualized, and districts and implementing partners were selected to carry out the AYA activities. Table 3 presents details on AYA implementation in the three countries.

**Table 3. Aspects of AYA Implementation in Ghana, Tanzania, and Uganda**

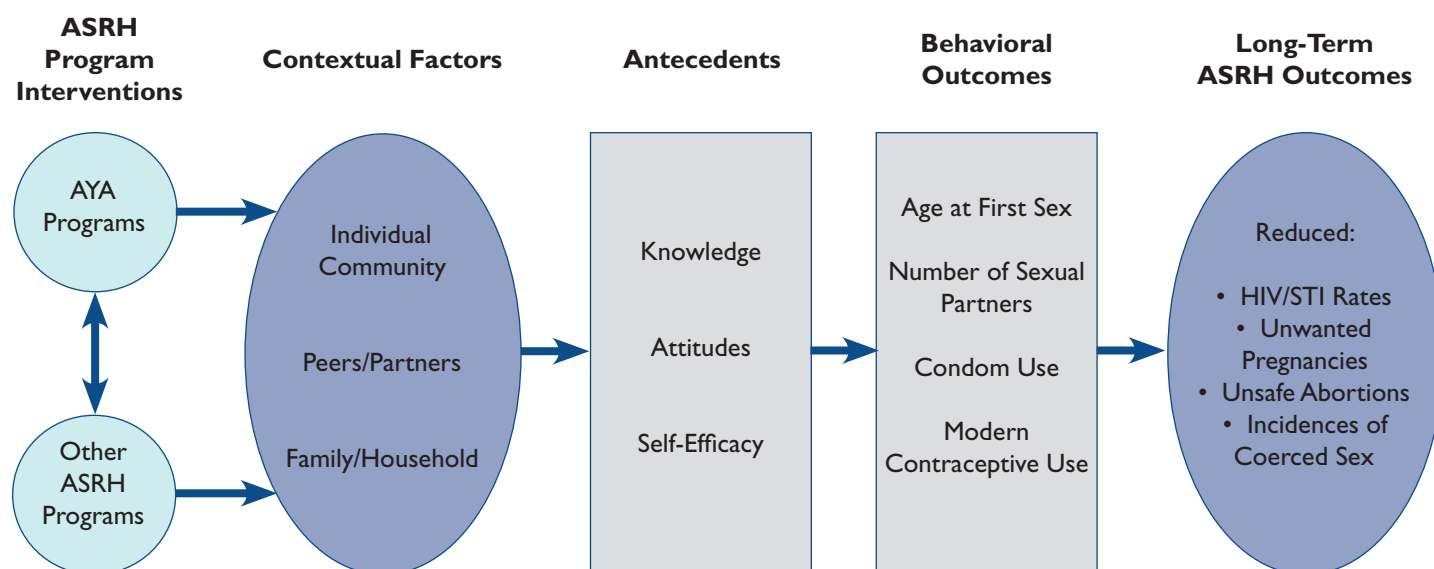
AYA Implementation	Ghana	Tanzania	Uganda
Period of implementation	2001–2005	2002–2005	2001–2005
Number of districts/wards where AYA was active	20 of 110 districts	10 of 129 districts	20 of 56 districts
Number of implementing partners	12	28	35

# Methodology

## Conceptual Framework

Figure 1 illustrates the conceptual framework motivating this evaluation. The framework is based on the theory that adolescent development takes place under the influence of overlapping contexts, or ecological systems, within which adolescents live. Those contextual factors include the nuclear family, extended family, peer group, neighborhood, community, and institutions such as school or the workplace (Brooks-Gunn et al. 1993; Duncan, Boisjoly, and Harris 2001). The contextual factors are expected to influence adolescent sexual and reproductive health (ASRH) behaviors and their antecedents (factors such as knowledge, attitudes, and self-efficacy that are presumed to act as precursors to behavior change).

**Figure 1. The Conceptual Framework for the AYA Impact Evaluation**



The framework holds that African Youth Alliance (AYA) interventions affected ASRH antecedents directly by interacting with young people or indirectly by influencing the context within which youth reside, as well as by enhancing established ASRH programs. The causal pathway then assumes that antecedents (i.e., knowledge and attitudes) influence behavioral outcomes such as abstinence, partner reduction, and condom and contraceptive use. Finally, the improved ASRH behaviors should logically contribute to improved health conditions among youth. This framework is consistent with the health belief model (Rosenstock 1974; Janz and Becker 1984), social cognition model (Bandura 1986), and other health behavioral models.

## Hypothesis and Research Questions

This evaluation focuses on the relationship between AYA interventions, antecedents, and behaviors in AYA program areas and among youths who have been exposed to AYA programs. It tests the hypothesis that unmarried and recently married<sup>4</sup> youths who are age 17–22 and who were previously exposed to AYA interventions are more likely than unexposed youths to report the desired ASRH outcomes targeted by the program. Specifically, it addresses the following evaluation questions.

### Antecedents

We asked how AYA affected these ASRH antecedents:

- Among 17- to 22-year-old unmarried and recently married youths, were those who were exposed to AYA more likely to have better knowledge about HIV/AIDS and condoms than were those not exposed to AYA?
- Among 17- to 22-year-old unmarried and recently married youths, were those who were exposed to AYA more likely to have more desirable attitudes about condoms than were those not exposed to AYA?
- Among 17- to 22-year-old unmarried and recently married youths, were those who were exposed to AYA more likely to have more self-efficacy regarding safe ASRH behavior (mainly regarding condom use) than were those not exposed to AYA?

### Behaviors

And we asked how AYA affected these ASRH behaviors:

- Were 17- to 22-year-old unmarried or recently married youths who were exposed to AYA more likely to abstain from sex or to delay first intercourse than were those not exposed to AYA?
- Among sexually active 17- to 22-year-old unmarried or recently married youths, were those who were exposed to AYA more likely to report fewer lifetime sexual partners than were those not exposed to AYA?

---

4. *Recently married* was defined as those who were married within the two years preceding the evaluation. As in the Demographic and Health Survey (DHS), *married people* were defined as those who are in union and living together. The 17–22 age range resulted from the fact that the budget supported sampling of only one age group. Although AYA worked with youths age 10–24, most activities were focused on those age 15–20. Given the time lag between AYA field activities and the current evaluation, those youths age 17–22 at the time of this survey would be most likely to have been reached by AYA during AYA's main period of implementation.

- Among sexually active 17- to 22-year-old unmarried or recently married youths, were those who were exposed to AYA more likely to use condoms than were those not exposed to AYA?
- Among sexually active 17- to 22-year-old unmarried or recently married youths, were those who were exposed to AYA more likely to use modern contraceptives than were those exposed to AYA?

## Measurement of Key Variables

The evaluation measures three types of key variables: exposure, outcomes, or dependent variables (i.e., antecedents and ASRH behaviors), and it measures confounders or controls. Exposure variables measure respondent exposure to AYA interventions. Antecedent outcome variables measure factors such as knowledge, attitudes, and self-efficacy that act as precursors to sexual behavior change. Behavioral outcome variables measure changes in sexual and reproductive health behaviors. The control variables measure factors other than exposure to AYA (i.e., exposure to other ASRH programs, age, socioeconomic characteristics, etc.) that may influence the outcomes and potentially bias impact estimates. The exposure and outcome variables are listed in table 4. Definitions of the key variables are in the appendixes of the country-level reports.

## Evaluation Design

The post-test-only design combined an intervention-control group strategy with a strategy that assessed the relationship between self-reported exposure to AYA and ASRH behavioral outcomes. Antecedents and behavioral outcomes of interest were

**Table 4. List of Exposure and Outcome Variables**

Exposure Variables	Outcome/Dependent Variables: Antecedents	Outcome/Dependent Variables: Sexual Behavior
Intervention-control design: <ul style="list-style-type: none"> <li>• Living in intervention area</li> </ul> Self-reported exposure to AYA-supported programs: <ul style="list-style-type: none"> <li>• Mass media</li> <li>• Youth-friendly services</li> <li>• Peer educators</li> <li>• Life-planning skills</li> <li>• Enter-education (poem, dance, choir, sport, rap, club, and drama)</li> <li>• Livelihood skills training</li> </ul>	<ul style="list-style-type: none"> <li>• HIV/AIDS knowledge (spontaneous response)</li> <li>• HIV/AIDS knowledge (prompted response)</li> <li>• Belief that condom is protective against HIV/AIDS</li> <li>• Positive attitude toward condom users</li> <li>• Self-efficacy: very confident in obtaining condom when needed</li> <li>• Confident could put on condom correctly</li> <li>• Belief that she or he could insist that partner use condom</li> </ul>	<ul style="list-style-type: none"> <li>• Delay of sexual debut (until age 17 or older)</li> <li>• Abstaining from sex during past 12 months</li> <li>• Fewer than two sex partners in past 12 months</li> <li>• Condom use at first sex</li> <li>• Condom use at last sex</li> <li>• Ever used a condom with current partner</li> <li>• Consistently uses condom with current partner</li> <li>• Modern contraceptive use during first sex</li> <li>• Modern contraceptive use during last sex</li> </ul>

analyzed under both post-test-only strategies. The intervention-control group strategy compares responses of youths in AYA program areas with those of youths in control areas, where no AYA activities took place other than a mass media campaign, broad-based advocacy, and coordination initiatives. This type of design strategy is commonly used to demonstrate mean differences in outcomes, and it addresses questions about a program's effectiveness in reaching its target population.

The intervention-control strategy was complemented by a self-reported exposure strategy. In this strategy, attention focused on program efficacy or on the extent to which program interventions influenced outcomes among participants. This strategy compared antecedents and behavioral outcomes of youth who reported exposure to AYA with those of youth who reported no exposure or who lived in control areas. Exposure measures focused on youths' experience with specified aspects of three program components—youth-friendly services (YFS), behavior change communication (BCC) and life-planning skills (LPS), and livelihood skills training—in areas where all program components were implemented simultaneously (the other three being policy and advocacy coordination, institutional capacity building, and coordination and dissemination).

The design used two analytical techniques to determine impact: propensity score matching and instrumental variable regression. Both techniques use observational data from a single point in time, and data were triangulated to increase confidence in the results. Each aspect of the evaluation design is discussed in the section that follows. Both analysis approaches are described in detail in the individual country reports.

The sampling strategy for this evaluation was designed to meet the requirements of both the intervention-control and the self-reported exposure strategies. AYA program implementers defined intervention areas as districts or wards, depending on the country context, where AYA had implemented its full range of services for at least one year. Control areas were purposefully selected areas that were considered comparable with intervention areas in terms of urban–rural setting, ethnicity, local economic, and infrastructure development but saw no AYA activities other than mass media campaigns and other regional or nationwide activities.

The evaluation used three questionnaires to conduct individual, household, and community informant interviews. The individual questionnaire captured information on location and identification, background characteristics, YFS, BCC/LPS, knowledge, attitudes, perceived risk of and motivation to avoid unsafe sex and unwanted pregnancy, sexual and other health behaviors, and gender attitudes. The household questionnaire included a roster of occupants, an inventory of household assets, and a series of questions to measure adults' perceptions of local ASRH issues. The community questionnaire was administered to local implementing partners and local government informants in each of the evaluation localities to capture local awareness of the ASRH activities (particularly those supported by AYA), the informants' involvement in such activities, their ASRH knowledge and attitudes, and their perception of the AYA program.

The fieldwork in the three countries took place between March and June 2006 under the direction of John Snow, Inc., and in-country research counterparts. The sample size for each country is shown in table 5. Sampling and fieldwork approaches are described in greater detail in the individual country reports. Data entry was validated using the double data entry protocol.

**Table 5. Sample Size for Each Country by Gender and Geographic Area**

Country	Intervention Areas	Control Areas	Total
<b>Females</b>			
Ghana	1,036	800	1,836
Tanzania	843	336	1,179
Uganda	933	615	1,548
<b>Males</b>			
Ghana	952	628	1,580
Tanzania	492	229	721
Uganda	995	633	1,628
<b>Total Sample</b>			
Ghana	1,988	1,428	3,416
Tanzania	1,335	565	1,900
Uganda	1,928	1,248	3,176

## Challenges and Limitations

The evaluation set out to test whether exposure to AYA's comprehensive, integrated program resulted in improved ASRH knowledge, attitudes, and behaviors among young people in areas where AYA worked. Given this strictly defined scope, many important evaluation questions were not addressed in this impact evaluation. For example, the evaluation did not test the relative effectiveness of any single component of the program. In addition, it did not measure program outcomes, such as coverage or service quality, or compare performance in one country with performance in another. It is also worth mentioning that for some components, such as policy and advocacy, AYA may have had an impact at higher levels of the system than could have been detected in this evaluation. Some of those issues are addressed in AYA's end-of-project evaluations. The results of this impact evaluation should be considered alongside the findings of those studies to gain an understanding of AYA performance overall.

Other challenges and limitations included a lack of comparable baseline data, possible dilution of measured impact in intervention areas owing to young people's mobility and their ability to recall exposure to interventions that were not branded as AYA and that may have taken place months or years earlier. Restricting the sample to youth age 17–22 years (married or recently married) for reasons of manageability, cost, and time constraints also limits some of the analysis that could be done on subcategories of youth, especially younger adolescents.

The way in which all those issues and potential biases were addressed is described in detail in the individual country reports. In general, a conservative design approach was used that in most cases would tend toward an underestimation rather than an overestimation of AYA's impact. In this way, the potential for false-positive results is minimized, and if a positive impact is detected, there is higher confidence that the result is a true reflection of impact.





# Results

Detailed results of the surveys in the three countries and of the discussions about results and implications are provided in the full reports for each country. Readers should refer to those reports for a more comprehensive description of results. This report summarizes the key findings across countries, including both the degree of exposure and the impact of self-reported exposure on adolescent sexual and reproductive health (ASRH) outcomes.

## Degree of Exposure among Target Youth

Before one analyzes the extent to which exposure to the African Youth Alliance (AYA) influenced young people to change their sexual behavior, it is worth discussing the degree to which young people reported being exposed to AYA at all. Youth participation in AYA programs and recollection of specific ASRH messages—sometimes two to three years after the fact—is in itself a substantial achievement. If exposure were substantial in intervention areas, that exposure would be a measure of successful programming. By contrast, if AYA reached only a small portion of youths in intervention areas but had a strong impact on the areas, that impact would indicate a successful message and an individual impact at the individual level, but less impact at the population level.

Exposure to AYA was measured on a scale. Respondents were characterized as having high, some, or no exposure. In each country, all known AYA interventions were included in the questionnaires. Interventions varied between countries, because AYA supported different activities in each country. Each respondent was scored on the basis of how many interventions she or he reported seeing, attending, or knowing about and for which she or he could recall the main ASRH message. In the intervention areas, respondents were classified as having high exposure if they recalled exposure to at least three activities, some exposure if they recalled one to two activities, and no exposure if they recalled no activities.

For the multivariate analysis, all respondents in control areas were classified as having no exposure even if they recalled some AYA interventions, because it was assumed that they would have gotten exposure to only pieces of the overall program, not the comprehensive, integrated AYA package. In the self-reported exposure analysis, the group of individuals with some exposure was dropped. Thus, in the final analysis described in this report, individuals with high exposure were compared with those with no exposure. In general, in this report as in the individual country reports, the term exposed respondents refers to the highly exposed group.

**Table 6. Percentage of Self-Reported Exposure to AYA Interventions by Gender, Country, and Level of Exposure in Both Intervention and Control Areas<sup>a</sup>**

Country	Degree of Self-Reported Exposure (percentages)				Total
	None (no exposure)	Low (exposure to 1–2 interventions)	High (exposure to 3+ interventions)	Not Determined	
Females					
Ghana	51.0	25.3	23.3	*	100
Tanzania	50.0	32.3	17.5	*	100
Uganda	48.5	29.7	21.8	*	100
Males					
Ghana	43.6	22.2	33.7	*	100
Tanzania	44.4	28.2	27.3	*	100
Uganda	45.4	31.7	22.9	*	100
Total Sample					
Ghana	47.6	23.9	28.1	*	100
Tanzania	47.9	30.7	21.2	*	100
Uganda	46.9	30.7	22.4	*	100

\* Less than 1.0 percent.

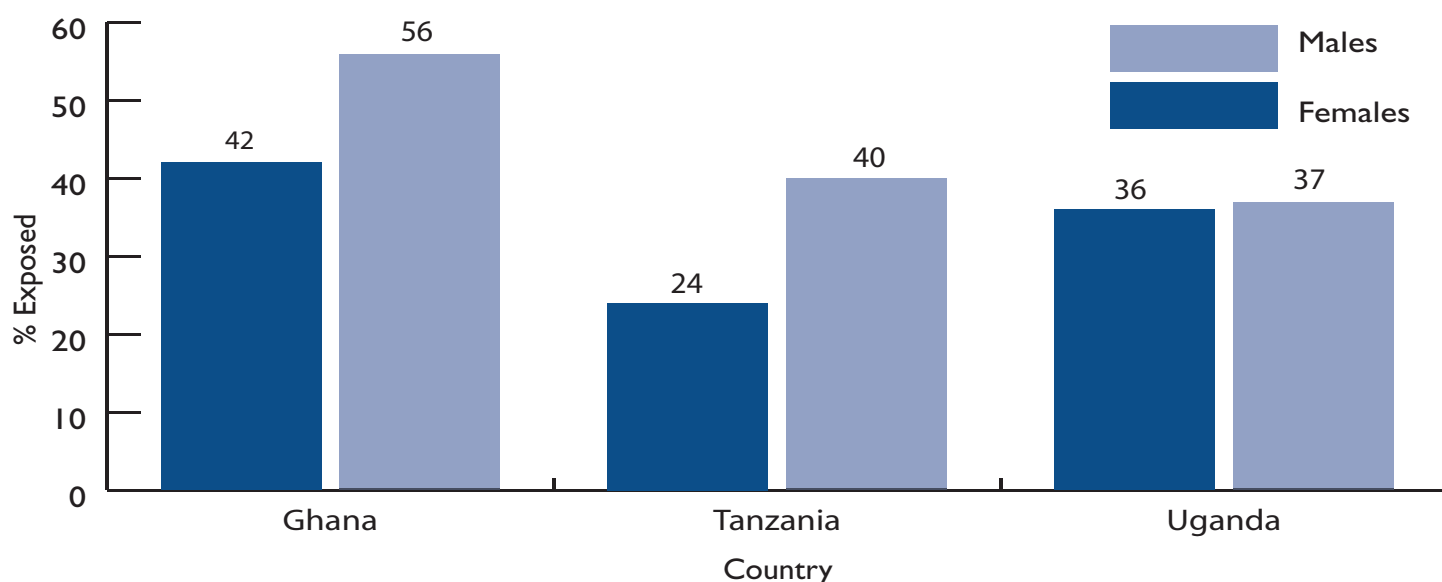
a. Figures are rounded.

Table 6 shows the percentage of respondents in each country who reported being exposed to AYA interventions, by the level of reported exposure. More than half of the total sample in each country recalled being exposed to at least one AYA-supported activity, and 21 to 28 percent were classified as highly exposed. When the sample is limited to intervention area respondents only, more than 30 percent of respondents were classified as highly exposed to AYA. Interestingly, males were generally more apt to report exposure to AYA programs, especially in Ghana and Tanzania, as shown in figure 2. Young males in intervention areas of those countries were 14 and 16 percentage points, respectively, more likely than females to report high exposure. This finding is important to consider in relation to AYA's impact on behavioral outcomes (shown in later sections), for which the results demonstrate that AYA had an impact, mainly on females.

Table 7 presents exposure data in more detail by type of intervention. Not surprisingly, the degree of exposure varied markedly by country, thereby reflecting different country approaches and available media. For example, exposure to television messages was much higher in Ghana than in the other countries—attributable at least in part to the greater program focus on television messages in Ghana. Television campaigns were not used at all in Uganda. Those approaches made sense because of the high level of television ownership in Ghana (64 percent of the population, compared with 59 percent in Tanzania and only 14 percent in Uganda<sup>5</sup>). In general, more young people tended to recall interventions, such as media messages and certain enter-education activities (ASRH messages conveyed through entertainment events), than interventions that required more initiative and more intensive involvement, such as life-planning skills (LPS) programs and visiting youth-friendly clinics.

5. Data from household surveys.

**Figure 2. Percentage of Intervention Area Respondents Reporting Exposure to at Least Three AYA-Supported Interventions, by Gender and Country**



**Table 7. Percentage of Youth Living in the Intervention Areas Who Were Exposed to AYA-Supported Interventions, by Country and by Type of Intervention**

Type of Exposure	Ghana	Tanzania	Uganda
At least one radio program	8.0	40.7	57.2
At least one tv program	75.3	30.2	NA
At least one newsletter	NA	NA	51.2
Visited youth-friendly clinic	8.5	10.3	8.0
Met with peer educator	30.6	26.9	11.8
Attended life-skills program (in school)	NA	NA	9.1
Attended life-skills program (out of school)	NA	5.3	5.0
Enter-education			
Sport	29.3	14.6	22.8
Club	52.9	5.7	NA
Drama	47.0	22.7	6.9
Poetry	36.4	6.6	NA
Debate	NA	NA	30.2
Puppet show	NA	NA	3.7
Dance	NA	8.6	NA
Choir	NA	14.6	NA
Rap	NA	15.4	NA

NA = The intervention was not used in that country.

## Impact of AYA on Antecedents and Sexual Behaviors

This section presents the results of the analysis of AYA's impact on selected ASRH behaviors and the antecedents to those behaviors. As discussed in the methodology section, the evaluation combined two research designs (intervention-control and self-reported exposure) and two analysis techniques (propensity score matching [PSM] and instrumental variable [IV] regression). AYA's impact on ASRH was determined through triangulation of three analysis scenarios:

- The intervention-control strategy analyzed using PSM
- The self-reported exposure design analyzed using PSM
- The self-reported exposure design analyzed using IV regression approach

In this report, in the interest of simplicity, results are shown for the PSM analysis of the self-reported exposure design only. The self-reported exposure design proved to be stronger than the intervention-control design for detecting impact, and the bar graph values shown by the PSM analyses are preferred to those of the IV approach because the latter values can be distorted under certain conditions of the sample.<sup>6</sup> In the individual country reports, the results from all three scenarios are shown in detail for antecedent and behavior variables, including the complete results of each statistical model, in the appendix tables.

In the figures that follow, the impact on each outcome of interest is presented for the three countries, with separate figures for females and males, and for antecedent and behavior variables. Statistically significant results are shown with an asterisk.<sup>7</sup>

### Ghana

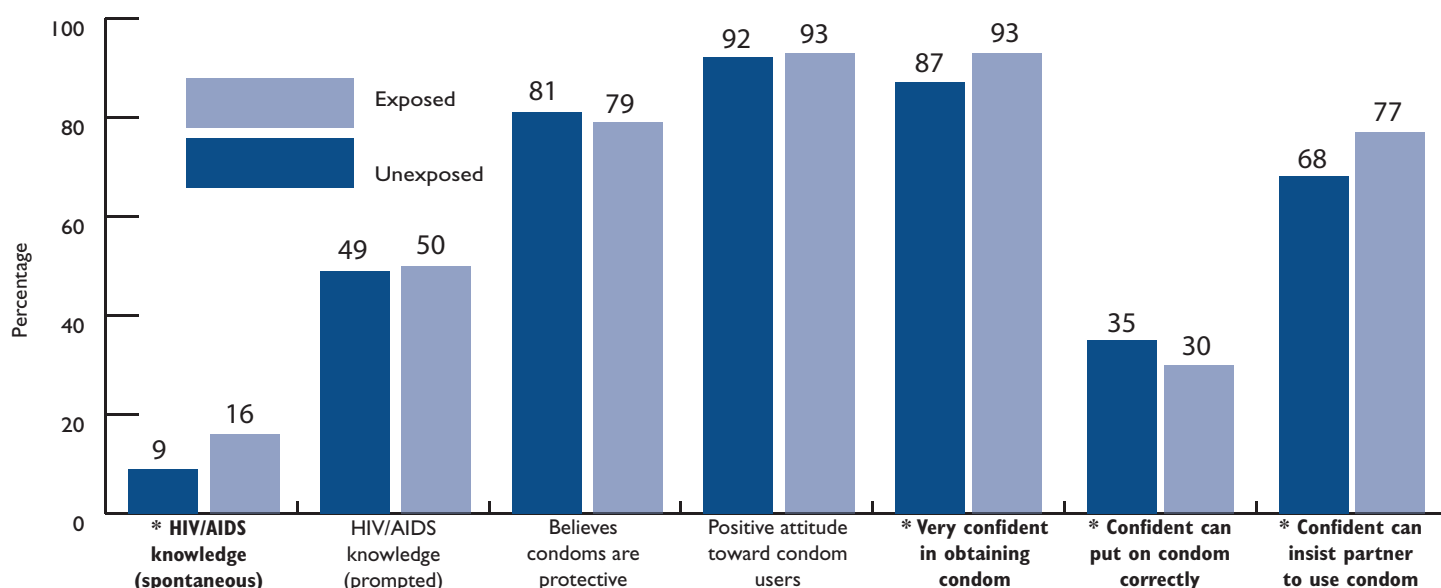
Figures 3 through 6 show the results from Ghana, with figures 3 and 4 focusing on antecedents and figures 5 and 6 on behaviors. A significant positive impact on female antecedents was observed for spontaneous knowledge of HIV/AIDS,<sup>8</sup> confidence in obtaining condoms, and confidence in insisting that sexual partners use condoms. These results indicate that exposure to AYA had a significant impact on these variables in the expected direction (see figure 3). A significant impact was also detected for confidence

6. This would be the case if endogeneity were detected (also known as selection bias or unobserved confounders). In such cases, exposure to AYA could be associated with the outcome variable under question, not necessarily because AYA caused the impact, but because the youth that availed themselves of AYA interventions may have already been motivated to follow such practices. In such cases, AYA may have simply reinforced existing motivations for health seeking and prevention behavior rather than triggering it. The IV approach controls for this bias and gives unbiased impact measures (i.e., the difference in the outcome of interest between exposed and unexposed). However, the absolute measures (i.e., bar graph percentages) are hypothetical and do not reflect population-level estimates; therefore, they appear distorted.

7. In general, confidence that AYA had an impact (or a “treatment effect”) on ASRH is strongest if a statistically significant impact was observed in multiple analysis scenarios. However, the self-reported exposure strategy was considered more valid than the intervention-control strategy (see country reports for details), and the IV analysis was considered more conclusive than PSM. In the analysis of results, therefore, we conclude that an impact occurred if the results are significant under the IV model only or under the PSM self-reported exposure approach in the absence of endogeneity. Therefore, in figures 3–14 in this report, it may be that an apparently large difference between exposed and unexposed respondents is not significant (difference caused by endogeneity) or conversely that a small difference is significant (significance detected by IV models). In most cases, a two-tailed *p*-value of 0.05 was the critical level to determine statistical significance.

8. It should be noted that the low values shown for HIV/AIDS knowledge are due to the way the variable is constructed, not necessarily to low knowledge among respondents.

**Figure 3. Ghana: Impact on ASRH Antecedents among Females**



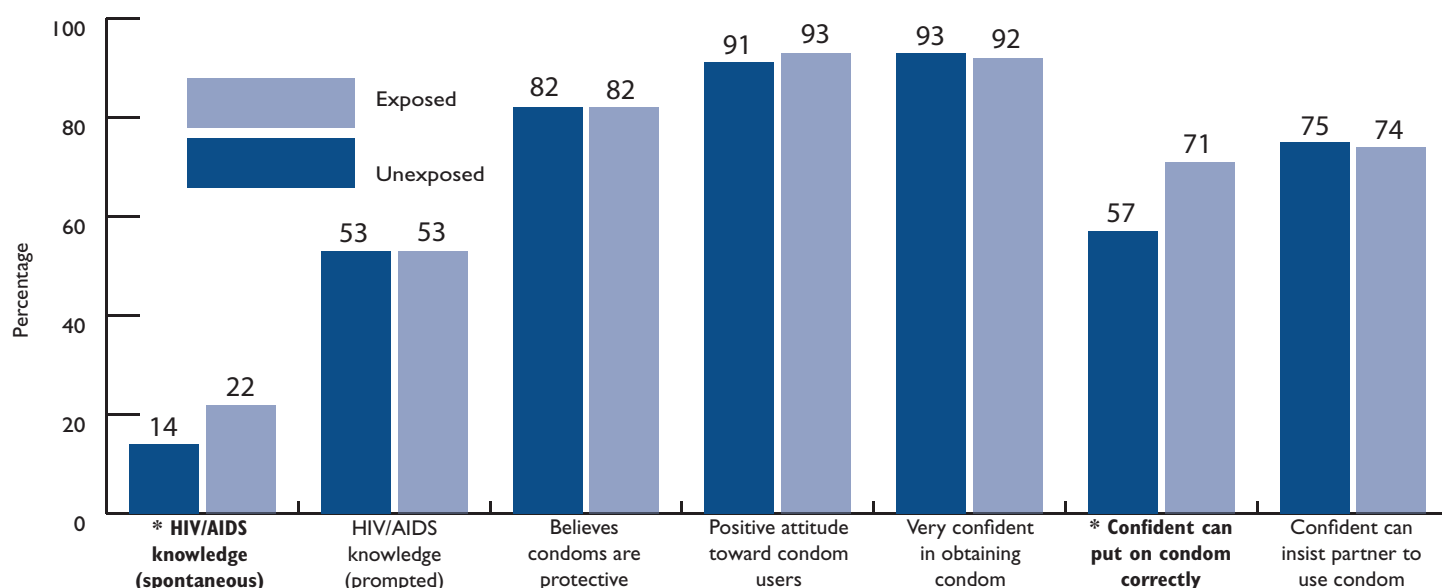
\* statistically significant difference between exposed and unexposed

in putting on condoms correctly, but in a negative direction. The percentage of females with confidence in putting on condoms was low as well (30 percent among females exposed to AYA and 35 percent among those not exposed), indicating a potential area of future need for ASRH programs in Ghana. No significant impact was seen for (a) prompted HIV/AIDS knowledge, (b) perception that condoms protect against AIDS, and (c) positive condom attitudes. However, the absolute values for the latter two variables at least were high among both exposed and unexposed respondents.

Figure 4 presents the findings of the impact on ASRH antecedents among males in Ghana. The results suggest that AYA had a positive impact on young males' HIV/AIDS knowledge (spontaneous responses) and confidence in putting on a condom correctly, but no impact was detected for the other variables. Overall variable frequencies were quite similar to those seen among women, with the notable exceptions that confidence in putting on condoms correctly was substantially higher among males, as was both spontaneous and prompted knowledge of HIV/AIDS. Higher levels of confidence among males in using condoms is not very surprising, given their role in using this method. The fact that HIV/AIDS knowledge levels among females lagged behind levels among males, however, is worrisome and a possible area to be addressed in future ASRH programs.

In terms of AYA's impact on ASRH behaviors, the results are quite striking and noteworthy. On the positive side, a significant positive impact was observed on all nine behavior variables among females, including abstinence, partner reduction, condom use, and contraceptive use (see figure 5). In many cases, the magnitude of the observed impact was sizable as well, as shown by the differences in the heights of the paired bars. Conversely, as shown in figure 6, no positive impact was seen on male youths for any variable; in fact, a negative impact was observed for abstinence. To be fair, how-

**Figure 4. Ghana: Impact on ASRH Antecedents among Males**



\* statistically significant difference between exposed and unexposed

ever, one should note that the percentage of young males who reported practicing safe behaviors was actually quite high relative to the percentage of young females doing so, even for the abstinence variable. So, for example, even though reported abstinence levels were lower among males exposed to AYA than among those not exposed (while the opposite was true among females), abstinence levels among exposed males were, nevertheless, still higher than among exposed females. One area of potential concern in the results for young males is partner reduction.

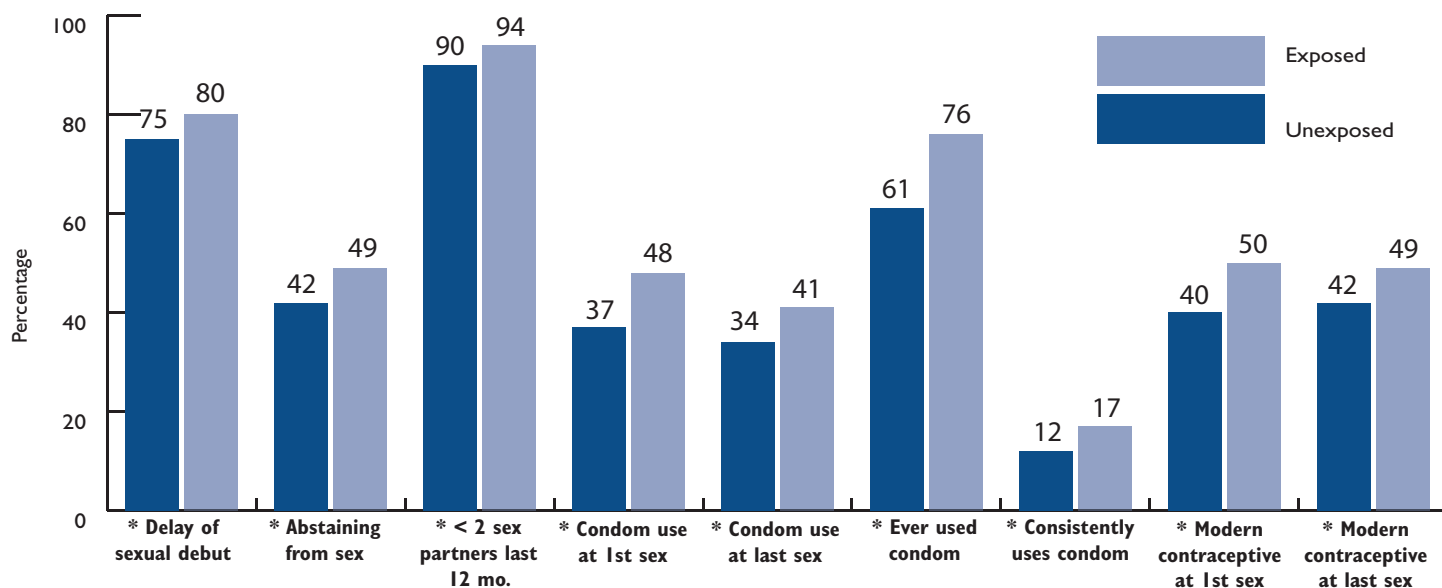
As seen in figures 5 and 6, the percentage of females reporting fewer than two sex partners in the past 12 months was extremely high (more than 90 percent for both exposed and unexposed respondents), and AYA succeeded in having a positive impact despite high overall level. Values for males were much lower (less than 60 percent), but despite that, no impact of AYA was seen. This area is, therefore, also one for a potential focus for future ASRH programs.

## Tanzania

Results for Tanzania are shown in figures 7 through 10. The impact on antecedents is shown in figures 7 and 8 for females and males, respectively, while the impact on behaviors is shown in figures 9 and 10.

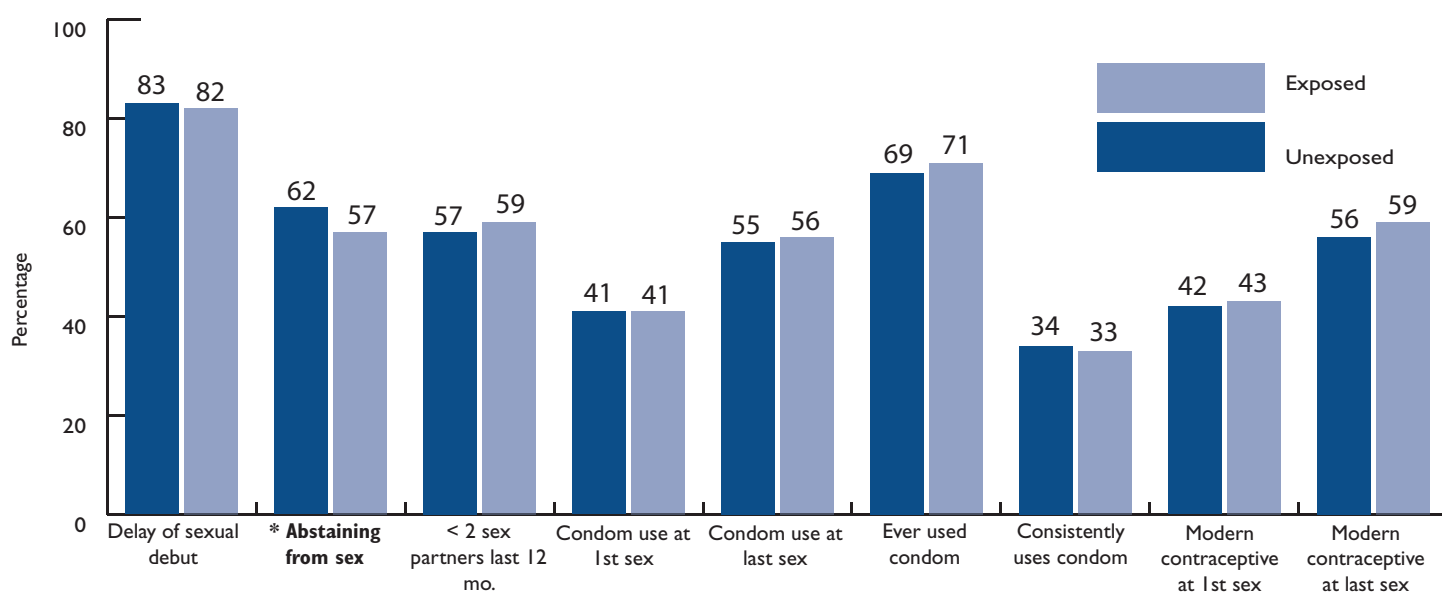
The results in terms of ASRH antecedents were fairly similar to those from Ghana, with some notable exceptions. Spontaneous knowledge levels were higher in Tanzania (prompted knowledge levels were lower, however), and belief that condoms protect against AIDS was much lower in Tanzania. Otherwise, attitudes toward condom users were positive for both males and females, and fairly high values were seen for most self-efficacy variables. As in Ghana, low percentages of females were confident of put-

**Figure 5. Ghana: Impact on ASRH Behaviors among Females**



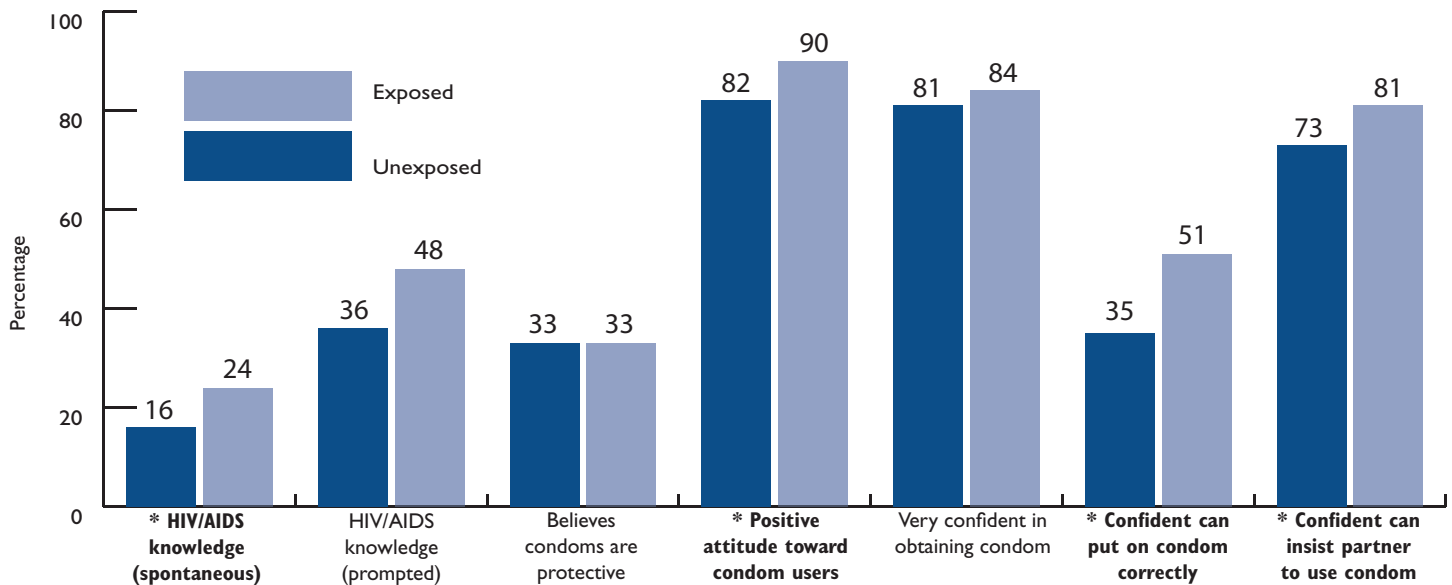
\* statistically significant difference between exposed and unexposed

**Figure 6. Ghana: Impact on ASRH Behaviors among Males**



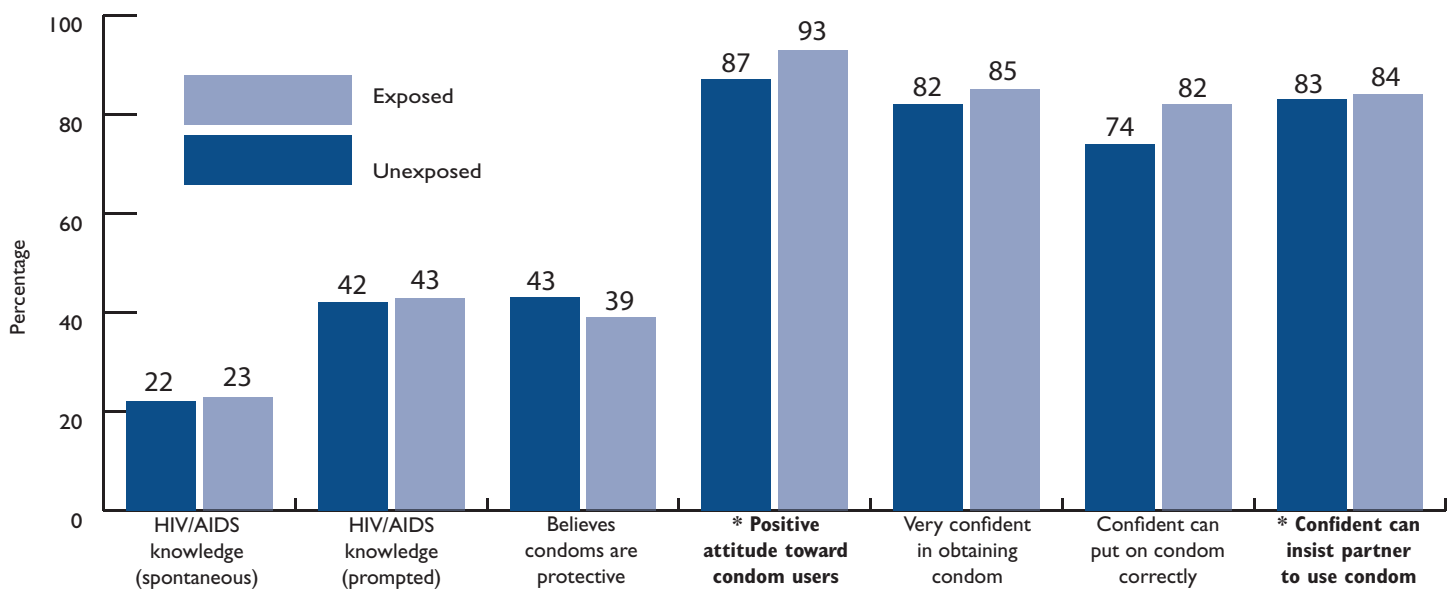
\* statistically significant difference between exposed and unexposed

**Figure 7. Tanzania: Impact on ASRH Antecedents among Females**



\* statistically significant difference between exposed and unexposed

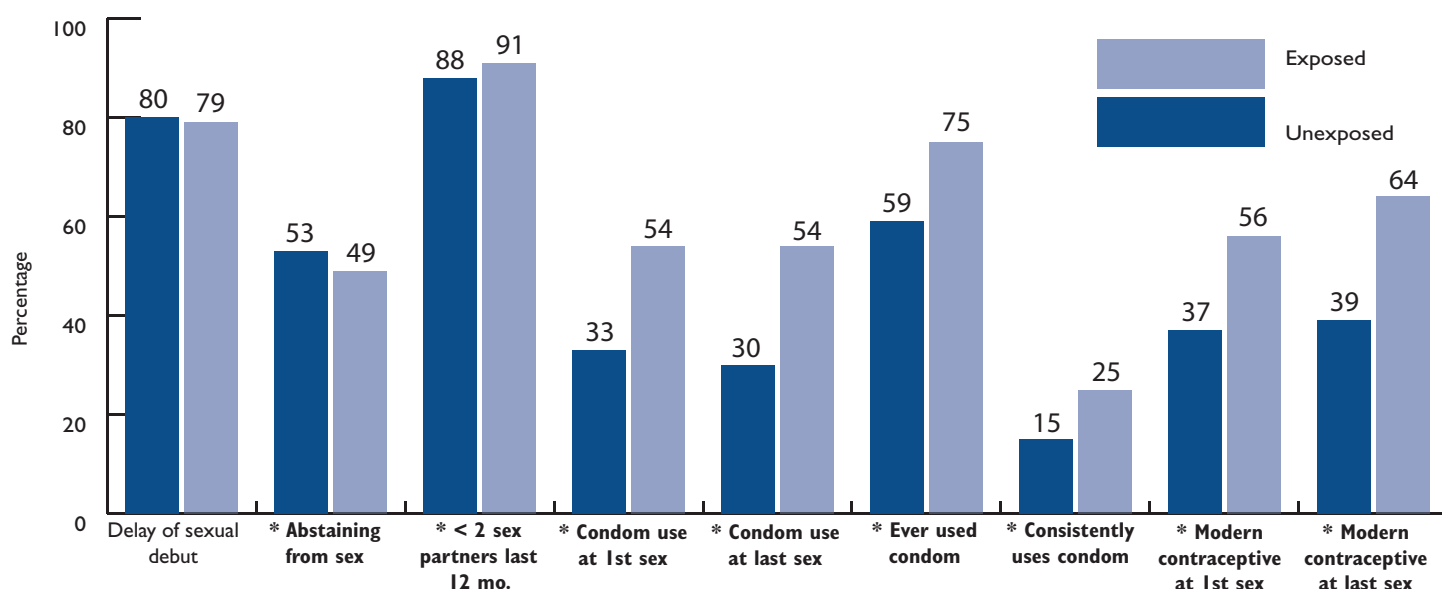
**Figure 8. Tanzania: Impact on ASRH Antecedents among Males**



\* statistically significant difference between exposed and unexposed



**Figure 9. Tanzania: Impact on ASRH Behaviors among Females**



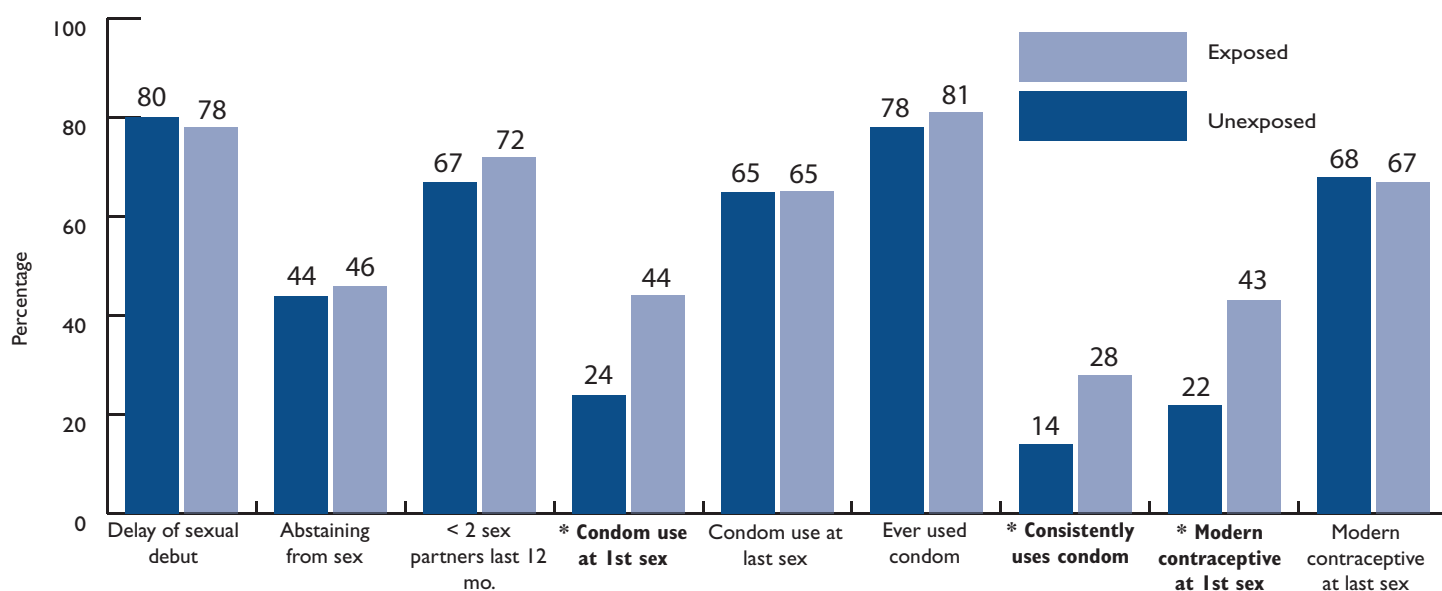
\* statistically significant difference between exposed and unexposed

ting on condoms correctly. However, in Tanzania, AYA achieved a positive impact on this variable. A statistically significant positive impact among females was also seen for spontaneous HIV/AIDS knowledge, attitudes toward condom users, and confidence in insisting that partners use condoms (see figure 7). Among males, AYA achieved a positive impact on attitudes toward condom users and confidence in insisting that partners use condoms (see figure 8).

As in Ghana, the impact on sexual behaviors showed mainly among females, but in Tanzania the differential by gender was not quite as striking. A positive impact on females' behavior (see figure 9) was detected for all the condom and contraceptive use variables and for the number of sexual partners in the previous 12 months, but not for delay of sexual debut or abstinence. In fact, the impact on abstinence was seen to be significantly negative. Among males (see figure 10), in contrast to Ghana, some positive impact was seen—on condom use at first sex, contraceptive use at first sex, and consistent condom use with current partner. Notably, however, despite this positive impact, actual levels of condom and contraceptive use remain relatively low and in need of further improvement.

It should be noted that, as in Ghana, some variables for which no impact was seen actually had fairly high levels of safe behaviors, and some variables where the impact was significant remain low and in need of further improvement. Again, although the impact was greater among young females than among young males, the actual percentages of males reporting safe behavior practices were often higher than those of females, even those exposed to AYA. Not surprisingly, the percentage of young males reporting one or fewer sex partners in the previous year was substantially lower than the percentage of females doing so. As in Ghana, AYA did not achieve a positive impact for this variable.

**Figure 10. Tanzania: Impact on ASRH Behaviors among Males**



\* statistically significant difference between exposed and unexposed

## Uganda

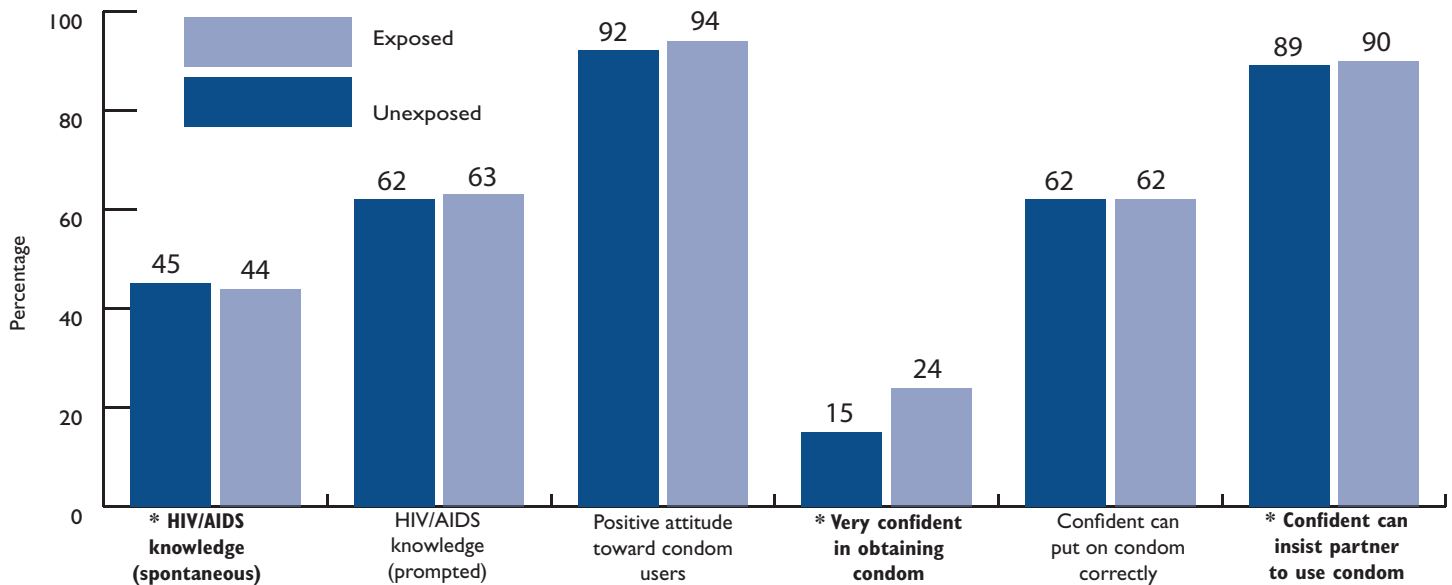
Results for Uganda are shown in figures 11 through 14. The impact on antecedents<sup>9</sup> is presented in figures 11 and 12 for females and males, respectively, and the impact on behaviors is presented in figures 13 and 14.

The impact of AYA on antecedents in Uganda shows some similarities to the other countries, including similar patterns among males and females and similar levels for many variables. Interestingly, both spontaneous and prompted HIV/AIDS knowledge were higher in Uganda than in the other countries, perhaps reflecting the fact that Uganda was an early leader in HIV/AIDS prevention on the continent and was the first African country to openly confront the epidemic and to widely publicize prevention strategies. Confidence in insisting that partners use condoms was higher in Uganda than in the other countries, though confidence in obtaining condoms was much lower. This lack could be because of condom supply disruptions that occurred in Uganda during the period of AYA implementation or possibly because the districts sampled in Uganda were more rural than in the other countries. Obtaining condoms may, therefore, have been genuinely more difficult.

A significant positive impact among females (see figure 11) was found for spontaneous HIV/AIDS knowledge and confidence in obtaining condoms (albeit the actual levels for the latter variable remain low even among those exposed to AYA interventions). Among males (see figure 12), a positive impact was seen on spontaneous HIV/AIDS knowledge. Curiously, among both males and females, a negative impact was seen on confidence in

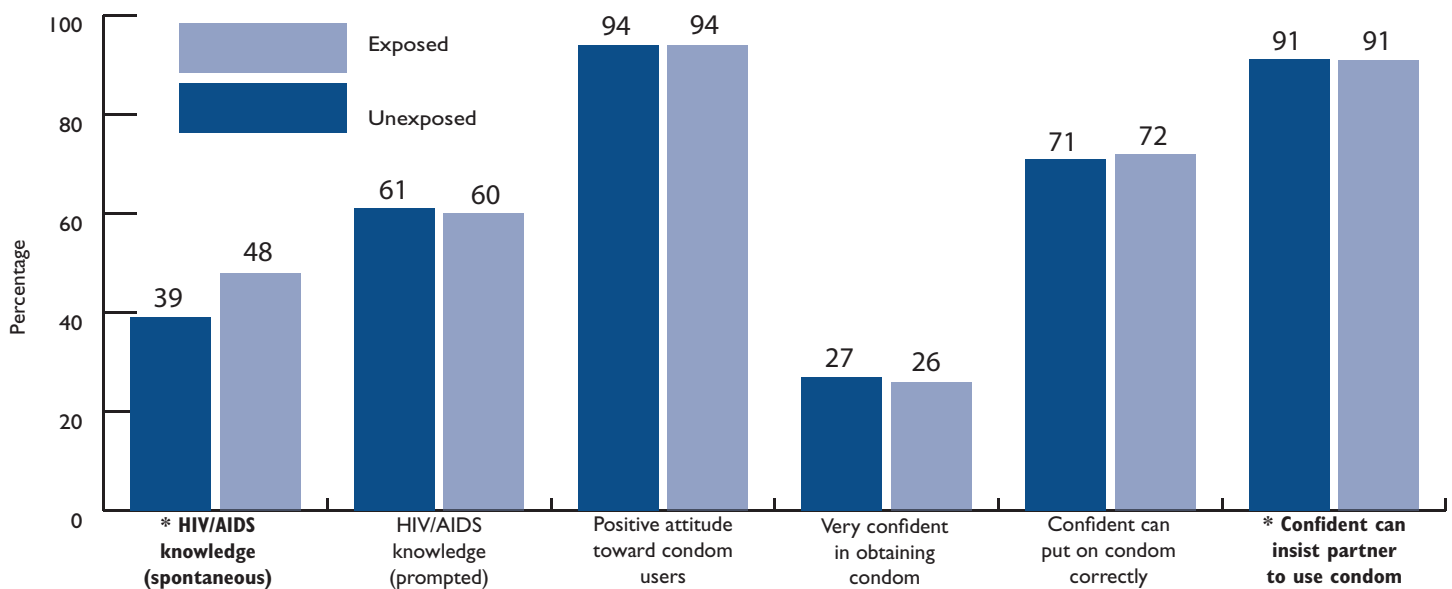
9. The perception that condoms protect against HIV/AIDS was not tested in Uganda, hence, the smaller number of antecedents shown.

**Figure 11. Uganda: Impact on ASRH Antecedents among Females**



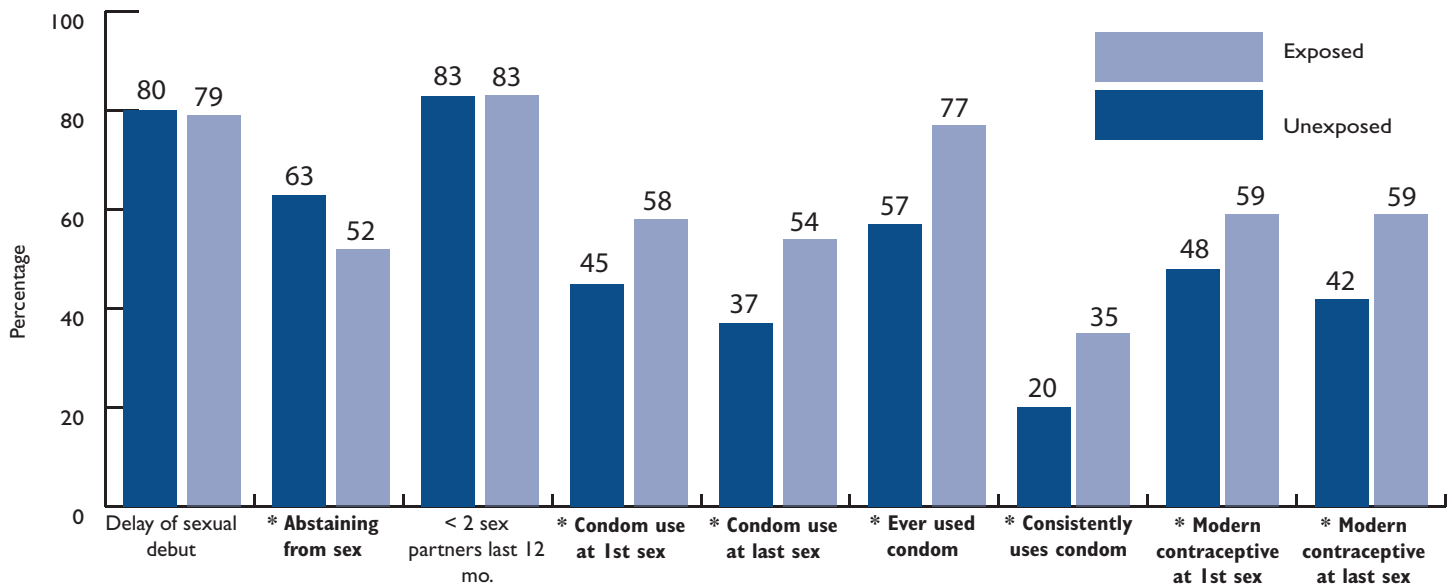
\* statistically significant difference between exposed and unexposed

**Figure 12. Uganda: Impact on ASRH Antecedents among Males**



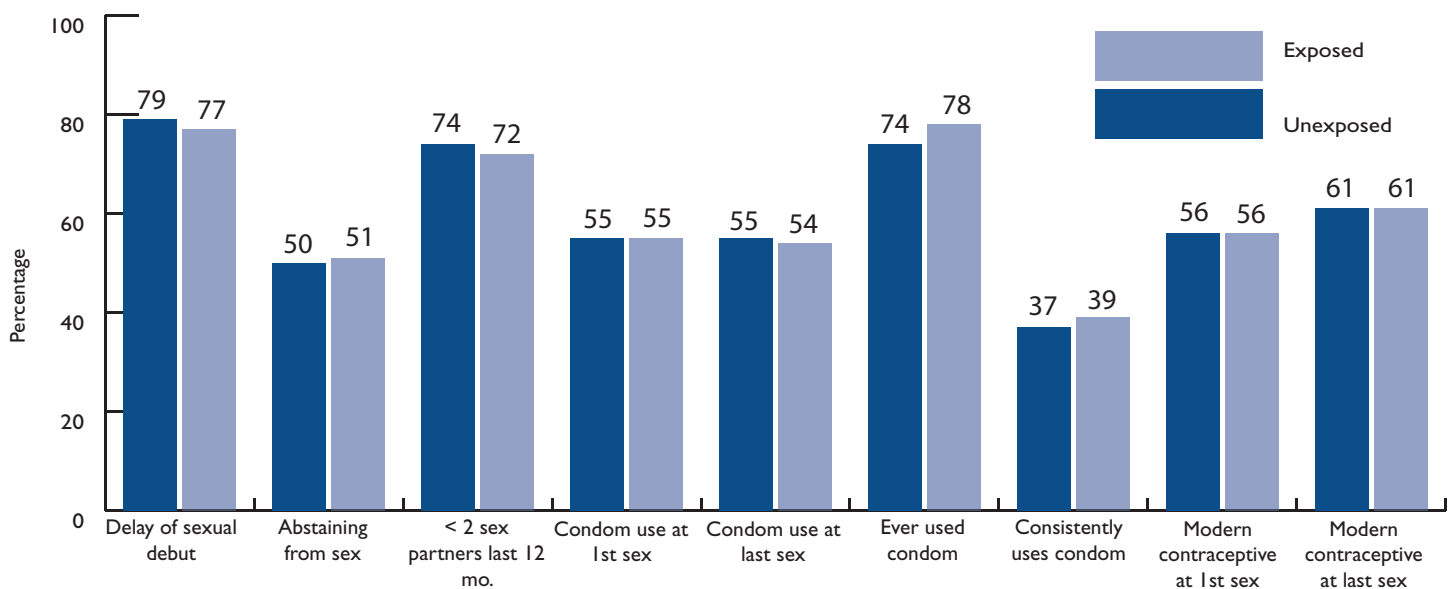
\* statistically significant difference between exposed and unexposed

**Figure 13. Uganda: Impact on ASRH Behaviors among Females**



\* statistically significant difference between exposed and unexposed

**Figure 14. Uganda: Impact on ASRH Behaviors among Males**



\* statistically significant difference between exposed and unexposed

insisting that partners use condoms. Reasons for this counterintuitive result are unclear, but it is worth noting that the negative impact was slight<sup>10</sup> and that overall levels for the variable were fairly high (89 to 91 percent among both males and females).

In terms of AYA's impact on sexual behavior in Uganda, the results are similar to those in the other countries, particularly when examining results by gender. Among females (see figure 13), AYA achieved a positive impact on all four condom use variables (first sex, last sex, ever use, and consistent use) and both contraceptive use variables (at first sex and last sex). The magnitude of impact on all those variables was also substantial. No impact was seen among females for sexual debut or number of partners, and a negative impact was detected for abstinence. Among males (see figure 14), no significant impact (positive or negative) was observed for any behavior variable.

As in other countries, however, the percentages of males in Uganda who reported practicing safe behaviors were similar to the percentages of females doing so. The differential impact by gender appears mainly because the levels among unexposed males were substantially higher than among unexposed females, rather than being higher for exposed females than for exposed males. A result of AYA in those cases, therefore, could be that female outcomes improved from initially low levels to levels similar to those of their male peers by the time of the evaluation.

## Summary of Results

A summary of results is shown in table 8, which illustrates the overall impact of integrated AYA programs on adolescents' sexual behaviors and the antecedents to those behaviors in the three countries of the evaluation. Cells that are shaded grey and marked positive show where AYA had a statistically significant positive impact on the variable, on the basis of triangulation of the analysis approaches. Cells shaded blue and marked negative indicate a negative impact of AYA. These results are counterintuitive. Unshaded cells indicate variables for which no statistically significant impact was observed.

The table essentially summarizes in a single table the results of figures 3 through 14 (all measured variables for all three countries) for visual impact. Especially striking is the dramatic and noteworthy impact on condom and contraceptive use variables among females, the lack of impact on male behaviors except in Tanzania, and the limited—even negative—impact on abstinence except among females in Ghana. It is also interesting to note that although an impact was observed for several antecedent variables in all three countries and among both males and females, even more impact was detected for behaviors (among females), which one would normally consider more difficult to change than antecedents. One must interpret the data in table 8 with caution, because some variables that were affected by AYA remain at low levels and need further improvement, while others that AYA failed to affect or that showed a negative impact were already at relatively high levels from which further improvements would be difficult to achieve.

These observations are discussed in detail in the individual country reports. Overall conclusions and their implication for future ASRH programming in Africa are discussed in the following sections.

<sup>10</sup> In fact, in the PSM analysis of self-reported exposure as shown in figures 11 and 12, levels were actually slightly higher among exposed respondents than among unexposed ones, but the negative impact observed in the IV analysis is the result that is considered conclusive.

**Table 8. Summary of Impact on Antecedent and Behavior Variables, by Gender and by Country**

Antecedents	Females			Males		
	Tanzania	Uganda	Ghana	Tanzania	Uganda	Ghana
High HIV/AIDS knowledge score (spontaneous response)	Positive	Positive	Positive		Positive	Positive
High HIV/AIDS knowledge score (prompted response)						
Belief that condom is protective against HIV						
Positive attitude toward condom users	Positive			Positive		
Very confident in obtaining condom when needed		Positive	Positive			
Could put on condom correctly	Positive		Negative			Positive
Can insist that partner use condom	Positive	Negative	Positive	Positive	Negative	
Behavioral Outcomes	Females			Males		
	Tanzania	Uganda	Ghana	Tanzania	Uganda	Ghana
Delay of sexual debut			Positive			
Abstains from sex (past 12 months)	Negative	Negative	Positive			Negative
Fewer than two sex partners during past 12 months	Positive		Positive			
Condom use at first sex	Positive	Positive	Positive	Positive		
Condom use at last sex	Positive	Positive	Positive			
Ever used condom with current partner	Positive	Positive	Positive			
Always use condom with current partner	Positive	Positive	Positive	Positive		
Modern contraceptive used at first sex	Positive	Positive	Positive	Positive		
Modern contraceptive used at last sex	Positive	Positive	Positive			

## Answers to Key Research Questions

The specific objective of this evaluation was to answer seven research questions to determine whether AYA had a positive impact on ASRH antecedents and outcomes in the countries under study. As demonstrated in the previous two sections, we can say with confidence that AYA did achieve a significant and noteworthy impact in several areas in all three countries.

The main findings of the evaluation are summarized in light of the original research questions.

### Antecedents

**Question 1:** Among 17- to 22-year-old unmarried and recently married youths, were those who were exposed to AYA more likely to have better knowledge about HIV/AIDS and condoms than were those not exposed to AYA?

**Answer:** Females and males in the study who had been exposed to AYA were significantly more likely to have better knowledge about HIV/AIDS (spontaneous) than were those who had not been exposed to AYA (with the exception of young males

in Tanzania). No definitive impact (corroborated by multiple analysis methods) was observed on prompted knowledge for either male or female youth.

**Question 2:** Among 17- to 22-year-old unmarried and recently married youths, were those who were exposed to AYA more likely to have more desirable attitudes about condoms than were those not exposed to AYA?

**Answer:** Both females and males in Tanzania were more likely to have positive attitudes. No definitive impact was observed in Ghana or Uganda, but attitudes were overwhelmingly positive among both males and females.

**Question 3:** Among 17- to 22-year-old unmarried and recently married youths, were those who were exposed to AYA more likely to have more self-efficacy regarding safe ASRH behavior than were those not exposed to AYA?

**Answer:** Results varied by country, but females in each country who had been exposed were significantly more likely to have enhanced self-efficacy for at least one variable. Females and males in Uganda who had been exposed to AYA were significantly less likely to feel confident in insisting that their partner use condoms. Males in Tanzania who had been exposed were more likely to feel confident about insisting that their partner use condoms, while males in Ghana who had been exposed to AYA were more likely to feel confident about putting on a condom correctly.

## Behaviors

**Question 4:** Were 17- to 22-year-old unmarried or recently married youths who were exposed to AYA more likely to abstain from sex or to delay first intercourse than were those not exposed to AYA?

**Answer:** Females exposed to AYA interventions in Ghana were more likely to abstain from sex and to delay first intercourse than were unexposed females. However, females in Tanzania and Uganda and males in Ghana were generally less likely to abstain from sex than were unexposed respondents. No definitive impact on abstinence was seen among males in Tanzania and Uganda. Aside from females in Ghana, as mentioned earlier, no impact was observed on sexual debut among males or females.

**Question 5:** Among sexually active 17- to 22-year-old unmarried or recently married youths, were those who were exposed to AYA more likely to report fewer lifetime sexual partners than were those not exposed to AYA?

**Answer:** Females in Tanzania and Ghana who had been exposed to AYA were significantly more likely to report fewer partners during the previous year. No impact was detected among females in Uganda or among males in any country.

**Question 6:** Among sexually active 17- to 22-year-old unmarried or recently married youths, were those who were exposed to AYA more likely to use condoms than were those not exposed to AYA?

**Answer:** Females who had been exposed to AYA were significantly more likely to use condoms—by a wide margin over unexposed females. This result was true in all three

countries and includes use at first sex, use at last sex, ever use, and consistent use. An impact among male respondents was observed only in Tanzania and that was for use at first sex and consistent use.

**Question 7:** Among sexually active 17- to 22-year-old unmarried or recently married youths, were those who had been exposed to AYA more likely to use modern contraceptives than were those not exposed to AYA?

**Answer:** Females who had been exposed to AYA were significantly more likely to use contraceptives—by a wide margin over unexposed females. This result was true in all three countries and includes use at first sex and at last sex. Among males, an impact was observed for contraceptive use at first sex in Tanzania only; no impact was seen among males in Ghana and Uganda.



# Discussion

This evaluation sought to determine whether the African Youth Alliance (AYA) program had an impact on adolescent sexual and reproductive health (ASRH) in Ghana, Tanzania, and Uganda, among the youths living in areas where AYA had implemented a full package of interventions (all six program components) for at least one year. The measured impacts of AYA varied for some outcomes by method of analysis; however, in most cases, the analysis methods corroborated the findings of other methods quite consistently. This convergence of findings through the different designs and analysis approaches provides confidence that the impact detected through the evaluation can indeed be attributed to AYA's programs. The conservative design that was used attempted to correct for known biases and especially to reduce the chance of false-positive results. The post-test-only evaluation design and analyses proved effective for evaluating a complex public health program such as AYA, even in the absence of comparable baseline information.

Results from the evaluation show that a significant number of young people in AYA implementation areas were reached by AYA programs and were able to recall ASRH messages, although the degree of exposure varied by country and by type of intervention. Results further demonstrated a significant positive impact of AYA programs on several variables, most notably condom use, contraceptive use, partner reduction, and several self-efficacy/knowledge antecedents.

Overall, the impact of AYA on ASRH behaviors and their antecedents occurred more frequently for females than for males, especially in Ghana and Uganda. It is difficult to say why females were more significantly impacted by AYA programs than were males, though as noted in the Results section, male variable levels were often notably higher than were those of females among unexposed respondents, making it harder to achieve a further impact among males. But this finding was not universally the case. It is notable, for example, that the percentage of males with fewer than two sexual partners was substantially lower than the same percentage among females in all three countries. Yet AYA was able to achieve a positive impact on this variable among females in Ghana and Tanzania, but the program achieved no impact on males in any country.

AYA's impact on females is noteworthy and highly commendable, given that females are at serious risk of adverse ASRH outcomes such as HIV infection and unintended pregnancy. But in today's environment, particularly with the high rates of HIV and

sexually transmitted infections (STIs) that affect young people, males play just as great a role, if not a greater one, than do females in terms of influencing sexual health outcomes. Males, therefore, need to be reached with appropriate interventions to increase their sexual and reproductive health knowledge, to improve their attitudes toward condoms, and to improve key behaviors such as condom use and nonconcurrent sexual partnerships. Although AYA did have an important impact on male behaviors in Tanzania and certain antecedents in all countries, no impact was observed for most male behavior variables. Future ASRH programs should try to reach more males with appropriate messages. This effort will most likely entail tailoring messages and service delivery models for young males who are both in school and out of school, for those in urban and rural areas, and among married and unmarried youths.

Recent research has shown that young males do respond positively to certain ASRH messages, but that the most effective programs are those that address social norms related to gender (Peacock and Levack 2004; Pulerwitz et al. 2006; WHO 2007). Certain evidence suggests that successful ASRH programs aimed at males go beyond providing accurate information and quality services to working directly on gender norms, which in many societies are inequitable and encourage negative male behaviors.

In an analysis of 58 evaluation studies on interventions to address gender norms, WHO (2007) further determined that those programs with the most ambitious approaches to gender norms (“gender transformative” as opposed to “gender neutral” or “gender sensitive”) had the most positive impacts on gender attitudes, as well as achieving broader ASRH outcomes. Successful programs also seem to tailor messages specifically to young males’ needs, often carrying them out in different settings that are seen as less threatening, and with different approaches and messages than those typically used to reach young females. Such approaches take time to achieve large-scale impact, but if reaching young males is a priority of ASRH planners, it may be worthwhile for future ASRH programs in Africa to invest in them. Qualitative approaches, such as focus group discussions, can be helpful to determine the best approaches in any given setting.

Other areas in which there was little evidence of AYA impact were (a) delay of sexual debut and abstinence (females and males) and (b) partner reduction (males). However, a lack of significance does not necessarily mean the program did not have any impact in those areas. The full impact of AYA on the delay of sexual debut and abstinence are not known for younger adolescents because our sample focused on older youths age 17–22. Nevertheless, the lack of impact or the negative impact on sexual debut, abstinence, and partner reduction (among males) is counterintuitive and deserves some discussion. Although the age factor could have played some role in the findings, it is possible that AYA’s approach or messages simply did not resonate with young males. It is also possible (a) that the negative impact on abstinence is a reflection of young people’s real-life situations and (b) that as they become older and find ways in which they can minimize their risks of HIV, other STIs, unwanted pregnancy, etc. (which they could learn through exposure to AYA), they could possibly be more apt to engage in (safe) sex than are the youths who were not exposed to such information.

There is some evidence that nonsexual factors such as basic education, family structure, livelihood skills, and peer norms may be just as important as more traditional knowledge and attitude antecedents when seeking to encourage abstinence, delay of sexual debut, and partner reduction (Blum and Mmari 2004; Kirby 2001). Although some of those factors are beyond the control of most ASRH programs, others are

worth pursuing, possibly in partnership with organizations working in other sectors. In any case, reasons for such AYA findings are not fully known and warrant further research to better determine their causes, as well as to identify ways that programs could better address abstinence and sexual debut in the future.

This evaluation suggests that AYA's multicomponent, integrated approach, which combines strategies such as (a) behavior change communication to address risk behaviors; (b) youth-friendly services for HIV/STI counseling and testing and for use of modern contraceptives, including condoms; and (c) outreach services such as peer education and other activities in the community, had a significant impact on several ASRH variables. Such positive findings offer hope that comprehensive programs with similar attributes—when implemented in similar settings—could likewise achieve positive impacts.



# Recommendations and Considerations

The scope of this study specifically focused on measuring the impact of the African Youth Alliance (AYA) in terms of the seven research questions. As such, it looked at only one part of the overall AYA picture, and it offers limited potential to make recommendations for future adolescent sexual and reproductive health (ASRH) programming. Nevertheless, some findings clearly provide insights that can contribute to future planning. Recommendations tend to fall into one of several categories: (a) expanding the interventions that appear to lead to positive impact, (b) seeking creative alternatives to address areas where less impact is seen, and (b) carrying out further data analysis or additional research.

## Replicate What Works

Overall, AYA achieved an impressive positive impact on several ASRH outcomes in all three countries, especially among females. The results suggest (a) that a comprehensive, scaled-up, multicomponent approach such as AYA can be effective in improving certain key ASRH outcomes and (b) that expanding such programs to other sites in the three countries studied, or in other similar countries, could have similar impacts. In theory, when expanding the program to other sites, one would try to replicate those interventions associated with most successful impact (e.g., activities focused on HIV/AIDS knowledge, some of the self-efficacy interventions for females, and activities to increase condom and contraceptive use among females). Further, one might want to focus on activities related to variables whose outcome levels in the youth population remain low, despite positive AYA impacts.

Table 9 shows such variables, listing those that were associated with positive impacts but whose (positive outcome) levels in the population remained relatively low among respondents exposed to AYA (60 percent or less). Examples of this phenomenon include most of the condom and contraceptive use variables, especially among females. In fact, of the 20 variables shown, 17 are results among female respondents. In general, those areas are where one would conclude that AYA successfully achieved positive change in the population, but where further improvements are needed. Those types of outcomes would seem to be ideal targets for future ASRH programming. Note that the table shows levels for exposed respondents, so outcomes among unexposed youth would be even lower; this latter group could be a key target for future ASRH programs. Because AYA did achieve an impact in those areas, replicating the integrated AYA approach would seem to be an appropriate way to seek continued improvements.

**Table 9. Variables on Which AYA Achieved Positive Impact, But for Which Fewer Than 60 Percent of Exposed Young People Reported Positive Outcomes**

Variable	Country	Gender (M/F)	Exposed Respondents Reporting Positive Outcome (%)*
Very confident in obtaining condoms	Uganda	F	24
Confident can put on condom correctly	Tanzania	F	51
Abstaining from sex last 12 months	Ghana	F	49
Condom use at first sex	Ghana	F	48
	Tanzania	F	54
		M	44
	Uganda	F	58
Condom use at last sex	Ghana	F	41
	Tanzania	F	54
	Uganda	F	54
Consistently uses condoms	Ghana	F	17
	Tanzania	F	25
		M	28
	Uganda	F	35
Modern contraceptive at first sex	Ghana	F	50
	Tanzania	F	56
		M	43
	Uganda	F	59
Modern contraceptive at last sex	Ghana	F	49
	Uganda	F	59

\* Percentages are from the propensity score matching analysis of self-reported exposure results. Knowledge scales were not included because composite values may not represent true knowledge levels.

In general, regardless of actual levels of the variables measured in this evaluation, continued attention needs to be paid to providing appropriate reproductive health and HIV services for young people, both married and unmarried populations, even where results of this study are encouraging (e.g., condom use among young females). Despite the positive impact observed and the relatively high portions of sexually active youths reporting condom use, a large proportion of young people still do not use condoms or modern contraceptives despite a desire to avoid HIV and pregnancy. Sexual activity is certain to occur among a certain portion of unmarried young people, so programs need to continue meeting the needs of those youths with culturally appropriate programs, not only by encouraging condom use where appropriate but also by improving negotiating skills and by making sex—among those who do engage in it—wanted (i.e., noncoerced) and safe.

### Improve Methods for Achieving Overall Impact

The results of this evaluation were not always positive. In those cases where AYA did not achieve a positive impact, alternative approaches to AYA may be preferred—or

*Recommendation: Continue using existing programs to maintain high levels for these variables*

**Table 10. Variables on Which AYA Did Not Achieve Positive Impact, But for Which More Than 80 Percent of Unexposed Young People Reported Positive Outcomes**

Variable	Country	Gender (M/F)	Unexposed Respondents Reporting Positive Outcome (%)*
Believes condom is protective against HIV	Ghana	F	81
		M	82
Positive attitude toward condom users	Ghana	F	92
		M	91
	Uganda	F	92
		M	94
Very confident in obtaining condoms	Ghana	M	93
	Tanzania	F	81
		M	82
Confident can insist that partner use condoms	Uganda	F	89**
		M	91**
Delay of sexual debut	Ghana	M	83
	Tanzania	F	80
		M	80
	Uganda	F	80
Fewer than two sex partners in the past year	Uganda	F	83

\* Percentages are from the propensity score matching analysis of self-reported exposure results. Knowledge scales are not included because composite values may not represent true knowledge levels.

\*\* AYA had a slight negative impact on this variable.

at least approaches that add additional attributes to the AYA package. When one attempts to decide which areas need alternative approaches, it is important to distinguish between those variables that indicated highly positive ASRH conditions but no AYA impact, and those suggesting poor ASRH conditions and on which AYA had no impact. Examples of these two types of results are shown in tables 10 and 11.

Table 10 shows variables for which no AYA impact (or a negative impact) was observed, but very positive ASRH levels exist (80 percent or more positive response among youths who were unexposed to AYA). For example, in Ghana and Uganda, AYA did not have an impact on attitudes toward condom users, but attitudes were positive among almost 90 percent of those surveyed in both countries. Although AYA failed to have an impact on those variables, the outcome levels in the youth populations are quite high regardless of whether the youths were exposed to AYA or not.

Note that the table shows values for unexposed youths only, so outcome levels among exposed youths would be even higher. As such, it is likely that the AYA approach and other existing ASRH approaches may be valuable in working on such variables, because the approaches seem effective in keeping outcomes at high levels. Future programs could focus on maintaining the progress to date through existing, ongoing, ASRH

**Table 11. Variables on Which AYA Did Not Achieve Positive Impact, and on Which 60 Percent or Fewer of (Exposed) Young People Reported Positive Outcomes**

Variable	Country	Gender (M/F)	Exposed Respondents Reporting Positive Outcome (%)*
Believes condom is protective against HIV	Tanzania	F	33
		M	39
Very confident in obtaining condom	Uganda	M	26
Confident in putting on condom correctly	Ghana	F	30**
Abstaining from sex in past 12 months	Ghana	M	57**
	Tanzania	F	49**
		M	46
	Uganda	M	51
Fewer than two sex partners in past 12 months	Ghana	M	59
Condom use at first sex	Ghana	M	41
	Uganda	M	55
Condom use at last sex	Ghana	M	56
	Uganda	M	54
Consistently uses condoms	Ghana	M	33
	Uganda	M	39
Modern contraceptive at first sex	Ghana	M	43
	Uganda	M	56
Modern contraceptive at last sex	Ghana	M	59

\* Percentages are from the propensity score matching analysis of self-reported exposure results. Knowledge scales are not included because composite values may not represent true knowledge levels.

\*\* AYA had a negative impact on this variable.

strategies including AYA. Most of the variables in this category are antecedents, which is not very surprising; one would expect antecedents to reach higher levels among the population sooner than behavioral outcomes, which typically depend on longer-term normative change that is within the populations and that influences young people and, therefore, takes longer for ASRH programs to affect.

The results of greatest concern to planners are those outcomes for which AYA did not achieve a positive impact but where, unlike in table 10, population levels were unfavorable (60 percent or less reporting positive outcomes among exposed respondents). Variables of this category are shown in table 11. Not surprisingly, 15 of the 18 variables shown are from results among males, indicating once again how important it is to reach young males and suggesting that reaching males successfully will likely require new and creative approaches.

Most variables are associated with behavioral outcomes, which is not surprising; those behaviors would normally be expected to be harder to improve. Because AYA did not



have a positive impact on such variables, the results of this evaluation would not suggest replicating the AYA approach, but rather undertaking alternative approaches that have proven effective with young males in the past. Finding appropriate means to do this will likely be one of the key challenges to ASRH programs in Africa in the near future.

The authors acknowledge that tables 9, 10, and 11 simply point policymakers in a general direction as far as programming decisions. However, the actual choice of the most effective basket of activities depends on many factors beyond the analysis conducted here.

### **Provide Further Data Analysis and Further Research**

Clearly, further data analysis would be helpful to learn more about why no impact was seen in some areas and why a negative impact was observed in a few cases. Potential analyses could include an examination of (a) abstinence and sexual debut variables among the younger ages of those surveyed; (b) characteristics of males who were exposed to AYA and who had positive or negative behaviors; (c) characteristics of males and females who exhibited positive and negative behaviors related to sexual debut, abstinence, and partner reduction; (d) additional antecedents and behaviors; (e) relative impact of exposure to different AYA components (e.g., youth-friendly services, media, enter-education, life-planning skills, etc.); and (f) others.

Additional research beyond the current study could also help determine the best approaches for future ASRH programs in all three countries. Examples already mentioned include qualitative research, such as focus groups to determine the most acceptable and effective approaches for reaching males, plus research on variables such as sexual debut, abstinence, partner reduction, and male-directed interventions in general. Other areas could include better understanding of the cost issues of scaling up approaches. For donors and program managers alike, there may be a desire to scale up or replicate the AYA interventions but, without better knowledge of cost issues, it is unclear how feasible (in terms of cost, management, human resources, and absorptive capacity of implementing partners) a national-scale comprehensive program would be.

There have been several major research studies on ASRH in AYA countries, and there may be an opportunity for stakeholders to conduct some secondary analysis of those studies to shed further light on the findings of the current evaluation. Findings from this evaluation may also be better understood and more meaningful if viewed in conjunction with the final program evaluation report from AYA (African Youth Alliance 2007), which (a) examined the extent to which young people used AYA program interventions, (b) qualitatively examined the effectiveness of the implementation of each program component, and (c) addressed issues of cost to some extent.

### **Add Future Impact Evaluations**

This evaluation proved effective as a post-test-only design by triangulating the findings from three analysis scenarios and by controlling for known biases. Despite known limitations described elsewhere, the authors believe that this methodology can be effectively used to determine program impact at the population level in cases where baseline data do not exist, or, as in this case, where baseline data are not comparable with the endline sample. Although a baseline–endline experimental design is theoretically preferable to a post-test-only design in many regards, when a comparable baseline is not available, the design used in this study can prove effective.



# Conclusions

This study evaluated whether the African Youth Alliance (AYA) program had an impact on adolescent sexual and reproductive health (ASRH) in Ghana, Tanzania, and Uganda among the youths living in areas where AYA implemented the full package of interventions (all six program components) for at least one year. Overall, the results showed a substantial impact for some subgroups, especially on condom and contraceptive use among females, with a very trivial impact also observed on some antecedents for both males and females. The main conclusions of the study may be summarized as follows:

- A small but important impact was observed on antecedents. Encouragingly, a positive impact was observed for (a) spontaneous HIV/AIDS knowledge among both males and females in most countries, (b) condom attitudes in Tanzania, and (c) some self-efficacy variables in all three countries. A very slight negative impact was observed on confidence in insisting that partners use condoms in Uganda. Some of the antecedent variables for which no significant impact was detected were already well established at high levels in the general youth population surveyed. Thus, further gains would have been difficult to achieve. In general, antecedent levels were fairly high in most countries, suggesting that youth in AYA areas were fairly well prepared to practice safe sex.
- A consistent impact was detected on condom and contraceptive use among females. In terms of program impact, this area was clearly the crowning achievement of AYA in all three countries. It is, indeed, impressive and noteworthy that a significant positive impact was observed so consistently across all countries and across most analysis methods for this important group of variables. Given the magnitude of the impact in most of these “method use” variables, one can say with confidence that AYA programs were able to improve behaviors among a sizable proportion of youths in areas where the programs were in operation. Putting this result in the context of the conceptual framework for this study, behaviors that were improved by the AYA interventions would be expected ultimately to contribute to improved ASRH in program areas, including reduced incidence of HIV/AIDS and other sexually transmitted infections (STIs); fewer unwanted pregnancies; and, ultimately, saved lives and a healthier youth population.
- Much less impact was observed among young males. Although the above findings represent an outstanding achievement of AYA, one must ask why the impact on behaviors occurred so predominantly among females, especially in Ghana and

Uganda. Even if AYA did have an important impact on males in terms of certain antecedents and in terms of certain behaviors in Tanzania only, the impact on the vast majority of indicators was insignificant. Future ASRH programs should certainly try to reach males more broadly and effectively, which will likely entail more tailored messages and service delivery models that address their specific ASRH needs. In order to do this well, it is worth investigating more precisely the causes of the divergence between male and female outcomes in this evaluation, as well as qualitatively exploring what approaches would best meet male needs.

- Less impact (sometimes negative) was found on sexual debut and abstinence. As mentioned previously, the lack of impact on sexual debut and abstinence may stem from the fact that AYA focused interventions in those areas to younger cohorts, while this study interviewed those youths who were mostly above the median age of sexual initiation in all three countries. It may also be possible that an impact on all these behaviors takes a longer time than to bring about than the period of AYA's full implementation. Furthermore, it may simply be possible that AYA's messages were not very effective among the targeted youth groups. Whatever the reason, these variables are important ones that should be addressed in any ASRH program. Further research could shed light on why no positive impact was detected, as well as suggesting effective directions for future programming.
- The research design was effective. Encouragingly, the results of the three analysis techniques consistently corroborated each other for both antecedents and behavioral outcomes. Such corroboration provides further confidence that the impact detected can indeed be attributed to AYA. The conservative design that was used attempted to correct for known biases and especially to reduce the chance of false-positive results, thereby suggesting that in most cases the impact would more likely be underestimated than overestimated. Overall, the authors believe that although baseline–endline experimental designs may be preferable where feasible, this post-test-only evaluation design proved effective for evaluating the population-level impact of a complex public health program and attributing impacts to the program's efforts.

In conclusion, evidence from this impact evaluation suggests that multicomponent programs that combine strategies such as behavior change communication to address risk behaviors; youth-friendly services for HIV/STI counseling and testing and for use of modern contraceptives, including condoms; and outreach services such as peer education and other activities in the community can be an effective approach to addressing young people's ASRH needs. The success of such programs also depends on their being culturally appropriate in the local context, being sensitive to the needs of young people, and being built on the strengths of local institutions. It is hoped that the results from this study can contribute to a better understanding of ASRH in general and specifically in the context of youth programs in Ghana, Tanzania, and Uganda, which should lead to improved future programming and, ultimately, to improved sexual and reproductive health among the youth populations of those countries.

# Bibliography

African Youth Alliance (AYA). 2005a. “Youth-Friendly Services: Tanzania End-of-Program Evaluation Report.” Boston: Pathfinder International.

———. 2005b. “Partnerships: A Technical Paper on the AYA Experience.” <http://www.ayaonline.org/CDWebDocs/AYAResources/Toolbox/Reports/TechPapers/AYATechPartnerships-full.pdf> (accessed November 2006).

———. 2007. “Improving Health, Improving Lives: The End of Programme Report for the African Youth Alliance, 2007.” New York: UNFPA. <http://www.ayaonline.org> (accessed April 30, 2007).

Awusabo-Asare, K., A. M. Abane, and A. Kumi-Kyereme. 2004. “Adolescent Sexual and Reproductive Health in Ghana: A Synthesis of Research Evidence.” Occasional Report No.13, Alan Guttmacher Institute, New York.

———. 2006. “Adolescent Sexual and Reproductive Health in Ghana: Results from the 2004 National Survey of Adolescents.” Occasional Report No. 22, Alan Guttmacher Institute, New York.

Bandura, A. 1986. *Social Foundations of Thought and Action: A Social Cognitive Theory*. Englewood Cliffs, NJ: Prentice-Hall.

Becker, M. H. 1974. “The Health Belief Model and Personal Health Behavior.” *Health Education Monographs* 2 (4): 324-473.

Becker, Sascha O., and Andrea Ichino. 2002. “Estimation of Average Treatment Effects Based on Propensity Scores.” *The Stata Journal* 2 (4): 358–77.

Blum, Robert, and Kristin Mmari. 2004. *Risk and Protective Factors Affecting Adolescent Reproductive Health in Developing Countries: An Analysis of Adolescent Sexual and Reproductive Health Literature from Around the World*. Geneva: World Health Organization.

Boolen, K. A., D. Guilkey, and T. Morz. 1995. “Binary Outcomes and Endogenous Explanatory Variables: Tests and Solutions with an Application to the Demand for Contraceptive Use in Tunisia.” *Demography* 32: 111–31.

Brooks-Gunn, J., G. J. Duncan, P. K. Klebanov, and N. Sealander. 1993. “Do Neighborhoods Influence Child and Adolescent Development?” *American Journal of Sociology* 99 (2): 353–95.

- Duncan, G. J., J. Boisjoly, and K. M. Harris. 2001. "Sibling, Peer, Neighbor, and Schoolmate Correlates as Indicators of the Importance of Context for Adolescent Development." *Demography* 38 (3): 437–47.
- Focus on Young Adults Program. 2001. "Advancing Young Adult Reproductive Health: Actions for the Next Decade." Unpublished end-of-project report, Pathfinder, Washington, DC.
- Ghana Statistical Service (GSS), Noguchi Memorial Institute for Medical Research (NMIMR), and ORC Macro. 2004. *Ghana Demographic and Health Survey 2003*. Calverton, Maryland: ORC Macro.
- Janz, N. K., and M. H. Becker. 1984. "The Health Belief Model: A Decade Later." *Health Education and Behavior* 11: 1–47.
- John Snow, Inc. 2007. "Evaluation of the African Youth Alliance Program in Ghana: Impact of Sexual and Reproductive Health Behavior among Young People." Washington, DC.
- . "Evaluation of the African Youth Alliance Program in Tanzania: Impact of Sexual and Reproductive Health Behavior among Young People." Washington, DC.
- . "Evaluation of the African Youth Alliance Program in Uganda: Impact of Sexual and Reproductive Health Behavior among Young People." Washington, DC.
- Karim, Ali Mehryar, Robert J. Magnani, Gwendolyn T. Morgan, and Kate C. Bond. 2003. "Reproductive Health Risk and Protective Factors among Youth in Ghana." *International Family Planning Perspectives* 29 (1): 14–24.
- Kirby, Doug. 1997. "No Easy Answers: Research Findings on Programs to Reduce Teen Pregnancy." Unpublished document, National Campaign to Prevent Teen Pregnancy, Washington, DC.
- . 2001. *Emerging Answers: Research Findings on Programs to Reduce Sexual Risk-Taking and Teen Pregnancy*. Washington, DC: The National Campaign to Prevent Teen Pregnancy, Task Force on Effective Programs and Research.
- K2-Consult Uganda Limited. 2001. *A Rapid Fact-Finding Study (Situation Analysis) on Adolescent Sexual and Reproductive Health in Uganda: Final Report*. Kampala, Uganda: African Youth Alliance Initiative, United Nations Population Fund, Program for Appropriate Technology in Health, Pathfinder International.
- Lloyd, Cynthia B., ed. 2006. *Panel on Transitions to Adulthood in Developing Countries, National Research Council Growing Up Global: The Changing Transitions to Adulthood in Developing Countries*. New York: Population Council.
- Ministry of Health (MOH) (Uganda). 2007. "Health Online." Reproductive Health website. [http://www.health.go.ug/reproductive\\_health.htm](http://www.health.go.ug/reproductive_health.htm) (accessed August 15, 2007).
- Ministry of Health (MOH) (Uganda) and ORC Macro. 2006. *Uganda HIV/AIDS Sero-Behavioural Survey, 2004–2005*. Calverton, MD: Ministry of Health and ORC Macro.
- Peacock, Dean, and Andrew Levack. 2004. "The Men as Partners Program in South Africa: Reaching Men to End Gender-Based Violence and Promote Sexual and Reproductive Health." *International Journal of Men's Health* 3 (Fall 2004): 173–88.

Population Reference Bureau (PRB). 2006a. "PRB Datafinder: PRB 2006 World Population Data Sheet." <http://www.prb.org/Datafinder.aspx> (accessed October 31, 2007).

———. 2006b. "The World's Youth 2006 Data Sheet." Unpublished Report. Washington, DC: PRB." <http://www.prb.org/pdf06/WorldsYouth2006DataSheet.pdf> (accessed October 31, 2007).

Pulerwitz, Julie, Gary Barker, Mardo Segundo, and Marcos Nascimento. 2006. "Promoting More Gender-Equitable Norms and Behaviors Among Young Men as an HIV/AIDS Prevention Strategy." Horizons Final Report. Population Council, Washington, DC.

Rosenstock, K. 1974. "Historical Origins of the Health Belief Model." *Health Education Monographs* 2 (4): 328–35.

Rosenbaum, P. R., and D. B. Rubin. 1983. "The Central Role of the Propensity Score in Observational Studies for Causal Effects." *Biometrika* 70: 41–55.

Senderowitz, Judith. 2000. "A Review of Program Approaches to Adolescent Reproductive Health." Poptech Assignment Number No. 176. Unpublished document prepared for U.S. Agency for International Development, Washington, DC.

StataCorp. 2005. Stata Statistical Software: Release 9. College Station, TX: StataCorp LP.

Tanzania Commission for AIDS (TACAIDS), National Bureau of Statistics (NBS) Tanzania, and ORC Macro. 2005. *Tanzania HIV/AIDS Indicator Survey 2003–2004*. Calverton, MD: TACAIDS, NBS Tanzania, and ORC Macro.

Uganda AIDS Commission. 2005. "National HIV/AIDS atlas." <http://www.aidsuganda.org/texbits/ATLAS%20Format%20-%20081205.pdf>.

United Nations Programme on HIV/AIDS (UNAIDS). 2004. "At the Crossroads: Accelerating Youth Access to HIV/AIDS Interventions." United Nations, New York. [http://www.unfpa.org/upload/lib\\_pub\\_file/316\\_filename\\_UNFPA\\_Crossroads.pdf](http://www.unfpa.org/upload/lib_pub_file/316_filename_UNFPA_Crossroads.pdf) (accessed August 17, 2007).

United Nations Children's Fund (UNICEF). 2006. *The State of the World's Children 2006*. New York: UNICEF.

United Nations Population Fund (UNFPA) and Population Reference Bureau. 2003. *Country Profiles for Population and Reproductive Health: Policy Developments and Indicators 2003*. New York: UNFPA and Population Reference Board.

World Health Organization (WHO). 2006. "Building a Better Future for Youth: Learning from Experience and Evidence," Africa Regional Forum on Youth Reproductive Health and HIV, June 6–9, 2006, Dar es Salaam, Tanzania. Washington, DC: WHO, Population Council, and Family Health International.

———. 2007. "Engaging Men and Boys in Changing Gender-Based Inequity in Health: Evidence from Programme Interventions." Geneva: WHO.