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# The Impact of Mentoring on Learning Outcomes

## Adolescent Girls and the Challenges of Menstruation in Kenya

Mary A. Otieno

## GLOBAL SCHOLARS PROGRAM WORKING PAPER SERIES

This working paper series focuses on education policies and programs in developing countries, featuring research conducted by guest scholars at the Center for Universal Education at Brookings (CUE). CUE develops and disseminates effective solutions to the challenges of achieving universal quality education. Through the Global Scholars Program, guest scholars from developing countries join CUE for six months to pursue research on global education issues. We are delighted to share their work through this series.

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# The Impact of Mentoring on Learning Outcomes

## Adolescent Girls and the Challenges of Menstruation in Kenya

Mary A. Otieno

### OVERVIEW

Although low-income countries have made great progress in expanding participation in education, high dropout rates, low levels of transition to secondary school and poor learning outcomes remain sources of concern. In each of these areas, there are often marked gender disparities, such as adolescent girls being more likely to drop out of primary and early secondary school. The factors behind school dropout rates, poor learning outcomes and gender disparity are complex and vary both across and within countries. This paper focuses on a pervasive but widely neglected source of education disadvantage: the onset of menstruation. It reviews cross-country evidence on how social attitudes that limit the support provided to adolescent girls in managing menstruation may be holding back their educational progress and reinforcing gender disparities. The paper focuses on Kenya—a country for which there is compelling evidence that issues related to

helping girls with their menstrual problems are weakening efforts to achieve gender equity in schooling. Recognizing the need for a stronger research base to guide public policy, the paper proposes a randomized trial to explore the potential benefits of strengthened mentoring comprising managing menstruation, educational and psycho-social challenges, coupled with the provision of sanitary napkins.

### INTRODUCTION

Education's power to transform societies cannot be underestimated. It breaks the generational cycles of poverty and disease and is important for a nation's development and prosperity. High-quality education equips and empowers boys and girls with the knowledge and skills needed to lead healthy lives, protect themselves against disease and shape their communities. Girls in particular benefit tremendously from a rights- and gender-

based approach to learning, which empowers them to challenge gender discrimination and take charge of their lives. The onset of adolescence is a landmark event in the life of a young woman. Yet many adolescent girls face a problematic multiplicity of options as they attempt to manage their lives during menstruation while dealing with the resulting physical and psychological changes.

Adolescence in girls has been recognized as a special period that signifies the transition from girlhood to womanhood. This transitional phase of life is important because it includes many key social, economic, biological and demographic events that set the stage for the future. And it is marked by the onset of menarche, a female's first menstrual period, as an important milestone. The World Health Organization defines "adolescence" as the period between 10 to 19 years of age (Kulkarni and Durge 2011), and has found that adolescent girls constitute about one-fifth of the world's total female population. Menstruation is a normal physiological process that begins during puberty and may be associated with various symptoms occurring before or during the menstrual flow (Khadilkar, Stanhope, and Khadilkar 2006). Though it is a normal physiological process, it is often associated with premenstrual and menstrual disturbances (Chumlea et al. 2003). The medical and social consequences of premenstrual and menstrual symptoms and related disorders affect not only the individual but also her family and society (Khadilkar, Stanhope, and Khadilkar 2006; Chumlea et al. 2003).

Menstruation-related problems among young adolescents are implicated in four major education problems. The first is primary school dropout rates. Girls drop out of school in part because of the beginning of the menstruation cycle and its associated challenges. Many girls fail to attend school in later adolescence; and for those who do, many are still in primary rather than secondary school, where one might expect to find them. In Kenya, at the primary level, dropout rates for boys are higher than that for girls in the lower levels, but these rates change as both reach puberty. At grade 7, the proportion of girls dropping out of school, 7.1 percent, overtakes that of boys, 6.8 percent; in grade 8, however, the dropout gap widens by 0.7 percent, with girls dropping at a rate of 2.6 percent and boys at 1.9 percent, respectively (Muganda-Onyando and Omondi 2008). This is about the time they reach puberty and are more likely to engage in sexual activities.

The fact that the majority of donor funding is directed toward girls' primary school attendance may contribute to this pattern. For the pubescent girl, there are wider interactions, which entail an increased risk of dropping out linked to early marriage, because at this stage a female is seen as a woman ripe for marriage. When a girl gets married, she loses livelihood opportunities that would have been enhanced by further education, and the fact that she becomes a mother at such a young age with little knowledge about motherhood results in increased mortality rates. Existing education programs are bereft of curricula that address adolescent learning

needs, in particular the needs of girls whose lives often close down rather than open up during menstruation.

Second, despite the gains in primary school enrollments, Kenya still has low net enrollment rates in secondary schools (estimated at 50 percent by the World Bank in 2009). This is largely due to the low transition rate from primary to secondary school, which is estimated to be approximately 55 percent (EMIS 2010). However, the same data shows that gender inequality still exists, with a transition rate from primary to secondary school of 48 percent for girls and 52 percent for boys. A lack of secondary education diminishes youths' chances of receiving the increased benefits expected at this level of education, leading to lasting economic disadvantages for girls and their future families.

Third, low levels of learning are also linked to menstruation, due to girls' inability to cope with the moods and symptoms brought on by their menstrual cycle, which may well play a discernible role in their academic performance. Adolescent girls' performance and affective patterns fluctuate with their menstrual cycle. Poor mental performance is generally more common during menstruation due to premenstrual symptoms and for several days before the onset of menstruation, which may inhibit a girl's regular participation in school and finally weaken her performance.

Fourth, low performance exacerbates the gender inequalities that already exist between girls and boys across a host of areas, includ-

ing social and economic empowerment that may continue past adolescence into later years of their life. So where is the pubescent girl left with her education? If she completes primary education, it is likely of low quality, leaving her with few tools and resources to proceed to higher levels of education.

## **HISTORY**

### ***The High-Risk Years of Adolescent Girls' Education***

This section begins with a general introduction to the situation of adolescent girls worldwide and then focuses on girls' menstruation issues and their influence on girls' educational participation rates and success. Perhaps no other segment of society globally faces as much exploitation and injustice as that of adolescent girls. Yet these are overlooked members of society, and investing in them is also the smart, if not ethical, thing to do, as noted by Lloyd and Young (2009)—who add that if the 600 million adolescent girls in the developing world today follow the path of dropping out of school, early marriage and early childbirth, along with vulnerability to sexual violence and HIV/AIDS, then cycles of poverty will continue. Yet today, only a tiny fraction of international aid dollars is spent effectively on meeting the needs of adolescent girls.

A number of studies have revealed that adolescent girls face challenges that challenges that affect them individually, socially, economically, educationally, and environmentally. Thus puberty for girls can be very

challenging (Kirk and Sommer 2006), and the issues they face are more complex than those faced by boys during the same period. Adolescent girlhood is always a critical time of identity formation and a period of transition from childhood to womanhood. Hence, the teen years for girls today are a period of real danger. The range of risks girls face during this period requires more attention, notwithstanding the many strategies being implemented to support their plight in developing countries. Girls entering puberty often face a “crisis of confidence” that makes them vulnerable to risky behavior, and these bad choices can have devastating lifelong consequences. Poor academic performance, early marriage, young motherhood, unwanted pregnancy, and disease are rated as the main challenges facing adolescent girls in developing countries. One in seven girls in developing countries gets married before reaching the age of 15 years, and nearly half are married by age 20; often, the girls are not given a choice to make decision on the matter (Lloyd and Young 2009). And once married, girls go from being under the control of their fathers and brothers to being under the control of their husbands.

### **School Dropouts**

A common concern among educationists is that girls may be more likely to drop out of school after they reach puberty because of the difficulty of managing menstruation while at school and the fact that the age at which girls reach puberty has decreased over the years (Grant, Lloyd, and Barbara 2010). The foregoing study was a survey of adolescent

students age 14 to 16 years in rural Malawi, where 34 percent of girls reported having missed school at some time in the past because of their period, primarily due to heavy bleeding during their menses (Grant, Lloyd, and Barbara 2010).

The onset of puberty influences girls’ primary school attendance and completion, because during this period, female roles ascribed in early childhood (e.g., performing household tasks, caring for younger siblings and serving males) become more firmly established, and girls are seen as suitable for having sexual relations and conceiving children (Burchfield 2001). Burchfield’s study addressed the impact of puberty (and of menarche, as a visible sign of puberty) on girls’ attendance and retention in school, and its findings show that peers’ and adults’ judgmental attitudes intensify pubescent girls’ feelings of exclusion and inadequacy and lessen their desire to attend school. Absenteeism from school (13.9 percent) is one of the major effects of menstruation-related problems on the daily routines of adolescent girls (Dambhare, Wagh, and Dudhe 2012).

### **Low Levels of Transition to Secondary School**

A comparative study of girls’ and boys’ transition rates from primary education to general lower secondary education in 2008 in Sub-Saharan Africa showed that boys are more likely to make the transition from primary to secondary education than girls, but that those girls that make this transition are likely to do the same as or even better than boys (Lloyd and Young, 2009). Hence, inequality



against girls is boosted with the higher transition rate of boys (UNESCO 2011a). Furthermore, girls at the onset of puberty have a more complicated situation because of menstruation. In Kenya, the transition rate to secondary school for girls was lower than for boys by a consistent average of 3 percentage points between 1991 and 2004 (Otieno and Colclough 2009). The biggest jump in transition rates was recorded in 2005, which exceeded the 2004 figure by 11.2 percent. The transition rates, like other participation indices, disguise serious regional disparities within Kenya between girls and boys. Because fewer girls than boys make it to secondary school, they lose out on cumulative lifetime earnings in secondary education compared with their male counterparts.

A study conducted for various countries found that there is a significant opportunity cost due to girls' higher school dropout rates (UNICEF 2003; Chaaban 2008; Chaaban and Cunningham 2011). The loss of potential lifetime earnings dramatically decreases when students drop out of school. In fact, if girls in Kenya, Tanzania have been equivalent to, respectively, 20, 18, 14, and 13 percent of annual gross domestic product (GDP). Also, if their more educated sisters completed secondary school, they would contribute, respectively, 48, 32, 24, and 34 percent of annual GDP more to their economies over their lifetimes—equivalent to an increase in annual GDP growth rates of approximately 0.5 to 1 percent annually for the next 45 years.

### ***Low Levels of Learning Achievement***

Once in school, the aggregate data suggest that girls tend to do well in most regions. Repetition rates also suggest that boys generally must repeat a grade more than girls, except in Sub-Saharan Africa, where repetition rates are higher for girls, in part due to inadequate preparation (UNESCO 2011a, 71) and high absenteeism (Kelly 2000). However, the high repetition rates (above 10 percent, and more often between 15 and 25 percent) for both girls and boys in many Sub-Saharan African countries, a few Arab states, and Brazil indicate inefficiency, which may be a result of poor quality or institutional norms that resist progression (UNESCO 2004, 71). The trends regarding adolescent girls' participation in education reveal an array of needs. Although some adolescent girls participate in education, many do not participate at all. At the onset of puberty, adolescent girls' achievement rates decline as a result of absenteeism, and in some cases the result may be the result may be to drop out of school altogether.

Trends in gender differences in percentages of grade 6 pupils in the countries that belong to the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) reaching at least level 4 of reading in 2007 show a slightly higher proportion of girls (65.7 percent) reached at least the "reading for meaning" level than boys (61.1 percent) (SACMEQ 2011). Overall, girls' performance in reading is reading is about equal to that of boys or even better in early grades but starts deteriorating at grade

7 (age 12 onward), at the peak of puberty, (SACMEQ 2011). Girls' menstrual challenges provide an additional explanation for their low achievement based on the temporary morbidities that come with menstruation.

### ***Gender Inequality***

Beyond access and enrollment in education, the educational options that are available may not promote gender equality in terms of participation in school participation in school, which in turn affects future livelihood opportunities. Much work is left to be done to improve the quality of education for adolescent girls. Though gender balance in grade 6 participation has improved in most SACMEQ countries, reducing gender disparity in achievement is an area that has shown very limited progress. First of all, unlike in industrial countries, the direction and the magnitude of gender differences in SACMEQ countries' school systems did not change much between 2000 and 2007. In most countries where boys performed better in 2000, they also did so in 2007; and where girls performed better in 2000, their performance was also better in 2007. Overall, the gender disparity is about 5 percent between boys and girls in reading in grade 6 among the SACMEQ countries, which include Kenya (SACMEQ 2011).

Education is important for everyone, but it has special significance for girls. Girls who have been educated are likely to marry later, and to have smaller, healthier families. Education informs and empowers girls to delay pregnancy until they are physically and emotion-

ally mature. It helps girls to identify the health risk due to inadequate menstrual management, and thus to manage menstrual challenges successfully during menstruation and continue with their education to completion. Educated women can recognize the importance of health care and know how to seek it for themselves and their children. On the basis of these facts, this paper advocates educating and mentoring adolescent girls so that they can so that they can learn to successfully manage their menses and menstrual, educational and psycho-social challenges, as well as stay in school, concentrate in their studies, and increase their learning scores.

### ***Evidence on Menstruation as a Risk Factor***

In India, the education status of the early adolescent girl's age group (10–14 years) was found to be significantly associated with knowledge of adolescents regarding menstruation (Kumar and Srivastava 2011). The researchers say that existing social and cultural practices regarding menstruation, awareness levels, and behavioral changes are key challenges to schooling for the adolescent girl. Further results say that the onset of menses and puberty introduces restrictions into girls' lives that inhibit their abilities to pursue their education as well as future career opportunities (Sommer 2009). Sommer's study found that challenges such as the gender-discriminatory nature of the school's physical environment, coupled with period-induced pains, the unaffordability of sanitary napkins and pressure from academics, the home en-

vironment and peer dynamics that intrude on girls' comfort level while attending school during their monthly periods. Sommer also found a significant gap in girls' knowledge about the pragmatics of menstrual management and pubertal body change, which necessitated the development of a puberty book project called *Know & Grow* (Sommer 2009). The book has been implemented in Tanzania, and many of the comparative study's findings by Sommer were used to develop the book, whose aim was to explore girls' experiences of menstruation, puberty, and schooling and how the onset of menses might interrupt girls' abilities to participate successfully in school (Sommer 2009). Additionally, the book has since been included in the Tanzanian education curriculum. It is currently being adapted and simplified for the purpose of developing girls' puberty books in Ghana and Ethiopia in 2011 and 2012, respectively. However these puberty books' impact has yet to be evaluated.

### ***Plausible Transmission Mechanisms***

For adolescent girls, the stage of puberty is coupled with additional special challenges that are different from those of boys. During this stage, girls experience important bodily changes, especially in their reproductive system; reach mental maturity; and learn about and adapt to social life, including knowledge and skills gained through both education and work.

Approximately 50 percent of the world's female population acquires information from

their own experience about menstruation, despite how important good menstrual hygiene is for a woman to be able to function optimally during the menstrual period, as noted by Tjon (2007). Also noted in Tjon's study was the relation between menstrual hygiene and school dropout rates for girls from the higher forms of primary and secondary education, emphasizing that several of the UN Millennium Development Goals are unlikely to be achieved if a number of states and nonstate actors do not take immediate action to educate adolescents about menstrual hygiene. A study on a pre-menarcheal training given to 273 (55.2 percent) Nigerian school girls using a pretested, semistructured questionnaire to the age of 14.9 years (+ or - 1.7 years) found that mothers (74.7 percent) were the more common source of information on menstruation (Uzochukwu, Patricia, and Theophilus 2009; Gujarat, Oza, and Tiwari 2006). The study's findings further indicate that an inappropriate experience of menarche, the adverse effects of menstruation on schooling and social life and the use of unhygienic menstrual absorbents were more common among Nigerian girls who had no pre-menarcheal training than among those who did. Hence, the authors recommended further research on ways to promote menstrual education and hygiene practices among adolescent girls. Social and cultural factors play an important role in the transmission of menstrual knowledge, as found by a study that used audiotaped focus group and individual interviews with 73 African American, Mexican American, Arab American, and European American girls about their menstrual under-

standing (Orringer and Gahagan 2010). The researchers also found out that an incomplete understanding of menstruation may place girls at a risk for sexually transmitted diseases and unintended pregnancy.

### **Sickness**

The health problems faced by adolescent girls include irregular periods of menstruation; menstrual hygiene; reproductive tract infections; and anemia, which also can be viewed as a major nutritional problem (Kulkarni and Durge 2011). Cramps, backaches, headaches, fatigue, feelings of increased weight, abdominal bloating, breast heaviness, vomiting and joint pain are the most common premenstrual symptoms experienced by the adolescent girls (Dambhare, Wagh, and Dudhe 2012).

During menstruation, girls experience menstrual disorders, as reported by 21.1 percent in a study done in India of grades 11 and 12, in the age group 15 to 19 years (Nair et al. 2012). Another study undertaken in India explored the prevalence of reproductive health morbidities among unmarried adolescent girls and studied health-care-seeking behavior during periods of menstruation. Out of total 224 girls who had attained menarche, 146 (65.18 percent) were having one or more stillbirths or infants who died at birth (Kulkarni and Durge 2011). A high prevalence of dysmenorrhoea (cramps) (53.60 percent) was found among adolescent girls. 1 Backaches during menstruation were found to be a second common ailment among 93 girls (41.52 percent).

### **Shame**

Although menstruation is a natural, reproductive process, it bears a strong cultural taboo that commands that it not be seen, discussed, or even acknowledged at all (Kissling 1996b; Roberts 2004). This desire to keep menstruation secret is often paired with an attitude that menstruation is dirty and disgusting (Roberts 2004). Many girls report shame about being seen with a menstrual product or, worse yet, about bleeding through clothing, and some adolescent girls report that they are embarrassed simply by the fact that they menstruate (Schooler et al. 2005; Kissling 1996a; Roberts 2004). Menstrual shame leads to girls' feelings of worthlessness, and to individuals experiencing shame so severe that they often want to "sink into the floor and disappear" (Tangney 1996, 743). The resulting efforts to cope with avoidance have been linked specifically to adolescent risk taking, including not going back to school until the menstrual period is over and risky sexual behavior (Cooper et al. 2003), which often may end up in pregnancy and/or early marriage and dropping out of school.

### **School Factors**

A study that examined whether girls who make the transition to puberty earlier than their peers are likely to get a bad start in high school, such as entailing cumulative disadvantages long after puberty (and even adolescence) is completed, found that early pubertal timing affects girls' perceptions of self and is linked with girls' peer relationships (Cavanagh, Riegler-Crumb, and Crosnoe

2007). Furthermore, this study found that, as a consequence of its effects on girls' psychological well-being and relationships with peers, early pubertal timing is associated with higher levels of problem behaviors, such as drinking, smoking and sexual activity. Girls who reach puberty early require guidance on how to manage these challenges, maintain their attendance at school, and concentrate on their studies so that they will be able to graduate to post-primary education levels.

Another study of adolescent girls in Taiwan (Chang et al. 2009) examined the cultural and social restrictions associated with menstruation, including myths and misconceptions; girls' adaptability towards it; their reaction, and the reactions of their families; the realization of the importance of menstruation; and the changes that came into their life after menarche and their resistance to such changes. A qualitative research design was employed using focus groups of 20 female students between 10 and 12 years of age to explore their menarche and menstruation experiences. The results reflected the menstrual experience of girls with their changing bodies—including the "physical effects" of menarche and menstruation, such "emotional issues" as the psychological impact of menarche and menstruation and the "social dimensions" of menarche and menstruation—and led to the conclusion that young females can experience significant physical and emotional difficulties with menstruation, many of which stem from poor information and the reactions of their peer group to menstrual activity. The onset of menstruation is

therefore a significant milestone in a woman's life, and for female adolescents it is both a sharply defined biological event and also a traumatic and uncomfortable time that require guidance and support to manage its accompanying challenges, which often interfere with pubescent girls' schooling.

### ***Parental Concerns***

The onset of menstruation signals an end to girlhood—and therefore frequently also an end to education, as parents in many cultures begin to consider their daughters' marital prospects. These themes were explored by Kirk and Sommer (2005), who affirmed that parents may believe that it is no longer necessary or appropriate for a daughter to continue to attend school past puberty. For girls who missed opportunities for schooling when they were younger and are not yet enrolled in school at the age of puberty, menarche may serve as an additional barrier to initiating their education, and parents may regard schooling as even less important for post pubescent girls.

Koff and Rierdan (1995) studied 157 adolescent girls in grade 9 who had been menstruating for one to three years. These girls were asked to give their opinion on how they would prepare younger girls for the event and how they would advise parents to prepare their daughters. They rated their own experience of menarche (in terms of preparation, initial response, parents' roles, and sources of information) by answering four open-ended questions. Koff and Rierdan' findings show that the girls emphasized

the need for emotional support and for assurance that menstruation is normal and healthy—not bad, frightening or embarrassing. The girls stressed the pragmatics of menstrual hygiene and the subjective experience of menstruation (how it would actually feel), with only 17 percent indicating that knowing about the biology of menstruation would ease the transition.

### ***Underlying Menstruation-Related Problems***

#### ***A Lack of Information***

Ignorance at home and school about menstruating girls' needs and experiences can mean that the schooling experience is far from a positive one (Sommer 2009). An assessment of the effect of pre-menarcheal training on menstruation and hygiene practices of Nigerian school girls (with an average age of 15) revealed inappropriate experiences of menarche and a lack of timely information, along with the adverse effects of menstruation on schooling and social life (Uzochukwu, Patricia, and Theophilus 2009; Gujarat, Oza, and Tiwari 2006). An incomplete understanding of menstruation may place girls at risk for sexually transmitted diseases and unintended pregnancy (Orringer and Gahagan 2010). Educational status and the early adolescent's age group (10–14 years) were found to be significantly associated with the extent of adolescents' knowledge and beliefs regarding menstruation (Kumar and Srivastava 2011). The foregoing evidence necessitates further research on menstrual education and hygiene practices

that can enhance pubescent girls' knowledge of improved management of the situation.

#### ***A Lack of Sanitary Napkins / Sanitation Infrastructure***

A lack of adequate sanitary protection makes movement away from home physically impossible, and the onset of menses will inevitably have an impact on girls' access to education. For girls who are able to continue attending school, the widespread reality of poor sanitary facilities may be another hindrance. Poor sanitary facilities, a lack of sanitary supplies and educational practices can have a negative impact on girls in terms of school access and experience. The research evidence of Kirk and Sommer (2006) indicates that menstruating girls may hesitate to go up to the front of the class to write on the board, or to stand up, as is often required to answer teachers' questions, due to a fear of having an "accident" and staining their uniforms. Kirk and Sommer recommend exploring the possibilities for school-based programs to address some of these menstruation- or maturation-related concerns and to improve the situation for post pubescent girls.

#### ***Hygiene-Related Problems***

The use of unhygienic menstrual absorbents was more common in girls who had no pre-menarcheal training than those who did (Uzochukwu, Patricia, and Theophilus 2009; Gujarat, Oza, and Tiwari 2006). A study was conducted of the menstrual problems and menstrual hygiene practices of adolescent girls in grades 6 and 7 in Thiruvanan-

thapuram, India. Respondents were selected for the study using a multistage sampling procedure and were screened using a pre-tested self-evaluation questionnaire. The results identified 21.1 percent of the menstrual disorders common in adolescence that can have significant consequences for future reproductive health (Nair et al. 2012).

### ***Rural-to-Urban Migration***

Rural-to-urban migration is contributing to the breakdown of traditional family methods for conveying menstruation instruction (e.g., grandmothers and aunts giving advice to girls), leaving newly post pubescent girls to potentially suffer shame and dislocation without guidance on the meanings and management of menstruation (Sommer 2009). Sommer identifies a significant gap in girls' knowledge about the pragmatics of menstrual management and pubertal body change. This gap, according to this paper, necessitates the need for an intervention to test the impact of menstrual mentoring toward building high self-esteem at the onset of menstruation, an important stage in life for adolescent girls.

### ***Potential Solutions from the Research Evidence***

According to Lloyd and Young (2009), the alternative approaches to addressing the educational needs of adolescent girls that have been employed previously include scholarships and stipends; the recruitment and/or training of female teachers, parateachers,

and other educators; transportation and boarding; safety policies and training; and codes of conduct. The authors also note that those approaches that have been successful include scholarships and the training of female teachers. However, mentoring, tutoring and peer support are seen to be promising but have not yet been proven successful among adolescent girls in primary school.

### ***Mentoring***

A natural mentoring relationship was found to have a protective indirect influence on risk behaviors like substance use and violence through its positive association with the school attachment mediator (Black et al. 2010). This was revealed in testing a mediation model, which hypothesized that school attachment, mediated the longitudinal association between school-based natural mentoring relationships and risk behaviors, with a sample made up of youth with an average age of 14.8 years and almost equal proportions of females and males (53 percent) from various ethnic backgrounds. Mentoring is reported in research to be a powerful intervention for supporting people in various academic, employment and community settings and to foster personal bonds. A mentoring relationship also provides a safe space where young people can express their feelings about the academic, behavioral, career and personal issues that they experience during adolescence and can learn to manage them successfully to achieve a smooth transition to post pubescent stage (Leake, Burgstahler, and Izzo 2011).

### ***The Schema Model***

Schemas are frameworks of concepts and actions that are derived from experience and reflect a person's construal of an object or event (Hastie 1981). Markus extended the idea of cognitive schemas to the social domain and argued that to process the vast array of self-relevant stimuli routinely, people construct knowledge structures about the self, which he referred to as self-schemas. This schema model is relevant to the proposed study because it will provide mentoring relationships as stimuli that will enable girls to identify with a positive self that may drive their motivation for higher future achievement. Showers's (1992) study showed that how information about the self is organized in memory also plays an important role in shaping self-esteem.

### ***Subsidized Sanitary Products***

The topic of menstruation as one of the contributors to low school attendance has received minimal attention. Girls in developing countries, on average, miss about 21 percent of school days because of their menstrual periods (Scott et al. 2010). The researcher investigated whether the provision of sanitary products in Ghana may offer a faster, more direct, and less expensive means of raising school attendance and academic performance among girls than is seen from the more common community engagement programs aimed at retaining girls in school. It was found that the provision of sanitary napkins and an education module to the girls about menstruation and hygiene reduced absenteeism from 23 to 9 percent.

However, separate research conducted in Nepal also revealed that girls miss about 0.4 days of school in a 180-day school year due to their periods (Thornton and Oster 2010). Randomized access to a menstrual cup tested in Nepal by girls revealed no significant difference in absenteeism between the girls who used the cup and those who did not. Diversity in culture and environment were the possible explanations for the differences in results in similar studies conducted in Ghana and Nepal.

### ***The Kenyan Story of Menstruation and Adolescent Education***

This section explores Kenyan pubescent girls' situation and discusses various research efforts that have been conducted on girls' menstrual management plight. It ends with a series of broad, overarching recommendations for further work on this topic, including a call for urgent research, policy and programming on this critical issue for girls. For this reason, questions of how primary school girls in rural Kenya negotiate their menstrual periods in the school setting and the barriers they face in the process of menstrual management are explored.

A study by Ogeng-o, Obimbo, and Ogeng-o (2011) on the mean menarcheal age among primary school girls in Kenya finds the age to be 12.5 to 12.8 years, with a peak at 12 to 14 years and about 10.8 percent attaining menarche before the age of 11 years, indicating a decrease in the age at which puberty

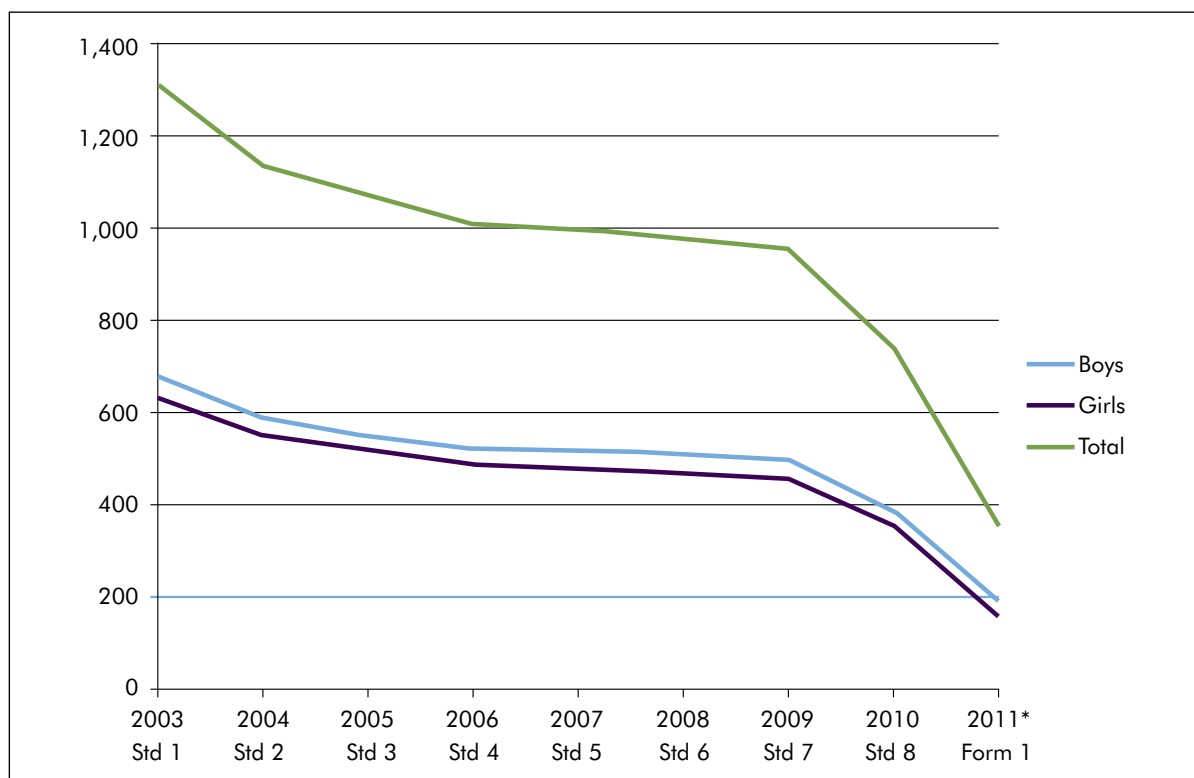


begins. The study subsequently recommends reproductive health education and follow-up for complications that arise as a result of early menarche. Therefore, puberty is a delicate situation that requires attention and support, and Black and others (2010) recommend mentoring, saying that mentoring relationships may influence adolescents' development by protecting them against risky behaviors, especially in the school context.

A study by McMahon and others (2011) conducted in Kenya's Nyanza Province examined the knowledge and practices related to menstruation and menstrual management among 48 primary school girls age 12 to 16 years. Their findings indicate that girls asso-

ciate feelings of fear, shame, distraction and confusion with menstruation. The girls most frequently said that they folded, bunched up or sewed cloth, including cloth from shirts or dresses, scraps of old cloth, or strips from an old blanket. Further evidence from the same research points to the need for approaches that would give pubescent girls knowledge of how to manage menstruation challenges. The levels of teenage childbearing are highest in Nyanza (27 percent) and Coast (26 percent) provinces but lowest in Central Province (10 percent). Hence menstruation difficulties are a complication for girls in Nyanza, where this paper proposes an intervention to guide them on the onset of puberty.

FIGURE 1. CHARTING GRADE PROGRESSION: ENROLLMENT FROM GRADE 1 IN 2003 TO GRADE 9-FORM 1 IN KENYA, 2010



Source: EMIS 2010.

Figure 1 shows high enrollment of both boys and girls at grade one. For example, there was very high enrollment in 2003, but by 2010, it had gone down by more than half for both boys and girls. Overall, the progression of girls is much lower than that of boys in comparison with total enrollment.

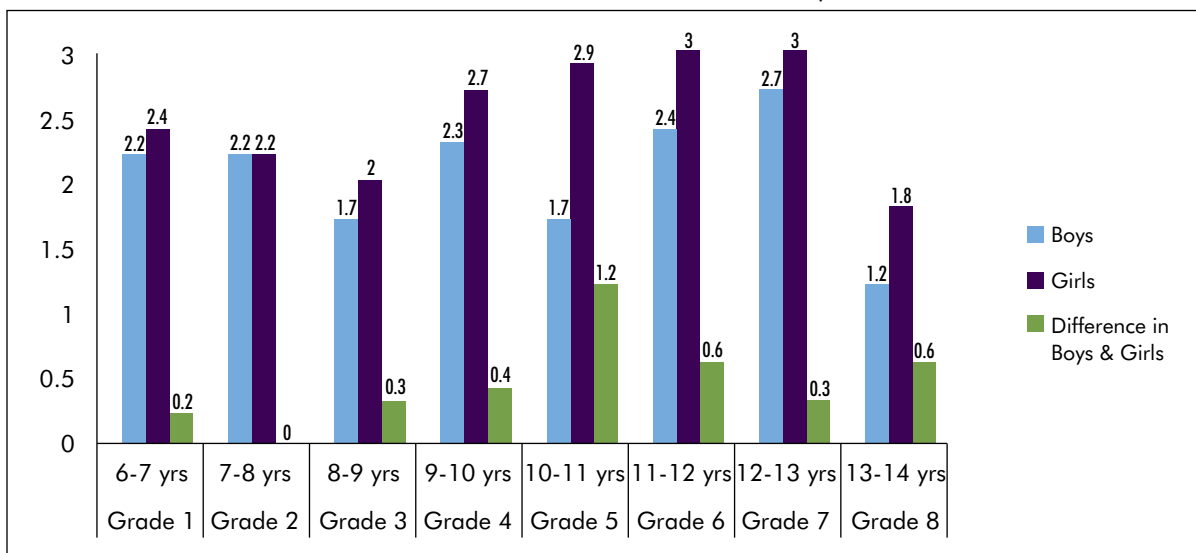
Figure 1 provides another insight that school enrollment decreases by increase in grade for both boys and girls (EMIS 2010); about 1.3 million girls and boys enrolled in grade 1 in 2003, and an estimated 700,000 reached grade 8, while a small number, 380,000, progressed to Form 1. Out of those who reached grade 8, an estimated 410,000 were boys, with only 290,000 girls. Among those who made it to form 200,000 were boys and 180,000 were girls. The scenario points further toward high dropout rates among girls, especially from grade 7 where their curve is on a downward slope and becomes steeper.

The dropout trend is the same for boys but for girls is much lower.

Kenyan adolescent girls miss approximately 3.5 learning days per month during their menstruation periods due to a lack of funds to purchase sanitary pads (Muganda-Onyando and Omondi 2008). Cumulative absenteeism because of menstruation may lead to dropping out. The dropout rate is significant at the onset of puberty among girls, and thus 2.9 percent of girls dropped out compared with 1.7 percent of boys in grade 5 in Kenya (IDEA 2012). Figure 2 provides a detailed picture of the current dropout rate by gender from grades 1 to 8.

According to Figure 2, girls' dropout is slightly higher than that of boys with only 0.2 percent difference at the onset of primary education. However, at grade 5—about 10-12 years, the girls' dropout rate increases drastically

FIGURE 2. DROPOUT RATE IN PRIMARY SCHOOL BY GENDER AND GRADE IN KENYA, 2009–11



Source: IDEA 2012

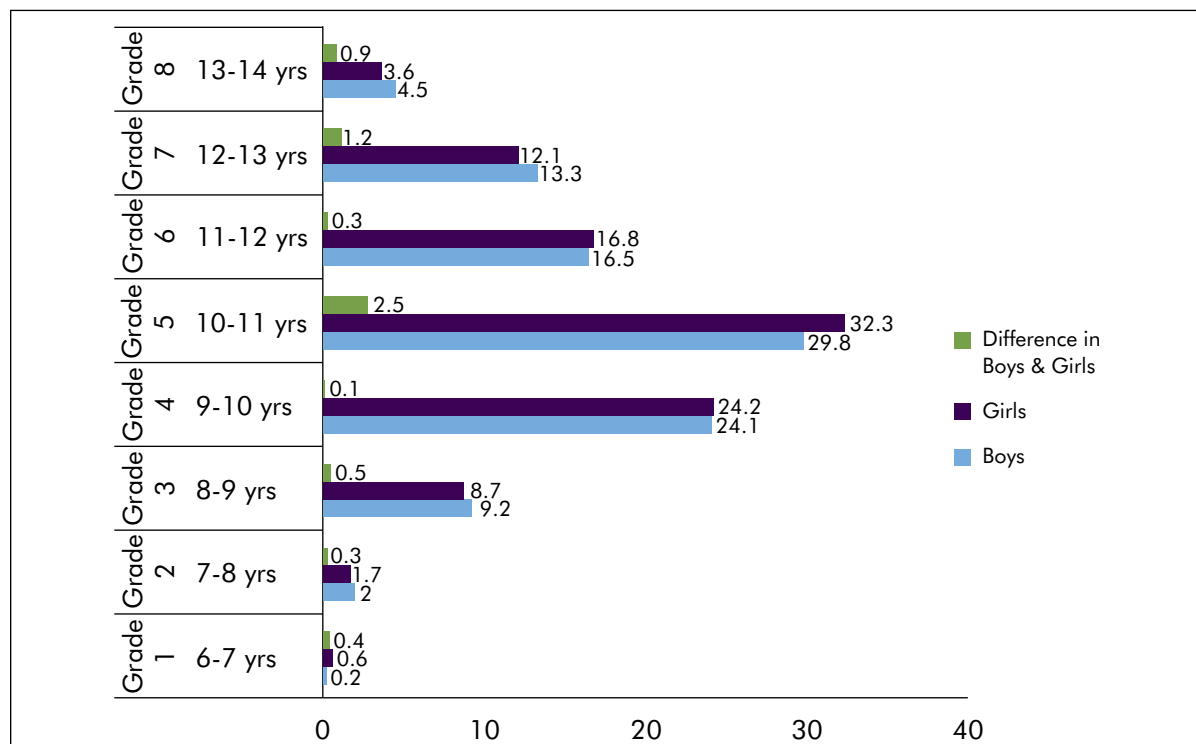
to 1.2 percent. The increase points further to implications of menstruation periods at this stage. Possible reasons for dropping out range from pregnancy and marriage to poor performance.

The government of Kenya mainstreamed an affirmative policy framework in its education programs to deal with inequalities in education through Kenya Education Sector Support Programme, 2005-2010 (Republic of Kenya 2005). The Kenyan government, subsequently allocated Ksh. 300 million in the 2011-12 financial budget for supplying sanitary napkins to all public schools (Otieno 2011). However, the program has yet to be implemented—the supply has yet to be made to schools, and its adequacy and sustainability also have yet to

be established. Figure 1 also shows that despite high enrollment in primary education, there are implications for progression to secondary school, which declines along with increases in age and grade. Where are the girls?

Figure 3 shows learning achievement between girls and boys and how girls' situation at the onset of puberty is made worse by menstruation between ages 11-12. It further indicates that at grade 5, girls' performance is significantly higher than that of boys by 2.5 percent and levels up in the next grade, while at grade 7 the situation worsens for girls and continues up to grade 8. However, comparing dropout rates for grade 5 in Figure 2 and the achievement level at the same grade for

FIGURE 3. PERCENTAGE OF PUPILS REACHING THE READING COMPETENCE LEVEL IN KENYA



Source: SACMEQ 2011

girls in Figure 3, the story is clear: At grade 6, the complications of menstruation is taking effect, absenteeism increases, and performance deteriorates. This is a significant indicator of the impact of menstrual challenges coupled with other educational and psychosocial challenges on schooling in terms of participation rates and achievement among pubescent girls in Kenya.

During menarche, girls require guidance on what to expect of menstruation and how to manage it in order to make a smooth transition to adulthood as well as how to acquire the ability to still continue with school at the same time. This paper assumes that if a girl is in school, there is more protection from unwanted sexual advances. The supply of sanitary napkins works well if the girl understands how to use it, leading to less likelihood of being embarrassed by clothing stains and leakage and staying away from school. Better information on the monthly cycle will help girls to gain confidence and appreciate puberty as they can any other developmental process that should not interfere with schooling. Hence mentoring experience among the girls would result in positive academic results and reduce negative behaviors, promoting self-esteem and favorable social attitudes.

Delaying pregnancies and postponing early marriages to a more healthy age are not only desirable from a general reproductive health perspective but may also lead to more economic and social empowerment for young women, who thus can continue their educations or secure a more lucrative job. Hence,

it is crucial to find an intervention that will support adolescent girls' staying in school so they can progress to higher levels, and helping them to increase their test scores to successfully complete primary education.

## **THE PROPOSED INTERVENTION**

### ***Rationale***

This paper proposes to evaluate the impact of mentoring among young adolescent girls age (10–15 years) at the onset of menstruation to determine whether being able to manage menstruation, psychosocial and educational challenges can have a positive impact on their academic performance. Adequate knowledge of menarche and menstruation is necessary, as previous studies have recommended strategies encouraging adolescent girls to remove the fear of the unknown and face future socio-economic tasks with confidence, a reason why mentoring is a promising intervention.

Mentoring is a powerful intervention for supporting people in various academic, employment, and community settings, to foster personal bonds and provide a safe space where young people can express their feelings about the academic, behavioral, career and personal issues that they experience during adolescence and thus learn to manage them successfully to make a smooth transition (Leake, Burgstahler, and Izzo 2011). Menstrual mentoring therefore is a promising intervention that this paper proposes for improving learning outcomes among pubescent girls in Kenya.

The schema model, as described above, addresses both the structural and functional properties of a person's self-concept; it provides a means of looking at how properties of current and future-oriented conceptions of the self affect behavior.<sup>2</sup> Once established in memory, schemas function as organizing frameworks that enable a person to (1) selectively focus on a single stimulus; (2) draw inferences and attribute meaning to the stimulus; (3) store relevant information in memory for later use; and (4) plan and execute a coherent, purposeful response (Cantor 1990). People are more likely to direct their attention to information that is consistent with an established self-concept, and to process that information more quickly (Bargh 1982; Kuiper and Rogers 1979; Markus 1977; Rogers, Kuiper, and Kirker 1977). In addition, people have available in memory not only conceptions of who they are in the present but also images of who they were in the past and visions of who they might become in the future. These future-oriented representations, referred to as possible selves, are conceptions of the self that one expects, fears, wishes for and feels ought to be in the future (Markus and Nurius 1986; Ogilvie 1987).

A number of self-report questionnaires and card-sorting exercises with a collection of self-descriptors printed on cards and girls asked to sort the cards into meaningful groupings will be used to evaluate self-esteem. In this study, girls will be given a predetermined collection of self-descriptors printed on cards and asked to sort the cards into meaningful groupings (Linville 1987; Showers 1992). Stein (1994) developed

a procedure based on Zajonc's (1960) card-sorting task whereby subjects are first asked to generate self-descriptors and then indicate the patterns of interdependence among them.

Individuals who have positive conceptions of themselves in behavioral domains that they value are more likely to have high self-esteem than those who have positive self-conceptions in domains of little personal significance (Markus and Nurius 1986). This study envisages the mentoring of pubescent girls to enable them to develop positive conceptions about themselves at the onset of menstruation and thus to be able to successfully manage the menstrual, educational and psychosocial challenges that inhibit them from excelling in school. The study assumes that mentoring will motivate adolescent girls to identify their self-worth, concentrate in studies and subsequently increase scores.

Focusing on properties of the way information about the self is organized in memory offers new possibilities for developing intervention strategies designed to increase self-esteem (Stein and Markus 1990). As Figure 3 shows, people set goals of what they want in their minds and then identify activities that will help them achieve the goals—those that they know through observation self-judgment or experience works and hence makes a decision based on it.

We propose a two year intervention on enhanced mentoring of Kenyan rural girls in Homabay County. This area is one of the poorest in the region, with 50 percent poverty

rate including low education levels (KDHS, 2008/9). The targeted study girls are between ages 10-15 in public primary schools. The mentoring will be on menstrual, educational and psycho-social challenges.

We will:

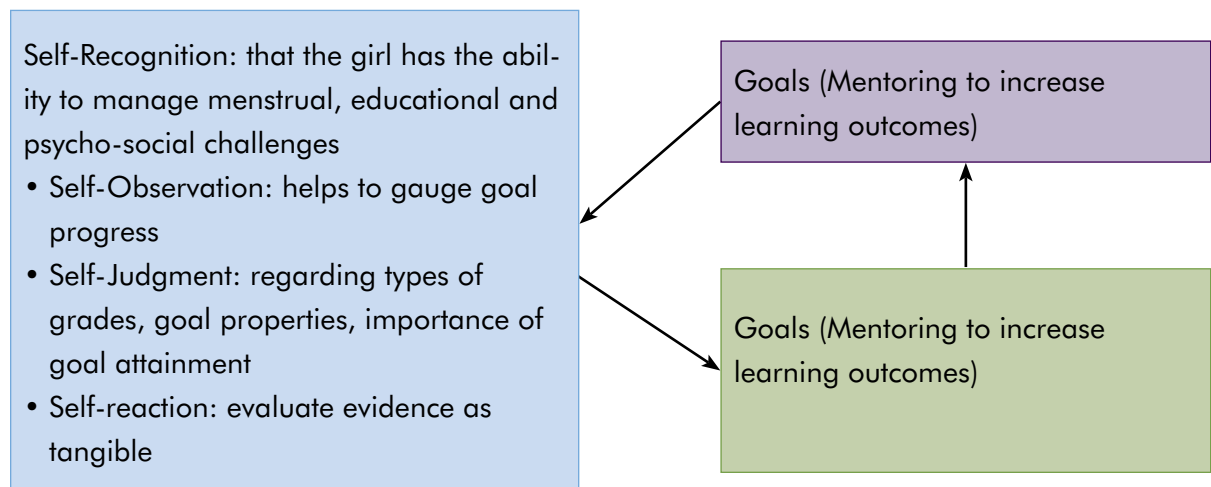
1. Set up a mentoring program for rural girls around the changes which take place in their bodies as adolescents, to give them the necessary information and help raise their self-esteem/increasing positive self;
2. Provide access to modern sanitary products;
3. Provide the needed information on menstrual cycle and the risks of sexual relationships;
4. Provide information on the importance of attaining high scores, including good study habits and benefits of education; and,
5. Provide support on psycho-social challenges such as consequences of early pregnancy/marriage and of HIV/AIDS.

Figure 4 also shows the relationship between self-concept and stimuli-mentoring, and assumes that girls will respond positively to the mentoring program, and thus they will progress from where they are at the time of study to self-efficacy and being able to sustain motivation. Proximal) goals—like knowing how to manage menstrual, educational and psychosocial challenges and good feelings about self—are greater sources of motivation than distant goals. It is easier to gauge progress toward a shorter-term goal, and the perception of progress raises self-efficacy.

### **Randomized Approach**

Randomized trial is relevant for this study because it will show the outcome of mentoring sometime after the program has been introduced and the outcome at that same point in time had the program not been introduced (“counterfactual”)—state of the world that adolescent girls would have experienced in the absence of the program (if they had not-participated).

FIGURE 4. CONCEPTUAL FRAMEWORK: INTERFACE OF SELF-CONCEPT/SCHEMA ATTRIBUTES



The use of randomized field experiments in this study will allow scientific measurement of the impact of mentoring on learning outcomes among adolescent girls aged 10 to 15 years. The study will be randomized by school. By randomly assigning girls either to the treatment group that receives the mentoring or to the control group that does not receive mentoring, the study will be able to measure the effect of the mentoring program on learning outcomes, regardless of other factors that may lead to changes in girls' scores at the end of two years.

### **Hypothesis**

The hypothesis ( $H_0$ ) states that there is a significant difference in learning scores, attendance, self-esteem and retention between pubescent girls mentored on how to manage their menstrual, educational and psychosocial challenges than those not mentored. Using a sample of 1000 and a grade deviation of 0.10, the power of statistical test therefore will be:

$$n = 1000; a = 0.10; H_0: \mu = 0 \text{ vs. } \mu > 0.$$

$$z = \frac{\bar{x} - 0}{0.10/\sqrt{1000}} = \frac{\bar{x}}{0.003162} \geq 1.645$$

$$\bar{x} \geq 1.645 \times 0.003162 = 0.0052$$

Under alternative hypothesis  $\mu = 0.0095$

$$= P[\bar{x} \geq 0.0052 \mid \mu = 0.0095]$$

$$= P\left[z \geq \frac{0.0052 - 0.0095}{0.003162}\right]$$

$$= P[z > -1.36]$$

$$= 0.91$$

Hence, the power of the statistical test is established at 91 percent. One thousand

pubescent girls will make up the sample size, chosen from 20 public primary schools (all mixed—boys and girls, split in half between treatment (500) and control (500) groups).

### **Study Location**

The study will be conducted in Homabay County in the former Nyanza Province, which lies on the shores of Lake Victoria in Western Kenya. It has a population of 958,791 people (KNBS and ICF Macro 2010; KDHS 2008–9). Household economies in the county are supported by fishing and farming. Kenya's drought seasons frequently put an increased financial strain on families in this region because they rely heavily on subsistence agriculture. According to the KDHS survey, primary school enrollment in Homabay County stands at 283,162 (both boys and girls) and the poverty level is 50.2 percent (KDHS 2008-9). Reading achievement levels are low, according to UWEZO findings that show 3 out of 4 children in class 3 cannot read class 2 English story and that more than 4 out 10 children are not attending school daily on UWEZO visits (UWEZO 2011). Nyanza Province, had the country's highest overall HIV prevalence, at 15 percent among adults age 15 to 49, with 16.0 percent of women and 11.4 percent of men infected (KDHS 2008–9). The surveys also show that about 13.4 percent of females have never received education and that of those who enroll in school, 49.3 percent do not complete primary education.

## ***Proposed Impact Evaluation: Design and Methodology***

We propose the implementation of a randomized trial at the school level. One thousand pupils will be randomly assigned to a Treatment and a Control group; a baseline survey will be conducted for each group; then the proposed mentoring program will be rolled out in the Treatment group; after one year, and then after the second year, follow-up surveys will be conducted, and finally evaluation on the differences in attendance, retention, self-esteem and performance between the control and treatment group will be studied. The evaluation design will be based on the following outline:

### ***Baseline: Data for Both Treatment (G1) and Control (G2) Groups***

Baseline survey will consist of data from both the treatment and control group at the beginning of the study prior to the roll out of the mentoring program. Historical tracking of both the treatment group (G1) and the control group (G2) will be conducted for girls who at the time of the study will be 10 to 15 years of age and have started receiving their menstrual period, irrespective of grade. This is to establish who is in and out of school by age, attendance, performance, repetition, retention and self-esteem and also who has previously been mentored on menstrual, educational and psychosocial challenges. Any school or girl participating in any program sponsored by a nongovernmental organization will not be selected for the study.

The study will make an effort to track girls who have already dropped out of school but who would have been part of the study to find out the reasons why, and whether they anticipate going back to school. Figure 5 shows types of data on the background characteristics of girls to participate in the study and from what specific respondent groups they will be collected at baseline. The same type of data will also be collected at the end line of the program based on Figure 5 outline.

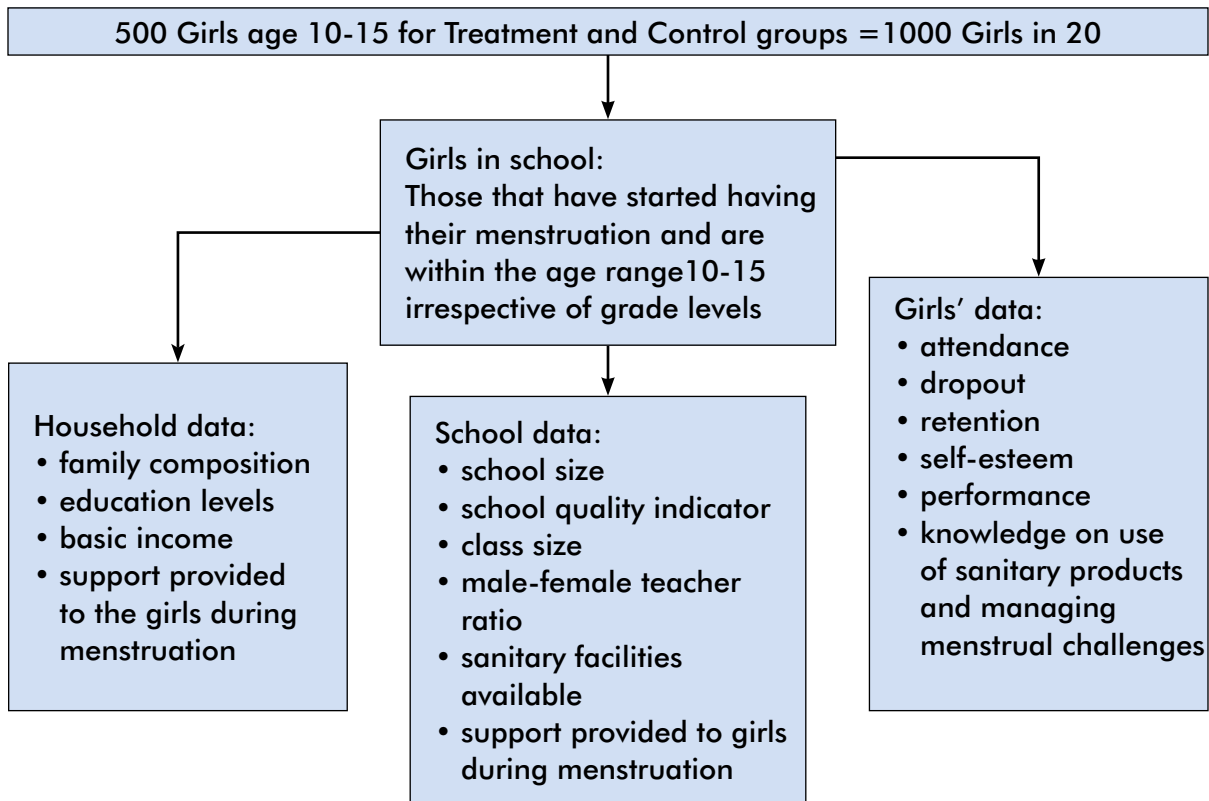
### ***In-Depth Interviews***

In-depth interviews will be conducted with the girls to determine their reasons for missing school and including assessment of their baseline self-esteem (using self-esteem descriptor words), menstrual, educational and psychosocial challenges using the schema model. Menstrual challenges will include hygiene, use of a sanitary napkin, premenstrual symptoms and menstruation pains. Educational challenges will be on study habits, academic performance of self and peers, including perceptions on individual, other peers' academic ability, progress, benefits of going to school and completing primary, secondary and university-level education for socio-economic roles in society. Psychosocial challenges will include interaction with the environment, sex relationships at the onset of menstruation, the consequences of early pregnancy and marriage as well as the benefits of delaying them, dropout from school, and diseases like HIV/AIDS.

In-depth interviews will also be conducted with teachers on support provided in school for menstruating girls to manage menstrual challenges.



FIGURE 5. GIRLS' BACKGROUND INFORMATION



Focus group discussions will be conducted with mothers on how they prepare their daughters for menstruation, including whether they discuss and provide advice on the consequences of early pregnancy and/or marriage and dropping out of school, as well as advice on good study habits.

Data from G1 and G2 will be analyzed separately, and the differences will be recorded. Differences in G1 and G2 will be difference 1 (D1).

**Treatment**

Girls in the treatment group will be mentored. Group mentoring for girls will be conducted after school in the evening in study schools. Follow-up mentoring will be done by

mentors during menstruation (group mentoring) once a week in the study schools and advice will be given on managing the three issues respectively (menstrual, educational and psychosocial). Mentors will be randomly assigned to mentees. Distribution of sanitary napkins to the girls will be done monthly. Mentors will be senior girls who have completed secondary education and university graduates who are high achievers. The mentors will be trained on relevant skills how to mentor the pubescent girls on menstrual, educational and psychosocial challenges.

**Evaluation**

Assessments will be conducted three times: the baseline at the beginning of the first year,

then at the end of year one and again at the end of year two. However, record tallies of the girls in the study for both G1 and G2 groups will be conducted to check girls' participation by trimester. This is important to check those girls who move in and out of the program with respect to school attendance and participation on the program.

Document analysis will be conducted to collect data on attendance, performance, repetition and retention for G1 and G2. In-depth interviews will be conducted with girls to evaluate their self-esteem and experience with the mentoring program. There will also be focus group discussions to follow up with the mothers on the impact of mentoring on their daughters in terms of interest in schooling. Overall, the endline data will be a replica of the baseline. We propose to analyze differences in changes overtime between the baseline and the follow-up surveys. An analysis of difference-in-differences =  $(D1 - D2)$  will be conducted to find out the impact of mentoring on learning scores, school attendance, self-esteem and retention for both G1 and G2. Learning,  $L$ , will be determined according to the functions,  $F$ ; of the girls' household characteristics,  $HH$ ; School characteristics,  $S$ ; girl characteristics,  $G$ ; and treatment,  $T$ ; thus,  $L = F(HH, S, G, T)$ . The difference in the score will be determined according to whether the girl is in or out of treatment.

Figure 5 shows the expected impact of the proposed mentoring program. This is expected to be achieved by designing the study carefully; randomly assigning girls to treatment

or control; collecting baseline data; verifying that assignment looks random; monitoring process so that integrity of experiment is not compromised; collecting follow-up data for both the treatment and control groups; estimating mentoring impacts by comparing mean outcomes of treatment group versus the mean outcomes of control group and assessing whether program impacts are statistically and practically significant.

The proposed intervention will be important in the following ways:

1. Increased transition to post primary education, with all well-known benefits that this will entail;
2. Increased effectiveness of the education sector To enable development by providing information of where to invest more in girl education;
3. This is not only an education issue or a health issue, but an economic issue as well (a recent study shows that investing in girls' education could increase growth in GDP by 1.2-1.5 percent per year (World Bank 2011). Figure 6 provides an assumption of the expected impact after the mentoring program.

## **Recommendations**

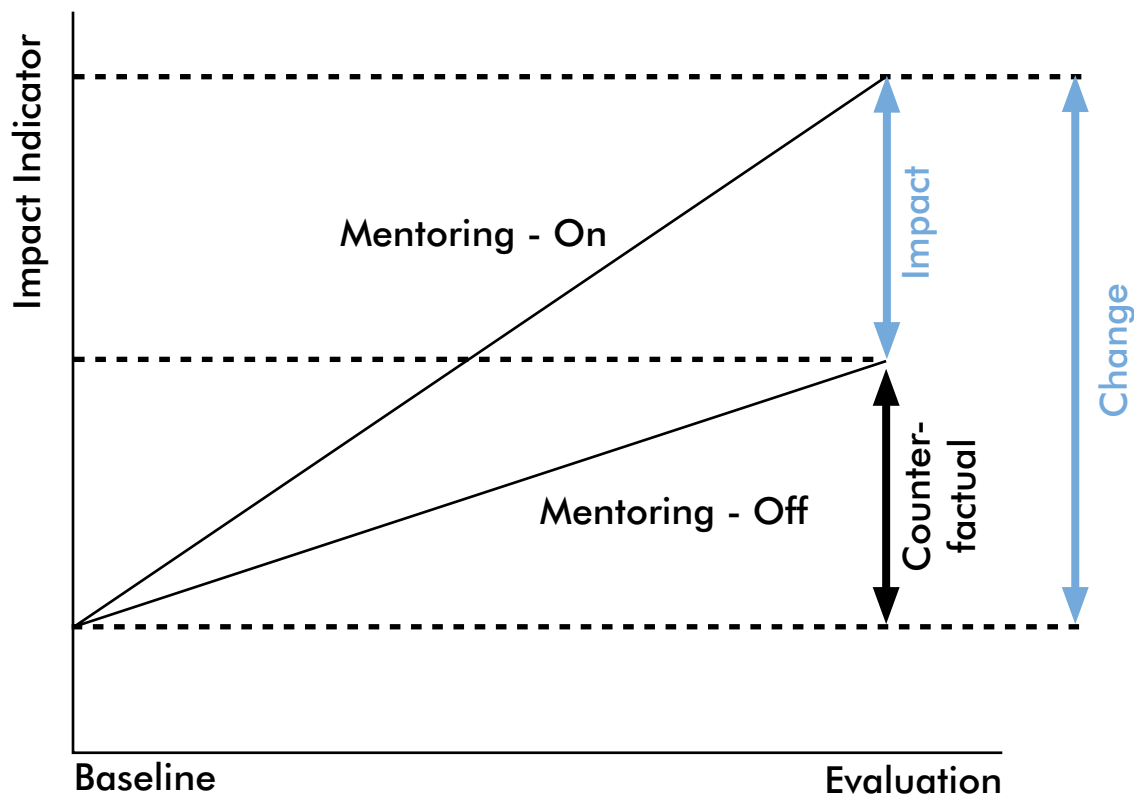
The study will assess whether mentoring pubescent girls on their menstrual, educational and psychosocial challenges will improve learning outcomes. This research would include interventions that seek to help the girls

improve themselves, including their self-esteem and motivation to gain the benefits of education and good academic performance. It will also recognize the risks and consequences of early pregnancy and the adverse effects of being infected by HIV/AIDS. Responses from the literature review also support a conceptualization of menstrual education as a long-term, continuous process, beginning well before menarche and continuing long after (Koff and Rierdan 1995).

The research will also include an investigation of governments' role in supporting adolescent girls' transition from primary to secondary education and beyond to find out whether there

are any complementary policy proposals. Although the number of pupils missing school due to menstruation is evident both in urban and rural contexts, it appears to be higher in rural settings. It is evident that girls use old clothes and old newspapers because they cannot afford to buy modern sanitary products (Kirk and Sommer 2006). Further research is also necessary on mothers'/guardians' role in preparing and supporting their daughters at menarche. Koff and Rierdan's (1995) study results show that girls saw mothers as critically important but often unable to meet their needs. Many girls felt uncomfortable talking about menstruation with their fathers, wanting them to be supportive but silent.

FIGURE 6. EXPECTED IMPACT OF THE MENTORING PROGRAM ON LEARNING OUTCOME



Source: IPA and J-PAL Training, 2012

## CONCLUSION

Early pubertal timing has three main consequences. First, it affects girls' perceptions of self, physically putting them out of step with their peers at a developmental moment when both physical (body) and social comparisons increase in significance. Second, it is linked to girls' relationships with their peers. Third, it brings new life tasks with which the girl is unfamiliar; for example, the onset of menses interrupts her routine, a change that requires guidance and mentoring. Girls during menarche require guidance on what to expect of menstruation and how to manage it so as

to make a smooth transition to adulthood as well as to acquire the ability to continue with school. Little has been done in mentoring pubescent girls on menarche and menstruation in Sub-Saharan Africa, and particularly in Kenya. This lack of support continues to increase girls' absenteeism, early marriages, unwanted pregnancies, poor performance and dropout rates from primary school. A variety of policy measures need to be undertaken at the school, community, and national levels to alleviate these problems.

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## ENDNOTES

<sup>1</sup> Dysmenorrhea is the occurrence of painful cramps during menstruation. More than half of all girls and women suffer from dysmenorrhea.

<sup>2</sup> Beliefs and attitudes people have about themselves. These beliefs are used to guide and organize information processing, especially when the information is significant to the self. Self-schemas are important to a person's overall self-concept.

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