

# Developing the CycleSmart™ Kit: Increasing puberty knowledge and fertility-awareness among very young adolescents in Rwanda

Investigators:

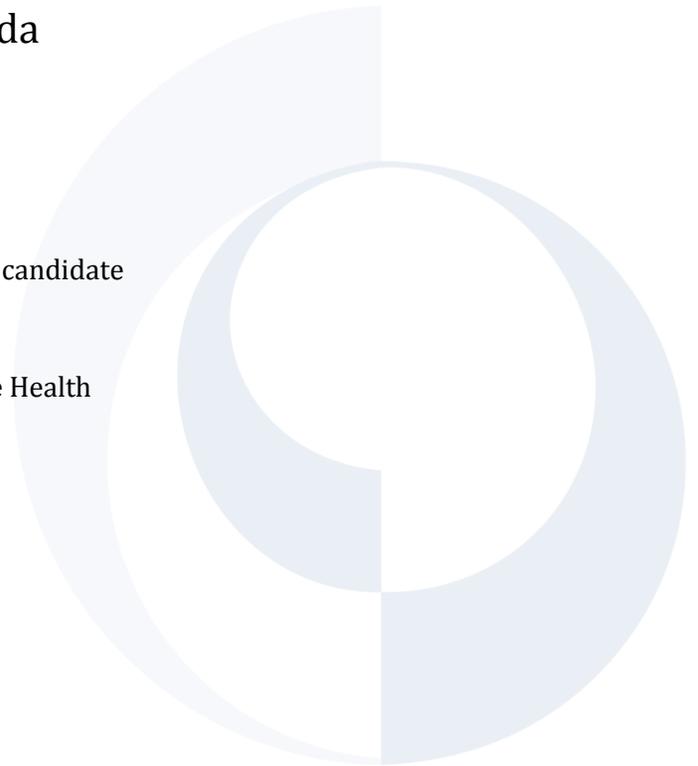
Melissa K. Adams, MPH

Rebecka Lundgren, MPH, PhD candidate

Submitted October 2013

The Institute for Reproductive Health

Georgetown University



**USAID**  
FROM THE AMERICAN PEOPLE



**© 2010. Institute for Reproductive  
Institute of Reproductive Health, Georgetown University  
Recommended Citation:**

Rwanda CycleSmart Study. October 2013. Washington, D.C.: Institute for Reproductive Health, Georgetown University for the U.S. Agency for International Development (USAID).

The Institute for Reproductive Health (IRH) is part of the Georgetown University Medical Center, an internationally recognized academic medical center with a three-part mission of research, teaching and patient care. IRH is a leading technical resource and learning center committed to developing and increasing the availability of effective, easy-to-use, fertility awareness-based methods (FAM) of family planning.

IRH was awarded the 5-year Fertility Awareness-Based Methods (FAM) Project by the United States Agency for International Development (USAID) in September 2007. This 5-year project aims to increase access and use of FAM within a broad range of service delivery programs using systems-oriented scaling up approaches.

This publication was made possible through support provided by the United States Agency for International Development (USAID) under the terms of the Cooperative Agreement No. GPO-A-00-07-00003-00. The contents of this document do not necessarily reflect the views or policies of USAID or Georgetown University.

#### **The FAM Project**

Institute for Reproductive Health  
Georgetown University  
4301 Connecticut Avenue, N.W., Suite 310  
Washington, D.C. 20008 USA  
irhinfo@georgetown.edu  
www.irh.org

## Acknowledgements

This report was prepared by Etienne Amendezo, Lissa Glasgo and Melissa Adams on behalf of the Institute for Reproductive Health with support from Amaya Cotton-Caballero, Rebecka Lundgren, Marie Mukabatsinda, Irit Sinai and Kimberly Aumack Yee. This study would not have been possible without the creativity, hard work and commitment of the Ministry of Health of Rwanda, Association Rwandaise pour le Bien-Etre Familial (ARBEF), Association des Guides du Rwanda, Hope Foundation, Young Women's Christian Association (YWCA), and Centres Scolaires Mpara. Most importantly, we thank the young people and community members in Kicukiro, Gakenke, Gikondo, Nyanza, Rwamagana, Butezi, Mpara, Bukomero, Mahembe, Nyabihu, and Muhanga who generously shared their time and experiences with the study team in hopes of contributing towards efforts to improve adolescent sexual and reproductive health in Rwanda.

## Table of Contents

Acknowledgements .....	0
Acronyms .....	2
List of Tables & Figures.....	3
Executive Summary.....	4
1. Introduction .....	8
2. Background.....	9
3. Methods.....	10
4. Developing the CycleSmart Brochure.....	<b>Error! Bookmark not defined.</b>
4.1. Desk Review .....	10
4.2 Key Informants.....	11
4.3 Focus Group Discussions with Older Adolescents.....	<b>Error! Bookmark not defined.</b>
5. Validating the CycleSmart Kit .....	15
5.1 Focus Group Discussions with Parents .....	15
5.2 Focus Group Discussions with Younger Adolescents.....	17
6. Field-testing and Evaluating the CycleSmart Kit.....	20
6.1 Field-testing the CycleSmart Kit.....	20
6.2 Evaluating the CycleSmart Kit.....	23
7. Conclusion and Recommendations.....	26
7.1 Program Implementation .....	26
7.2 Dissemination .....	27
7.3 Research.....	27
Appendices.....	279
Appendix A.....	289
Appendix B.....	30
Appendix C.....	32
Appendix D.....	34
Appendix E.....	35
Appendix F.....	36
References .....	37

## Acronyms

AGR	Association des Guides du Rwanda
AIDS	Acquired Immuno-Deficiency Syndrome
ARBEF	Association Rwandaise pour le Bien Etre Familial
ASRH	Adolescent Sexual Reproductive Health
CHW	Community Health Worker
FAM	Fertility Awareness-Based Methods
FGDs	Focus Group Discussions
FP	Family Planning
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HIV	Human Immunodeficiency Virus
IEC	Information, Education, Communication
IRB	Institutional Review Board
IRH	Institute for Reproductive Health
MIGEPROFE	Ministry of Gender and Family Protection
MINEDUC	Ministry of Education
MINIYOUTH	Ministry of Youth
MOH	Ministry of Health
PSI	Population Services International
RGPC	Rwanda General Population Census
SDM	Standard Days Method
SPSS	Statistical Package for Social Sciences
SRH	Sexual and Reproductive Health
STI	Sexually Transmitted Infection
UNFPA	United Nations Population Fund Agency
VYA	Very Young Adolescent
WHO	World Health Organization
YWCA	Young Women's Christian Association

## List of Figures & Tables

Figure 1.....	Improvements in Knowledge of CycleSmart Participants
Table 1.....	Improvements in Knowledge by Field-testing organization
Table 2.....	Improvements in Knowledge by Sex of Participant

## **Executive Summary**

### **Introduction**

Fertility awareness is fundamental to understanding and making informed decisions about sexual and reproductive health (SRH) and is especially important for boys and girls as they enter puberty. Providing adolescents with accurate and age-appropriate information and tools to understand fertility and manage pubertal transition can empower them to make appropriate decisions about sexual behavior and protect their reproductive health across the life course. Studies with adolescents have shown that appropriate content and methodologies combining body and fertility awareness, gender, and sexuality, improve knowledge and increase social awareness leading to healthier behaviors among boys and girls (Palmer, 2010; IRH 2013).

CycleBeads®, the color-coded beads typically used with the Standard Days Method (SDM) of family planning (FP) to track the fertile days of the woman's menstrual cycle, have also been used in some programs as a visual and tactile way to teach young girls about their menstrual cycle, puberty-related changes, risk of pregnancy, and fertility (Lavoie, 2009; Aumack Yee, 2010). However, there is little information or practical guidance on how to use CycleBeads to help girls learn about their menstrual cycle, and whether CycleBeads could be effective in helping both girls and boys learn about and reflect on fertility, puberty, gender roles and other issues important to their reproductive health.

From 2011-2013, IRH collaborated with youth-serving organizations in Rwanda to develop, validate, and evaluate a package of puberty and fertility-awareness educational materials and tools. The package, known as the CycleSmart Kit, consists of CycleBeads and a country-specific informational brochure at its core and can also include a calendar, a weekly diary, and reusable sanitary pads.

### **Methods**

From 2011-2012, IRH partnered with Association Rwandaise pour le Bien-Etre Familial (ARBEF) to develop a country-specific instructional brochure that provides information on puberty and fertility and explains how to use CycleBeads to track the menstrual cycle. The development of the CycleSmart brochure was conducted in two phases and included the following:

1. Product development
  - A desk review of local youth SRH materials and resources
  - Interviews with 10 key informants from youth-serving organizations
  - Focus group discussions with male and female adolescents (ages 15-17) (two FGDs with 10-12 boys and two FGDs with 10-12 girls)
2. Product validation
  - Focus group discussions with parents of very young adolescents (two FGDS with 12 parents each)
  - Focus group discussions with male and female adolescents (ages 12-14) (two FGDs with 9-12 girls and two FGDs with 9-12 boys)

During the second year (2012-2013), the CycleSmart brochure and CycleBeads were combined with a calendar, a weekly diary, and reusable sanitary pads to form a comprehensive package of puberty

materials. The expanded CycleSmart Kit was tested as an educational tool by 198 adolescents with four local youth serving-organizations (Hope Foundation, Young Women Christian's Association, Association des Guides du Rwanda, Centres Scolaire Mpara). A 20-item self-administered questionnaire was used to assess changes in puberty and fertility knowledge among adolescents using the CycleSmart Kit.

### **Developing the CycleSmart Kit**

In order to develop an effective and informative brochure, IRH conducted formative research to explore the puberty- and fertility-related information needs of adolescents in Rwanda. The formative research began with a desk review of ASRH materials and resources currently available in country followed by key informant interviews with individuals that work with adolescents, including government and NGO workers, parents/guardians, teachers, and community health workers (CHWs). The last part of the formative research included FGDs with older adolescents to gain a better understanding of current levels of knowledge among adolescents regarding puberty, fertility, sexuality, and reproduction; existing gaps in knowledge and resources; types of information that would best serve this population; and the feasibility of introducing CycleBeads as an educational tool for Rwandan adolescents.

Key findings from the formative research include:

- Adolescents primarily learn about puberty changes from their peers and school, less frequently from their parents, the media and youth centers, and almost never from health facilities or religious institutions.
- Cultural taboos, illiteracy and lack of time spent with children serve as barriers to parent-child communication on SRH.
- Youth centers provide information and learning activities for adolescents which focus mostly on FP- and HIV-specific lessons rather than more comprehensive ASRH education.
- No standardized ASRH educational tools or materials are available countrywide, and few programs address the needs of very young adolescents (ages 10-14).
- Most girls and boys have basic knowledge about physiological changes that occur during puberty; however, many have misconceptions about the causes of puberty-related physical changes and most are unaware of the changes in fertility that accompany physical development.
- Older adolescent boys and girls report being surprised by the changes they experienced during puberty and wishing they had had access to information or educational tools such as those contained in the CycleSmart Kit.
- Adolescents recommended that the brochure contain information about the changes of puberty in girls and boys, the rights of youth and advice on how girls and boys should behave during their pubertal ages.

### **Validating the CycleSmart Kit**

Based on information gathered from the desk review, key informant interviews, and FGDs with older adolescents, IRH developed the CycleSmart Brochure and Kit. The Kit was validated through FGDs with younger adolescent girls and boys (ages 12-14), and parents of younger adolescents. Adolescent girls were oriented to the CycleSmart Kit during a FGD and provided with CycleSmart Kits to track their cycles over the course of six weeks. They then reconvened to share their experience using CycleSmart and provided recommendations for improving the Kit. A FGD was held with parents of young adolescents to assess their

reaction to the Kit and its acceptability to parents. Adolescent boys were given the opportunity to learn about the Kit during a focus group discussion and provide feedback on its content, acceptability, and utility.

Overall, parents responded positively to the CycleSmart Kit, stating that it would be an effective tool for both children and parents. The majority of parents felt that the CycleSmartKit was culturally appropriate and well-adapted to the Rwandan context. While most parents said that the brochure seemed appropriate for girls in their own communities, a few were concerned by the fact that it might be used by adolescents to plan sex during the infertile periods of a girl's menstrual cycle. Opinions also differed about the fact that the brochure emphasized physical changes of girls more than those of boys. Despite these concerns, reactions to the brochure were mostly positive and most parents felt that the brochure should be included in the national health curricula of schools.

Adolescent girls also responded positively to the CycleSmart Kit stating that they were happy and excited about the brochure's design and content. After using the CycleSmart Kit for six weeks, adolescent girls reported that they had learned more about their changing bodies and how to track their menstrual cycles, and findings showed that the majority of participants used CycleBeads appropriately and clearly understood the significance of the different colored beads (facilitators checked the girls calendars and beads to assess accuracy of use).

Similarly, VYA boys felt that the brochure was very useful and a good tool for boys and girls alike. Most reported learning new and important information about fertility and puberty through reading the brochure. While they appreciated that the brochure helped them to understand both female and male puberty changes, many suggested adding information about boys' puberty or creating a separate brochure specifically for boys.

Findings reveal that both girls and boys in rural and urban areas easily understood the information contained in the brochure and were able to use it to learn about their own puberty and fertility and to share their learnings with peers and younger siblings.

### **Field-testing and Evaluating the CycleSmart Kit**

In year 2 of the project (2012-2013), the CycleSmart Kit (expanded to include reusable sanitary pads) was tested as an educational tool by 198 adolescents in four youth-serving organizations (Hope Foundation, Young Women's Christian Association, Association des Guides du Rwanda, Centres Scolaires Mpara). The organizations participated in an orientation meeting in which they were provided with the CycleSmart Kit and guidance on how to incorporate the Kit into their existing activities. A 20-item self-administered questionnaire was used to assess changes in puberty and fertility knowledge among adolescents using the CycleSmart Kits.

Facilitators from field-testing sites reported that it was easy and feasible to integrate the CycleSmart Kit into their existing programs particularly because children were happy, interested and self-motivated in using the tool to increase their knowledge about puberty and fertility. While facilitators agreed that the CycleSmart Kit Guidelines helped them to prepare for and carry out education sessions, most suggested that they be further expanded to provide more detail about puberty and fertility, as not all facilitators had enough knowledge on reproductive health issues to answer all of the adolescents' questions.

Evaluation results indicate that the CycleSmart Kit was effective in increasing knowledge. To assess knowledge improvement, questions measuring similar concepts were grouped together to form five indices: female fertility and menstruation, male fertility, puberty changes, keeping safe and use of CycleBeads to track menstruation. Statistically significant ( $p < 0.01$ ) increases in knowledge were observed on all concepts measured at baseline and endline.

### **Conclusion and Recommendations**

Study results indicate that the CycleSmart Kit can help fill an important gap in ASRH education and materials in Rwanda. Focus group discussions with adolescents, parents of adolescents and stakeholders who work with adolescents all indicate significant knowledge gaps in puberty and fertility awareness among adolescents in both rural and urban areas of Rwanda. Adolescents reported a lack of trusted information and that despite their interest in learning about puberty and how to manage the changes they were experiencing, their primary source of information was their peers who often have partial or inaccurate knowledge on the topic. The CycleSmart Kit was determined to be an effective and culturally appropriate resource to meet the need for accessible, accurate information on puberty and ASRH for adolescent girls and boys.

Important learnings were generated from the study that should be considered by programs interested in using the CycleSmart Kit in their activities. These include:

- While most adolescents were able to understand how to use CycleBeads after the first session, a single session explaining how to use CycleBeads may not always be sufficient for adolescents to retain key points. Organizations that incorporate the CycleSmart Kit into programs for adolescent girls should note that it may be best to introduce the brochure and CycleBeads over the course of several sessions to reinforce the messages, ensure that girls remember the instructions on how to use CycleBeads, and respond to any questions that may arise as girls learn to track their cycles.
- Programs should consider strategies for educating parents as well as adolescents about puberty, so that parents will be better equipped to respond to their adolescent children's questions and needs.
- To reach boys, programs should consider developing a brochure that includes more information on boys' puberty and fertility, possibly as a separate material.
- Programs should consider supplementing the programmatic guidelines by providing facilitators with hardcopies of the *My Changing Body* manual.

Despite promising results from this study, further research is needed to better understand the effect of CycleSmart use on adolescent knowledge, attitudes, and behaviors. A more rigorous evaluation, with a comparison group, should be conducted to measure changes in knowledge and determine if these changes are maintained over time. A longitudinal cohort study would be helpful in elucidating whether or not increased puberty- and fertility-awareness knowledge among very young adolescents translates to behavior change and improved sexual and reproductive health outcomes in older adolescence. Finally, a process evaluation to determine what level of training/orientation is needed for adolescents to successfully use the CycleSmart Kit would help to further inform programming efforts.

## 1. Introduction

Fertility awareness is fundamental to understanding and making informed decisions about sexual and reproductive health (SRH) and is especially important for boys and girls as they enter puberty. A review of the literature indicates that girls and boys often begin puberty without sufficient information about their changing bodies and emerging fertility to make critical decisions needed to protect their health, including preventing undesired pregnancy (Carvacho et al., 2006; Sommer, 2009). Adolescents often lack the skills and information to deal with physical, social, and emotional changes associated with this time of rapid transformation. Furthermore, many parents, schools, youth organizations, and religious institutions are ill-prepared to help young people understand and prepare for puberty (Chong et al., 2006).

Providing adolescents with accurate and age-appropriate information and tools to understand fertility and manage pubertal transition can empower them to make appropriate decisions about sexual behavior and protect their reproductive health across the life course. When young people are better aware of how their bodies work and what changes to expect as they become adults, they are better prepared to deal with SRH issues and challenges, including future family planning (FP) decision-making and use (Palmer, 2010).

Studies with adolescents have shown that appropriate content and methodologies combining body and fertility awareness, gender, and sexuality, improve knowledge and increase social awareness leading to healthier behaviors among boys and girls (Palmer, 2010; IRH 2013). CycleBeads®, the color-coded beads typically used with the Standard Days Method (SDM) of FP to track the fertile days of the woman's menstrual cycle, have also been used in some programs as a visual and tactile way to teach young girls about their menstrual cycle, puberty-related changes, risk of pregnancy, and fertility (Lavoie, 2009; Aumack Yee, 2010). However, there is little information or practical guidance on how to use CycleBeads to help girls learn about their menstrual cycle, and whether CycleBeads could be effective in helping both girls and boys learn about and reflect on fertility, puberty, gender roles and other issues important to their reproductive health.

Youth-serving organizations, teachers, and health workers in countries where IRH works have also noted that CycleBeads could be a useful tool for teaching adolescents about the menstrual cycle and fertility. IRH partnered with local youth-serving organizations to test the feasibility of using CycleBeads as a fertility awareness tool for very young adolescent (VYA) girls and boys, ages 10-14 and to develop and test a package of tools to help them learn about menstruation, puberty, fertility, and gender roles.

Puberty and sexual education materials were reviewed and a series of focus group discussions (FGDs) with older male and female adolescents (ages 15-17) as well as interviews with key informants who work with adolescents were conducted to guide the development of the brochure. Based on the results of those group discussions and interviews, a brochure was designed that uses colorful illustrations, young protagonists, and storytelling to convey information related to tracking, understanding, and preparing for menstruation; understanding the physical, psychological, and sociological changes that accompany puberty; and reflect on gender roles.

The brochure and CycleBeads, known as the CycleSmart Kit, were later combined with a calendar, a weekly diary, and reusable sanitary pads to form a package of puberty and fertility-awareness educational

materials and tools. Focus group discussions with younger adolescents (ages 12-14) and parents of younger adolescents were held to validate the brochure and determine the feasibility of introducing the CycleSmart Kit to adolescents as a tool for understanding the menstrual cycle and fertility. A field-testing exercise was then conducted with four local youth-serving organizations to determine how easily the CycleSmart Kit can be integrated into existing youth programs. During field-testing, a 20-item self-administered questionnaire was used to assess changes in puberty and fertility knowledge among adolescents using the CycleSmart Kit.

This report describes the two-year process used to develop, validate, and evaluate the CycleSmart Kit in Rwanda.

## **2. Background**

In Rwanda, over 40% of the population is below the age of 14 (RGPC, 2002). Ensuring the healthy development of VYAs (ages 10-14) is essential for Rwanda's future, as this is a stage in a child's journey to adulthood when information and support are particularly needed. Despite adolescents making up nearly half of Rwanda's population, research has shown that comprehensive strategies to provide health services that meet adolescent needs have been widely missing in Rwanda (Binagwaho, 2009). Studies show that VYAs in particular have low levels of information about puberty and their emerging fertility, and that pregnancy and sexually transmitted infections are not well understood. The VYA age group represents a critical window of opportunity for building the foundations of SRH and rights among adolescents – most of whom are not yet sexually active and are still developing their attitudes toward gender equality – and for preparing them to make safe, informed and voluntary sexual and reproductive decisions in their lives (WHO, 2011). Boys and girls in the VYA age group are guided by parents, teachers, community leaders and peers through adolescence, often towards gender-inequitable or risky choices that directly influence health-related behaviors. A recent study by the Rwandan MOH shows that the key health issues faced by the country's adolescents today include those related to adolescent sexual and reproductive health ASRH, including FP and STIs (Binagwaho, 2009).

The Rwandan Ministry of Health (MOH) has recognized the need for adolescent-serving programs in Rwanda and is working to improve SRH information and services for the adolescent age group (ages 10-19). The National Reproductive Health Policy and the National Youth Policy, both developed by the MOH, work toward this purpose. But while policies and programs may address older adolescents, few to date have focused specifically on the unique needs of VYAs. Formative research conducted by IRH in Rwanda demonstrates low knowledge regarding fertility and reproductive processes among VYA boys and girls, discomfort with puberty-related changes among boys and girls, and the critical influence of gender norms in shaping perceptions and experiences of puberty (IRH, 2011). While puberty and fertility-related topics are taught in schools to some extent, many Rwandan adolescents report not receiving the information until after puberty changes have begun, and state that their peers are their primary source of (often incomplete or inaccurate) knowledge on ASRH topics. Dialogue around puberty educates adolescents about the changes that will occur in their bodies and could serve as a starting point for discussions between adolescents, their families and their communities on fertility, safe sex practices, and sexual and reproductive rights.

### **3. Methods**

During the first year of the study (2011-2012), IRH partnered with a local NGO that offers youth education programs services in Rwanda, Association Rwandaise pour le Bien-Etre Familial (ARBEF), to develop an instructional brochure that explains how to use CycleBeads to track the menstrual cycle and provides information on puberty and fertility. The development of the brochure, called CycleSmart, was conducted in two phases with the following components:

#### Phase I: Developing the CycleSmart Brochure

- Desk review of local youth SRH materials and resources
- Interviews with key informants from youth-serving organizations
- Focus group discussions with male and female older adolescents (ages 15-17) (conducted separately)

#### Phase II: Validating the CycleSmart Kit

- Focus group discussions with parents of very young adolescents
- Focus group discussions with male and female very young adolescents (ages 12-14) (conducted separately)

During the second year (2012-2013), the CycleSmart brochure and CycleBeads, called the CycleSmart Kit, were combined with a calendar, a weekly diary, and reusable sanitary pads to form a comprehensive package of puberty materials. The expanded CycleSmart Kit was tested as an educational tool by 198 adolescents with four local youth serving-organizations (Hope Foundation, Young Women Christian's Association, Association des Guides du Rwanda, Centres Scolaire Mpara). A 20-item self-administered questionnaire was used to assess changes in puberty and fertility knowledge among adolescents using the CycleSmart Kits.

### **4. Developing the CycleSmart Brochure**

In order to develop an effective and informative brochure, IRH conducted formative research to explore the puberty- and fertility-related information needs of adolescents in Rwanda. The formative research began with a desk review of ASRH materials and resources currently available in country followed by key informant interviews with individuals that work with adolescents, including government and NGO workers, parents/guardians, teachers, and community health workers (CHWs). The last part of the formative research included focus group discussions (FGDs) with older adolescents to gain a better understanding of current levels of knowledge among adolescents regarding puberty, fertility, sexuality, and reproduction; existing gaps in knowledge and resources; types of information that would best serve this population; and the feasibility of introducing CycleBeads as an educational tool for Rwandan adolescents.

#### **4.1. Desk Review**

A desk review was conducted via web search and in-person visits to identify governmental and non-governmental organizations involved in ASRH-related activities in Rwanda, and to analyze the policies, approaches, curricula and guidelines they have produced. The desk review primarily focused on

information collected from ten organizations: Rwandan Ministry of Health (MOH), Ministry of Education (MINEDUC), Ministry of Youth (MINIYOUTH), Ministry of Gender and Women in Development (MIGEPROFE), Association Rwandaise pour le Bien Être Familial (ARBEF), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) Rwanda, UNFPA Rwanda, Dushishoze Youth Centers, IMBUTO Foundation, and Girl Hub in collaboration with PSI's 12+ Program. During analysis, the format, style, language, and activities suggested for puberty education in materials were noted.

#### **4.1.1. Sources of SRH knowledge**

The desk review revealed that the primary sources of SRH information for adolescents in Rwanda are peers, schools, and youth centers. Youth centers provide both information and learning activities for adolescents – including interactive group sessions, youth magazines, brochures, health education, and recreational activities – but do not have standardized ASRH educational tools or IEC materials that are available countrywide. Materials in youth centers, including anatomical models, flipbooks and reading materials, are used principally for FP- and HIV-specific lessons rather than for more comprehensive ASRH education. Parents and family members were rarely cited as sources of knowledge, possibly due to traditional taboos against discussing sexuality both in the home and in public.

#### **4.1.2. Gaps in school-based SRH curricula**

While teachers discuss with students physical changes during puberty and the potential consequences of sex – covering both male and female reproductive systems as well as FP methods and HIV – the existing curricula and educational aids do not explore the social and gendered manifestations of pubertal changes or how to manage them.

Results further indicate that SRH education takes place too late for some adolescents: the national curriculum integrates puberty and SRH information into the sixth year of primary school and afterward, but some girls begin puberty in the fourth year.

#### **4.1.3. Plans for future ASRH educational tools and policy**

In response to the gaps in available ASRH curricula in Rwanda, the MOH has developed an ASRH and Rights Policy and plans to use it to develop standardized educational tools and age-appropriate, gender-sensitive and culturally acceptable educational materials on the topic for adolescents in Rwanda. The materials will aim to improve knowledge of and skills related to ASRH by increasing access to information about puberty and SRH among adolescents, parents, service providers, health educators, and community and opinion leaders. The products will also include a comprehensive core package of youth-friendly SRH services to be integrated in the existing health service structures.

### **4.2. Key Informants**

A snowball sampling method was used to identify ten adult key informants with in-depth historical and cultural knowledge of girls' and boys' growing-up experiences in various regions of Rwanda. Interviewees included ASRH experts working with governmental institutions and local NGOs, school teachers, parents/guardians and CHWs (Appendix A). Key informant interviews were conducted to supplement information gained from the desk review, providing insight into critical information gaps and challenges in

communication faced by adolescents and their communities on puberty- and fertility awareness-related issues. Key Informants also made recommendations for addressing those challenges and gave feedback on the potential use of CycleBeads and an accompanying brochure as tools for future interventions.

#### **4.2.1. Lack of accessible ASRH information sources for youth**

Confirming findings from the desk review, Key Informants reported that adolescents in communities learn about puberty changes primarily from their peers and school, less frequently from their parents, the media and youth centers, and almost never from health facilities or religious institutions. Parents in particular were noted to have little role in educating their children about SRH issues because of cultural barriers, illiteracy and lack of time spent with their children. One CHW stated that most parents do not teach their children about fertility, rather telling their girls *“just.....that [they] will see menses at a certain time”*, without explaining the biological significance of the menstrual cycle.

The majority of key informants cited a lack of puberty- and fertility awareness-focused educational materials designed specifically for adolescents in Rwanda. Additionally, interviewees mentioned that youth centers mostly target adolescents aged 15-24 years and focus primarily on HIV and pregnancy prevention rather than puberty changes, fertility awareness and positive puberty-management behaviors.

#### **4.2.2. Gaps in adolescent puberty-related knowledge**

Key informants noted that many gaps in puberty and fertility knowledge exist among adolescents: girls lack information about tracking menstrual cycles and have an unclear understanding of how to prepare for and manage the menstrual period, while boys were said to have little to no understanding of the menstrual cycle beyond very basic knowledge obtained from peers and school. Peers, while the principal source of information for adolescents, were reported to sometimes deliver erroneous and biased information. *“Most adolescents learn about puberty issues from their peers, but the bad thing is that information delivered by peers is sometimes wrong and based more on rumors than on the truth. I once was asked by one girl if it is true what her peer had told her that when a girl sees a facial acne and wants it to go, she has to have sex with a boy!”* said an interviewed teacher. Unfortunately, inaccuracies occasionally were found to extend beyond the peer circle to ASRH workers and “experts”. One ASRH worker at a local NGO stated that, *“When a girl has sex, she no longer experiences abdominal pain during her menses period.”*

#### **4.2.3. Inaccessibility of menstrual hygiene products**

Informants were also concerned with the inaccessibility of menstrual hygiene products particularly in rural areas where parents and children frequently cannot afford sanitary pads. *“Most girls are surprised with menses while at school and yet, they are not allowed to go to shops (out of the school) during class time. This limits them from finding products to use,”* noted another expert from a local NGO.

#### **4.2.4. Recommendations**

As the MOH works toward establishing policy, guidelines and a more streamlined collaboration with ASRH partners, Key Informants were eager for organizations to work towards wider accessibility and availability

of puberty- and fertility awareness-focused educational tools. A large majority of the Key Informants thought that CycleSmart would be an “impressive and innovative” addition to youth ASRH education in Rwanda. They cautioned, however, that parents and communities must be informed and sensitized about the tool to gain parental approval and community buy-in. Key Informants recommended youth forums and peer education approaches as the most appropriate channels for introducing the CycleSmart Kit to adolescents for educational purposes. They also made suggestions on key messages and topics to include in the brochure which ranged from describing CycleBeads in detail to encouraging parental involvement in adolescents’ reproductive health education.

### **4.3. Focus Group Discussions with Older Adolescents**

In order to better understand the information needs of adolescents and to obtain input on the brochure design, IRH conducted two FGDs with older adolescent girls and two FGDs with boys (ages 15-17 years old).

Older adolescents were chosen to provide feedback on the development of the initial design and content of the CycleSmart brochure because they likely to have experienced most of the physical changes resulting from puberty, be comfortable discussing puberty, and be able to reflect on the pubertal transition. These qualities allowed them to provide insight and guidance on information that would have better prepared them for puberty and that should be incorporated into the brochure for future generations of girls and boys.

FGDs were conducted with adolescent girls and boys in one urban (Kicukiro district) and one rural (Rwamagana district) site. A purposive sampling method was used to identify adolescents based on the following criteria: (1) between the ages of 15-17; (2) cover a range of cultural and socio-demographic characteristics; (3) demonstrate written and spoken proficiency in Kinyarwanda; (4) able to easily articulate their experiences to others. Selection was facilitated by the in-country partner ARBEF.

The FGDs focused on adolescents’ attitudes toward ASRH- related issues, their experiences going through puberty, existing gaps in puberty education needs, and how best to use CycleBeads as puberty- and fertility awareness-focused educational tools with adolescents. Interviewers used participatory techniques – including body mapping, projective techniques, and role-playing – to guide focus groups in exploring adolescent knowledge, perceptions, and beliefs regarding topics including: the menstrual cycle, male and female fertility, cervical secretions, perceived risk of pregnancy, gender roles, sexual and reproductive rights, and communication about SRH between boys and girls, among peers, and with family members and other community members.

#### **4.3.1. Gaps in SRH Knowledge**

Findings from FGDs with older adolescents showed that most girls and boys have basic knowledge about physiological changes that occur during puberty, and that there are no significant differences in such knowledge between urban and rural participants. Many adolescents, however, had misconceptions about the causes of puberty-related physical changes, and most were unaware of the changes in fertility that accompany physical development. One boy reported that his elder friends told him that “*when a boy develops facial acne, it means he has too much sperm which does not come out of the body and would otherwise be harmful for the body,*” and a girl explained that tracking periods was important because sex

while a girl is bleeding can make her pregnant. Confusion about the cause, process and effects of puberty also led to a lack of understanding about healthy reproductive attitudes and behaviors during and after puberty. Confirming findings from the desk review and key informant interviews, adolescents reported that peers and school teachers were the principal sources of puberty related information for young people from both urban and rural sites. Due primarily to existing cultural barriers, parents' role in providing such information was deemed low by most young respondents, especially those from the rural study site.

When speaking about their own experiences with puberty, older boys and girls reported that they were surprised by the first changes that occurred during puberty, stating that they wished they had known what was going to happen ahead of time and that younger adolescents should be informed. *"I was surprised by bleeding from my genitals. I did not know what it was when it first occurred ... a teacher took me in a room that was next to my classroom and explained what was happening to me,"* said a young girl from Rwamagana. Another girl from Kicukiro remarked that upon starting her menstrual period, she did not know how to manage it, *"Other girls at school are the ones who showed me how to wear a pad."* Most adolescents agreed that parents should be sensitized to educate their daughters on what a menstrual period is and how to manage it properly.

FGDs determined that there are no typical tools used by adolescent girls to keep track of their menstrual cycles beyond simply counting the days after the most recent menses. In some cases, girls reported that their periods still surprised them at school or in other environments, and that they were not always accurate in predicting when the next menstrual period might occur. A good number of girls and boys, moreover, do not know when, during the girl's menstrual cycle, her fertile period occurs.

#### **4.3.2. Reaction to CycleBeads as educational tool**

FGD participants viewed CycleBeads and the CycleSmart brochure as a potentially helpful tool for puberty and fertility education for both boys and girls, as well as a valuable tool for girls to prepare for and manage their periods. FGD participants recommended that CycleBeads be used in youth SRH education programs because it was easily understandable, practical, and simple to use. Moreover, most respondents thought that the tool would equip them with more knowledge and make them confident about understanding their own puberty-related changes. *"...Using CycleBeads to discuss puberty changes with parents or teachers will make us confident to discuss such things with any person,"* noted a boy from Rwamagana.

#### **4.3.3. Key concerns and recommendations**

Older adolescents noted the irregularity of some girls' menstrual cycles and cost of materials as potential limitations to use of CycleBeads, as well as parents' misgivings about the tool. Some girls feared that their parents would not approve their use of CycleBeads, and one girl from Kicukiro explained that *"It would maybe depend on how parents understand things, but I know that my dad would not simply accept me to use this tool because he may think that I want to know when I can get pregnant and when I cannot; hence he would tell me to continue tracking my periods in the way used by others in the community which is simply observing whether periods have come or not."* Other FGD participants noted that the biggest challenge might simply be having a discussion about puberty with their parents, some of whom still regard such discussions

as “shameful” or “inappropriate”: *“It is very difficult to discuss puberty issues with illiterate parents because they still consider discussing such things as a cultural taboo,”* said a boy from Rwamagana.

In regards to the brochure design, adolescents suggested that the brochure should contain information about the changes of puberty in girls and boys, the rights of the youth and advice on how girls and boys should behave during their pubertal ages, among other topics. Older girls thought that was important to add images and drawings to the brochure which thought VYA would find appealing. Participants also suggested a different color palette for the brochure; with a general preference for light, pastel-like colors.

## **5. Validating the CycleSmart Kit**

Based on information gathered from the desk review, key informant interviews, and FGDs with older adolescents, IRH developed a CycleSmart Brochure. The brochure uses colorful illustrations, young protagonists, storytelling, and games to convey information related to tracking, understanding, and preparing for menstruation; understanding the physical, psychological, and sociological changes that accompany puberty; and tips on staying safe (see Appendix B). The CycleSmart Brochure was combined with a weekly diary, a calendar, and CycleBeads to form a CycleSmart Kit. The Kit was validated through FGDs with younger adolescent girls and boys (ages 12-14), and parents of younger adolescents. Adolescent girls were oriented to the CycleSmart Kit during a FGD and provided with CycleSmart Kits to track their cycles over the course of six weeks. They then reconvened to share their experience using CycleSmart and provided recommendations for improving the Kit. A FGD was held with parents of young adolescents to assess their reaction to the Kit and its acceptability to parents. Adolescent boys were given the opportunity to learn about the Kit during a focus group discussion and provide feedback on its content, acceptability, and utility. Both adolescents and parents found the brochure useful and culturally appropriate. Girls said that they and their friends would use the Kit, and boys said that they would like to see a brochure targeted at males. Parents believed that the CycleSmart Kit would be a useful resource for teaching their children about puberty.

### **5.1. Focus Group Discussions with Parents**

FGDs were conducted with parents of adolescent girls and boys in one urban (Kicukiro district) and one rural (Rwamagana district) site. Discussions with parents (12 parents per FGD) were conducted to (1) determine whether parents find the messages and the images in the CycleSmart brochure acceptable and appropriate for younger adolescents, (2) assess how useful parents feel the CycleSmart Kit will be for informing their children and encouraging parent-child discussion on puberty-related topics, (3) generate ideas on how programs can engage parents in the use of the Kit, and (4) identify improvements needed in content, images, written explanations, sequence of information, and the brochure’s design.

#### **5.1.1. CycleBeads as catalyst for SRH dialogue**

During discussions, parents from both rural and urban areas expressed the challenges of helping VYAs stay healthy throughout their adolescence. Of primary concern was the rapid onset of puberty in girls who don’t well understand the implications of these changes, and the idea that girls might want to satisfy their curiosity by making choices against their parents’ advice. *“As she starts to develop some feelings for the opposite sex, she needs much more care and guidance because she may easily get pregnant, so my job is to*

*always watch her,”* reported a mother from Rwamagana referring to her 13 year-old daughter. A father from the same area echoed her thoughts: *“At least adolescents of 15-18 years are older and can be easy to follow because they are more or less mature and experienced... the child of 10-14 years is very difficult to manage, because she wants to do things in order to seek experience or satisfy her curiosity.”*

Parents responded positively to the CycleSmart Kit, stating that it would be an effective tool for both children and for parents: children would learn about physical changes and how to manage them, and parents would use it as a reminder of their roles and responsibilities in their children’s lives. The tools were also seen as a potential guide for parent-child discussions on puberty-related topics. A male participant from Kicukiro stated, *“This kind of brochure reminds parents that they have the principal role in educating their children about puberty issues, instead of leaving them with biased information received from their peer.”* Another woman cited the brochure’s capacity to debunk myths about puberty that might otherwise have negative effects on children’s lives. A mother from Kicukiro added, *“To parents, [this tool] gives us more detailed and structured information about what we have to tell our children.”* A father from Rwamagana commented, *“to me, this brochure is a parent’s reminder, it will certainly serve as a bridge for parents-children interaction.”*

### **5.1.2. Clarity and Cultural Acceptability**

Although many parents were new to CycleBeads, all participants responded positively to it as a practical tool for educating girls about their menstrual cycles and how to manage them. *“Surely it is appropriate, and our children will be lucky to have these modern things; for us when we grew up, no one could tell us what was happening, so we were frustrated,”* noted a mother from Rwamagana. Additionally, parents described the information contained within the brochure as complete, clear, simple, easy to understand, and culturally appropriate. *“This is a very simple and easy-to-use tool, even a non-literate parent can use it to teach his children,”* added another parent from Rwamagana.

The majority of parents felt that the CycleSmart Kit was culturally appropriate and well-adapted to the Rwandan context. Parents felt that the CycleSmart Kit would be easily accepted by parents and communities as a practical tool to educate VYAs on puberty and to foster conversation between parents and children on the topic. *“It is a very good tool. I am sure mothers and their children will be eager to sit somewhere and discuss about puberty changes using it,”* said a female respondent from Rwamagana. Another female FGD participant in Kicukiro, highlighting difficulties in starting conversations about ASRH, stated, *“This brochure will be a communication channel between parents and their daughters... in the communities, most children fear to introduce such a discussion with their parents while parents are ignorant of many aspects of puberty changes and lack how to start a discussion on such issues with their children.”* Parents also worried about having accurate and updated information on puberty to share with their children, and cited CycleBeads and the brochure as a source of knowledge for parents and VYAs alike: *“It will help parents to be updated about puberty changes, you often find children having more knowledge than what we, parents, know; because they learn it at school whereas most of us never had chances of learning it.”*

### **5.1.3. Key concerns and recommendations**

While most parents said that the brochure seemed appropriate for girls in their own communities, a few were concerned by the fact that it might be used by adolescents to plan sex during the infertile periods of a

girl's menstrual cycle. *"I am imagining a situation whereby VYAs have sufficient knowledge to use CycleBeads [as a contraceptive method]... I guess that once a girl has understood how her body works, she may use this information to plan sex,"* said a focus group mother in Kicukiro.

Opinions also differed about the fact that the brochure emphasized physical changes of girls more than those of boys. Participants engaged in some debate over the ideal balance of reproductive and physical changes highlighted in the brochure. Some participants (particularly men) viewed the lack of emphasis on boys' pubertal changes as negative, while others (particularly women) saw the emphasis on girls' puberty as natural since in their view, girls' pubertal changes were more complicated than boys'. *"It would be better to provide complete educational tools/information for girls as well as for boys, so that everyone who reads it finds in it what he looks for,"* said a father from Rwamagana.

Most parents felt that the brochure should be included in the national health curricula in schools. Beyond integrating it into the national curricula, parents suggested placing billboards with key information in schools, by roads, or in any other places that children and adults may have access to, disseminating audio-visual manuals with key information, creating community youth forums and parent forums for discussions relating to ASRH, and working with CHWs to sensitize communities about puberty and fertility. *"It can easily fit in the newly established girls' room available in most schools in Rwanda, so it may go with sensitization of teachers responsible for the girls' rooms and for letting the girls access the brochure when they go in the girl's room",* noted a male parent/teacher from Rwamagana.

## **5.2. Focus Group Discussions with Younger Adolescents**

FGDs with older adolescents were used to inform the development of the CycleSmart brochure, however, in order to assess how useful and effective the more comprehensive CycleSmart Kit would be, it was important to get input from younger adolescents- the intended end-users of this tool. Thus, FGDs were conducted with adolescent girls and boys (ages 12-14) in one urban (Kicukiro district) and one rural (Rwamagana district) site. A purposive sampling method was used to identify adolescents based on the following criteria: (1) between the ages of 12-14; (2) covered a range of cultural and socio-demographic characteristics; (3) written and spoken proficiency in Kinyarwanda; (4) able to easily articulate their experiences to others. The selection of adolescents was also facilitated by the local partner ARBEF.

FGDs were conducted and documented by five young facilitators (three women and two men) aged between 20 to 27 years. They were directly supervised by a local research consultant. The facilitators used participatory exercises such as body mapping, community mapping, and role-playing games to create a fun and safe environment for open sharing of thoughts and experiences. Sessions with girls and boys were conducted separately.

VYA girls, as the primary intended end-users of the brochure, participated in two discussion sessions. In the first session they discussed their knowledge and questions related to puberty and fertility. They were also oriented to the CycleSmart Kit and taught how to use CycleBeads to track their menstrual cycles. After the end of the first session the girls were provided with a copy of the draft brochure, a calendar, CycleBeads and a weekly diary to track of their experiences. They were asked to take the materials home and use them

for a six-week period. Selection criteria for girls participating in the CycleSmart validation exercise included girls: (1) who had already begun menstruating, (2) ages 12 to 14, (3) not sexually active, (4) not planning to become sexually active, and (5) agreed to:

- Provide feedback on the draft brochure, identify their preferences, and use the draft brochure to learn about early changes of puberty, how gender norms influence how puberty-related changes are viewed and experienced, fertility awareness, and how to manage menstruation
- Use CycleBeads to track their menstrual cycles and other bodily changes for six weeks
- Keep a journal/diary of observed emotional and physical changes throughout their menstrual cycle for six weeks
- Participate in a pre- and post- validation exercise group discussions

After the six-week validation exercise, the girls participated in a group discussion in which they shared their experiences using the CycleSmart Kit, the effect of the tool on themselves and on their friends and family members, as well as their suggestions on how to improve it.

Boys, on the otherhand, participated in one group discussion and did not take the CycleSmart Kit home to use. During their group discussion, the facilitators explored knowledge levels/gaps related to puberty and fertility and obtained feedback from the boys on the content, acceptability and utility of the CycleSmart Kit to boys.

#### **5.2.1. Positive reaction to CycleSmart Kit**

The adolescent girls responded positively to the CycleSmart Kit stating that they were happy and excited about the brochure's design and content. Participants characterized the images as "pretty," "interactive," and "useful". Comments also focused on the characters in the brochure, highlighting the images in which girls advise one another on how to behave or manage their cycles and the pages in which parents discuss puberty with their children. *"The teachings are good and will be very useful in our lives...we actually need to know everything that is contained inside the brochure,"* reported a group of girls from Rwamagana. The brochure was also noted as a resource for ensuring correct use of CycleBeads, girls said that they used the brochure to remember what the different colored beads mean, as well as to double check the direction the ring should move around the beads.

#### **5.2.2. Increased understanding of menstruation**

After using the CycleSmart Kit for six weeks, adolescent girls reported that they had learned more about their changing bodies and how to track their menstrual cycles, and findings showed that the majority of participants used CycleBeads appropriately and clearly understood the significance of the different colored beads (facilitators checked the girls calendars and beads to assess accuracy of use). Girls stated that CycleBeads helped them learn more about their cycles and helped them to predict when their menstrual periods would occur next, as well as teaching them how to prepare for menses and identify their fertile periods. *"It is very meaningful to use the CycleBeads, I was always surprised and frustrated by my menses but last time, as I was prepared, it did not even hurt me like before,"* one respondent from Rwamagana said. Others noted that they knew to carry pads with them when the ring crossed the dark brown bead on

CycleBeads, signifying that their periods would start soon. Participating girls also reported having a better understanding of their fertile periods, some saying that they had previously been confused by cervical secretions but now expected them on days when their CycleBeads ring was on a white bead (fertile days). A girl from Kicukiro reported, *“I couldn’t understand why I had secretions for some days during my cycle, but when I saw it last time, it was not a surprise to me because it coincided with the fact that the ring of my CycleBeads was on white beads.”* Another girl from Kicukiro noted, *“I now know that when I have secretions and/or when the ring is on the white beads, I am very likely to getting pregnant.”*

### 5.2.3. Request from adolescent boys for more information

Similarly, VYA boys felt that the brochure was very useful and a good tool for boys and girls alike. Most reported learning new and important information about fertility and puberty through reading the brochure. *“It is very interesting... from the information contained in this panel, I now know that I can get a girl pregnant if we have unprotected sex”* noted a boy from Kicukiro. Boys generally liked the images and text in the brochure, though suggested that a few minor details in the images – the hairstyles portrayed, for example, and the colors used – be changed to more accurately reflect the cultural context.

While they appreciated that the brochure helped them to understand both female and male puberty changes, many suggested adding information about boys’ puberty or creating a separate brochure specifically for boys. *“We would prefer that the brochure also talks – in an equal manner – about all the changes of boys and how boys should behave during this period of transformation,”* reported a group of boys from Rwamagana. A separate brochure for boys was a popular idea, and all boys in both sites said that they would like to have a male-focused product. *“It can help us teach other boys in the villages, especially those who have not had chances to go to school,”* noted a boy at Rwamagana, while another stated that *“it can also be a good tool for discussing our changes during the anti-AIDS clubs meetings at school.”* Others highlighted the assistance a boy-focused brochure would provide in helping them understand social and behavioral changes related to puberty, *“I think a brochure for boys would be a good one because it can teach us on how to behave with girls,”* said another boy from Rwamagana.

### 5.2.4. Increased ASRH communication

Participating girls and boys reported that the CycleSmart Kit contributed to improved communication about puberty and fertility awareness between them and their families and community members (parents, sisters and brothers as well as their friends/peers/schoolmates). Findings reveal that both girls and boys in rural and urban areas easily understood the information contained in the brochure and were able to use it to learn about their own puberty and fertility and to share their learnings with peers and younger siblings. The majority of participants reported that they shared CycleBeads and/or the brochure with peers interested in learning about puberty and fertility. Some girls even shared their CycleBeads with a non-participating peer so that she could track her menstrual cycle as well. One girl from Kicukiro used the brochure to explain to a teacher why she was using CycleBeads, *“My evening class teacher could not understand how I was given the CycleBeads normally used by women for FP purposes, but when I showed him the insert and told him all what you had taught us, then he was happy about it.”* Girls were particularly positive about the brochure, saying that it helped them explain CycleBeads to their peers and to remember important details about their use.

The great majority of participants believed that the overall brochure presentation was complete, clear and acceptable to girls and boys. The brochure's color, size, and design were also viewed positively by most, although a few stated that they would prefer a booklet format to the existing brochure layout.

All girls acknowledged support from their mothers or other family members during the testing period, many mentioning that because of the parents' session on the CycleSmart Kit, their mothers were eager to explain more about the fertility cycle and signs of puberty. They also noted improved communication about puberty and ASRH, *"My mum used to ask me every day if I had moved the ring or if I had filled the diary, so I enjoyed it because she was closer to me and more concerned,"* said a girl from Kicukiro.

#### **5.2.5. Key concerns and recommendations**

Overall, VYAs described the CycleSmart Kit as a very useful tool for VYAs who want to learn more about girls' changing bodies and fertility, discuss those changes with their peers and families, and use CycleBeads accurately. The brochure was received very positively in general, and most girls felt that it was a strong product in its draft form, expressing their appreciation that they were no longer surprised by their menstrual periods. Boys, however, felt that the brochure focused too much on girls' puberty-related changes and not enough on boys' development. They agreed that the brochure was a good tool for ASRH education, but suggested that kit designers create a brochure specifically for boys as well.

VYAs also encouraged the development of classes around puberty and fertility incorporating CycleBeads. While most respondents said that VYAs would feel comfortable using and understanding the brochure's contents without attending classes, they believed that classes would allow for greater sharing of information and experiences. *"By discussing with your peers, you realize that what happens to you also has happened to them; you just feel relaxed and get to know that all the changes are normal,"* said one respondent from Kicukiro. Another girl from Rwamagana stated, *"It is easy when peers communicate among themselves and share their knowledge and experiences... for instance, if I tell my friend that I have taken two months without seeing my periods, she also does not get frustrated of not having seen hers ... because then she gets to realize it is something normal."*

## **6. Field-testing and Evaluating the CycleSmart Kit**

During the final year of the study (2012-2013), IRH field-tested and evaluated the CycleSmart Kit to determine how easily the Kit can be integrated into existing youth-focused programs and assess how effective it is in increasing knowledge about puberty, fertility, and gender equality among adolescent girls and boys (ages 10-14 years).

### **6.1. Field-testing the CycleSmart Kit**

#### **6.1.1. Methods**

IRH identified four Rwandan youth-serving organizations that represented a mix of background characteristics (private and public sector, urban and rural, school- and non-school based) and that worked with a variety of young adolescents (in-school, out-of-school, orphans, urban, rural, boys, and girls). Representatives from the four organizations (Young Women Christian's Association, Association des

Guides du Rwanda, Hope Foundation and Centres Scolaires Mpara) were invited to participate in an **orientation meeting** where they were introduced to the CycleSmart Kit (which was expanded to include reusable sanitary pads) and provided with programmatic guidelines. The guidelines include answers to frequently asked questions, steps for integrating the Kit into existing youth-serving programs, and strategies for reaching out to parents and key stakeholders (Appendix C). During the orientation meeting, participating organizations also developed action plans for a five-week period of field-testing including steps for selecting adolescents to field-test the Kits, distributing a pre-test questionnaire to assess knowledge levels, explaining and distributing CycleSmart Kits, following up with the participating adolescents, and administering a post-test questionnaire at the end of the field-testing period. Each field-testing site was requested to complete a weekly log report form during field-testing which provided in-depth information on how the CycleSmart Kit was used and how the guidelines were applied.

Partner organizations were provided with the materials needed to implement the field-testing exercise (CycleSmart Kits, Guidelines, copies of their Action Plan, weekly log forms, letters to obtain consent from parents, and pre/post-test questionnaires). The groups were also be provided with small funds to cover expenses related to implementation (e.g. snacks and beverages for participating youth, transportation to field sites).

The CycleSmart Kit was **field-tested** with 198 adolescent girls and boys (ages 11-14 years) by the four partner organizations in 10 different sites over the course of five weeks. The types of activities implemented by field-testing organizations varied from didactic to more participatory approaches. During the field-testing process, IRH Rwanda field staff and a representative from the Rwandan MOH conducted monitoring visits to each organization to observe field-testing activities and provide additional technical support as needed. Other than mandatory participation in the orientation meeting and the maintenance of a weekly log, field-testing sites were allowed flexibility in how the CycleSmart Kit was integrated into organization program activities.

While the implementation of the CycleSmart Kit varied by organization, some aspects of the process remained the same. For example, most organizations conducted an orientation sessions where they introduced the CycleSmart Kit to participating adolescents. They also conducted weekly follow-up sessions with the adolescents (mostly on Saturdays). Facilitators from all participating organizations spoke to parents about the field-testing activity in order to obtain parents' perceptions of the CycleSmart Kit and approval for their child's participation. Some organizations conducted home visits to meet with parents, however, most had the parents meet them at the locations where sessions were taking place and in some cases invited them to participate in the orientation session with their children.

Prior to the commencement of field-testing, all organizations except one informed the local authorities. Also, since most field-testing activities were conducted at primary school facilities, most organizations reported that school teachers and school directors often co-facilitated and participated in the educational sessions with the adolescents. In one site, a public dialogue meeting was organized that gathered teachers, parents, children and local authorities to discuss ASRH issues based on the contents of the CycleSmart Kit. In another site, participating adolescents organized a "youth night" where they shared with children not participating in the study what they were learning. Some participating adolescents were invited by parents' groups to explain and teach them about the CycleSmart Kit. Other adolescents took the initiative to

make their own pads and other materials from the CycleSmart Kit. Adolescents across most sites engaged in role plays, songs, dance, poetry, and organized debates- all aimed, at bringing the CycleSmart Kit to life and demonstrating knowledge acquired from the use of the CycleSmart Kit.

After the five-week field-testing period was completed, weekly logs and pre/posttest questionnaires were collected and analyzed. Field-testing organizations also participated in a **debrief meeting** where they shared their experiences/lessons learned and made recommendations for future roll-out of the CycleSmart Kit.

Field-testing results were used to improve and finalize the CycleSmart Kit and programmatic guidelines.

### **6.1.2. Results**

In general, all implementing organizations found the CycleSmart Kit easy to integrate into programs, interesting to facilitators and adolescents and an important tool for facilitating dialogue on ASRH.

#### **6.1.2.1. Facilitators found the CycleSmart Kit easy to use and worthwhile**

Facilitators from all field-testing organizations reported that integrating the CycleSmart Kit into programming had been easy and that they were interested in continuing to use the CycleSmart Kit in future programming. Facilitators reported that adolescents had gained accurate knowledge and puberty management skills as a result of their experiences with the CycleSmart Kit. Most facilitators, in fact, stated that girls in their sites were not surprised by their menstrual periods during field-testing. Further, most organizations reported that they would advocate for its use and extension to other partners and the community at large in hopes of reaching non-participating children, particularly younger boys and girls who have not yet entered puberty so that they could be prepared for puberty-related changes. *“There is also a need to give the CycleSmart Kit to girls who haven’t started [their] periods yet... [the Kit] can be started with nine-year-olds,”* said one facilitator. Core steps to integrate the CycleSmart Kit in Rwandan youth ASRH programs cited by facilitators included incorporating the tool in primary education curricula and involving the community through local leaders and community health workers.

#### **6.1.2.2. Guidelines are necessary and should be developed more fully**

While facilitators agreed that CycleSmart Kit guidelines helped them to prepare for and carry out education sessions, most suggested that they be further expanded to provide more detail about puberty and fertility, as not all facilitators had enough knowledge on reproductive health issues to answer all of the adolescents’ questions. IRH’s *“My Changing Body”* manual was proposed as a detailed information source in addition to the CycleSmart guidelines that might provide helpful background information for facilitators.

Facilitators also commented that the Kit would most likely not be as effective if simply distributed to adolescents as a stand-alone product as opposed to being integrated in group activities. The facilitators believed that in-depth discussions and repeated interactions with facilitators helped adolescents understand and use the information contained in the brochure more effectively. This opinion was echoed by participating adolescents during monitoring visits as well.

### **6.1.2.3. Facilitators found adolescents eager to learn**

Facilitators from field-testing sites said that it was easy and feasible to integrate the CycleSmart Kit into their existing programs particularly because children were happy, interested and self-motivated in using the tool to increase their knowledge about puberty and fertility. Most facilitators reported being impressed by how the young people, after the first introductory session, were eager and at ease while discussing puberty and fertility topics, despite the fact that such topics are traditionally considered taboo.

## **6.2. Evaluating the CycleSmart Kit**

A simple pre-posttest design was used to assess the effect of the CycleSmart Kit on puberty- and fertility-related knowledge of study participants.

### **6.2.1. Methods**

A self-administered 20-item questionnaire was distributed to all participating adolescents by facilitators prior to commencing field-testing activities (baseline) and five weeks later (endline) at the conclusion of the field-testing period (Appendix D). Adolescents were instructed to complete the questionnaire without discussion or input from peers or session facilitators. Questionnaires were in Kinyarwanda and included questions about menstruation, male and female fertility, puberty changes, safety behaviors, and CycleBeads use. The same questionnaire was used at baseline and endline.

All data entry and analysis were conducted by IRH using IBM SPSS Statistics 20 software. Analysis included frequencies, cross tabulations, and means of indices.

### **6.2.2. Results**

#### **6.2.2.1. Characteristics of study participants**

A total of 198 adolescent girls and boys completed the baseline questionnaire. The majority of baseline participants were female (73%) with a mean age of 13.5. At endline, a total of 195 girls and boys completed the questionnaire, with the majority female (72%) with a mean age of 13.4. Each field-testing organization had approximately 20 participants per site. The Association des Guides aux Rwanda, with four sites, had the largest number of participants at baseline and endline. Appendix E provides a summary of study participants by organization and site at baseline and endline.

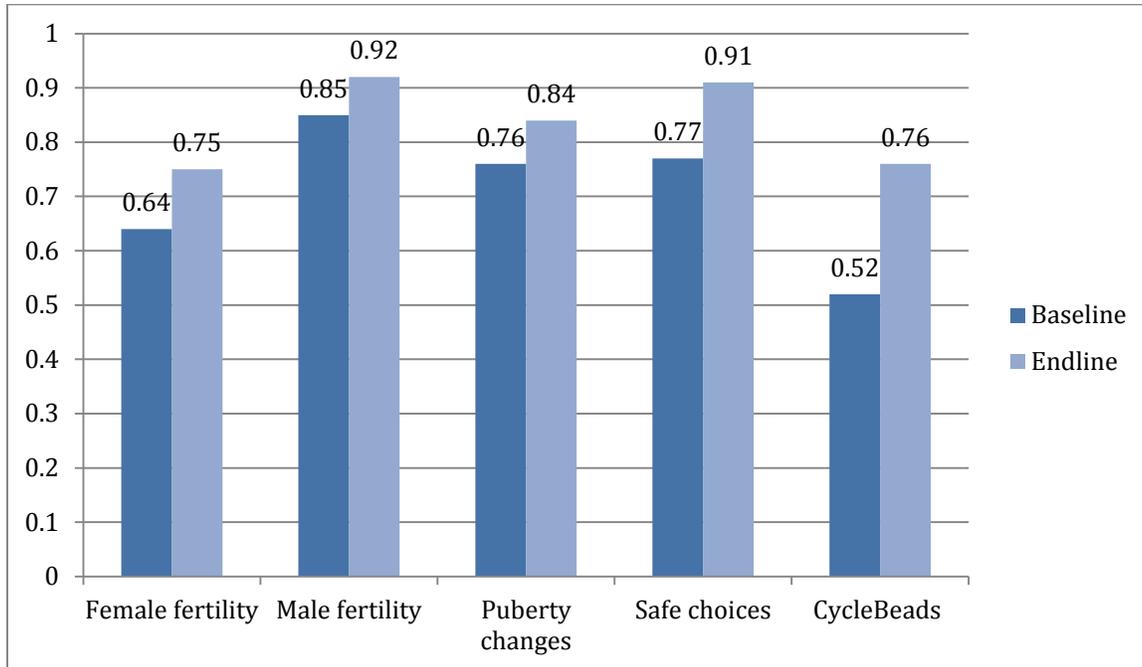
#### **6.2.2.2. Overall improvements in knowledge**

To assess knowledge improvement, questions measuring similar concepts were grouped together to form five indices; female fertility, male fertility, puberty changes, safe choices and use of CycleBeads to track menstruation (See Appendix F for a list of the items included in each index). Specific items were selected based on formative research findings and focus on identified knowledge gaps (e.g. whether boys have a menstrual cycle like girls or if cervical secretions are an indication of healthy fertility in girls). To calculate each index, a value of 1 was assigned to correct responses and 0 to incorrect responses for each item. Items were added, and the total was divided by the number of items that each respondent contributed to the

data. This allowed us to include respondents who had a missing value for one or two of the contributing items. All indices range from 0-1, with 1 indicating the most correct responses and 0 the least correct responses.

As illustrated in Figure 1 below, statistically significant ( $p < 0.01$ ) increases in knowledge were observed on all concepts measured at baseline and endline. The largest increase in knowledge was related to the use of CycleBeads, however this concept also had the lowest knowledge levels at baseline.

**Figure 1.** Improvements in Knowledge of CycleSmart Participants (mean knowledge indices at baseline and endline)



### 6.2.2.3. Differences in knowledge improvement by organization

Results varied by implementing organization (see Table 2). Of the four organizations participating in field-testing, two organizations demonstrated statistically significant increases on all knowledge indices measured at baseline and endline. The third organization demonstrated statistically significant increases on all knowledge indices except Male Fertility and Puberty Changes. The fourth organization only demonstrated statistically significant increases in two knowledge indices: Safety and CycleBeads. This organization used fewer participatory approaches compared to others which may account for differences in results.

**Table 1.** Improvements in Knowledge by Field-testing organization (mean knowledge indices at baseline and endline)

Organization	Female fertility		Male fertility		Puberty changes		Safe Choices		CycleBeads Use	
	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
1 (n=71)	0.67***	0.95	0.88***	1.00	0.73***	0.96	0.74***	0.99	0.50***	0.96
2 (n=159)	0.64***	0.72	0.84***	0.93	0.75*	0.81	0.78***	0.90	0.52***	0.75
3 (n=79)	0.64**	0.73	0.90	0.94	0.85	0.88	0.83**	0.92	0.50***	0.68
4 (n=79)	0.61	0.64	0.80	0.83	0.73	0.74	0.74*	0.81	0.53***	0.71

\*denotes significance at  $p < 0.1$  level of comparing baseline to endline for each group

\*\* denotes significance at  $p < 0.05$  level of comparing baseline to endline for each group

\*\*\* denotes significance at  $p < 0.01$  level of comparing baseline to endline for each group

#### 6.2.2.4. Differences in knowledge improvement by sex

Although the CycleSmart Kit was designed specifically for use by 10-14 year old girls, it is important for boys to have access to fertility and puberty information as well. Data reveal that both girls and boys demonstrated statistically significant increases in knowledge at endline (see Table 2). While girls demonstrated highly statistically significant ( $p < 0.01$ ) differences on all indices, boys only demonstrated highly statistically significant improvements on three out of the five indices. On two indices, Male Fertility and Puberty Change, boys demonstrated marginally significant improvements ( $p < 0.10$ ). In the case of the Male Fertility index, the level of knowledge at baseline was high (0.89) which may explain the lower significance level of change between baseline and endline. In the case of the Puberty Changes index, while the increase for boys was not statistically significant, the actual increase was larger for boys.

**Table 2.** Improvements in Knowledge by Sex of Participant (mean knowledge indices at baseline and endline)

	Female Fertility		Male Fertility		Puberty Changes		Safety		CycleBeads	
	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline	Baseline	Endline
<b>Girls (n=281)</b>	0.66***	0.76	0.84***	0.91	0.77***	0.84	0.77***	0.91	0.51***	0.76
<b>Boys (n=96)</b>	0.59***	0.74	0.89*	0.95	0.73*	0.82	0.78***	0.90	0.51***	0.78

\*denotes significance at  $p < 0.1$  level of comparing baseline to endline for each group

\*\* denotes significance at  $p < 0.05$  level of comparing baseline to endline for each group

\*\*\* denotes significance at  $p < 0.01$  level of comparing baseline to endline for each group

#### 6.2.2.5. School attendance during menstruation

In order to contribute to knowledge about the influence of menstruation on school attendance, a question was added to the endline questionnaire regarding school attendance during menstruation. About a third (33.8%) of girls reported that they had ever missed school because of their period. The following reasons were cited for missing school during menstruation: felt unwell (39.3%), improper or poor feminine hygiene (e.g. lack of access to sanitary pads, leakage of menstrual blood)(29.5%), made fun of (18.0%), feeling embarrassed (11.5%), and fear (1.6%).

## **7. Conclusion and Recommendations**

Study results indicate that the CycleSmart Kit can help fill an important gap in ASRH education and materials in Rwanda. Focus group discussions with adolescents, parents of adolescents and stakeholders who work with adolescents all indicate significant knowledge gaps in puberty and fertility awareness among adolescents in both rural and urban areas of Rwanda. Many of the older adolescents reported they were surprised by physical changes and did not at that time understand the implications of puberty on their fertility. They also noted that their parents and family members often feel uncomfortable speaking about these topics with them. Furthermore, adolescents reported a lack of trusted information in general; stating that despite their interest in learning about puberty and how to manage the changes they were experiencing, their primary source of information was peers who often have partial or inaccurate knowledge on the topic.

The CycleSmart Kit was determined to be an effective and culturally appropriate resource in meeting the need for an accessible, accurate source of information on puberty and ASRH for girls and boys. Both parents and adolescents reported that they felt comfortable and were interested in using the materials. Adolescent girls enjoyed learning to use CycleBeads and thought that they were a useful tool for tracking their menstrual cycles. Reporting higher levels of ASRH knowledge overall, girls seemed most enthusiastic about no longer being surprised by their periods and having a better understanding of what changes in their bodies and behaviors were normal. Girls and parents both stated that using the CycleSmart Kit increased their communication around ASRH issues and fostered “closeness” between mothers and daughters.

### **7.1. Program Implementation**

Important learnings were generated that should be considered by programs interested in using the CycleSmart Kit in their activities. While most adolescents were able to understand how to use CycleBeads after the first session, a single session explaining how to use CycleBeads may not always be sufficient for girls to retain key points. Organizations that incorporate the CycleSmart Kit into programs for adolescent girls should note that it may be best to introduce the brochure and CycleBeads over the course of several sessions to reinforce the messages, ensure that girls remember the instructions on how to use CycleBeads, and respond to any questions that may arise as girls learn to track their cycles. Boys said that they would like to receive more information on male puberty, and would like either a more balanced amount of male and female information in the current brochure or a similar brochure targeted at adolescent males. Including more images of males in the brochure may help to break down some of the cultural taboos regarding discussing this topic with the opposite sex.

Parents expressed that they would like to be included in the process of educating their children about puberty. However, many feel that they do not have adequate information on the topic themselves. Programs that utilize the CycleSmart Kit should consider ways to educate parents as well as adolescents about the changes experienced during puberty and on other SRH topics. By including parents’ forums (“evenings for parents”) or community sensitization as a core components of implementing the CycleSmart Kit, programs could also foster dialogue on puberty, fertility, and gender equality between parents and children. Some parents were concerned that their daughters might use CycleBeads not just to track periods,

but as a method of contraception by planning sex around fertile periods. Future iterations of CycleSmart Kit should include additional information on why CycleBeads may not be adequate as a family planning method for adolescents.

For a better and standardized use of the CycleSmart Kit throughout youth programs, the programmatic guidelines should be developed more fully to provide facilitators with necessary complementary information about reproductive health and user-friendly ways to approach young people. The “*My Changing Body*” manual was particularly cited by some facilitators as a good and detailed source of information for facilitators.

## **7.2. Dissemination**

Participants suggested that as the MOH of Rwanda develops standardized, age-appropriate, gender-sensitive and culturally acceptable educational tools on ASRH for adolescents in Rwanda, the CycleSmart Kit should be used as an evidence-based source of information and potentially adapted to fit within the core package of services to be integrated in existing youth forums and structures. Through the Maternal and Child Health Department, the MOH could also be involved in procuring and disseminating the CycleSmart Kit to communities through CHWs and local authorities. Participants felt that the Kit should be integrated into the national education curriculum through the Ministry of Education. They suggested that programs consider incorporating other media to disseminate VYA puberty and fertility messages as well, including billboards near high-traffic roads, signs at schools, and audiovisual manuals covering highlights from the brochure. Community youth forums can provide a safe space for young people to discuss issues pertaining to ASRH and could potentially be another beneficial way of addressing youth information needs and disseminating the CycleSmart Kit. Programs could also advocate for strengthening the capacity of existing youth-serving organizations in Rwanda, creating more youth programs, and providing them with funding and training in order to reach more young people.

## **7.3. Research**

Despite promising results from this study, further research is needed to better understand the effect of CycleSmart use on adolescent knowledge, attitudes, and behaviors. A more rigorous evaluation, with a comparison group, should be conducted to measure changes in knowledge and determine if these changes are maintained over time. A longitudinal cohort study would be helpful in elucidating whether or not increased puberty- and fertility-awareness knowledge among very young adolescents translates to behavioral change and improved sexual and reproductive health outcomes in older adolescence. Finally, a process evaluation to determine the level of training/orientation needed for adolescents to successfully use the CycleSmart Kit would better inform programming efforts.

Additional information on the CycleSmart Kit including copies of the CycleSmart Brochure and CycleSmart Guidelines available at: <http://irh.org/blog/meeting-the-needs-of-adolescents-introducing-the-cyclesmart-kit/>.

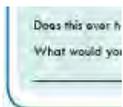
## **Appendices**

Appendix A	List of Key Informants
Appendix B	CycleSmart Brochure
Appendix C	CycleSmart Guidelines
Appendix D	CycleSmart Evaluation Questionnaire
Appendix E	Summary of Participants (by organization and site)
Appendix F	Indices

## Appendix A. List of Key Informants

	School Level Completed	Sex	Job	Residence
1	University (MPH)	Male	Educator/teacher (school headmaster) in Kicukiro	Kigali
2	Secondary school	Female	National Women's Council	Rwamagana
3	University (Degree in Social Sciences)	Female	Local expert in youth education about SRH, ARBEF	Kigali
4	University (MPH)	Male	Responsible for ASRH & Rights project at IMBUTO foundation	Kigali
5	University (Masters in Accounting Sciences)	Female	Parent/guardian and founder of "the girl's room" project	Kigali
6	Secondary school	Female	Parent	Rwamagana
7	Primary school	Female	Community health worker	Kigali
8	Secondary school	Female	Educator/teacher in Kicukiro	Kigali
9	University (Medical Doctor)	Female	MoH/ASRH NTWG	Kigali
10	University (Masters in Health Communication and Social Sciences)	Female	PSI/12+ program	Kigali

**Appendix B. CycleSmart Brochure** (High resolution version available at <http://irh.org/resource-library/cyclesmart-cyclebeads-brochure/>)



A soft pad with  
of plastic that s  
underwear. Mo  
thrown in the tr  
use.



## Simple Steps for Including the CycleSmart Kit in Your Program



**Read the CycleSmart brochure completely, and understand how to use CycleBeads, before discussing them with youth.**

- Practice how you will teach this to young people.
- If you have questions, talk with a person who can provide correct answers and more information.



**Talk with girls about the brochure and the beads.**

- Talk to girls individually or in a group. Discuss the changes both girls and boys notice.
- Show girls how to use CycleBeads to keep track of their periods, and to pay attention to the changes they notice between one period and the next.
- Give each girl a CycleSmart Kit with her own brochure and CycleBeads to use. Your program can add a calendar, a diary, and/or sample sanitary pads to the Kit, as well as information about how to contact local health providers.



**Talk with boys also.**

- Have a mixed group of boys and girls, or talk to boys by themselves.
- Use CycleBeads to teach boys about the girls' menstrual cycle and the changes girls notice. Also talk about the changes boys notice.
- Give boys the CycleSmart brochure.



**Discuss how girls and boys may be treated differently at puberty.**

- Find out what young people have noticed about what society expects from girls and boys now that they are growing up.
- Ask what this means to them and how they feel about girls and boys being treated differently.
- Explore together how young people can stay healthy and safe in their community.



**Involve parents.**

When possible, show parents and other caring adults how to use the CycleSmart Kit to educate their children about puberty and fertility awareness.

### What is the CycleSmart Kit?

The CycleSmart Kit includes CycleBeads (a set of color-coded beads that help a girl keep track of her menstrual cycle and learn about her fertility) and a simple, factual brochure about puberty. The CycleSmart Kit is designed to help young people, ages 10 to 14, develop an awareness of their emerging fertility and make decisions which promote their health. The Kit also helps parents, teachers, health providers, peer-educators and others talk to young girls and boys about their changing bodies and how to stay healthy and safe.

### Why are the CycleSmart Kit and puberty education so important?

Many girls and boys enter puberty with very little information about their changing bodies. Often parents and other important adults in their lives feel unprepared or uncomfortable talking about this topic. Yet, when young people can discuss the changes of puberty and signs of fertility, including physical and emotional changes of both girls and boys, this helps prepare them to make healthy decisions about relationships and sexual behavior in the future. It also helps them to better care for their changing bodies and notice right away any signs that they need to seek health care. The CycleSmart Kit is an easy, concrete and meaningful tool for puberty education, and has been tested and used in Rwanda and other countries in the world.

### Who might explain and give this Kit to youth?

Parents, teachers, health providers, educators, religious leaders, and others are among those well-positioned to offer and discuss the CycleSmart Kit with young people. Programs for parents and peer educators (such as child-to-child or older youth to younger youth) also provide ideal opportunities to do so. The CycleSmart Kit can be offered to young people through clubs like girl guides and boy scouts, after-school programs, pharmacies, elementary and middle schools, girls' rooms, and health posts. Girls and boys can also get the CycleSmart Kit directly and read the brochure themselves, although it is most helpful for them to have access to a person who can respond to questions that may arise.

It is very easy to include the CycleSmart Kit in your program.

## Some Ideas for Teaching Groups of Youth about Puberty and Fertility Awareness from the My Changing Body curriculum

- Help young people get to know one another, and feel comfortable with the group leader and the topic, pgs. 16-19.
- Find out what girls and boys know and believe about puberty and fertility, explore myths and provide accurate information, pgs. 20-23, 40-42.
- Use games and role plays to discuss gender roles, basic rights, and possibilities, pgs. 23-28.
- Encourage young people to talk with their parents and ask about their parents' beliefs and experiences, pgs. 30-31. Suggest that they keep a diary of their own experiences, observations and feelings, pgs. 32-33.
- Bring local products used during menstruation to touch, feel and become familiar with, pgs. 43 -44.
- Make fertility awareness beads with local buttons or create menstrual cycle flash cards, pgs. 62-69. Bring substances that look and feel like cervical secretions.
- Evaluate your sessions to find out what young people have learned, pgs. 118-126.  
<http://tinyurl.com/MyChangingBodyE2>



## Involve Parents

Parents are key to providing good puberty and fertility awareness education to their children. There are many teachable moments available to parents, to connect with their children in important ways. Programs can support and train parents, helping them to gain knowledge and confidence.

When parents are "askable" it helps young people feel more comfortable and open to talking about sensitive and personal topics. Good communication between parents and their children builds trust and support throughout the growing up years.

It is OK if parents don't have all the answers, they can find out together with their children.

Be a resource and involve parents in creative ways.

## Frequently Asked Questions

If our program has never provided puberty education, can we give young people the CycleSmart Kit?

Yes, you can explain and give the Kit to girls and boys without having a comprehensive sexual and reproductive health program for youth. For programs that do provide puberty education, the CycleSmart Kit can add to and enhance the program in a practical, hands-on way.

What resources are available with fun and meaningful activities we could use when talking about the CycleSmart Kit with young people?

*My Changing Body: Puberty and Fertility Awareness Education for Young People, 2<sup>nd</sup> Edition*, is an excellent resource. There are 6 sessions for youth, an evaluation component, and also instructions for parents and trainers. To view and download this curriculum for free, go to: <http://tinyurl.com/MyChangingBodyE2>

The CycleSmart brochure and CycleBeads are more focused on the changes that girls experience. What puberty information is available for boys?

For more male-focused resources on puberty and additional resources for both girls and boys on gender awareness, resiliency, and empowerment of young people to make healthy choices see <http://www.iywg.org/youth/resources>

Are CycleBeads used as a family planning method?

A girl should not try to use CycleBeads as a way to prevent pregnancy. It can take quite a few years for a girl's cycles to become regular. A woman with a willing partner, who gets her period every 26 to 32 days, would also need more information than is presented in the CycleSmart brochure to be able to use CycleBeads to space or limit the births of her children. However, girls who use CycleBeads to learn about and track their cycles can be better prepared to use a fertility awareness-based method in the future.



For more information about the CycleSmart Kit please contact: [irhinfo@mail@georgetown.edu](mailto:irhinfo@mail@georgetown.edu)

## Appendix D. CycleSmart Evaluation Questionnaire



Circle one: Male or Female  
Write age [\_\_\_\_\_]

### How CycleSmart Are you?

**Instructions:** We are interested in knowing how much information you have on the changes that boys and girls experience so that we can make better programs. Please carefully read each question and circle "yes" or "no" depending on what you think the answer is. Your answers are private and you do **not** need to put your name on this paper. When you are done please place it in the envelope that was given to you and hand it to the project staff.

1. Is it true that the menstruation period is the normal and healthy shedding of blood from the uterus?	YES	NO
2. Do all women and girls have a menstrual cycle that lasts exactly 28 days?	YES	NO
3. Is a boy able to get a girl pregnant once he has had a "wet dream"?	YES	NO
4. Does the menstrual cycle cover all of the days between one period and the next period?	YES	NO
5. Are "Wet Dreams" common for boys as their bodies begin to change?	YES	NO
6. If a girl has started menstruating, does that mean she can become pregnant?	YES	NO
7. Do new thoughts and feelings also accompany the rapid body changes that boys and girls experience?	YES	NO
8. Do boys have a menstrual cycle like girls?	YES	NO
9. Does body hair grow in new places as boys' and girls' bodies change?	YES	NO
10. Should a girl or boy talk to a trusted grown-up if they feel pressured or unsafe?	YES	NO
11. Can girls use CycleBeads to know when to expect their next period?	YES	NO
12. Is it a good idea for boys and girls to talk to <u>both</u> their mom and dad about the bodily changes they experience?	YES	NO
13. Are having sex and being in love the same thing?	YES	NO
14. Is a girl or woman likely to become pregnant if she has unprotected sex during days of menstrual bleeding?	YES	NO
15. Are cervical secretions a healthy sign that a girl or woman can become pregnant?	YES	NO
16. When using CycleBeads, does a girl keep the ring on the red bead until after her period has stopped?	YES	NO
17. Do body changes like getting taller and sweating more happen at the same age for everyone?	YES	NO
18. Should a girl go to a private place with a boy or man if he offers her gifts or money?	YES	NO
19. Can alcohol and drugs lead to risky choices?	YES	NO
20. Should a young girl try to use CycleBeads to prevent pregnancy?	YES	NO

## Appendix E. Summary of Study Participants (by Organization and Site)

Site	Baseline (n=198)			Endline (n=195)		
	Female	Male	Total	Female	Male	Total
<b>Association des Guides du Rwanda</b>						
Gakenke	15	5	20	14	5	20
Gikondo	15	5	20	15	5	20
Nyanza	16	4	20	15	5	20
Rwamagana	16	5	21	14	2	20
<b>Total</b>	<b>62</b>	<b>19</b>	<b>81</b>	<b>58</b>	<b>17</b>	<b>80</b>
<b>Centres Scolaires Mpara</b>						
Butezi	14	5	20	15	5	20
Mpara	15	4	20	14	4	19
<b>Total</b>	<b>29</b>	<b>9</b>	<b>38</b>	<b>29</b>	<b>9</b>	<b>39</b>
<b>Hope Foundation</b>						
Bukomero	16	5	22	12	6	19
Mahembe	7	6	15	13	5	18
<b>Total</b>	<b>23</b>	<b>11</b>	<b>34</b>	<b>25</b>	<b>11</b>	<b>37</b>
<b>Young Women's Christian Association</b>						
Nyabihu	15	5	20	15	5	20
Muhanga	15	5	20	14	5	19
<b>Total</b>	<b>30</b>	<b>10</b>	<b>40</b>	<b>29</b>	<b>10</b>	<b>39</b>

## **Appendix F. Indices**

### **Female Fertility**

- The menstruation period is the normal and healthy shedding of blood from the uterus
- All women and girls have a menstrual cycle that lasts exactly 28 days
- The menstrual cycle cover all of the days between one period and the next period
- A girl can become pregnant once she has started menstruating
- A girl or woman is likely to become pregnant if she has unprotected sex during days of menstrual bleeding
- Cervical secretions are a healthy sign that a girl or woman can become pregnant

### **Male Fertility**

- A boy is able to get a girl pregnant once he has had a “wet dream”
- “Wet dreams” are common for boys as their bodies begin to change
- Boys have a menstrual cycle like girls

### **Puberty Changes**

- New thoughts and feelings also accompany the rapid body changes that boys and girls experience
- Body hair grows in new places as boys’ and girls’ bodies change
- It is a good idea for boys and girls to talk to both their mom and dad about the bodily changes they experience
- Body changes like getting taller and sweating more happen at the same age for everyone

### **Safe Choices**

- A girl or boy should talk to a trusted grown-up if they feel pressured or unsafe
- A girls should go to a private place with a boy or man if he offers her gifts or money
- Alcohol and drugs lead to risky choices
- Having sex and being in love the same thing

### **CycleBeads Use**

- Girls can use CycleBeads to know when to expect their next period
- While using CycleBeads,a girl keeps the ring on the red bead until after her period has stopped
- A young girl should try to use CycleBeads to prevent pregnancy

## References

1. Government of Rwanda (GoR). Adolescent sexual and reproductive health and rights policy. August 2011. Ministry of Health Kigali - Rwanda.
2. United Nations entity for gender equity and the empowerment of women. Fourth world conference on women. September 1995. Beijing - China
3. Lavoie, K. and Lundgren, R. Improving Family Planning Services for Women and Their Partners: A Couple-Focused Approach, Final Report for the U.S. Department of Health and Human Services Office of Population Affairs, May 2009.
4. Palmer, L. Advancing Promising Program and Research/Evaluation Practices for Evidence-based Programs Reaching Very Young Adolescents: A review of the Literature. Washington DC: Institute for Reproductive Health, Georgetown University, September 2010
5. Binagwaho, A. A report on Adolescents' health and HIV services in Rwanda, in the context of their human rights. August 2009. Kigali – Rwanda
6. Linda H B., Renee E S., Jane F., Vinit S. Global perspectives on the sexual and reproductive health of adolescents: patterns, prevention, and potential. *Lancet* 2007; 369: 1220–31
7. Institute for Reproductive Health, Georgetown University. Evaluation of the “My Changing Body: Fertility Awareness for young people, 2nd edition” 2011
8. National Institute of Statistics of Rwanda (NISR), Ministry of Health and ICF Macro, MEASURE DHS. Rwanda Demographic and Health Survey 2010: Preliminary report. NISR & Calverton, Maryland, USA.
9. National Institute of Statistics of Rwanda (NISR), Ministry of Health and ICF Macro, MEASURE DHS. Rwanda Demographic and Health Survey 2010. NISR & Calverton, Maryland, USA
10. National Institute of Statistics of Rwanda (NISR), Rwanda population and housing Census 2012: Provisional results. Nov. 2012
11. Ministry of Health of Rwanda. Rapid Assessment of Adolescence sexual and reproductive health programs, services and Policy and its Strategic Plan issues in Rwanda. 2011
12. TRAC plus Rwanda: Behavioral Surveillance Survey among youth aged 15-24 years in Rwanda 2010
13. National Institute of Statistics of Rwanda (NISR), Ministry of Health and ICF Macro, MEASURE DHS. Rwanda Demographic and Health Survey 2005: NISR & Calverton, Maryland, USA.
14. Park. Rwanda's reforms boost progress on school enrolment. 2010.
15. Government of Rwanda (GOR). Economic Development and Poverty Reduction Strategy (EDPRS): 2008-2012. Kigali, Rwanda: GOR, Ministry of Finance and Economic Planning, 2007 (p. 51). Accessed June 04, 2011 at <http://www.minecofin.gov.rw>
16. Rapport annuel du ministère de la santé du Rwanda, 2009-2010 ([www.moh.gov.rw](http://www.moh.gov.rw))
17. Nzaana Joyce, Kitembo O.G., Biology for Rwanda Secondary Schools. Book three. 2009
18. National Family Planning Policy and its Five-year strategies (2006-2010), Ministry of Health. March 2006 pp 6-7.
19. Rwanda Family Planning Strategic Plan, 2011-2015. Government of Rwanda, Ministry of Health, Maternal & Child Health, October 2011.
20. Alessia Radice. Comment Mieux Travailler avec les Jeunes dans le Domaine de la Santé Reproductive : Formation pour les Prestataires de Services, Avril 2009. Rwanda
21. Restless Development. Girl hub: the state of girls in Rwanda. January 2011

22. Senanayake P, Nott JH, Faulkner KM. Adolescent sexual and reproductive health: the challenge for society. *Hum Fertil (Camb)*. 2001;4(2):117-22.
23. Stella Neema, Fatima H. Ahmed, Richard Kibombo, Akinrinola Bankole. Adolescent Sexual and Reproductive Health in Uganda: Results from the 2004 National Survey of Adolescents. 2006
24. Shaw D., Access to sexual and reproductive health for young people: Bridging the disconnect between rights and reality. *International Journal of Gynecology and Obstetrics* 106 (2009) 132–136
25. World Health Organization. The sexual and reproductive health of younger adolescents: research issues in developing countries: background paper for a consultation. WHO 2011
26. Braeken D., Rondinelli I., Sexual and reproductive health needs of young people: Matching needs with systems. *International Journal of Gynecology and Obstetrics* 119 (2012) S60–S63
27. World Health Organization. The sexual and reproductive health of young adolescents in developing countries: Reviewing the evidence, identifying research gaps, and moving the agenda. Nov 2010