

The girls have needs

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Individual and environmental determinants of hormonal contraceptive use among adolescent girls in the Kintampo Communities of Ghana

Ellen Abrafi Boamah Kaali



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Colophon

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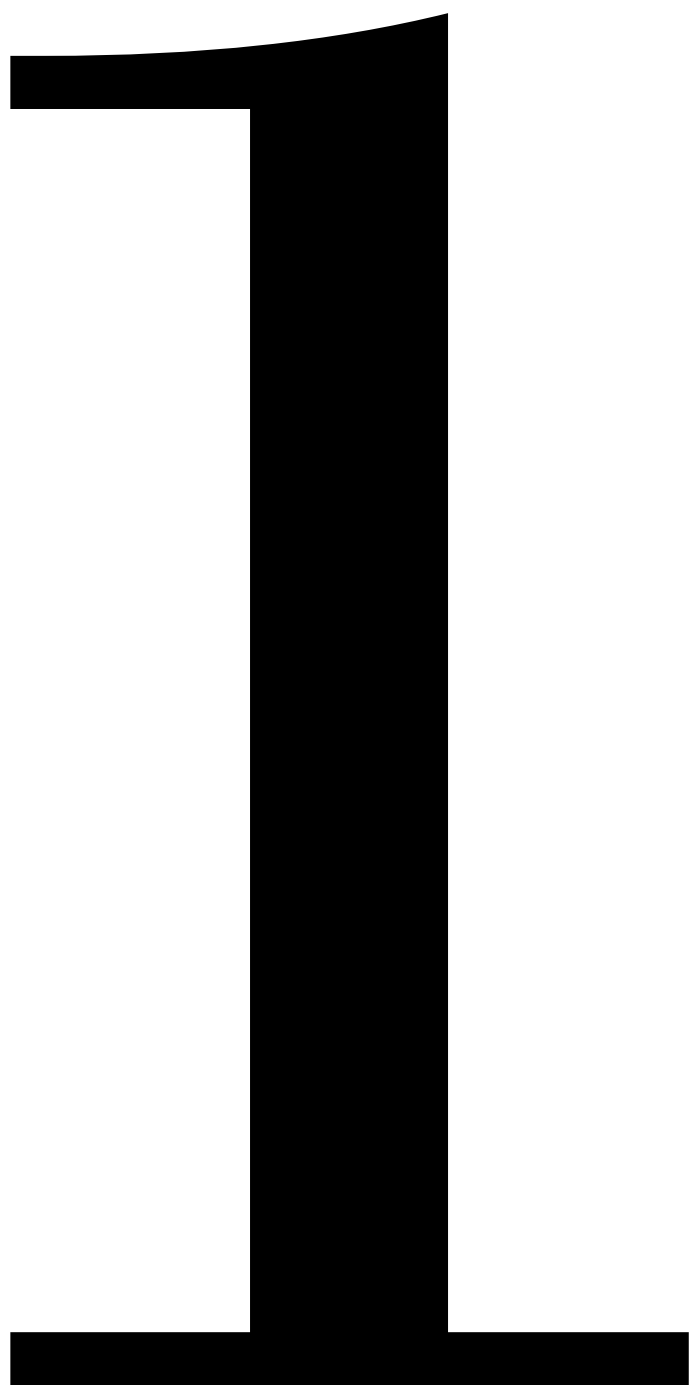
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Chapter 1

General Introduction

Adolescence is the phase of life from age 10 to 19 years. This distinctive stage in human growth and development has the potential to chart the course of one's life in a positive or negative direction. It presents a unique opportunity and sets the stage for a healthy life and good socio-economic prospects for the future (WHO, 2022). The rapid change in adolescents' physical, cognitive, and psychosocial development at this stage highly impacts their feelings, thoughts, decision-making, and relationship with the environment (Skinner et al., 2019; WHO, 2022; Zucker and Brown, 2019). At this stage, adolescents are curious to explore the world around them. Their curiosity and high tendencies toward adventure can be rewarding and fulfilling. However, poorly coordinated can result in regrettable consequences such as illnesses, injuries, and death (WHO, 2022; Zucker and Brown, 2019). One of the leading health risks in adolescence is the risk of early and unplanned pregnancy resulting from sexual behaviours practiced by them. Being pregnant and being a teenage mother exposes both mother and child and the family to several health, social and economic risks (Chung et al., 2018; Maness et al., 2016; Marvin-Dowle et al., 2018; Siniša, 2018) as detailed below.

The adverse effects of teenage pregnancy

Complications during pregnancy and delivery are the leading cause of death among adolescent girls aged 15 to 19 years globally (Kassa, 2021; Guttmacher Institute 2020, 2021; WHO, 2022). In addition, most of the time, teenage pregnant girls face stigmatizing or other negative responses from their environment, including their family, friends, partners as well as the healthcare setting (Anima et al., 2022; Aparicio et al., 2018; Kotoh et al., 2022; Kumar et al., 2018; WHO, 2020a). Therefore, they tend to go for unsafe abortions that may lead to infections, trauma of the cervix or uterus, hemorrhage, uterine perforation, bowel injuries, damage to genital tracts and internal organs, or even death (Aronoff and Marrasso, 2022; WHO, 2019). Further, most adolescent girls who give birth tend to forgo their education, which limits their full potential and consequently results in inadequate employment opportunities and hinders their contribution to personal and national development (Manzi et al., 2018; Serván-Mori et al., 2022). This may negatively impact the adolescents' lives and families by placing economic hardships on them (Astuti et al., 2020; Febrianti et al., 2022). Children born to teenage mothers have elevated risks of childhood morbidities and mortalities (Karataşlı et al., 2019; Kassa et al., 2021; Siniša, 2018), neglect, abuse, failure in school, foster care and are likely to turn out as low achievers in life (Aizer et al., 2020; Anima et al., 2022; Ghose and Lopamudra, 2017). The issue of teenage pregnancy is a public health, economic, and social burden and should be tackled by all stakeholders.

The global burden of teenage pregnancy and its magnitude in Ghana and Kintampo

Annually, about 21 million female adolescents aged 15-19 years become pregnant in low-and- middle-income countries (Guttmacher Institute, 2020; WHO, 2020). In addition, some 777,000 girls below the age of 15 years give birth yearly in developing countries (Guttmacher Institute, 2020; UNFPA, 2016; WHO, 2020a). About half (10 million) of all pregnancies occurring among adolescents are unintended, and many (5.7 million) result in abortions, mostly under unsafe conditions (Guttmacher Institute, 2020). The most significant proportion of teenage pregnancies occur among girls in marginalized communities characterised by poverty, low levels of education, and limited job opportunities (WHO, 2020).

Adolescent childbearing in Ghana is a substantial public health, economic and social problem due to a persistently high level of teenage pregnancy (GSS et al., 2018). The 2017 Ghana Maternal Health Survey reported initiation of childbearing among 14.4% of adolescent girls aged 15 to 19 years, similarly recorded during the 2014 Ghana Demographic and Health Survey (GSS et al., 2015, 2018). About 12% of girls 15 to 19 years experienced a live birth, and 3% were still pregnant with their first child in 2017 (GSS et al., 2018). Adolescent pregnancy was significantly high among 19-year-old girls at 32% compared to 15-year-old girls at 3%. It was also more common (18%) among girls who live in rural areas compared to those who live in urban areas 11%. Furthermore, adolescent pregnancy was high among girls with no education (34.7%) and those from poor households (21%), compared to their counterparts who have secondary-level education (4.2%) and those from wealthy households (2.7%).

In the study area in Kintampo, Ghana, 30% (n=315) of sexually active adolescent girls aged 15 to 19 years sampled as part of a sexual and reproductive health survey in 2011 had experienced pregnancy (Boamah et al., 2014). Of those, 19.2% were still pregnant during the survey, 42.6% had given birth, 34% had aborted their pregnancy, 3.2% had miscarried, and 1.1% had live births, but the babies died later. A recent survey in the study area conducted by Boamah-Kaali et al. among 444 adolescent females in 2021 showed 45% of the sexually active adolescent girls (268/444) had experienced pregnancy (Personal Communication), pointing to an upward trend of adolescent pregnancy and draws attention to the need for curtailing it.

Adolescent pregnancy prevention

Even though complete abstinence from sex is ideal for avoiding pregnancy, the evidence of high levels of sexual activity among adolescent girls, sometimes at very young ages, shows that abstinence is easier said than done for most girls (Santelli et al., 2006). For example, though some adolescent girls have sex in response to the natural urge to do so (Martinez and Abma, 2020), others engage in sexual activity beyond just sexual gratification or love but for financial and other forms of benefits (Buller et al., 2020, Krugu et al., 2016). Many also engage in sexual activities unplanned (it just happened) or are forced into the act (Buller et al., 2020; Krugu et al., 2016) out of pressure from friends, ignorance, and misinformation (Boamah-Kaali et al., 2016).

Evidence suggests high levels of sexual activity among adolescent girls globally, of which Ghana is no exception (GSS et al., 2015, 2018; Guttmacher Institute, 2019; Kaida et al., 2021; Martinez and Abma, 2020). In the United States of America, data from the 2015-2017 National Survey of Family Growth indicated that 42% of adolescent girls aged 15-19 years had experienced sexual intercourse (Martinez and Abma, 2020). Another study among state school adolescents in Ribeirao in Sao Paulo, Brazil, reported sexual intercourse among 63.4% of girls (Arruda et al., 2020). In sub-Saharan Africa, data from the National surveys of 24 countries showed both low and very high levels of sexual activity among adolescents ranging from 4% to 60% across countries in the region (Doyle et al., 2012).

Many girls are sexually active by the age of 18 years in Ghana (GSS et al., 2018). At the national level, the Ghana Demographic and Health Survey of 2014 reported that 43% of girls aged 15 to 19 years had initiated sexual intercourse, with 12% starting sex by the age of 15 years (GSS et al., 2015). The Ghana maternal health survey of 2017 also showed that about 12% of women aged 20 years and 49% of women aged 49 years were sexually active by the time they were 15 and 18 years, respectively. Among girls aged 15-19 years, 9% began to have sex before they turned 15 years (GSS et al., 2018). A recent study among adolescents in three regions of Ghana comprised the Greater Accra, the then Brong Ahafo, and Northern Regions. The study reported 21% of adolescent girls in Brong Ahafo, 5% of girls in Greater Accra, and 8% of girls in the Northern Region started having sex before the age of 15 years (Awusabo-Asare et al., 2017). In the Kintampo study area, a survey of adolescent girls aged 15 to 19 years showed that 60% were sexually active in 2021 (Personal Communication). Following the discussion above, many adolescent girls are sexually active; hence, a proposal toward complete abstinence for pregnancy prevention may not fit the needs of all adolescent girls (Boyer, 2018; Buse et al., 2016).

The next appropriate option for avoiding unwanted pregnancies besides abstinence is the correct and consistent use of effective contraceptive methods (Chandra-Mouli et al., 2013, 2014, 2017; Fikree and Zerihun, 2020), but available data point to the low levels of contraceptive use among adolescents globally (Guttmacher Institute, 2020; Martinez and Abma, 2020) and also in Ghana. Evidence suggests a considerable reduction (60%) in unwanted pregnancies and subsequent abortions if all girls in low- and middle-income countries wanting to prevent pregnancy use modern contraceptives (Guttmacher Institute, 2020). The Guttmacher Institute reported in 2020 that although 32 million adolescent girls in low- and middle-income countries want to prevent pregnancy, many (43%) do not use contraception (Guttmacher Institute, 2020).

Locally in Ghana, the rates for the prevalence of contraceptive use reported from different studies conducted among Ghanaian adolescents are diverse and range between 0.3% and 82% (Boamah et al., 2014; GSS et al., 2018; Keogh et al., 2021; Ahinkorah et al., 2020; Oppong et al., 2021). According to the Ghana Maternal and Health survey of 2017, only 6.9% of adolescent girls aged 15 to 19 years used any non-traditional contraception. Over 50% of sexually active adolescent girls who did not want to get pregnant did not use contraception (GSS et al., 2018).

Further, a study by Enuameh et al. (2015) in the Kintampo area of Ghana among adolescents aged 10-19 years recorded contraceptive use prevalence at 25%. Adolescents who were currently using any contraceptive method was 9%, and contraceptive use at the last sex was among 10.9% of the respondents. About 33% of pregnant girls in that study were not using any contraceptive method though they were not ready to have children (Enuameh et al., 2015). In the 2021 study by Boamah-Kaali et al., 25% of girls reported using a hormonal contraceptive method for pregnancy prevention in the same area (Personal Communication).

Amidst the low levels of contraceptive prevalence among adolescents in most developing country settings, previous research showed adolescent's preference for condoms in pregnancy prevention compared to other birth control options, especially hormonal contraceptive methods (Grindlay et al., 2019; Keogh et al., 2021; Yau et al., 2021). A survey of young people 18 to 24 years in Ghana showed that 18% of sexually active adolescent girls who were part of the survey used male condoms, 8% used injectables, 6% used pills, and 2% used implants (Grindlay et al., 2019). The use of condoms among the general adolescent population is relatively typical compared to hormonal contraceptives, probably because condoms are readily available and cheaper (Chandra-Mouli et al., 2014). Also, it serves a dual purpose of preventing sexually transmitted infections and pregnancy, unlike the other methods (WHO, 2020b). Ad-

ditionally, some adolescents believe hormonal contraceptives have many unpleasant side effects, including the risk of future infertility (Boamah-Kaali et al., 2021; Keogh et al., 2021.; Schrumpf et al., 2020; WHO, 2020b). Therefore, for sexually active adolescents unaware of their partner's STI status, condoms are the ideal choice for preventing STIs and pregnancy.

However, condoms can only be successful at preventing pregnancy and sexually transmitted infections when used correctly and consistently. Conversely, adolescents mostly do not accurately and consistently use any contraceptive method (Enuameh et al., 2015; GSS et al., 2015). Moreso, research shows that people who use coitus-dependent methods are more likely to be inconsistent with their use or to stop using them altogether (Steinberg et al., 2021). Specific to condoms, their use consistency diminishes over time in stable relationships (Chandra-Mouli et al., 2014). Also, although all contraceptive methods have adherent challenges, condom use places higher demands on users because its use is disposed to several errors (Bjekić et al., 2018; Raidoo et al., 2020).

Besides the many user failures related to condom use, high partner dependence is required for consistent use (Afful and Attom, 2018; Raidoo et al., 2020). Moreover, the fact that some girls are in the relationship for financial and material gains and depend on their partner for economic support limits their autonomy for safe sex negotiation, as noted among adolescent girls in Ghana (Boamah-Kaali et al., 2016; Aboagye et al., 2021; Krugu et al., 2016; Ahinkorah et al., 2020). Past studies have shown that even married women in sub-Saharan Africa could not demand safe sex for similar reasons (Sano et al., 2018; Seidu et al., 2021).

In sum, reducing pregnancy among adolescents with a focus on condom use is not a comprehensive approach. The double Dutch approach (i.e., using any hormonal contraceptive method (HC) in addition to condoms) (Hood et al., 2014; Wilkinson et al., 2022) could be an appropriate alternative for pregnancy prevention and the prevention of sexually transmitted infections among adolescent girls and is worth exploring. Many studies have reported the enablers and barriers to condom use among adolescents (Amevor and Tarkang, 2022; Aventin et al., 2021; Chowdhuri et al., 2019; Lee, 2022; Watsi and Tarkang, 2022; Yidana et al., 2015). However, studies focusing on the factors influencing the correct and consistent use of HC methods are limited. They should also be identified to guide appropriate interventions toward dual-method use.

Theoretical framework

Theories can guide the understanding of possible factors influencing the correct and consistent use of HC methods among adolescent girls. This thesis used components of the Social Ecological Model (SEM) by Glanz et al. 2008 to explore factors that could explain adolescent girls' correct and consistent use of HCs. The SEM postulates that multiple interacting factors influence human behavior. These include the individual (knowledge, attitudes, skills), interpersonal (family, friends, social network), organizational (organizations, social institutions, community (relationships between organizations), and public policy levels factors (national, state, local laws, and regulations). For this thesis, the interpersonal, organizational, and community-related factors are grouped and referenced as environmental level factors. As detailed below, the environmental level and individual factors were used to explore the determinants of uptake and correct and consistent use of HC among adolescent girls. The public policy level factors were not covered.

Factors influencing the use of contraceptives in general and hormonal contraceptives specifically

At the individual level, the use of contraceptive methods, including hormonal, non-hormonal, and condoms, is constrained by factors such as age, level of education, living arrangement, family type, marital status, and socio-economic status (Aviisah et al., 2018; Blackstone et al., 2017; Bolarinwa et al., 2020; Chola et al., 2020; Keogh et al., 2021; Smith, 2020). Further, feelings of embarrassment from societal stigma relating to non-marital sex and contraceptive use, poor knowledge of various methods available, limited knowledge of the method right for the individual, lack of understanding on how the methods work, poor knowledge of how to use them, low self-efficacy and skills to use the method, lack of autonomy to decide on a method to use, poor knowledge on where to get the method from and limited knowledge on the legal rights to use contraceptives affect the use of general contraceptive methods negatively (Abdul-Razak, 2016; Boamah-Kaali et al., 2021; Chandra-Mouli et al., 2014; Enuameh et al., 2015; Rizvi et al., 2021). However, positive attitudes toward contraceptives, self-efficacy to use contraceptives, pregnancy risk perception, desire to prevent unwanted pregnancy and high level of educational attainment, plans to pursue higher education, and affordability of contraceptive methods motivate the use of all contraceptive types among adolescents (Bain et al., 2021; Grindlay et al., 2019; Yidana et al., 2015).

Specific to hormonal contraceptives, fear of the side effects of particular types of methods, fear of side effects on menstruation, fear of other related health risks in general, misconceptions about how the methods work, misconceptions about side effects of specific methods, experiences with specific methods, perceived convenience of use and infrequent sexual activity negatively influence their use among adolescent girls (Bain et al., 2021; Blackstone et al., 2017; Chandra-Mouli et al., 2014; Enuameh et al., 2012; Gbagbo, 2020; Keogh et al., 2021; Krugu et al., 2016; Mushwana et al., 2015; Rizvi et al., 2021; Schwandt et al., 2015; Smith, 2020).

At the environmental level, factors such as cultural barriers, prohibitive social norms, gender norms, cultural norms on fertility, male partner disapproval, pressure from family and partner to give birth, peer influence, fear of parents, absence of parental support, lack of partner support, cost of methods and poor health worker attitude, negatively impact the use of all contraceptive types among adolescents (Abdul-Razak, 2016; Bain et al., 2021; Blackstone et al., 2017; Chandra-Mouli et al., 2014; Rizvi et al., 2021; Sanchez et al., 2020; Smith, 2020; Yidana et al., 2015). Also, factors such as the health worker's approach to service provision for adolescents, not providing comprehensive sex education for adolescents, limited availability of contraceptive methods, and unavailability of appropriate methods for adolescents have been found to impact general contraceptive use among adolescents negatively (Chandra-Mouli et al., 2014; Grindlay et al., 2019; Kayondo, 2012; Rizvi et al., 2021). On the other hand, supportive social networks, respect for privacy and confidentiality in service provision for adolescents by service providers, the ready availability of contraceptive products, and accessibility of methods motivate all contraceptive use among adolescents (Bain et al., 2021).

In summary, personal and environmental factors determine adolescent girls' use of hormonal contraceptives. Identifying specific determinants that can be targeted with appropriate interventions is crucial for behavior change. Gaps remain in the literature concerning the determinants of HC use, specifically among adolescent girls in sub-Saharan Africa, including Ghana.

For instance, different factors could explain contraceptive use among different groups of women. Perhaps, their motivation for contraceptive use could differ when comparing teenage girls 15 to 19 years who are unmarried to older married women. However, literature reporting factors that influence the use or non-use of contraceptive methods usually put all women across the reproductive age range (15 to 49 years) together. This makes targeting interventions for specific groups of women a challenge.

Also, many studies on adolescent contraceptive use report only on the determinants of contraceptive use in general. They fail to clearly distinguish between the determinants of specific contraceptive types (for example, there is usually no distinction between the determinants of hormonal and non-hormonal method types, including condoms). Again, knowing which determinant to target and for which method becomes a challenge.

Additionally, most studies report only on socio-demographic determinants of contraceptive use. However, demographic and personality-related factors are not amenable to change compared to social cognitive determinants based on people's beliefs. Social cognitive determinants can be targeted with theory- and evidence-based educational interventions for behavior change.

Furthermore, most studies report only determinants identified through qualitative approaches. Yet, qualitative findings cannot provide evidence of correlational associations for intervention purposes. They cannot quantify the relative significance of the various determinants to inform which ones to target as intervention endpoints.

The studies reported in this Ph.D. thesis set out to contribute much-needed evidence to fill these literature gaps by explicitly identifying the individual and environmental determinants of uptake and correct and consistent use of HCs, among adolescent girls with and without HC experience. Through qualitative and quantitative methods, several similar and unique determinants have been identified for both adolescent groups that could be targeted with appropriate interventions toward the uptake and correct and consistent use of HCs by programme managers. The findings would be helpful for policymakers to design policies for adolescent reproductive health in general.

The premise for the studies in this thesis

In 2007 I completed my bachelor's degree in Population and Family Life Education from the University of Cape Coast in Ghana. Returning home to Kintampo, I found many of my peers with a child or a pregnancy. Most were out of school and not working, and I wondered what went wrong with them.

In 2008, I was an assistant research officer at the Kintampo Health Research Centre (KHRC). I had the privilege of traveling around several communities in the research catchment area of KHRC for fieldwork. During that time, I encountered many young girls who were mothers who could barely care for themselves, not to mention their children. The fashion of early childbearing across the communities I visited and among

my peers struck a chord in my mind. I thought of what to do about the problem. There had not been any research on the sexual and reproductive health of adolescents, including pregnancy in the Kintampo area, so there was no empirical documentation on the magnitude and causes of the problem. I was curious to know how many girls were getting pregnant early, what could be causing that, and how to support them for better sexual and reproductive health outcomes. As these thoughts ran through my mind, the Management of the Kintampo Health Research Centre opened a grant application dubbed “The Director’s small grants initiative” in 2009. The initiative was an avenue for nurturing young scientists in the Research Centre to carve their research career pathways. I was one of six applicants who got awarded this grant. That presented an excellent opportunity for me to study and understand the issues around adolescents’ sexual and reproductive health in the Kintampo area.

Because this was the first of its kind, I sought to know the sexual and reproductive health needs of both male and female adolescents, which could be unique for the different groups. I did a cross-sectional study using quantitative and qualitative data collection tools among 793 male and female adolescents aged 15 to 19 years across 35 communities in the Kintampo North Municipality and Kintampo South District in 2011. The results from the study demonstrated that 40% (311/793) of the adolescents were sexually active. As much as 52.4% of girls compared to 22.5% of boys had experienced sexual intercourse. A third of all sexually active respondents (94/311) had experienced pregnancy, with 34% terminating their pregnancy. Knowledge of at least one contraceptive method was high (88.9%) among the entire sample of respondents (793), especially awareness of condoms was very high (84%). About 33% of the sexually active had never used a contraceptive method, 44% use contraceptives sometimes, and only 22.9% use them consistently. The use of condoms was higher at 82% compared to 15.6% for hormonal contraceptive methods. Another important finding was the girls’ inability to negotiate condom use (Boamah, 2012; Boamah et al., 2014).

From the study described above, many adolescent girls in Kintampo were sexually active but mostly unable to negotiate for condom use. Consequently, many had experienced unwanted pregnancy, abortions, and early motherhood. I understood from the study findings that adolescents in Kintampo needed help to prevent pregnancy, but condom use alone was not a complete solution. The double Dutch approach (i.e., use of any HC and condom) could be the best way to prevent unwanted pregnancy and sexually transmitted infections simultaneously instead of primarily relying only on condoms (Hood et al., 2014; Wilkinson et al., 2022).

To initiate intervention towards the dual method approach, factors that influence the use of condoms and hormonal contraceptive methods in our context should be understood. There has been quite some research on factors influencing condom use among Ghanaian youth (Amevor and Tarkang, 2022; Gbagbo, 2020; Kangmennaang et al., 2019; Teye-Kwadjo et al., 2017; Watsi and Tarkang, 2022; Yidana et al., 2015). However, the determinants of hormonal contraceptive use among Ghanaian adolescent girls are barely known.

In this Ph.D. work, qualitative methods (i.e., FGDs and IDIs) were used to identify individual and environmental level factors that could explain the uptake and the correct and consistent use of HC among adolescent girls with and without HC use experience. Several social-psychological factors seemed to influence HC use among the girls based on their experience. Quantitative measurements were used to determine the relative significance of the qualitatively identified determinants in predicting HC use intentions among all adolescent girls and sub-samples of girls based on HC experience and age. The results from the qualitative and quantitative studies make up four empirical chapters described in this thesis. These have all been published or submitted as separate manuscripts to peer-reviewed journals for publication.

Overview of the studies

Chapter two reports on a qualitative study into the individual and environmental determinants of non-uptake of HC among adolescent girls without HC use experience. In-depth interviews and focus group discussions were conducted among girls 15 to 19 years to understand the factors influencing their non-uptake of hormonal contraceptives.

After identifying why adolescent girls with no HC experience did not use them, it was also essential to determine what motivated the ones with HC experience to correctly and consistently use their HCs. **Chapter three** reports on a second qualitative study but now focuses on adolescent girls who have experienced HC use and explores the individual factors that enable the correct and consistent use of HC by them. In-depth interviews were used for data collection among girls aged 15 to 19 years.

Beyond the individual factors that motivated the correct and consistent use of HCs among adolescent girls with HC use experience, further understanding what factors within the environment encourage them to correctly and consistently use their HC was necessary. **Chapter four** presents a study on environmental factors influencing correct and consistent HC use among adolescent girls, focusing on parental, peer,

partner, health worker, community, and religious norms on HC use among adolescent girls. The same in-depth interviews were used in chapter three to describe their perceptions of external social influences.

Based on findings from the initial three qualitative studies and literature, **Chapter five** then employed a quantitative approach to explore the relevance of identified social-psychological determinants in predicting HC use intentions among young women in the Kintampo area of Ghana. A cross-sectional study was carried out among 1203 young women aged 15 to 24 years from 75 communities within the Kintampo North Municipality and South District.

A general discussion of the empirical work reported in this dissertation is included in **Chapter six**, which make inference to all four studies reiterating and summing up their significant findings. It situates the important findings in the context of available literature on adolescent contraceptive use, putting them into perspective for future intervention and research purposes in our setting and other similar settings. The chapter also comments on methodological limitations and strengths. **Chapter seven** is made up of all the references cited in this thesis. Finally, **Chapter eight** describes the scientific and social impact of the findings reported in this thesis, whereas **Chapter nine** summarizes the entire dissertation.



Chapter 2

Individual and environmental level factors explaining non-uptake of hormonal contraceptives among adolescent girls in Rural Ghana from the perspectives of adolescent girls

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Abstract

Background: Adolescent pregnancy remains a public health concern globally. The use of hormonal contraceptive methods is a proven way of preventing pregnancies and in turn unsafe abortions. However, research shows that the use of hormonal contraceptive methods is rather low among African adolescent girls, and Ghana is no exception. **Objective:** This manuscript uses the socio-ecological model to guide our understanding of the factors associated with non- use of hormonal contraceptives among adolescent girls in Ghana. **Methods:** An explorative study was done using qualitative data collection methods. Two focus group discussions and sixteen in-depth interviews were conducted among adolescent girls aged 15-19 years (N= 38) in the Kintampo area of Ghana to determine factors affecting the uptake of hormonal contraceptives. **Results:** Adolescents showed a lack of in-depth knowledge related to the different hormonal contraceptive types. Negative attitudes towards adolescent hormonal contraceptive use, fear of real and perceived side effects of hormonal contraceptives, lack of self-efficacy to use contraceptives, fear of disclosure of use, and fear of societal stigma related to sexual intercourse and its related issues among adolescents may explain why adolescent girls in this context do not use hormonal contraceptive methods. **Conclusion:** To promote hormonal contraceptives among adolescent girls, a combination of multifaceted social-psychological, personal, and community level interventions is needed.

Introduction

Adolescent pregnancies remain a public health concern globally (United Nations International Children's Emergency Fund, 2008). The greatest proportion of adolescent pregnancies occur in less developed countries and mostly among those with no education and those from poorer households (United Nations Department of Economic and Social Affairs, 2017). It is estimated that around 21 million adolescent girls between 15 and 19 years of age get pregnant annually in developing countries (Darroch et al., 2016; WHO, 2020). Further projections indicate growth in adolescent pregnancies globally by the year 2030 mainly due to the ever-growing adolescent population worldwide, especially in African countries (United Nations Department of Economic and Social Affairs, 2019).

Pregnancy and childbirth among adolescents have both health and social implications. Health-wise, pregnancy and delivery complications are the leading causes of death for girls 15 to 19 years worldwide (Neal et al., 2012). Babies born to adolescent mothers have elevated risks of childhood morbidities and mortalities (WHO, 2016). Socially, adolescents who become pregnant face stigmatizing or other negative responses from people within their environment, including their family members and friends, as well as the health care setting (Hokororo et al., 2015; Norris et al., 2016). They often tend to practice unsafe abortions in countries with restrictive abortion laws (Chen et al., 2009), which may cause several complications with permanent health consequences or even death (Darroch et al., 2016; Say et al., 2014). Globally, around 3.9 million unsafe abortions occur among 15 to 19-year-old girls each year (Darroch et al., 2016). Additionally, adolescent pregnancy interferes with the girls' future education and limit opportunities for employment (Merrick, 2015).

The use of contraceptive methods has been proven to prevent unwanted, early pregnancies and in turn unsafe abortions (Hubacher et al., 2008). However, research shows that the use of effective contraceptive methods is rather low among sexually active African youth, including Ghanaian youth (Hubacher et al., 2008), with even lower rates among rural area dwellers and those in the lowest wealth quantiles (Hounton et al., 2015). Available data suggest that the use of condoms is relatively more common among adolescents compared to the other birth control options because of their ready availability and low cost (Chandra-Mouli et al., 2014). However, though condoms prevent pregnancy and sexually transmitted infections (STIs), depending only on condoms for protection bears several risks, especially for girls. Condoms can only be an effective way of protection when used correctly and consistently. For correct condom use, one relies on the partner's willingness to use them, but this can be a challenge for adolescent girls, who lack the skills and competences for condom use negotiation

(Krugu et al., 2017). Moreover, in stable relationships, research reports a decrease in consistent condom use over time, relating their use to being loose or not trustworthy (Villarruel et al., 2010a). For maximal protection for adolescents, therefore, the dual method approach; i.e., using condoms and hormonal contraception seems the best option (Hood et al., 2017).

While there is an extensive body of scientific literature on factors influencing condom use (Ajayi et al., 2019; Teye-Kwadjo et al., 2018), studies focusing on factors that influence hormonal contraception use are limited. To be able to address the problem of low hormonal contraception use, a clear understanding of all related individual and environmental factors is needed. We, therefore, carried out a qualitative study to understand the barriers to hormonal contraceptive uptake among adolescent girls in Kintampo, a rural Ghanaian community, which has a high annual birth by adolescent (15%) (Kintampo Health and Demographic Surveillance System, 2015), a rate above the national average of 14% (GSS et al., 2015). Yet, hormonal contraceptive use among adolescents is low with an estimated prevalence of 13% among sexually active girls (Boamah et al., 2014).

This manuscript uses the socio-ecological model to guide our understanding of the factors associated with the non-use of hormonal contraceptives among adolescent girls 15 to 19 years of age in the Kintampo area of Ghana. The socio-ecological model posits that human behavior is influenced at multiple interacting levels, including the individual/intrapersonal, the interpersonal, the community, the institutional, and the public policy levels (Glanz et al., 2008) In this study, we have focused on the individual, interpersonal, community and institutional level factors. Individual level factors influencing hormonal contraceptive use in adolescents have been related to poor understanding of several aspects of hormonal contraceptive use, including the different types of hormonal contraceptives available and how the methods work (Hagan and Buxton, 2012), poor knowledge of side effects (Wafula et al., 2014), and poor knowledge on cost and legality of use (Yarrow, 2014). Also, limited awareness of methods perceived to be right for adolescents, poor knowledge of sources of obtaining the methods, and poor self-efficacy and skills to use the method, have been related to poor uptake of hormonal contraceptives (Abdul-Razak, 2016). Moreover, poor compliance, negative experiences with specific hormonal contraceptive methods (e.g., extreme bleeding related to the use of implants), fear of side effects of specific methods, and fear of related health risks of hormonal contraceptive use in general, have been associated with low uptake (Schwandt et al., 2015; Wood and Jewkes, 2006; Yidana et al., 2015). In addition, Adolescents' fear of negative stigmatizing responses related to early sex and contraceptive use from their parents, peers, and religious leaders amongst others have been reported to negatively affect hormonal

contraceptives use amongst them (Bimbola and Ayodele, 2007; Krugu et al., 2016; Mushwana et al., 2015).

At the interpersonal and community levels, varied social norms exist in different cultures (Gelfand et al., 2017) and they either motivate or demotivate the performance of certain behaviors (Hechter and Opp, 2001). Societal norms related to sexual morality in many African cultures disapprove of all forms of illicit sex (Bamgbose, 2001). People who deviate from societal norms face undesirable responses including ostracism and stigmatizing responses (Bamgbose, 2001). Studies have reported that social norms that discourage premarital sex and contraceptive use, negatively affect intentions to use, (Costenbader et al., 2019) as well as actual modern contraceptive use amongst adolescents (Agha et al., 2021).

At the institutional level, lack of access to youth-friendly health facilities, poor health professional-patient relationships, lack of privacy and confidentiality at health facilities, a lack of in-depth discussions during the consultation, and cost of hormonal contraceptive methods (Chandra-Mouli et al., 2014; Yidana et al., 2015) affect the use of hormonal contraceptive methods.

Next to empirical findings on factors explaining the non-use of hormonal contraception, several health-behavior-related theories may provide additional explanations (Ajzen, 1985; Bandura, 1999; Hall, 2012). Applying the Health Belief Model (HBM), adolescents may not be using hormonal contraceptives because they do not perceive themselves as susceptible to unwanted pregnancy. Also, they probably do not perceive the consequences of unwanted pregnancy as severe and do not believe in getting any potential benefit from using hormonal contraceptives.

Further, adolescents' perceived barriers to hormonal contraceptive use, and lack of self-efficacy to use, may explain why adolescents do not use hormonal contraceptive methods. This is evidenced by findings from Hall's systematic review of literature on using the HBM to guide the understanding of modern contraceptive behaviors and practice with in the general population (Hall, 2012).

In-depth information on factors influencing the uptake of hormonal contraceptive methods in Africa is limited in general and more so in sub-Saharan Africa (Haider and Sharma, 2012). Besides, the majority of scientific publications do not differentiate in their outcome measure between hormonal contraceptive methods and other non-hormonal contraceptive methods including condoms (Chandra-Mouli et al., 2014). In this qualitative paper, we explored the factors that limit the uptake of hormonal contraceptives from the perspective of adolescents in the Kintampo area of Ghana.

Methods

Study area description

This study was conducted in the Kintampo area, which is situated within the forest-savannah transitional ecological zone in the Bono East Region of Ghana. It covers an area of about 7162 Km² with an approximate resident population of 150,000. The population is youthful with over 45% under the age of 15 years (Owusu-Agyei et al., 2012). About 40% of adolescents 15 to 19 years of age are sexually active (Boamah et al., 2014). With a total fertility rate of 4.7 births per woman, 15% of annual births are attributed to girls 13 to 19 years of age (Kintampo Health and Demographic Surveillance System, 2015). Contraceptive prevalence among adolescents (10-19 years of age) is 25% (Enuameh et al., 2015). The male condom is the most used contraceptive method (82%) among adolescents in this region while hormonal contraceptives are only used by about 13% of sexually active girls (Boamah et al., 2014).

Study design

This was an explorative study using qualitative data collection methods from April to June 2018. Two focus group discussions (FGD) made up of 10 and 12 respondents respectively and sixteen in-depth interviews (IDI) were carried out among adolescent girls to determine factors that negatively affect the uptake of hormonal contraceptives amongst them. Both methods were used because the IDIs are effective at generating in-depth, personal and private information; complimented by FGDs that produce interesting group outputs, showing divergence or convergence of opinions between the group members (Guest et al., 2017; Vaismoradi et al., 2013).

Study population and description of participants

The study included 38 adolescent girls aged 15 to 19 years ($M = 17.0$ $SD = 1.1738$). Thirty-six out of the 38 girls had been to school with the highest level of educational attainment being Senior High School (15/36). The remaining 21 girls either had a primary level or junior high school level of education. Two girls had never been to school. About half of the girls (18/38) lived with both parents; the others (20/38) either lived with a single parent, other relatives, or lived by themselves. Most participants were Christians (34/38) and the four others were Muslims. About two thirds (23/38) had a boyfriend at the time of data collection. For pregnancy prevention, a few (5/38) used the male condom. Others also used rhythmic and withdrawal methods. None of the participants stated to have ever used hormonal contraception.

Description of study tools

An interview guide made up of semi-structured questions was used for data collection. Guides for both the FGDs and IDIs contained the same questions. The guides were

developed based on an extensive literature review of the factors that are reported to be associated with hormonal contraceptive use among adolescents globally, guided by the Socio-Ecological model. The interview guide was structured thematically under sections such of awareness of hormonal contraceptive options and their mode of action, attitudes to hormonal contraceptives, normative perceptions about hormonal contraceptive use among adolescents, and community norms. The data collection tools were pre-tested among some adolescents in the study area and necessary contextual adjustments were made before data collection.

Recruitment and data collection procedure

Participants were purposively selected from two Senior and one Junior High Schools (20 girls), two adolescent health corners (10 girls), and three dressmaking parlors (8 girls) in the Kintampo Municipality and South District. Verbal announcements about the study were made in the recruitment centers. In the schools, we asked permission from the head teachers to talk with the girls in their classrooms. We shared information about the study, which comprised a summary of the study objectives (i.e. identifying reasons for non-use of hormonal contraceptives among adolescent girls to inform interventions to promote hormonal contraceptive uptake and to prevent teenage pregnancy) and study procedures (i.e. either taking part in a focus group discussion or in-depth interview), and we explained how to enroll into the study; by writing their names and phone numbers on a piece of paper that was left behind.

Prospective respondents were given up to a day to re-think about participation after they signed up for the study. Inclusion criteria were based on age (i.e., between 15-19), educational background (primary, junior high, and senior high schools & those without the education), and non-use of hormonal contraceptives. Any adolescent who reported ever having used hormonal contraceptives was not included in the study. The IDIs and FGDs were done face to face in either English or the local language (Twi), depending on the preference of the participants. The first FGD was held at school premises in a designated room free from intrusion. The second FGD was held at church premises. IDIs were held at school premises, youth health centers, and participants' homes. The discussions were facilitated by a female social scientist guided by an interview guide. Right before the start of the interview participants were again reminded of their rights given in the written informed consent forms. For participants less than 18 years, consent was provided by their teachers if interviews were done in school or parents if interviews were done at home, in addition to their individual assent. Participants received copies of their signed consent forms.

On average, an IDI lasted between 25 to 35 minutes whilst an FGD lasted between 60 and 90 minutes. All interviews were audio-recorded and transcribed verbatim, with

those in Twi, further translated into the English language. The moderator sought the consent (through signed written informed consent) of respondents before recording and taking notes of all discussions. After conducting two FGDs and 15 IDIs, no new themes emerged and so data saturation was reached. Data collection ended after one more IDI was done.

Data management and analysis.

ATLAS. Ti version 8.4.2 qualitative data analysis software was used in managing and analyzing data collected. All eighteen transcripts (2 FGDs and 16 IDIs) were exported from MS word into ATLAS. Ti and thematic analyses were done. Guided by the grounded theory technique, an inductive approach was used to identify major themes that emerged from the data (Vaismorad et al., 2013). Two members of the study team (first and second author) independently reviewed the first three transcripts and formulated preliminary codes, guided by the objectives of the study. Iterative reviews were done between the two team members to identify other sub-themes and discussions were held when coding differed until an agreement was reached. Established codes were then applied to all transcripts for final analysis by the first author. All code summaries were again reviewed and discussed by both the first and the second author. For the transcripts review process, participant data related to their names were de-identified.

Electronic files containing the audio and transcripts from the study have been stored in password-protected computers.

Results

Reasons for the non-use of hormonal contraceptives are presented below structured by the different levels of the socio-ecological model. Quotes from both focus group discussions and interviews are included to illustrate major themes. The opinions expressed by adolescents on their perceived barriers to hormonal contraceptive use were not different for both in-depth interviews and focus group discussions, hence, results were merged. It is worthy to note that the adolescent girls used the terms family planning and contraceptives loosely to refer to hormonal methods such as the pill, injection and the implant. So even if the girls did not specifically refer to the word “hormonal” in the illustrative quotes, the methods they mentioned refer to what we consider as hormonal methods.

Individual level factors

Awareness and knowledge of hormonal contraceptive methods

Almost all the girls had heard of hormonal contraceptive methods, which they also called family planning methods. The majority of them could mention at least one form of hormonal contraceptive method. The injection and the implant were the most common methods mentioned. However, even though most participants were aware that hormonal contraceptive methods exist and are used by women in their reproductive age to prevent pregnancy, they could not explain their exact mechanism of action. A typical misconception was that hormonal contraceptives destroy the man's sperm making it incapable of impregnating a woman.

“When you use it and you have sex, it destroys the man's sperm so that it cannot impregnate you” (18-year-old girl in FGD)

Knowledge of where to get hormonal contraceptives

Almost all the girls knew at least one source for obtaining a hormonal contraceptive method. Hospitals were the most frequently mentioned source and then clinics, pharmacy shops, and drugstores (when prompted). The preferred source of hormonal contraceptives was stated as the hospitals because hospitals are more equipped with personnel and equipment.

“How can someone obtain a hormonal contraceptive method if they want to?” “... through hospitals and some drugstores but going to the hospitals is more relevant than the drugstores”. (IDI 16-year-old girl)

Few girls stated to not know where one could obtain the hormonal contraceptive method.

Knowledge of the cost of hormonal contraceptive methods

About half of the girls did not know how much it costs to get a hormonal contraceptive. Most of those who claimed to know only speculated that it was not expensive.

“Please it is not all that costly, it is not costly. Anyone who wants to do it the person can be able to afford and just do it straight”. (IDI 19-year-old girl)

Only one girl could attribute a price to the (removal of) the implant and few knew some organizations provide it for free.

“Madam it is free. If you want to go and take out the implant, they will take 30 Ghana Cedis from you”. (18 a year-old girl in an FGD)

A few of them mentioned that in their opinion, hormonal contraceptives are expensive and said they presumed the cost deterred people from accessing it.

Attitude toward hormonal contraceptive use

Most of the girls who were interviewed had positive attitudes toward the use of hormonal contraceptives in general but tended to be more negative when it was about adolescents using it. They said that it helped to prevent unplanned pregnancy, especially teenage pregnancy, therefore users could work, have peace of mind, complete school, or finish a trade they were learning. Mostly among married women, they felt it is very useful for spacing their children. They indicated that hormonal contraceptives could be used by the married, unmarried women and young girls in relationships.

“It is good...people use it to prevent unwanted pregnancy. Some people had unplanned pregnancies so to plan for the next pregnancy they use the family planning methods. This is because if they are unable to space their birth, they find it difficult to take care of the children”. (IDI with an 18-year-old girl)

However, the use of hormonal contraceptives among married women was more acceptable to most girls compared to unmarried adults and young girls. They said that adolescents who used contraceptives did not think, or had no good morals; they liked sex, they had no self-control and were promiscuous. The girls were also of the opinion that adolescents who used hormonal contraceptives may become sick or infertile and so they hurt themselves by using the methods. These perceived side effects were also the most often mentioned disadvantages of hormonal contraceptive use.

“... I feel that they don't have good morals or they can't live a chaste life that is why they go for contraception... some people say that the contraceptives are not good, you can't have children after using it. So, if I see them using it, I feel that it's very bad for a young girl like me to use contraceptives”. (IDI with a 16-year-old girl)

Other respondents did not see anything wrong with adolescents using contraceptives. They said it is a way of securing their future. Using contraceptives would help them to prevent teenage pregnancy, to be able to complete their school or whatever trade they were learning. They also said it is always better than abortion and that some adolescents have already given birth and may like to prevent a second child from coming so it is good for those to use contraceptives.

Self-efficacy in organizing and using hormonal contraceptives

A few of the adolescents expressed self-confidence in their ability to use hormonal contraceptives, should they want to. They claimed to know the benefits they would derive from using contraceptives and so if they decided to use it, they could. In contrast, most respondents said it would be very difficult for them to get a method if they wanted to. The adolescents indicated that they would have a negative feeling obtaining a hormonal contraceptive method from a pharmacy shop, clinic or hospital. They attributed this feeling to their perceived provider's negative reaction towards them. They all stated that providers would ask them a lot of questions including why they had come for a contraceptive method at this age, how old they were, what they were using "those things" for amongst others. They also felt the providers would think of them as bad girls and judge them because of their young age.

"As for me, I will feel very shy. They will ask you several questions. They will say you are too young. What are you using this pill for or why are you coming for this implant?". (IDI with a 17-year-old girl)

In addition, the girls feared providers would breach the confidentiality of their use of hormonal contraceptives. These negative feelings they said will make it very difficult to seek for hormonal contraceptive methods. The quotation below illustrates this feeling

"They will ask you what you have come there for and when you tell them and you leave the place, they will also tell other people. Maybe those people cannot also keep secrets so very soon people will start pointing their fingers at you when they see you passing. When that happens, I will not do it". (IDI with 17-year-old girl)

However, most of these responses were based on the girls' expectations. Only one girl confirmed to have experienced such responses from a provider.

Besides all these worries, one girl stated it would only be difficult the first time attending a clinic. After that, the people would know why she comes and stops asking the questions.

Fear of perceived hormonal contraceptive side effects

Almost all adolescents had some form of misconceptions about contraceptives. They described several negative effects attributable to contraceptive use including infertility, sickness, extreme weight gain or weight loss (i.e., you gain weight if the methods fit you or lose a lot of weight if it does not fit you), changes in the menstrual cycle and colour of blood, heavy bleeding, spotting, constant bleeding, amenorrhea, dysmen-

orrhoea, amongst others. Other issues mentioned include body weakness, dizziness, fainting, blood clots during menstruation, miscarriages, and becoming epileptic.

"... I have heard that someone went to insert one (the implant) and when she came back to work with it, she collapsed and since that, she is been epileptic". (18-year-old girl in an FGD).

Specifically, for the implant, they said it could dislodge to other parts of the body.

"I know one lady who was using the implant. When it was time for her to get married, the thing had made her grow so fat so they went to the hospital to get the thing out but they could not find everything. One of them was missing and they could not find it". (17-year-old girl in an FGD)

Moreover, some of the girls expressed a strong fear of the side effects of hormonal contraceptives. This fear emanates from unpleasant experiences other people have had from the use of hormonal contraceptives. The thought of these perceived side effects deterred them from using the methods.

"I had a friend who was using it (implant) but it was worrying her so she took it out and then later she became pregnant but she had a miscarriage. So, when we went to the hospital, they said it was because she was using the hormonal contraceptive method that was why she lost the baby. The implant got mixed in her blood". (18-year-old girl in an FGD)

In line with this, it came out strongly that adolescents were better off using short term methods, to prevent risks related to using long term methods.

"...It is just that I think we should not use the long-term methods like the one for five years. At least you can take the monthly injections". (17-year-old girl in an FGD)

However, one girl stated the need to switch between methods if one experienced an unpleasant effect.

"A friend of mine said when she did it initially (took the injection), it was good but later her bleeding pattern changed from one week to days...and she grew very fat. After some time, she had severe lower abdominal pain. Then later, she lost weight and began to faint...she said it is the injection. So, she stopped and she is now using the pills and all those effects stopped". (18-year-old girl in an FGD)

Anticipated disclosure of hormonal contraceptive use

The girls had divergent views about openly disclosing their use of hormonal contraceptive methods. Most of them expressed lack of willingness to disclose their hormonal contraceptive use. They would be worried for people, including their friends, to find out they used hormonal contraceptives. They feared people who would find them using hormonal contraceptives would perceive them to be bad girls, hence spreading rumours about them. This they indicated would make them feel bad, shy and embarrassed.

“Oooh...! in my school when they saw someone using contraceptive they started gossiping about that person. They said the girl can’t live a chaste life. They even think that she is a prostitute. So, I will not like to use it so that people will talk bad about me”. (IDI with a 16-year-old girl)

However, for some girls, it would not be a problem if people close to them (mothers or sisters) got to know about their hormonal contraceptive use because they could trust them to keep it as a secret.

Interpersonal factors***Peer influence***

Participants “learn” a lot about hormonal contraceptives from chatting with their friends and the opinions and stories (whether true or false/gossiping) told by these friends appeared to have quite some influence on their decision to use, considering examples they provided. The often-mentioned negative opinions of friends had a lot of overlap with the misconceptions about the side effects of hormonal contraceptive use (e.g., it harms you, causes health problems, etc.).

“For me it is because of the lady who went to do it and the thing got missing in her arm. I hear it makes you so fat and the thing can get lost in the body. That is why I have decided not to use it”. (FGD with 15 to 19-year-old girls)

The positive opinions expressed by friends were that hormonal contraceptive is good, protective, helpful, gives you good curvy shape, helps in finishing school, and shows you take responsibility. However, on the other hand, when asked about the influence their friends had on them, they tended to strongly state they did not care and some gave examples of how their opinion was contrary to those of friends.

Parents' influence

Almost all the adolescents reiterated that their parents would be very displeased if they found them using hormonal contraceptive methods. They anticipated their parents would think of them as very bad girls mostly because they are not of age to have sex in the first place. It is perceived as sinful behavior and being disrespectful towards the parents. Their parents would be disappointed in them, they would nag, scold them, may refuse to pay their school fees or even drive them away from home. These reactions from their parents would, in turn, make the girls feel shy and embarrassed.

“I think they will drive me away from home...they will say I am a bad girl. They will think that you have sex and you have a boyfriend. They will insult you and you won't feel happy. They will embarrass you and they will refuse to pay your school fees. They will ask you to let your boyfriend pay for your fees”. (IDI with an 18-year-old girl)

However, a few of the girls were more positive (i.e., it's better to use hormonal contraceptive than becoming pregnant) especially when they would first discuss it with their mothers before going for a method. Once they did that, they were sure their mothers would not have a problem if they got to know. They, however, alluded to the point that if they did it without pre-informing their parents, the parents would be angry at them.

Anticipated response from partner

Some of the girls who were asked to anticipate the opinion of their boyfriends on their use of hormonal contraceptive methods had different responses. They mostly did not think that their boyfriends would react negatively towards them for protecting themselves. Indeed, some mentioned that they thought their boyfriends would be happy if they found that they were using hormonal contraceptive methods because they could have sex without worrying about pregnancy.

“Oh nowadays, as for the boys, they like girls who use it. Hahhahhaa... I think they will be happy because as you have sexual intercourse, they know that nothing will come out of it”. (IDI with a 16-year-old girl)

One girl stated that her boyfriend's displeasure about her using a hormonal contraceptive method did not matter to her. As illustrated below

“That means he will not touch me hahhaahaaa... I will tell him the reason I did it and if he doesn't agree, then that means he won't touch me haha haha”. (IDI with a 19-year-old girl)

One girl strongly stated that her boyfriend would not be happy, especially when she does not discuss it with him in advance.

Community factors

Role of religion

The majority of the girls stated that (their) religion (Christianity or Islam) is against the use of hormonal contraceptive, especially for adolescent girls. It is considered a sin, against the will of God. It resembles an abortion and it is against God's planned number of children for you.

“Some Christians like “Gyidi” people, they cannot use it because they are always giving birth so they cannot use it... They say it is sinful... it is against their religion. They say that The Bible indicates that we should have as many children as the sea sand so assuming that God has given you eight children and you continue to use the family planning so that you give birth to only 3 children, it is sinful”. (19year old girl in an FGD)

“I also know an Islamic lady who went to do it and her husband was angry with her. Because it is something they don't like, her arm began to rot. I don't think it is the method that resulted in her arm rotting but I think it is because her husband spoke against it...she went to take it off and the rotting stopped”. (17-year-old girl in an FGD)

Almost all of them indicated their religious leaders would be disappointed in them if they got to know they used contraceptive methods. They expected their Pastors and Imams would see them as very bad girls who refuse to abide by the teachings or rules and regulations of the religion on the abhorrence of early and pre-marital sex including contraceptive use.

“They will think that you are not religious and then as a child, they always advise us to live a chaste life before marriage so they won't be happy with you. They think that since you are using the family planning method you have a boyfriend”. (IDI with a 16-year-old girl)

One the girl said she may miss an opportunity to get married because her Imam would not recommend her in case there was such an opportunity. They declared these responses will make them feel bad, sad, refuse to go to church or even put a stop to their contraceptive use.

“... if a man is looking for someone to marry. he will say I am a bad girl so he won't recommend me. He will say that I am having sex that is why I am using contraceptives. I will miss opportunities because he will recommend another person”. (IDI with an 18-year-old girl)

Perceived community norms

Almost all the girls perceived that the community would react negatively to their contraceptive use. They maintained that society sees contraceptive use as a preserve of only married adults therefore children are not supposed to use them. Consequently, children who use them are considered as bad girls and promiscuous and some of them may get insulted for that. They also professed that if people should see them using contraceptives, they would spread rumors about them in the community.

“... in the Ghanaian society when they see you using those things, they will say that ah this child, how can a child like you be using family planning? Hhaahaahaa you are a town helper” (IDI 16-year-old girl)

Only two girls seemed to be more resilient and stated that ‘we need to quit the shyness’ (as getting pregnant is still worse) and ‘no please it (i.e., their opinion) will not affect me’

Discussion

Using in-depth interviews and focus group discussions, we determined factors that negatively affect the use of hormonal contraceptives among adolescent girls in the Kintampo area of Ghana who reported that they had no experience in the use of hormonal contraceptives. Non-use of hormonal contraceptives among the adolescents was explained by a combination of individual-, interpersonal, community and institutional-level factors. At the individual level, poor knowledge of the different hormonal contraceptive types and their mode of action, negative attitudes towards adolescent hormonal contraceptive use, lack of self-efficacy to organize hormonal contraceptives, fear of real and perceived side effects of hormonal contraceptive use and fear of disclosure explained why the sexually active adolescents in this study did not use hormonal contraceptives. The interpersonal, community and institutional levels showed a strong association between social normative beliefs and hormonal contraceptive use amongst adolescents. Disapproval of hormonal contraceptive use, both expected and actual, by parents and peers, and societal disapproval and stigma toward pre-marital sex and contraceptive use by the community and religious groups, explained why adolescent girls in this study did not use hormonal contraceptive methods.

Our results showed that adolescents in this study had superficial knowledge on hormonal contraceptives. Though they could mention some hormonal contraceptive methods, their knowledge on the mode of action of these hormonal contraceptive methods in preventing pregnancy was poor. Studies have generally reported in support of our study the low levels of detailed knowledge of hormonal contraceptive among adolescents from different parts of the world (Nguyen et al., 2006), as well as the negative impact that lack of knowledge has on (hormonal) contraception use (Nguyen et al., 2006; Schwandt et al., 2015). A lack of knowledge may be explained by the fact that young people are often not given clear, correct and full information regarding matters of sex and sexuality at home and at school (Nguyen et al., 2006; Smith et al., 2011). In the Ghanaian context, issues related to sex are practically not discussed at home and are sketchily taught as part of a few core and elective subjects in school (Awusabo-Asare et al., 2017). This may explain why the adolescents in this study did not have in-depth knowledge about the different hormonal contraceptive methods and consequently, did not use them. To improve adolescents' knowledge on hormonal contraceptives, efforts should be geared towards provision of in-depth knowledge about hormonal contraceptive types, mode of action and side effects to adolescents when they visit the facility for contraceptives and also through mass media and school health programs.

A negative attitude towards adolescent hormonal contraceptive use was another important finding associated with the non-use of hormonal contraceptives among adolescents in this study. Most adolescents in this study approved of hormonal contraceptive use among married adults, to help them space up their children while they work. However, young girls and unmarried adults using contraception were perceived to lack good sexual morals. This negative attitude is likely shaped by prevailing descriptive social norms, that discourage pre-marital sex in most African societies including Ghana (Agha et al., 2021; Costenbader et al., 2017). Sexual intercourse in most African societies is not an activity meant for “children” and society's disapproval of sexual intercourse among young people inherently prohibits contraceptive use amongst them (Agha et al., 2021; Costenbader et al., 2017). Agha et al (2021) highlighted a strong negative association between contraceptive use and social norms that discourage pre-marital sex and contraceptive use among adolescents (Agha et al., 2021). This finding supports results from other similar studies (Costenbader et al., 2017; Nalwadda et al., 2011).

Another barrier to hormonal contraceptive use reported in this study is the lack of self-efficacy to organize hormonal contraceptive methods. This finding is similarly reported in other studies where adolescent's refuse to go for contraceptives from health facilities and chemical seller shops, attributable to feelings of embarrassment and

shyness associated with securing contraceptive methods from the various sources (Awusabo-Asare et al., 2006; Nalwadda et al., 2011; Wood and Jewkes, 2006). The feeling of embarrassment emanates from adolescent's anticipated negative reaction from providers, community gossip and labelling of promiscuity, as a response to early sexual activity amongst them. Programs aimed at building decision-making skills, assertiveness and self-confidence in adolescent girls could be an effective way of shaping their self-efficacy and hence, improving their hormonal contraceptive use decision making and subsequent uptake.

An additional significant finding that explains the non-use of hormonal contraceptives is the girls' strong perception and fear of side effects of hormonal contraceptives, similar to findings from other studies (Awusabo-Asare et al., 2006; Nalwadda et al., 2011; Yidana et al., 2015). Popular among the perceived side effects was future infertility. Some of the girls expressed the fear that the substance injected or implanted into the body could get mixed in the blood and stay in the system for long periods, which could cause miscarriages or lead to future infertility. In most African countries, childlessness is stigmatized, making childbirth a very important accomplishment. Indeed, one's success in life and social status is highly associated with the ability to bear children and sometimes the number of children one has (Yidana et al., 2015). Therefore, the use of anything with the potential to interfere with one's child bearing ability will be highly feared and avoided.

In addition to the fear of future infertility, adolescents also expressed worry about specific side effects related to using the implant. Though dysmenorrhea, amenorrhea, headache and dizziness are supported by literature as side effects of using implants (Inyang-Etoh and Akpan, 2016), the popular belief that the implant could get missing in the body and cause epilepsy is misconstrued. These misconceptions may have been fueled by ignorance and or misinformation from friends and other community members. However, the notion of dislodging implants appears to be common among Ghanaian youth as well as adults (Adongo et al., 2014). It is imperative therefore to direct interventions to disabuse adolescents' minds of their negative perceptions and misconstrued ideas about the side effects of hormonal contraception use. Out-reach to schools, places of worship and market centres could be very useful for sensitizing adolescents by health workers.

Furthermore, fear for disclosure of contraceptive use emanating from societal disapproval of hormonal contraceptive use amongst adolescents was reported as a key deterrent to hormonal contraceptive use reported in this study. Whether actively, or passively, adolescents in this study would be unwilling to disclose contraceptive use to their important others. They feared that if these people became aware of their

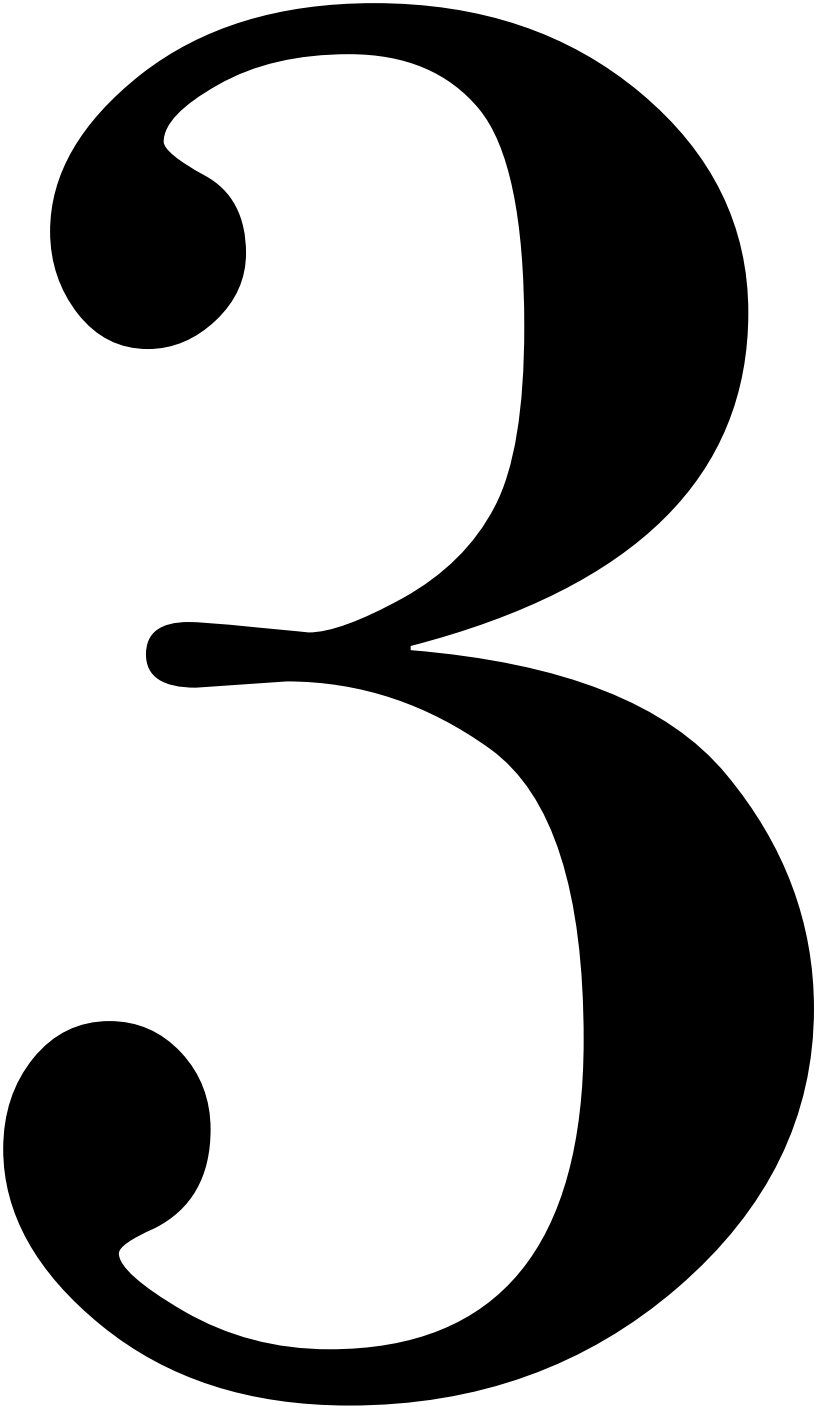
hormonal contraceptive use, it would be disapproved of and consequently result in stigmatization or even aggressive responses (Kinaro et al., 2015; Nalwadda et al., 2011). Such disclosure issues which are rarely reported in hormonal contraceptive use literature are often seen within the context of a set of social norms which sanction 'immoral sexual practices', (Bamgbose, 2001). Research on treatment adherence have shown that lack of disclosure can negatively influence adherence which in turn results in all kind of health issues (Arnold et al., 2008; Greeff et al., 2008; Smith et al., 2008). Adolescents' ability to disclose their hormonal contraceptive use or intentions to use specially to experienced adults such as parents and health workers may potentially expose them to the right information about the different contraceptives and their mode of action, to disabuse their minds of some of their misconceptions and take away their fears to promote use. Interventions targeting parents' and improving parent-child communication on sexuality-related matters may be a solution.

Lastly, adolescent's religious beliefs which prohibit the use of hormonal contraceptive prevented them from using hormonal contraceptives. Some Christians and Muslims believe that children are gifts from God and trying to stop them from coming by whichever means including the use of contraceptives is sinful as reported in other studies (Okereke, 2010; Kinaro et al., 2015; Nalwadda et al., 2010). In Nalwadda's study, adolescents reported that contraceptive use was viewed as murder in religious circles (Nalwadda et al., 2010). The phenomenon may explain why some religious leaders oppose contraceptive use. Religion is a very important component of the Ghanaian society. Christian and Islamic religions are highly practiced. Most of the religious laws and beliefs are consistent with, and reinforce societal norms, compounding adolescents' dilemma to use hormonal contraceptives. Societal norms are very difficult to change (Mollen et al., 2010), however, parents, religious leaders, teachers and community opinion leaders are very important agents in promoting change. It is important to educate them on the need for adolescents to have access to contraceptive use information and services and the risks to adolescent's wellbeing if these needs are not met.

To conclude, non-use of hormonal contraceptives among adolescents in this study was explained by a combination of individual, interpersonal, community and institutional based factors, shaped by social normative beliefs. Generally, the reasons for non- contraceptive use reported in other studies are like what we found as reasons for non- hormonal contraceptive use in this study. However, in addition to these reasons, fear of real and perceived side effects of hormonal contraceptives in general and perceived side effects of specific hormonal contraceptive methods, and disclosure issues are very strong reasons for non-use. A quantitative study to test the relative significance of the identified determinants of hormonal contraceptive use, to inform

the content of interventions to promote hormonal contraceptive use, to reduce the occurrence of adolescent pregnancy in the Kintampo area of Ghana is desirable, so we plan to embark on one.

It is worth to mention some limitations. Our study findings represent opinions from a few adolescent girls in the study area and make the study findings not generalizable to all other Ghanaian adolescents and, for that matter, other adolescents in general. The strength of this paper is that, though the adolescents' expressed opinions, beliefs and values were the same in both the focus group discussions and in-depth interviews, using both data collection methods was very useful. In the in-depth interviews, adolescents provided sensitive information that they may have avoided had it been in a focus group discussion. In the focus group discussions, discussants portrayed divergent ideas where necessary, made the point and gave examples to back their claim. This generated very rich diverse group data.



Chapter 3

Individual level factors explaining the correct and consistent use of hormonal contraceptives among adolescent women who have experience with hormonal contraceptive use

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Abstract

Pregnancy among adolescent girls is a global public health problem, especially in developing countries. Its occurrence can be prevented with the correct and consistent use of effective contraceptive methods. This study explored the personal determinants of hormonal contraceptive uptake and consistent use among adolescent girls as evidence for informing effective hormonal contraceptive use interventions among them. In-depth interviews were carried out among 16 girls aged 15 to 19 years with hormonal contraceptive experience between April and June 2022 in Kintampo Ghana. Results showed that knowledge on hormonal contraceptive types and sources of obtaining them, organizing hormonal contraceptive uptake and self-efficacy in getting access, hormonal contraceptive use decision making and disclosure of hormonal contraceptives use were important factors explaining uptake and consistent hormonal contraceptive use amongst adolescent girls in this study. Also, coping mechanism and skills for accessing and using hormonal contraceptives, attitude toward hormonal contraceptives and risk perception toward pregnancy, influence the uptake and consistent use of their hormonal contraceptives. Participants in this study were resilient and highly in favor of hormonal contraceptive use. They have demonstrated that it is possible for adolescent girls to use hormonal contraceptives and use them consistently if interventions are targeted at their attitude to hormonal contraceptives, their self-efficacy, decision-making skills, coping skills, pregnancy risk perception among others.

Introduction

Pregnancy among adolescents is a public health problem, especially in developing countries (Guttmacher Institute, 2020; WHO, 2020a). In sub-Saharan Africa, about 50% of annual pregnancies are by adolescent girls aged 15 to 19 years (Guttmacher Institute, 2020). The Ghana Maternal Health Survey of 2017 reported childbearing among 14.4% of girls aged 15 to 19 years (GSS et al., 2018). Percentages of childbearing adolescents increased with age (from 3% among girls 15 years vs. 32% among 19-year-old girls) and differed by place of residence (18% in rural areas vs. 11% in urban), region (from a low of 7% in Greater Accra to 19% in Western Region), level of education (35% for no education vs. 4% for secondary education) and wealth quintile (2.7% for highest vs. 21.1% for lowest quintiles). The Brong Ahafo Region where this study was carried out was one of the regions with the highest childbearing adolescents at 16% (GSS et al., 2018). In the Kintampo area, a survey of 793 male and female adolescents in 2011 showed as much as 40% of both male and female adolescents being sexually active. Among them, over 30% had either experienced a pregnancy or impregnated a girl (Boamah et al., 2014). The notable disparities in pregnancy occurrence among the different groups of adolescents in the country call for targeted interventions for pregnancy prevention.

Pregnancy and child birth related complications are noted as the primary cause of death for adolescent girls worldwide (WHO, 2020a) and their children have increased risks of low birth weight, preterm delivery, and poor neonatal outcomes (Ganchimeg et al., 2014). Teenage pregnancy also results in school dropouts, potentially leading families into poverty (Rosenberg et al., 2015). In addition, most teenage pregnancies are unintended and pregnant girls have reported negative responses from their surroundings including lack of support, refusal of their male partners to accept responsibility, threats of being disowned by family and stigmatization, from friends, family and even health care providers (Anima et al., 2022; Bain et al., 2019; Kotoh et al., 2022; Krugu et al., 2016). These, among other reasons, lead many girls to abort their pregnancies often in unsafe ways with negative health consequences and sometimes even death (Bain et al., 2019; WHO, 2020a). About 5.6 million adolescent pregnancies are aborted every year globally (Guttmacher Institute, 2020).

Abstinence from sexual intercourse is the surest way to prevent pregnancy and African religious and cultural norms emphasize abstinence from sex till marriage as such, efforts for pregnancy prevention mostly center around abstinence promotion (Baku et al., 2018). This limits the level of sexual and reproductive health education received by young people both at home and at school (Awusabo-Asare et al., 2017; Baku et al., 2018). However, sexual desire which is part of human biology peaks at adolescence

and makes abstinence from sexual intercourse not practical among all adolescents. In addition, some girls indulge in sexual intercourse for financial and material gains, out of pressure from friends, ignorance, and misinformation (Boamah-Kaali et al., 2016; Krugu et al., 2016). This makes pregnancy prevention interventions that concentrate on abstinence only not the best approach for all groups of girls (Boyer, 2018; Buse et al., 2016).

Next to abstinence, the use of effective contraceptives can prevent unwanted pregnancy. Research has shown, however that the use of contraceptive methods among sexually active adolescent girls is low in developing countries (Gutmacher Institute, 2020). In Ghana, in 2017, 9.8% of sexually active girls 15 to 19 years were using any contraceptive method, compared to 6.9% who used any modern method of contraception including oral contraceptive pill (1.1%); IUD (0.1%); injectables (1.3%), implants (1.7%), and male condom (1.6%) (GSS et al., 2018). Considering the negative effects that adolescent pregnancy places on the adolescent, her family and society at large, it is prudent to put in place strategies to curb the occurrence of unwanted teenage pregnancy through the promotion of correct and consistent contraceptive use among sexually active adolescents. So far, scientific research on contraceptive use, especially in developing countries, has mostly focused on condom use (Smith, 2020). Yet condoms are less reliable for pregnancy prevention compared to hormonal contraceptive methods (WHO, 2020b), and has numerous practical challenges with its use, including male partners' perception of it reducing sexual pleasure (Raidoo et al., 2020). Also, patriarchal views on gendered roles make men responsible for decisions on the number of children to have, giving women less autonomy over their own initiatives for contraceptive use (Afful and Attom, 2018). So, most girls depend on the willingness of their partner and their negotiation skills for condom use (Boamah et al., 2014). However, a lot of girls in the Ghanaian setting usually lack these negotiation skills (Kругu et al., 2016), which make women-controlled methods a better alternative for adolescent girls. Our paper focuses on the use of hormonal contraceptives (HC) to prevent pregnancy amongst adolescent girls.

For HCs to effectively prevent pregnancy, they must be used correctly and consistently. But correct and consistent contraceptive use is low in developing countries (Chandra-Mouli et al., 2014; Gutmacher Institute, 2020). It is critical then to explore the factors that influence the initiation of, as well as factors influencing the correct and consistent use of HC methods. Initiating HC use vs. consistent use of HCs are mediated by several overlapping but also different factors including personal and external level factors. We have previously reported on the personal and external barriers to initiating HC use among adolescents who have never used HC methods in the Kintampo area of Ghana (Boamah-Kaali et al., 2021). In the current paper, we

focus on the individual factors – or personal determinants - that enable the consistent use of HCs amongst adolescents in the Kintampo area, who have experience with HC use. External factors influencing HC use will be discussed in detail in another paper (Boamah-Kaali, n.d.).

Previous studies on determinants of hormonal contraceptive methods use report age, level of education, knowledge of contraceptive methods (Blackstone et al., 2017; Bolarinwa et al., 2020; Chola et al., 2020; Kapasia et al., 2022; Mahato et al., 2020), having clear plans for the future, communication with a partner about contraception use, desire to use birth control, and a desire to prevent unintended pregnancy as factors for contraceptive uptake (Bain et al., 2021; Blackstone et al., 2017; Nalwadda, 2012). In addition, fear of pregnancy, worries about carrying a pregnancy, worries about the cost of caring for a baby and fear of abortion complications, have been positively linked to HC uptake (Nalwadda, 2012). Specifically, for long-acting contraceptive methods (LARCs), perceptions about their reliability and long duration of action positively influence their uptake (Mahato et al., 2020).

Besides literature, theories can be useful for further clarifying potential determinants of contraceptive use and are essential for planning evidence-based interventions (Eldredge et al., 2016). Our study benefited from a brain storm of some constructs of the Theory of Planned Behavior (TPB) and the Health Belief Model (HBM) in identifying the possible determinants of correct and consistent HC use among adolescents with HC use experience. The TPB postulates that, behavior is determined by five constructs including intention, attitude, subjective norms and perceived behavioural control (Ajzen, 1991). For our study, it implies that adolescents would use hormonal contraceptives if they have a high motivation to use (intention), if they have positive attitude towards HC use (attitudes), if people around them support HC use, or use HCs themselves (subjective norm) and if adolescents have the confidence to use HCs (perceived behavioral control). The Health Belief Model also posits that, individuals are likely to indulge in a health related behaviour (i.e. HC use in our case) to prevent a disease or a health condition (i.e. unwanted pregnancy in our case), if they believe that they are at risk and susceptible to the disease or health condition (i.e. risk of unwanted pregnancy in this case), if the effects of the disease or health condition are severe (i.e. perceived severity of negative effects of unwanted pregnancy in this case), and if the benefits outweigh the cost if the said disease is prevented (i.e. benefits of preventing early pregnancy through HC use) (Janz and Becker, 1984).

Research on the individual level factors that influence the use of contraceptives are usually based on the assessment of the influence of demographic factors (Kapasia et al., 2022.; Kungu et al., 2020; Wuni et al., 2017), which cannot be changed but can

be used to tailor interventions. Personal social-psychological factors influencing hormonal contraceptive use are amenable to change for intervention purposes but limited data on this exist globally even more so in Ghana. Therefore, this study contributes empirical data on the determinants of HC use specifically, by qualitatively studying the individual level or social-psychological factors that influence the initiation and consistent use of HCs among adolescent girls in the Kintampo area of Ghana. Knowing these determinants of HC uptake and consistent use, would provide a template for future interventions aimed at informing adolescents about the use of HCs and to assist them in making informed decisions with the goal of promoting better sexual health and reducing the occurrence of teenage pregnancy amongst them.

Methods

Setting

The present study was conducted in the Kintampo area (Kintampo North Municipality and Kintampo South District) of Ghana with an estimated population of 179,736 of which the adolescent population (15-19years) is 19045 (male 49.7% and females 51.3%) (Kintampo Health and Demographic Surveillance System 2022). In 2011, 67% of the 311 sexually active adolescents in a survey of 789 male and adolescents stated to have ever used a contraceptive method, with only 13% using HCs (Boamah et al., 2014).

Study design

An explorative qualitative study using semi-structured in-depth interviews was conducted among adolescent girls aged 15 to 19 years between April 2019 and June 2019. An in-depth interview approach was chosen because this was the first time exploring the subject matter in the study area. The method offered us the opportunity to generate in-depth data on personal opinions, thoughts, experiences and feelings of adolescents on the subject of HC use, which would have otherwise been difficult to do with other more confirmatory data collection methods such as pre-structured surveys.

Study population and selection criteria

The study population comprised of adolescent girls who had HC use experience (excluding girls with exclusive emergency pills experience). Girls who were using HCs at the time of the interviews and girls who had discontinued the use of their HCs in less than three months prior to the interviews were included. The length of three months of use discontinuation was chosen to avoid recall bias (Khare and Vedel, 2019).

Recruitment

Recruitment was done from the family planning clinic at the Kintampo Municipal Hospital, a Senior High School, two dressmaking parlors, and ten households in Kintampo town. Prospective participants were identified at the various locations by the study team through nurses, a school teacher and owners of dress making parlors, respectively. Those recruited from the households were identified using the database of the Kintampo Health and Demographic Surveillance System. Whenever the research team met a prospective participant, they introduced themselves as researchers from the Kintampo Health Research Centre, who were researching into HC use among adolescents. The study team did not know ahead of time, the HC use status of girls referred from the school and dress making parlors. All such prospective participants met were individually and privately asked by the interviewer if they had any experience with HC use. Prospective participants who were 15 to 19 years and who indicated they were currently using or had recently used a HC method from all the recruitment sources were asked if they would be willing to be consented to join the research.

Recruitment from households: Ten girls who had previously been part of a contraceptive use study involving our study team (Boamah et al., 2014) and were still in the age brackets of 15 to 19 years (10/793), were purposively selected using contact information that was obtained from the KHDSS. After contacting them, it turned out that eight of the ten girls contacted who had stated in the previous study that they used hormonal contraception, were actually consistently using emergency contraception and therefore could not be included in the study. In the end, only two were included in the study.

Recruitment from a secondary school: A senior high school was randomly selected out of three senior high schools in Kintampo using the lottery method. Fifteen girls were contacted through referral by a teacher. Twelve informed the research team that they were not using HCs. The three girls out of the fifteen who used HCs were asked to join the study. Subsequently, two fashion academies were approached as it is a place where there are numerous young apprentices. Out of twelve girls approached only three reported to use HCs and they all accepted the invitation to be included in the study. All the eight girls from these recruitment venues who met the inclusion criteria were informed about the study objectives (i.e., gathering information on factors that influence HC use amongst young women) and procedure (i.e., face-to-face in-depth interviews). They were then introduced to the study and were given a day to decide if they were willing to participate in a one-hour interview on their experiences with their HC use. All eight girls in the end participated in the study.

Subsequently, finding more girls, who were using normal HC (and no emergency contraception) and willing to disclose their HC use became a challenge and so the study team resorted to recruiting from the family planning clinic at the Kintampo Municipal Hospital. The nurses were requested to refer girls who came for family planning services and met the study's inclusion criteria. The family planning clinic is not allowed to share any personal information of patients. Therefore, when a girl came in for her contraceptive method, she would be asked by the nurses if she was interested in participating in a research activity among adolescents with HC use experience. Upon agreeing, the research team was informed by the clinic to schedule an interview with the girl following her visit. Ten girls who agreed were referred to the study team for an interview. Of these ten, one had to leave in the middle of the interview to take care of a younger sibling and another girl in the end did not want to join the study because she felt the subject area was too sensitive. The remaining eight were included in the analyses. Recruiting from the family planning clinic was the most effective method of recruitment, since the nurses already had knowledge on their age and contraception use. In the end, a total of 47 girls were approached following the recruitment procedures described above, of which in the end 16 girls were included in the study.

Ethics approvals, data collection and consenting process

The Kintampo Health Research Centre Institutional Ethics Review Committee (FWA number 00011103) and the Ethical Review Committee, Psychology and Neuroscience at Maastricht University (Reference number ECP_04_09_2012_S23) granted ethical approval for the conduct of this research. Interviews were carried out by a female social scientist with a Master's degree in Public Health from Kintampo Health Research Centre and a Master of science student from Maastricht University. Interviews were done at quiet places under trees, around school buildings, dressmaking parlors, at a church yard, and in a quiet room at an adolescent health corner. Interviews lasted an average of 40 minutes (range: 20 minutes – 60 minutes) and were tape recorded. Prior to starting the interviews, participants were allowed to ask questions on their rights and responsibilities as study participants. They were assured of anonymity (names not recorded but participants were given unique study ids which would make it impossible to relate any information to individuals) and private storage of their audio recordings on password protected computers, accessible only to study staff. They were informed that only group data would be shared with the scientific community. Participants were also told that they were free not to answer questions they were not comfortable about or to stop the interview at any time without any explanations.

All participants provided written informed consent for the interviews and audio recordings ahead of the start of interviews. For participants below 18 years of age,

parental consent was sought (i.e. the study objectives and procedures were explained to the person who was regarded by the girls as their legal representative and they were asked if the prospective participants would be allowed to join the study, to which the parents agreed. (No parent showed signs of unawares or disapproval of their children's HC use). There were no cultural barriers during the interviews as the interviewer is a native of Kintampo. The participants had the choice to do the interview either in English or the local language (Twi). Only one respondent had her interview in English, compared to 15 who had theirs in Twi (a local language spoken and understood by majority of residents). Data saturation was reached after the 15th interview and confirmed after the 16th interview. Nurses were then requested not to refer study participants anymore.

Description of study participants

Of the sixteen adolescent girls who participated in the study, twelve of them were Christians and the remaining four were Muslims. Almost all of them (15) had ever been to school with the highest educational level attained being Senior High School. Twelve were still schooling and four were dressmaking apprentices. Six of them lived with both parents, one lived with a single parent, five with a grandparent, two with older siblings, and two lived with their husband or boyfriend. All the girls had boyfriends and one was married at the time of data collection. Although specific questions on pregnancy were not asked, five girls reported to have given birth, and all girls had experienced sexual intercourse. (See Table 1 for full information on participant description).

Interview guide

A semi-structured interview guide was used for data collection. The TPB and HBM were used to brainstorm potential personal determinants of correct and consistent HC use among adolescent girls. The guide, which was structured in themes, had sections on: background characteristics, (e.g., age, level of education, relationship status, ethnicity etc.), hormonal contraception use and adherence experience (including how to make sure the method works), access to HCs (including the easiness or difficulty in obtaining HCs, etc.) and Personal thoughts and experiences with HCs use (including how decision to use was made).

Within each main theme, probing questions were asked to get more in-depth information (e.g., when discussing their experience, interviewers could ask on positive vs negative experiences). The data collection tool was pre-tested among three adolescents in the study area to test for coherent flow and understanding of the questions and prospective participants' ability to answer the questions, before data collection.

Table 1: Description of study participants (N=16)

Variable	Frequency(n)	Percentage (%)
Religion		
Christian	12	75
Islam	04	25
Schooling		
Primary school	03	19
Junior High School	07	44
Senior High School	05	31
illiterate	01	6
Marital status		
Married	01	6
In a serious relationship	15	94
Sex experience		
Sexually active	16	100
*Child birth		
Has a child	05	31
Has no child	11	69
Current occupation		
Dress making apprentice	04	25
Hair dressing apprentice	02	12
Schooling	10	63
Who respondent resides with		
Both parents	06	37
Single parent	01	6
Grand parent	05	31
Husband/Boy friend	02	13
Older Sibling	02	13

*question on childbirth was not asked but reported based on participant's own volition

Data analysis

The interviews conducted in Twi (15 in total) were translated and transcribed verbatim into English by the first author. The transcribed interviews were coded and thematically analysed using a qualitative data analysis software; Atlas Ti. Version 8.4.2. The code-tree was generated based on the grounded theory approach (Glaser and Strauss, 2017) using codes based on theoretical constructs. An open coding was done through inductive reasoning. Three interviews were coded by the first and second authors independently (second author not involved in data collection). To ensure intercoder reliability, back and forth discussions were done between the first and second author

on the discordant codes. The final codes used for the transcripts were all agreed on by both the first and second authors. Axial coding was used to draw connections between the codes and selective coding used to categorize codes into main and sub categories. Main categories were further grouped into possible themes. Outputs from the coding were summarized iteratively by the first and second author and are shown later in the results section below. Summaries that overlapped in content were merged.

Results

The results presented below describe adolescent girls' experiences with use and adherence to HCs, accessing of HCs, and the personal factors that may influence HC uptake and consistent use.

Correct use and adherence to HCs

All the girls in this study had used at least one form of HC method, with three of them having used several different ones. The types used, including current methods and methods ever used were the three months injection (13 girls), five years subdermal implants (7 girls) and the daily pill (5 girls). The most preferred and consequently used method was the three months injection. The next preferred method was the five years implant. With regards to the consistency in using their methods, among those who used the injections, they reported they always went on the expected date for a repeat dose of their vaccine. Among those who took the daily pill, they made sure to take it daily as shown below.

"I had to take it consistently. I always remembered to take my pills and I did not encounter any problems." (18-year-old girl)

However, a quarter of the girls were not compliant. It seemed they quickly and easily switched between methods the moment they started to feel 'uncomfortable'. Two girls with the implant had discontinued use, even though their sexual relationship continued. A few of them in the end switched to the emergency pill, using it as a regular way of protection, regardless of the side effects as illustrated in the quote below.

"First of all, I went to the hospital for the family planning injection. [...] The three months. So that one kind of prevents the menses from flowing and when that happens, your tummy bloats so a sister of mine told me to stop when the time was up for me to repeat the injection but a friend of mine told me to go for the renewal because the injection will be more beneficial. Those medicines (emergency contraceptive pill) are not safe and I should not take so much of it into my system..."

So, I continued with the injection. [...] but later, I developed headaches and I lost a lot of weight so I decided that I will not do it again. So, I stopped and resorted to using the emergency pill” (18-year-old girl)

Knowledge on HC types and sources of obtaining them

All the girls we spoke to knew that HCs are used for preventing unwanted pregnancy.

“I know that as I am learning this trade, definitely someone will propose to me and if he proposes, by all means we will have sex so that is why I decided to do it to prevent me from getting pregnant”. (16-year-old girl)

Most participants knew that there are different types of HCs including the three months injection, implants, daily pills and the emergency pills, though hardly anybody could correctly describe how HCs work. The hospital and clinic, as compared to the drugstore, were mostly mentioned as the place to obtain HCs. The majority were aware that it only protects you when you use it consistently and timely.

Organizing for HC and self-efficacy in getting access

Almost all the girls indicated that they got their HCs from the hospital instead of the pharmacy, because at the pharmacy you must pay more, and they expect more negative responses and/or are worried about meeting other people. A small majority of the girls indicated they had no difficulties or worries at all when visiting the family planning clinic for the first time. For the large majority, going to the facility the first time to get the method was difficult because they did not know what to expect, where to go or how to go about it. Half of the girls stated they were or would be feeling very shy and worried about all kind of difficult questions that would be asked. A few girls also stated that they were worried the health care provider would refuse to provide them the method. Almost all girls were escorted by either friends, cousins, boyfriends, neighbors, or parents, to the various sources (hospital, drugstores) for the first time in accessing HC. Subsequently, though, all girls could go by themselves to get their methods without an escort after they got used to the place and felt more comfortable.

R: “On the first day I was very shy but subsequently, I became close to the guy [the pharmacist] so when I go there, I can ask him questions and he explains things to me [...] I: Why were you shy? R: If it was Paracetamol that I was going to buy, I could easily go but going there for the first time to buy this medicine is shameful...Because people have different thoughts. The guy will think that I am a bad girl that is why I have come to buy this pill. So that crossed my mind and it made me shy buy I went to buy it”. (19-year-old girl)

HC use decision making

Most of the girls made the decision on HC use by themselves. For about a third of them, their decision was driven by having already experienced a pregnancy or by already having a child. They were confident that they had made the right decision for themselves by using HCs to protect against pregnancy and securing their future

R: "You know because of what happened to my school when I got pregnant, I don't want the same thing to happen to me again with this apprenticeship too. So that is why I decided to use it (five years implant) to protect myself so that I can successfully complete my apprenticeship [...] I: I see. So how did you make the decision to use the family planning? Did someone help you? R: No, I made the decision myself". (KI015)

Among the other girls, their decisions to use and what type to use were based on advice from others (in order of frequency mentioned: friends, mothers, nurses, neighbors, boyfriends or televised advertisement) and driven by a desire to be able to secure their future, by completing their education or a trade they are learning. They mentioned that after the advice to start using a HC method, they visited the family planning clinic where they were advised on the different types and were provided with their choice.

Disclosure of HC use

The majority of the girls we spoke to had disclosed their use of HCs to either their partners, mothers or close friends. In few cases, other family members (father, sister, cousin) also knew. For most of these girls, it is not a bother if others (even those not close to them) know or find out that they use HCs. Reasons for disclosing are that it is not a crime, it is normal, it is not a bad thing (a pregnancy is worse), and it shows responsibility: they are using it to protect themselves and besides everyone else does it as shown below.

"Oh, I won't be worried. Everyone else is spoilt. Everyone has a reason they go in for a boyfriend so I will not be worried." (15-year-old girl)

A few of the girls did not feel comfortable with disclosing their HC use because people may make wrong assumptions regarding their reasons for use and gossip about it; they will be seen as bad, disrespectful, and sleeping around. This group of girls have not discussed contraception with their partners because the partners have not enquired, or the girls were already using the contraceptives before getting into relationship with the guys.

Coping mechanism & skills for accessing and using HC

All girls stated how they cope with diverse unfavourable circumstances in their quest to access or use HCs. When it is about getting the HC, some stated that instead of going to the drugstore, where they are likely to meet familiar people, they rather go to the hospital and talk privately with the nurse. Others mentioned escort from e.g., friends, writing the name of the drug on a piece of paper or sending someone to get it for them, or ask the provider to bring it home, ask their boyfriend/somebody else to get it, go to an older and more experienced seller or walking away or waiting until the drugstore is empty.

I: "And the pills? How did you feel getting them from the drugstore? R: I used to feel shy. I used to go to places where the dispensers were matured. I: Why was that? R: I was shy. Hahaahaa...Anytime I went and met other people, I had to move aside for a while and wait for them to leave before I go to buy hahahaha". (19-year-old girl)

To deal with a non-approving boyfriend, some girls reported using it secretly and most went ahead to access their HC methods even after they met familiar people at the health facilities.

R: "No, I have never met anyone except today when I saw one of my teachers. I didn't even see her. She was the one who saw and called me to asked what I was doing there. I told her I had come for injection and she left. I: So how did you feel when you saw her? [...] I know I wasn't doing anything bad so there was no need for me to worry. I: Okay but how did she react? R: I did not see any reaction from her to show that I had come to do something bad. I don't know if it is later that she will go and talk about me". (16-year-old girl)

When asked on what helps them to comply it was mentioned that they read the instructions, track their schedule, use long-term if they are forgetful, or keep their HC next to an item they daily use.

"It is important you keep the medication at a place where you keep other things that you use daily. For instance, I used to keep mine at the same place where I keep my body lotion because I use my body lotion daily and when I see it, I remember that I must take it. So, we must keep it at such places where they will be visible". (19-year-old girl)

Attitude towards HC use

As expected, most of the girls expressed a (very) positive attitude towards HC use: it protects against unwanted pregnancy, making it possible to complete school, learn a trade, and be able to achieve future ambitions. Most of the girls found the use of HCs so beneficial that they would not yield to any opposition to use from family, friends, religious leaders or partners. Some stated that, even if they should experience side effects with their methods, they will still go ahead to use HCs because they presume the benefits outweigh the possible side effects. They state “it is effective and trustworthy”.

“As for the family planning, everyone knows it is good. It helps us to prevent pregnancy to be able to learn our trade. [...] so, if you go for a boyfriend and you don't protect yourself, you can become pregnant and you cannot complete your apprenticeship so that is why I agree that the family planning is good for everyone to do it”. (18-year-old girl)

However, a few respondents perceived the use of HC as bad, particularly due to unpleasant experiences such as change in menstrual cycle, and fear of side effects such as future infertility especially related to the use of implants. They seem to prefer the method that still gives them a monthly menstruation. There is also the believe that it is sinful because it means you have sex and/or it would motivate you to have sex with many men.

HC use misconceptions and their management

About half of the girls, we spoke to reported to have either witnessed or heard some unpleasant incidents being attributed to the use of HCs. Participants reported to have heard that using HCs could cause cancers, fibroids, destroy the womb or make the womb disappear, cause barrenness, make you infertile or at least cause pregnancy problems, make people collapse or even die. Specifically referring to the implant, girls reported it can get lost in the body.

“The reason we even came to take the implant out is that, there was this lady in our neighbourhood who was cooking so she collapsed and by the time she got to the hospital, she was dead. [...] Yes, she had also done the implant so we got scared. At the funeral, everyone was saying “family planning”, “family planning” so that really scared us”. (18-year-old girl)

Other study participants said that different methods of HCs may fit different people so there is the need for the nurses to check the blood and see what is most suitable for a specific person. Others do not believe the claims attributed to HCs and they think that if a method does not fit, the best thing for one to do is to just switch to another.

“I hear a lot of people complain about not having children when you use the family planning but I don’t take those assertions seriously. Other people have done it and yet, have given birth so I don’t believe it when people say that. We differ from each other. There are some people who would experience extreme weight loss when they use a type that does not fit them. Others also gain a lot of weight. It depends so when you experience some side effects, you just have to switch to another method that will work well for you”. (19-year-old girl)

Pregnancy risk perception

All the girls clearly expressed their awareness on the risk and fear of getting pregnant or a repeat pregnancy (for those already with children) when having unprotected sex, which would interfere with their future and therefore, the need to continue to protect one’s self as described below.

“Maybe you are in school and you are also in a relationship. You also have sex with the guy so if you don’t protect yourself, the guy doesn’t also protect himself, you will get pregnant. If you get pregnant now, you will drop out of school, and you can’t pursue your dream career”. (15-year-old girl)

Future ambitions

All the girls reported to have plans for a brighter future and are working towards their ambitions of becoming a doctor, a nurse, a soldier, a crime investigating officer, fashion designer, etc. For these reasons, they chose to use HCs to prevent having an unwanted pregnancy, which may interrupt their plans and prevent them from achieving their set objectives for the future. Some were really determined in doing so.

I: “So how about your boyfriend if he sees it will you be worried? R: No. I: Why? R: Because he knows I used it to protect myself so that I can progress so he will not say anything I: But if he should see it and ask you to stop because it is bad, will you stop? R: No then I will rather break up with him. I: Why is that? R: Because I am currently learning a trade but he is doing nothing. I am the one who can get pregnant not him. If I should get pregnant now, it will affect me but not him”. (17-year-old girl)

Discussion

We explored the individual factors that may explain the initiation and continual use of HCs among adolescent girls in the Kintampo area of Ghana. We found that most of the girls in our study used their contraceptive methods consistently. Only a few had stopped using theirs while others switched methods from time to time. Several social-psychological factors account for HC use initiation and adherence among the girls including knowledge on HC types and sources of obtaining them, organizing HC uptake and self-efficacy in getting access, HC use decision making, disclosure of HC use, coping mechanism and skills for accessing and using HC may explain the uptake and consistent use of HCs among girls in our study. Also, attitude toward HC use, HC misconceptions and their management, pregnancy risk perception and future ambition influence HC uptake and use consistency among the girls. These are discussed in details below.

Almost all girls in this study were aware of available HC types and where to get them but could not describe exactly how they work to prevent pregnancy. Because of the girls' limited knowledge on the mechanism of action of HCs in pregnancy prevention, some of them could hardly accept the side effects they experienced in using their HCs especially the change in their menstrual cycle and blood flow. This limited knowledge also fueled their misperceptions about HC use such as it causing future bareness. Some of the girls tended to worry about their personal experiences of the side effects of HCs they used and the unpleasant experiences of other people they knew making them switch methods or stop their method use altogether. Low levels of contraceptive use have been reported among adolescents who fear the side effects of contraceptives in literature (Akonor et al., 2021; Ukegbu et al., 2018). Eliason et al. (2014) have also found that being anxious about side effects of contraceptives, on account of limited knowledge on how contraceptives work is a paramount reason for not using modern contraceptives in rural settings (Eliason et al., 2014). Unfortunately, some of the girls in our study who had experienced some side effects from their regular HCs resorted to using emergency contraceptives. However, the use of emergency contraceptives could have increased side effects with frequent use, compared to regular HC methods (WHO, 2020b). Their preference for emergency contraception as a solution to avoiding side effects of their regular HCs could be a result of ignorance and draws attention to the need for in-depth education on this matter. Awusabo-Asare et al. (2017) notes the sketchy nature of all aspects of sexual and reproductive health issues taught in Ghanaian schools, emphasizing that contraception is the least covered topic among the SRH topics taught as part of selected core and elective subjects (Awusabo-Asare et al., 2017). The low level of indepth knowledge on contraceptives found in this study points to the need to consider comprehensive SRH education as a stand -alone

core subject taught in Ghanaian schools to provide Ghanaian youth with the needed information on SRH issues. Other interventions that provide full and comprehensive information on contraceptives, their mechanism of action and side effects may also help adolescent girls in Kintampo and other similar settings to gain deeper knowledge about hormonal contraceptives (Boti et al., 2019; Chandra-Mouli et al., 2019; Norton et al., 2017; Omar et al., 2008; Pazol et al., 2015). Such educational interventions could be delivered during school health talks and through the mass media (radio and television), to target out of school adolescents as well.

Organizing HC uptake and self-efficacy in getting access also influenced HC uptake and use consistency among girls in our study. Most girls in our study portrayed less self-efficacy in organizing and accessing their HCs from health facilities at least for the first time. They were mostly shy especially for the first time when visiting the health facility or drug selling outlet for their contraceptives and had to get an escort before going. Most of them feared to be judged by health care workers or other adults they might meet which negatively affected some of them as they had to go back home and come another time or find someone to get it for them. This could delay the renewal of their method and put them at risk of unwanted pregnancy. Adolescents with low self-efficacy have been reported in literature to be less likely to use contraceptives compared to those with high self-efficacy (Muhindo et al., 2015). A few of the girls however said they were confident going to the facility for their methods, even as first timers. Empirical data suggest that adolescents who portray high self-efficacy to access contraceptives from a health facility more often use their contraceptives consistently (Akonor et al., 2021; Getinet et al., 2022; Kahsay et al., 2018). Positive Youth Development programs such as “It’s your game...Keep it Real” (Markham et al., 2012; Tortolero et al., 2010) foster young peoples’ competence and confidence to develop safer sexual behaviours like delaying of sexual initiation, limiting frequency of sex, using contraceptives, and having fewer sexual partners (Gavin et al., 2010). It will be prudent to take adolescents through some of these interventions to build their self-confidence to enable them to be more assertive in taking important decisions regarding their sexual and reproductive health.

The girls’ innate motivation to decide on contraceptive use initiation in this study may also explain the consistent use of their hormonal contraceptive methods. Most of the girls in this study took the decision for HC use by themselves, showing their assertiveness and autonomy. The theory of self-determination, posits that the quality of a person’s motivation determines the extent to which they will indulge in and sustain a given behavior. Autonomous motivation, which is central to this theory argues that having the autonomy and freedom to make choices about important life goals is a strong predictor of behavior (Deci and Ryan, 1985). Most girls initiated

their hormonal contraceptive use based on their desire to avoid the occurrence or re-occurrence of pregnancy, to complete school or a vocation. This important decision to postpone pregnancy for school or vocation places them at a vantage point of becoming financially independent and empowered. Several health-related interventions based on the self-determination theory have helped people adapt their behaviours and benefited from improved health outcomes (Silva et al., 2015). It will be prudent to provide adolescent girls with these kinds of interventions which will enhance their ability to decide on life issues, including using hormonal contraceptives if need be.

Disclosure of HC use is another important determinant of HC use among the girls in this study. Research shows that adolescent girls who discuss issues related to sex, contraception, sexually transmitted infections, and pregnancy prevention particularly with their parents usually engage in safe sexual behaviours. They are more likely to also use contraceptives consistently (Gbagbo, 2020; Lantos et al., 2019; Widman et al., 2016). Most of the girls in our study had told their parents about their hormonal contraceptive use probably because they perceive their parents to be favorably disposed to adolescent HC use. It may also be that their parents encouraged them use HCs for pregnancy prevention especially for those who already had a child. The ability of the girls to talk to their parents about their sexual behaviour and contraceptive use could also signify a good parent child relationship at home. “Cuidate”, a sexual risk reduction program for Mexican youth, reinforces the importance of building parent-child relationships as way to promote environmental support at home for adolescents sexual and reproductive health. This fosters adolescents’ trust in their parents and enable the discussion of private issues (Villarruel et al., 2010) which could include their use of contraceptives.

Having a coping skill is useful in proactively addressing issues and dealing with stressful situations and anxieties in life (Berger, 2011; Schwarzer and Knoll, 2004; Skinner and Zimmer-Gembeck, 2009). The girls in our sample exhibited their coping skills in dealing with the difficulty of accessing and using HCs. Their expressed coping skills may explain their HC uptake and subsequent consistent use. They showed high level of commitment to their HC use and found several means through which to access and use their HC methods in the face of challenging situations and going against the demands of opposing partners. Ability to cope with difficult situations in life shows resilience and defines a person (Straud et al., 2015). Interventions based on cognitive behavioral therapy, social emotional learning, among others, equip adolescents with coping skills and present promising methods of helping them handle their emotional stress, modify risky behaviours, and adopt more healthy lifestyles (Šouláková et al., 2019). These interventions would be worth trying out to support adolescents in Kin-

tampo in dealing with possible stressful situations around their sexual and reproductive health, including their contraceptive use.

Further, positive attitude towards HC may explain the girls' uptake and consistent use of their hormonal methods in this study. Most girls were very positive about their HCs and attributed lots of benefits from using their HCs. Though almost all girls had either experienced or knew of the negative experiences of other people who used HCs, the positive attitude of most of them toward HCs in terms of how beneficial they are in preventing pregnancy probably helped in the consistent use of their methods. Positive attitudes to contraceptives have been linked to their uptake and consistent use. Literature points to consistent use of the oral pill, for example, among research participants with positive attitude toward contraceptives (Kiene et al., 2014). Also, the "Promoting Change in Reproductive Behaviours of Adolescents" (PRACHAR) project in India has demonstrated that promoting positive attitudes towards contraceptives leads to substantial increase in their uptake and sustained use (Subramanian et al., 2018). In essence, building demand for contraception among adolescents through interventions such as the PRACHAR project and the ones used in Chile, England, and Ethiopia (Chandra-Mouli et al., 2019), could be beneficial for improving attitudes to contraceptives use to improve their consistent use among adolescents in Kintampo.

Perceived risk of unwanted pregnancy and fear associated with unwanted pregnancy among girls in this study could also explain their initiation and sustained use of HCs. As it was similarly reported in Nalwadda's study in 2012, most of the adolescents in that study used contraceptives because of fear of the occurrence of pregnancy, fear of carrying the pregnancy and fear of taking care of the baby (Nalwadda, 2012). Evidently, most health decision making theories postulate that people would ideally not engage in behaviors with a high risk of an undesirable outcome (Janz and Becker, 1984). It is therefore not surprising that most of the girls in our sample appreciate their vulnerability to unwanted pregnancy and its consequences, and therefore their being proactive in avoiding it.

Strong future ambitions may also explain the girls' consistent use of HCs among the girls. All the girls who participated in this study were learning a trade or were in school. There are more girls in school or vocational training now than before, leading to an increase in age at first marriage in Ghana (GSS et al., 2015). Because girls spend longer periods in school or their vocational training, they would probably like to postpone pregnancy till after their education or training. Almost all the girls in our study seemed very committed to their schooling or learning of a trade and were bent on successful completion. They reported to use HCs so that they can successfully

complete their training, for economic self-sufficiency in future. Chernick et al. (2015) found in their study that adolescents who had clear plans such as finishing college, were more likely to use HCs (Chernick et al., 2015). This means that interventions that promise to ignite desire in adolescents to make them ambitious would be very helpful. These interventions could include the use of role models who can inspire and motivate adolescents to reinforce their existing goals and facilitate their adoption of new goals as demonstrated by Straud et al. (2015), in the use of role models to address the underrepresentation of women in science (Straud et al., 2015). Trying out such promising interventions on adolescents in Kintampo could be very rewarding for the girls, given their commitment to educating themselves for a better future. Role models in this case could also include peers similar to the adolescent girls in terms of ambitions and socio-demographic characteristics who have successfully used their hormonal contraceptive methods.

Limitations

Our study is limited in its level of generalizability because it only involved a small number of adolescent girls in a specific geographical area whose contraceptive use experiences were qualitatively explored. Therefore, inferences based on this study should be carefully done. Also, it was a challenge to find girls willing to declare their HC use from the general population. This could be because the prospective participants probably perceived they could be judged by the interviewer for using hormonal contraceptives. This means that our results could be biased by only reflecting the voices of girls who are open and convinced about their HC use. However, recruiting girls from different demographic backgrounds minimized any biases. The recruitment difficulties we experienced show how important it is to openly discuss issues related to adolescents' sexual and reproductive health at the community level to allow adolescents to express their needs for appropriate interventions.

Conclusion

Participants in this study were mostly resilient and highly in favour of HC use. They have demonstrated that it is possible for adolescents to use HCs and use them consistently. There is compelling evidence to suggest that if adolescents in Kintampo are provided with comprehensive sexuality education that provide indepth information on HCs and their mode of action, including side effects, they will be more informed, which will minimise their fears in relation to perceived and real side effects of HCs. In addition, would be for such education to target adolescents' attitudes toward HCs, to

build their self-confidence to organize and use HCs, to improve their decision-making skills, coping skills and negotiation skills. They also need to be challenged to set high future ambitions and their risks to pregnancies clearly communicated to them. Through the various interventions suggested above, they will be able to initiate and sustain HC use, to prevent unwanted pregnancy amongst them (Fornner et al., 2015).

The result of this study was very useful in generating and testing hypothesis for our quantitative study that tested the relative importance of the identified determinants in this study in predicting uptake and consistent use of HCs among young women (Boamah-Kaali et al., upcoming). It will further inform the content of our intervention development and its implementation in future.

4

Chapter 4

Perspectives of adolescent girls
on interpersonal and community
normative beliefs towards adolescent
hormonal contraceptive (HC) use and
their impact on HC use among them

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5

Chapter 5

Social-Psychological determinants
of the intention to use hormonal
contraceptives among adolescent women
in the Bono East Region of Ghana

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6

Chapter 6

General Discussion

Hormonal contraceptives (HC) effectively prevent unwanted pregnancy among female adolescents to secure their future for a better life (Chandra-Mouli et al., 2019; Guttmacher Institute, 2020; WHO, 2020b). Understanding all the factors influencing their use is essential to promote HC use among them. Individual and environmental level factors play a significant role in predicting HC uptake and the intention to use.

The studies described in this thesis aimed at improving our knowledge of how to help sexually active adolescent girls use HCs to prevent unwanted pregnancy. Specifically, it aimed to enhance the understanding of individual and environmental level factors that determine the uptake and correct and consistent use of HC among different groups of adolescent girls, as well as factors determining their intention to use HCs. This concluding chapter discusses the main findings of the reported empirical studies. Similar factors across the studies seemed to influence HC use initiations, correct and consistent HC use, and use intentions. These are discussed below: the individual-level factors and the environmental-level factors.

Individual-level factors

The girls in both studies one (non-users) and two (users), were highly aware of at least one HC method to protect against becoming pregnant. However, their work mode was unknown, creating a gap in HC knowledge among these adolescent girls. Lack of in-depth knowledge about contraceptives affects adolescents' uptake and use (Eisenberg et al., 2012; Frost et al., 2012; Hall et al., 2014; Pazol et al., 2015). Their limited knowledge of HC perhaps explains why adolescent girls in study one did not initiate HC use. A few in study two discontinued their HC use, while others switched to emergency contraceptives. Adolescent girls' limited knowledge of HCs could further be explained by the fact that comprehensive education on sex and sexuality is not covered in educational curricula and, therefore, not taught in Ghanaian schools (Awusabo-Asare et al., 2017). Only a few core and elective subjects treat these topics, but contraception is the least covered area (Awusabo-Asare et al., 2017). Most girls, therefore, learn about contraception from their friends, who are also not well-informed (Boamah et al., 2014).

Adolescents are likely to become entrenched in falsehoods regarding HCs and their appropriate use if they continually get exposed to wrong information from their peers. For example, many non-users and some users had misconceptions about HCs and had intense fears of their side effects when used by girls who had never given birth. They perceived using HCs early could cause health problems such as future infertility. The fear of both real and perceived side effects of HCs is reported to pose huge

barriers to HC use intentions, actual HC use, and use continuity in the literature (Chandra-Mouli et al., 2014; Clare et al., 2018; Coles et al., 2011; Frost et al., 2012; Grimes and Schulz, 2011; Pazol et al., 2015; Pritt et al., 2017). As such, the fears of both real and perceived side effects of HCs were important reasons explaining non-HC uptake and use discontinuity among some adolescent girls in the various studies reported in this thesis. Age-appropriate comprehensive sexuality education will be important in informing adolescents and shaping their attitudes towards HCs to improve uptake and prevent pregnancy from occurring. These forms of education could be provided in schools by being included in the curriculum and through peer clubs, adolescent health corners, radio talks, community forums, and durbars where applicable to reach adolescents out of school. To disabuse the minds of adolescents of the negative thoughts and held misconceptions about HCs, health workers and appropriate stakeholders should provide adolescents with a comprehensive education on HC types, mode of activity, effectiveness, and actual side effects through various channels of information provision described above for correct and sustained method use (Pazol et al., 2015)

Study one showed that non-HC use adolescent girls portrayed negative attitudes towards HCs and their use among adolescents. They perceived adolescents using HCs as promiscuous and at risk of future infertility. They also regarded HC use among adolescents as sinful behaviours that show disrespect towards parents because it means they are in a sexual relationship. Conversely, adolescent girls in study two with HC use experience had positive views about adolescents' use of HCs. They attributed great benefits to their use and depended on them for pregnancy prevention. The relationship between adolescents' general attitudes toward contraceptives and their use is reported elsewhere (Appiah-Agyekum and Kayi, 2013; Casola, 2019; Hagan and Buxton, 2012; Kinaro et al., 2015; Pritt et al., 2017; Manthata, 2019). However, the effect of attitude toward personal HC use on adolescent girls' HC use intention is relatively new in the literature. The finding implies that being positive-minded about personal HC use is necessary for HC use to occur. Adolescents who are sexually active need to understand the personal benefits of HC use and pregnancy prevention. Their attitudes towards HC use need to be changed. Attitudinal change methods like anticipated regret (Richard et al., 1995) and repeated exposure (Zajonc, 2016) can be employed to develop positive attitudes toward HC use and assist in their decision-making (Kok et al., 2016).

According to Bandura, self-efficacy is a personal judgment of “how well one can execute courses of action required to deal with prospective situations” (Bandura, 1977). In study one, the girls who had no experience in HC use, compared to their counterparts in study two with HC experience, judged themselves as low in their ability to

access and use HC. They acknowledged feeling shy and embarrassed, assuming they had to access HC from various supply outlets. These negative feelings limited their ability to organize for HCs, influencing non-uptake amongst them. For the users of HC in study two, they portrayed increased ability in obtaining and using HCs. Even in unfavorable circumstances, they used their planning skills to devise other strategies for securing their HC methods. In study four, self-efficacy toward access and use of HC significantly predicted HC use intentions among the main group, and the four sub-groups studied. Research shows that having high self-efficacy among adolescents positively influences adolescents' intention and actual use of contraceptive methods (Hamidi et al., 2018; Okigbo et al., 2018; Prata et al., 2016; Whiting-Collins et al., 2020).

Bandura explains that “if one has performed well at a task previously, he or she is more likely to feel competent and perform well at a similarly associated task” (Bandura, 1977). Therefore, among the HC users, their intention for future HC use could be explained by their past ability to access and use HC. Among the non-HC users, the study results show that increased self-efficacy would result in more positive intentions for future HC use. In changing health behaviour, self-efficacy is a crucial determinant (Bartholomew Eldredge et al., 2016). The findings from these studies bring into perspective the need for improved self-efficacy among adolescent girls for successful HC use in the future. This encompasses both perceived and real self-efficacy skills. Through guided practice, verbal persuasion (Kelder et al., 2015), self-monitoring behavior (Creer, 2000), and planning coping responses (Marlatte and Donovan, 2005), among many other applicable skills and capability change methods, adolescents' perceived and real self-efficacy skills could be improved (Bartholomew Eldredge et al., 2016; Kok et al., 2016).

HC use disclosure also explained the non-uptake of HCs among adolescent girls in study one and the correct and consistent use of HC among users in study two. Adolescent girls in study one would be uncomfortable disclosing their HC use to important people around them for fear of being stigmatized by them. They also feared being tagged as bad girls and gossiped about by the community, explaining their non-HC use behaviors as reported before (Hall et al., 2016; 2018). The fear of being stigmatised and other unfavourable behaviours toward them by people in their social networks could originate from religious and community norms that disapprove of premarital sex among young people (Hall et al., 2018; Prettner and Strulik, 2016). These religious and community norms against premarital sex limit sex-related discussions between young and older people (Awusabo-Asare et al., 2017; Awusabo-Asare et al., 2008), fueling the lack of willingness by adolescents to disclose their sexual and

reproductive health needs to adults. This scenario could limit access to correct and reliable information on HCs, deepening adolescents' misperceptions toward HCs.

Comparatively, adolescent girls who used HCs in study two had no such fears. They disclosed their HC use intentions and actual use to their parents (mothers in particular), friends, and partners. Upon doing so, they received advice to start using or continue using HCs. They also received support in method selection and access. Especially among girls who had initiated childbirth, they perceived an expectation to prevent a repeat pregnancy from people around them, explaining why they would not be worried if the same people or others learned they use HCs. Disclosure seemed important in explaining the decision to initiate and sustain HC use among adolescent girls; however, it is rarely reported in HC literature, unlike HIV/AIDS literature, where it is more popular. Among people living with HIV/AIDS (PLWAs), available evidence reports the benefits of disclosure, including medication adherence, retention in care, better clinical outcome, and receiving social support, among others (Hornschuh et al., 2019; Deribe et al., 2018; Vreeman et al., 2014). Our findings unearth a gray area for further research while expanding on current knowledge on the determinants of HC non-uptake among non-HC users and the correct and consistent use of HCs among those with HC experience. Interventions like guided practice and verbal persuasion (Kelder et al., 2015) could equip adolescent girls to disclose their HC use intentions and actual use to important people around them for successful HC use. Lessons could also be learned from successful applicable tailored disclosure interventions (Paintsil et al., 2021) to improve disclosure skills among adolescent girls.

Future ambition further explained why adolescent girls with HC use experience consistently used their HCs. Most girls were in school or vocational training and determined for successful completion. They set goals to become various professionals, aiming for future economic freedom. For this reason, they chose to use their HCs consistently to prevent unwanted pregnancies, as affirmed in the literature (Chernick et al., 2015; Walker et al., 2019). Unintended pregnancy curtails educational prospects and marks the end of school or vocational training for most girls who become pregnant. Interventions that will project future possibilities among adolescent girls and provide alternatives to being pregnant are warranted. Through modeling, role models could inspire girls and encourage them to aspire high (Bandura, 1977; Kelder et al., 2015). Setting high goals for the future could motivate sexually active adolescent girls to use their HCs to prevent unwanted pregnancies consistently.

Several girls in study two had experienced pregnancy and perhaps perceived themselves at risk of unwanted pregnancy. Consequently, they probably used HCs consistently to avoid repeat pregnancies. The Health Belief Model explains that individuals are likely

to perform a given health behaviour if they perceive susceptibility to an adverse health outcome (Janz and Becker, 1984). Additionally, empirical data indicate a strong association between pregnancy risk perception and adolescent contraceptive use (Akonor et al., 2021, Brown et al., 2011, Kahsay et al., 2018). In another vein, perhaps adolescent girls who got pregnant in study two suffered negatively and may not want a repeat of that hence, their decision to continue using their HCs. This scenario, however, means that HC use starts late for most girls after an unwanted pregnancy, which may change their lives forever. To improve adolescent girls' use of HCs, interventions that would heighten their risk perceptions towards unwanted pregnancy and its effects are warranted, for example, using scenario-based risk information (Mevisen et al., 2009). However, risk perceptions result in protective action only if there are high self-efficacy perceptions toward performing the recommended action (Peters et al., 2013). Adolescent girls in study two seemed to indicate high levels of self-efficacy to access and use HC. The high perceived self-efficacy and pregnancy risk perception could be huge intervention endpoints for adolescent girls.

In study four, previous HC experience positively predicted HC use intentions in the main sample of respondents. Perhaps the use of HC has been beneficial to many of them, and that informs their intention to continue using it into the future, as shown in the literature (Boamah-Kaali et al., 2021, Keogh et al., 2021, Bangoura et al., 2019, Mumah et al., 2018). Additionally, people who are satisfied with the contraceptive methods they used in the past are likely to continue to use the same methods in the future (Mumah et al., 2018). In implication, if girls in this study were satisfied with a method they used in the past, they are more likely to intend to use those methods in the future. It will be helpful for health service providers working in the family planning clinics to assist women in choosing suitable methods that meet their individual needs so that they can stay motivated to use them.

Next to the individual level factors, the environmental level factors reported in the various studies to influence the uptake and correct and consistent HC use and use intentions are discussed below.

Environmental factors

Most adolescent girls in study one discussed HC use with their peers concerning HC side effects, and they gossiped about other friends using it. Their peers shared information on adverse side effects experienced by people who use HC, and they seemed not to approve of HC use among adolescents. These negative attitudes from their friends towards HC possibly influenced the girls' decision not to use HCs. However,

study three showed the injunctive norms of peers favored HC use among adolescents. Together with their friends, they discussed the benefits of HC use and were advised mainly by their friends to use HC for pregnancy prevention, which they did. Peer influence in adolescent HC use has been documented before (Bhushan et al., 2021; Calhoun et al., 2022; Sanchez et al., 2020). Our results further emphasise the role of peer pressure in HC decision-making among adolescents. Perhaps the adolescent girls from studies one and two could be influenced by their friends through a need for belonging (Brechwald and Prinstein, 2011). Adolescent girls in our two studies probably try to align themselves with the beliefs and practices of their friends to feel accepted by them (Prinstein and Giletta, 2016). Or perhaps they affiliate with peers who possess similar inclinations and are like-minded (Brechwald and Prinstein, 2011; Prinstein and Giletta, 2016). Either or both assumptions could explain the influence of peers on the distinct HC use behaviours among adolescents who use HCs and those who do not. Additionally, the peers of most girls in study two used HCs themselves, and they usually went together in pairs or groups to get their HC methods from the health facility. Going together in groups to get HCs is a critical finding in this study that needs further exploration. Perhaps they went together in groups for social support, which interventionists could leverage to help adolescents seeking HCs. Interventions such as mobilizing social support (Holt-Lunstad and Uchino, 2015; Valente, 2015) could be a good approach.

The adolescent girls in study one perceived their parents to have a negative attitude toward adolescent HC use. They anticipated mild and severe negative responses from their parents, assuming they would use HC, discouraging them from initiating HC use. The expected negative reactions from their parents are likely rooted in descriptive social norms that discourage pre-marital sex in most African societies (Agha et al., 2021; Costenbader et al., 2017; Nalwadda et al., 2011). As an honour to the family, many African parents wish their children to get married before they start having sex and childbearing. They frown upon premarital sexual activities and out-of-wedlock childbearing, which would disgrace the entire family (Boamah et al., 2014). Ultimately, these adverse reactions likely result in adolescent girls concealing their sexual relationships from their parents, exposing them to more risky behaviors such as non-contraceptive use. However, adolescents who discuss their sex life with their parents are more likely to practice safe sexual habits and less likely to contract sexually transmitted infections, unlike their counterparts who do not (Gbagbo, 2020; Lantos et al., 2019; Widman et al., 2019).

Interestingly the girls only anticipate these negative reactions from parents but have not practically experienced them. In a study among adolescent contraceptive users in Atlanta, some girls who anticipated negative parental responses toward their HC use

received their parent's support after confiding in them (Steiner et al., 2019). However, this could be the case because these parents live in a Western country with different norms regarding sexual intercourse and contraceptive use among adolescents. Notwithstanding, helping adolescents to develop positive views about their parents' reception towards their overall reproductive health and providing them with information about their parent's possible approval for their HC use (Forsyth, 2014; Mollen et al., 2010) could change their perceptions towards their parents' thoughts about adolescents HC use. Moreover, girls could be provided coping skills if their parents are pessimistic about their HC use (Marlatte and Donovan, 2005). On the other hand, parents as agents of change could be targeted with interventions to help them create a receptive environment towards adolescent reproductive health in general and their HC use specifically. As shown in the intergenerational model of the Guria Adolescent Health Project (GAHP), adolescents and their parents received extensive training on Adolescent Sexual and Reproductive Health (ASRH) issues and received life skills support. In the end, parents were receptive, and adolescents could freely discuss sensitive ASRH issues, including contraception at home (Inter-Agency Working Group, 2007).

Unlike the adolescent girls with no HC use experience in study one, those in study three who had used HC mostly anticipated their mothers to hold positive views about adolescent HC use, which motivated them to use HCs as shown elsewhere (Richards and Buyers, 2016; Steiner et al., 2019). Indeed, most had experienced their mother's support in choosing a specific HC method and accessing them. Interestingly, adolescent girls in studies one and two had opposite parental expectations regarding HC use. The probable reason could be that a third of the girls in study three had given birth. The majority of those had dropped out of school and needed to find other alternatives for building their future. It is only natural for parents of such girls to support them in using HCs, to prevent repeat pregnancies. Parents can play a positive role in adolescent reproductive health care; studies have found that parental involvement, which includes monitoring and communicating with adolescents, is essential for reducing risky health behaviours among adolescents while promoting positive health outcomes. This finding implies that interventions for preventing pregnancy and other risky behaviours among adolescents should consider the involvement of parents (Pengpid and Peltzer, 2018).

Adolescent girls in studies one and three reported their partners' approval of HC use by teenage girls to prevent unwanted pregnancy. In study three, their male partners supported them in accessing their HC methods from various outlets, similarly shown in a study from Kwazulu-Natal on the role of male partners in contraceptive use. Male partners in that study supported their girls by providing escorts, serving as reminders,

and providing information on their HCs to them (Kriel et al., 2019). A systematic review of factors influencing contraceptive use in sub-Saharan Africa also reiterates the positive role of male partners in successful HC use among adolescents (Blackstone et al., 2017). However, male partners can also be barriers to adolescent HC use, as a few respondents in study one reported. Male partners would oppose HC use when they presume that girls would be unfaithful to them or girls may experience unpleasant side effects or have trouble with childbirth in the future (Blackstone et al., 2017; Kriel et al., 2019). Intimate male partner relationship coupled with gender role dynamics is the most important interpersonal relationship in contraceptive decision-making and actual use (Varga, 2001; Maharaj, 2010). The role male partners play in HC use decision-making is multifaceted. It may include deciding on the number of children wanted and when to have them, providing financial support to access HC products and services, and approval for HC access and use, amongst others (Cleland et al., 2014; Dudgeon and Inhorn, 2004.). This makes male involvement in adolescent HC interventions worth considering for successful use.

In studies one and three, religious norms explained the non-uptake of HCs and the correct and consistent use of HCs among adolescent girls with and without HC experience. The influence of religion and religious norms in the use of contraceptives has been documented elsewhere (Bangoura et al., 2021; Brooks and Weitzman, 2022; Kahsay et al., 2018). Compared to the state and society, religion has the highest socialization impact on sex and sexual behaviours in Ghana (Brocato et al., 2007). Premarital sex and other forms of illicit sexual behaviours are considered sinful within religious circles. The use of contraceptives contradicts the doctrines of some Christian and Muslim denominations as it is believed to thwart God's plans for one's reproductivity. It is also perceived as abortion when contraceptives are used to prevent children from coming, and abortion is considered murderous in religious circles (Nalwadda, 2012). Further, it is considered to promote sexual promiscuity among unmarried young women potentially. Most of our study participants identify with some form of religion. For this reason, adolescents who esteem religious beliefs and teachings against illicit sex are not likely to indulge in it and will not use hormonal contraceptives (Bangoura et al., 2021; Boamah-Kaali et al., 2021; Brooks and Weitzman, 2022; Ezenwaka et al., 2020).

Surprisingly, in study four, adolescent girls who affiliate themselves with Christianity compared to those belonging to Islam, Traditional religious beliefs, or having no religion were more likely to intend to use HC in the future. This finding is by chance. The role of religion cannot be over-emphasized in planning HC use interventions for adolescents (Prettner and Strulik, 2016). Engaging religious leaders and important stakeholders in religious circles will be prudent when planning such interventions.

Interventionists can engage religious leaders and other stakeholders in religious circles through advocacy, lobbying, and participatory problem-solving (Christoffel, 2000; Cummings and Worley, 2014; Wallerstein et al., 2015; Weible et al., 2009).

Just like religious bodies, Ghanaian communities have sets of norms and values. People from different communities are expected to live in the confines of their community's normative beliefs. Community members who do not conform to this expectation are ostracized, stigmatized, and sometimes punished (Gelfand et al., 2017). One such norm widely acknowledged in most Ghanaian communities is the prohibition of sex before marriage. Young people, especially girls, are expected to be chaste and keep their virginity till marriage as an honor to their husbands and family (Bamgbose, 2001). Young people who have premarital sex are labeled with promiscuity; they are tagged as bad girls and are perceived as not acting their age (Hall et al., 2018). These descriptive norms of the community explain the non-uptake of HCs among adolescents with no HC use experience. As shown in the literature, the community's disapproval of sex among young unmarried people negatively affects contraceptive use among adolescent girls (Agha et al., 2021; Costenbader et al., 2017; Sanchez et al., 2020). Additionally, the community speculates rumors about HC side effects, especially the assertion that it causes infertility and discourages their use among young unmarried girls.

Nonetheless, some adolescent girls in study three did not take these assertions on HC side effects seriously and were not concerned about the community's thoughts toward their use of HCs. This attitude perhaps made it possible for them to continue to use their HCs. It is important to target interventions toward the community to provide support for adolescent sexual and reproductive health and well-being. Participatory problem-solving approaches like community engagements and brainstorming by stakeholders can produce collective and suitable methods for solving the sexual and reproductive health problems of adolescents (Norton et al., 2017). They will improve HC uptake and consistent use among adolescents girl if needed.

Lastly, healthcare worker's negative attitude toward adolescent contraceptive use and contraceptive service provision for adolescents is one of the common reasons for non-contraceptive use among adolescents (Ezenwaka et al., 2020; Mbalinda et al., 2020; Ninsiima et al., 2021; Nmadu et al., 2020). However, adolescent HC users in study three reported supportive injunctive norms of health workers towards adolescent HC use. The adolescents received support to access and use their HCs from health providers, including information provision, support with method selection, and encouragement for use continuation. Elsewhere, service providers deemed it necessary to place restrictions on adolescent HC use and were hesitant to provide such services for them because of health and safety issues, personal beliefs, and moral demeanor, among oth-

ers (Nalwadda, 2012). Our findings could be explained with various forms of training support received by health workers in Ghana to tailor reproductive health services to the needs of adolescents stemming from the adolescent health corner initiative (Ghana Health Service, 2017). Ghana has established adolescent-friendly corners to provide youth-friendly sexual and reproductive health information and services to adolescents (Ghana Health Service, 2017). This initiative led to some health personnel training on how to meet the needs of adolescents in SRH matters. Providing training to health service providers will be beneficial to them in tailoring SRH services to the needs of adolescents for improved HC use and pregnancy prevention (Denno et al., 2021).

We recently found from service providers who work in these health corners within our study area that they understand the need for sexually active adolescents to use contraceptives for pregnancy prevention. The health workers showed a positive attitude toward providing adolescent SRH services, including contraception. These positive attitudes and reported comfort in offering contraceptive services influenced their behaviour toward SRH service provision for adolescents (Senen, 2018). Even though some girls from study one among the non-users did not initiate the use of HCs because of perceived stigma and judgmental behaviors from health service providers, none of them had experienced such attitudes. Support from service providers could improve HC uptake amongst adolescents and should be provided.

Limitations & strengths

Some methodological challenges and strengths are worth mentioning. We used qualitative data collection methods for three studies. Therefore, generalizing their findings to all other Ghanaian adolescents and, for that matter, other adolescents is difficult because they represent opinions from only a few adolescent girls in one geographical area in Ghana. However, data saturation was reached for each study, and recruiting girls from different demographic backgrounds (i.e., age, level of education, religious background, etc.) minimized the generalization challenges.

We also experienced the challenge of locating girls within the general population who used HCs and were willing to declare their HC use in studies two and three. Given that the interviewer was older than the prospective participants, they probably felt shy and perceived she could judge them for using HC. In implication, our findings could be biased by representing the opinions of only girls who are open and convinced about their HC use. However, the interviewer is highly experienced in interviewing adolescents on personal and sensitive issues. She used her interview skills and expertise to ease the anxieties felt by the respondents by coming down to their level

and developing a good rapport with them. Further, she assured the girls of anonymity and private data storage on password-protected computers accessible only to the study team before and after the interviews. These approaches used probably minimized the response biases.

In study four, we used a survey that was administered face-to-face to the study participants, which could be a bit less private for them. This approach could lead to social desirability bias. To minimize this limitation, we fully assured participants of anonymity and confidentiality. We did not ask for the participants' names, and we informed them about group data reporting before and after the interviews. Additionally, the data collection instrument was long and could have been exhausting for the study respondents, affecting their responses to the questions. However, trained and experienced data collectors administered the questionnaire. They tried to sustain participants' interest and gave them brief periods for a break or rest.

It is also impossible to draw causal conclusions in this thesis because we used a cross-sectional survey for data collection in study four. However, our results point toward critical endpoints and show appropriate gaps for future research and interventions.

The strength of this dissertation is based on the study design, which used a mixed methods approach, including qualitative and quantitative data collection methods among different groups of respondents. In-depth interviews helped elicit sensitive and private information from the participants, which otherwise would have been challenging to share in a group setting. Focus group discussions provided divergent ideas that generated rich and diverse group data. Personal beliefs, perceptions, and values shared by the study participants through these qualitative methods would have been difficult to elicit with pre-structured data collection tools like survey questionnaires.

Most importantly, our survey questionnaire was primarily developed based on findings from qualitative studies. This method gives a comprehensive overview of the determinants of HC use in the study area. The process provides an additional advantage of data triangulation and augments the validity of our findings. Additionally, the quantitative study had a large sample size, reducing the possibility of results being by chance.

Future research

The findings from these studies draw further attention to important research gaps that need to be filled. Firstly, our results from studies one and three identified attitudes and injunctive norms perceived by peers, parents, partners, health service providers' community, and religious leaders as important determinants of HC use. However, these perceptions may not correctly represent the attitudes and norms of these critical people in the adolescents' social network. It will be important to understand the perspectives of peers, parents, partners, and health service providers themselves on how they perceive sexual and reproductive health service provisions to adolescents, including the use of HCs. This will guide the development of interventions at the environmental level to facilitate HC decision-making and use in case adolescents are considering HC use. We have previously reported on the opinions of health service providers in tailoring reproductive health services to the needs of adolescents (Boamah-Kaali et al., 2018).

Additionally, community opinion leaders and religious leaders can best tell how they perceive sexual and reproductive health service provision to adolescents and HC use among them. Hence, the subject should be studied among community opinion and religious leaders to understand and measure their perspectives for targeted interventions.

Moreover, the role of fathers in adolescent reproductive health is not known in this and many similar settings in sub-Saharan Africa. When parents are referred to in ASRH issues, it is primarily the mothers. The role of fathers and their perceptions towards contraceptive use in general among male and female adolescents should be studied so that they can be supported to get involved in ASRH issues.

Further, research shows that besides cognitive factors, structural factors like poverty, gender inequality, cultural norms, health care access, and emotional factors like stigma and fears influence contraceptive use intentions and actual use (Chandra-Mouli et al., 2014; Cleland et al., 2006). However, we did not measure these endpoints. It will be important to do this in a future study to address any barriers stemming from them appropriately.

Again, because study four was cross-sectional, causal inferences cannot be made. Making causal inferences with other study designs, such as case-control studies or longitudinal cohort studies, is possible. In the future, such study designs should be used to measure the causal determinants of HC uptake and correct and consistent use among adolescent girls.

Lastly, the dual method approach, thus, using condoms and an HC method, is ideal for effective pregnancy and STI prevention among sexually active adolescents (Hood et al., 2014; Wilkinson et al., 2022). Though our interviews touched a bit on this, there is no data in the Ghanaian setting on adolescents' perceptions towards dual method use. This is worth exploring to inform interventions that will support male and female adolescents to prevent pregnancy and STIs simultaneously through the dual method approach.

Conclusions and implications

This thesis aimed to improve our understanding of the individual and environmental factors influencing HC uptake and correct and consistent HC use among adolescent girls with and without HC use experience. Together, the four studies have identified similar important social and psychological factors at the individual (knowledge, attitudes towards HC, misperceptions, self-efficacy skills) and environmental level (factors related to peers, partners, parents, health workers, religious leaders, and the community, including religious bodies), that explain the uptake and correct and consistent use of HCs among adolescent girls with and without HC experience. However, some determinants are unique to either group. Among adolescent girls without HC use experience, the fear of perceived and actual side effects of HC and societal stigma strongly explained their non-uptake of HCs. On the other hand, pregnancy risk perception and future ambitions strongly explained correct and consistent HC use among adolescent girls with HC use experience. The finding implies that different groups of adolescent girls need different interventions, focusing on different determinants for improved HC use. It is not one size fits all.

Additionally, attitude toward personal HC use was a critical determinant of HC use intention among all adolescent girls studied. Unlike general attitudes toward HC, attitude toward personal HC use is rare in HC literature. The finding adds to the literature by improving our understanding of determinants of HC use among adolescent girls with and without HC experience. In the quantitative study, attitudes toward personal HC use and self-efficacy toward access and use of HC were unique in predicting HC use intention among the various adolescent groups. The results mean that attitude toward personal HC use and self-efficacy toward access and use of HC are two essential determinants for improved HC use among adolescent girls with and without HC use experience. These two determinants should be considered critical intervention endpoints to ensure successful HC uptake and correct and consistent use among all adolescent girls needing HC use.

Furthermore, disclosing HC use to people in the adolescent girls' social network was another important but barely reported factor explaining the uptake and correct and consistent HC use among adolescent girls with and without HC experience. This finding contributes to filling the literature gap by improving our knowledge of the determinants of uptake and the correct and consistent use of HC by adolescent girls with and without HC experience. It further expands on possible intervention routes suggesting that adolescent girls need to be provided skills to disclose their HC use intentions or actual use to important people around them for support with successful HC initiation and correct and consistent use.

Overall, this thesis has identified important determinants of uptake and correct and consistent use of HC by adolescent girls with and without HC experience. The possible adaptation of successful interventions targeting the critical determinants identified from similar settings suiting the Ghanaian context will be extremely important to improve HC use among adolescent girls.

For interventions suggested in this thesis to work, there is the need for collaborative efforts between important stakeholders from governmental and non-governmental ministries and agencies, civil society, parents, health care providers, teachers, community opinion, and religious leaders. These are important agents of change who must be involved and or lobbied, when necessary, to successfully implement appropriate interventions.

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Impact paragraph

Many adolescents in Ghana are sexually active, but most do not want to get pregnant. Although the majority of sexually active adolescent girls have no pregnancy intentions, many do not do anything to prevent pregnancy from occurring. Consequently, many sexually active adolescent girls in Ghana have experienced pregnancy, and many have started childbearing very young. Complications in early pregnancy and delivery among adolescents are the number one cause of death for girls 15 to 19 years. Children born to adolescent girls have high risks of poor birth outcomes. They are usually born preterm, have low birth weight, and suffer other severe neonatal outcomes, including death.

The correct and consistent use of hormonal contraceptive (HC) methods by sexually active adolescent girls can prevent pregnancy and avert the health and other consequences of unwanted pregnancy for both the mother and her child. Available evidence suggests very low levels of HC use among adolescent girls globally and especially among those in low and middle-income countries, including Ghana. The studies in this thesis were carried out to understand the individual and environmental level factors that influence the uptake of HC methods among adolescent girls who have no experience with HC, the factors influencing the correct and consistent use of HCs among those with HC experience, and the determinants of future HC intentions among them. Our results show the influence of several social-psychological factors on HC use decision-making among adolescent girls. Further, the findings demonstrate that different groups of adolescents need different interventions targeting different determinants. It is not a one size fits all. Findings from these studies will inform the contents of HC use interventions in the future to improve HC use among adolescents in Ghana to prevent unwanted pregnancy.

Scientific impact

There is a gap in knowledge between factors that may influence the use of HCs among adolescent girls, specifically when compared to all women within the reproductive age group (i.e., 15 to 49 years). However, most available literature on barriers and enablers of contraceptive use or family planning usually includes all women from 15 to 49 years, mostly married. However, different reasons may explain why an older married woman will use or not use contraceptives compared to an unmarried adolescent girl. Our studies provide evidence of factors that explain why adolescent girls with no HC experience do not use HCs and the factors that motivate the correct and consistent use of HCs among adolescent girls with HC use experience. Evidence on the determinants of HC use intentions among adolescent girls is also provided. These

determinants can be targeted as endpoints for educational interventions specific to adolescent girls.

Most studies reporting on factors influencing adolescent contraceptive use are not specific about the study outcome. They do not distinguish between contraceptive methods but combine hormonal and non-hormonal methods, including condoms. This creates a challenge of knowing which determinant influences the use of which method type and, thus, information about the requisite intervention. The findings of studies reported in this thesis provide evidence of factors influencing the use and non-use of hormonal contraceptives to guide the planning of specific interventions. Even within the context of HCs, the findings provide specific reasons for not using specific HC types in some cases. For instance, subdermal implants may not be used among adolescents because they fear that they might get lost and relocate to other parts of the body, which could cause severe health outcomes. Or the perception that they may stay for long periods in the blood to cause future infertility. The pill, on the other hand, may not be used among adolescents because of forgetfulness. These specific reasons affecting these methods would require different intervention modules, targeting misperceptions and fear against the implant factors and forgetfulness for the pill factors. These would be different from interventions targeting negotiation skills among adolescents who use coitus-dependent methods like condoms, for instance.

Again, most studies only report the influence of socio-demographic factors on adolescent contraceptive use, and it is usually from a secondary analysis of demographic and health surveys. However, for intervention purposes, such evidence is inconclusive and is not comprehensive enough to inform the contents of interventions. At best, they only provide proof of which subgroup of adolescents should be targeted with which intervention. Moreso, socio-demographic and personality-related factors are not amenable to change. The studies reported here have identified the individual and environmental level factors that influence adolescent girls in their HC use initiation, the correct use, and use consistency. Specifically, important social cognitive factors have been identified. Unlike socio-demographic factors, social cognitive variables are amenable to change because they are based on beliefs people hold. These beliefs can be targeted with theory- and evidence-based educational interventions providing information and training through a multitude of behavioral change methods, including persuasion, modeling, and guided practice, to improve HC use among adolescents.

Moreover, previous research in low-and -middle-income countries that have studied the individual and environmental factors of contraceptive use mostly used qualitative research methods only. Although qualitative studies are useful in identifying potential factors influencing adolescent decision-making concerning correct and consistent

hormonal contraceptive use, they do not provide correlational evidence. They cannot estimate the relative importance of these determinants in predicting the motivation to start HC use. Therefore, the relative significance of the different factors predicting HC use is still unknown in many settings. This dissertation has reported quantitative evidence on the relative importance of earlier identified social-psychological factors in predicting HC use intentions. This quantitative study was based on the outcome of previous qualitative studies, which validates our results. These quantitative findings can guide the selection of appropriate determinants for specific groups of adolescents to inform effective future HC use interventions planning. Again, these findings would be more informative in the planning of policies.

Further, two key findings have been identified in this study to explain the non-uptake of HC, the correct and consistent use of HC, and HC use intentions. These are non-disclosure and disclosure of HC use to important others among adolescents with no HC use experience and those with, respectively, and attitude toward personal HC use among adolescent girls. Disclosure or lack of it to important others as a determinant of the non-uptake of HCs and the correct and consistent use of HC, respectively is a gray area in contraceptive use literature. It expands our knowledge of factors informing HC use decision-making among adolescents and should be studied further. The relationship between positive attitudes toward contraceptive use and intention for future and actual use has been documented before. However, the effects of attitudes to personal HC use on HC use intention are rarely reported. The difference in the level of influence between these two attitude variables would be interesting to explore further to know how each affects the individual's decision-making process.

Social impact

Socially, young mothers who experience unplanned and unwanted pregnancies are stigmatized. Many cannot complete their education and cannot secure good jobs. Their children may also suffer physical and psychological abuse and become poor achievers. Our results imply that if adolescents are targeted with interventions that draw their attention to the personal benefits of HC use, their intention for future HC use could be improved. By this, the social consequences of unwanted pregnancy would be averted if they use HC.

Additionally, by using HCs, they will be able to prevent unwanted pregnancy, complete their school or vocational training, and secure good jobs in the future. They will be able to provide for themselves economically and become financially independent. Again, women who use HC could become empowered to make decisions regarding their reproductive health and overall well-being. The use of HCs also promotes sustain-

able population growth in less developed countries, ensuring equitable distribution of resources and poverty reduction.

Target groups

Adolescent pregnancy and childbearing are persistent public health, social and economic problems in Ghana. Improving the use of hormonal contraceptives among adolescents would reduce teenage pregnancy occurrence. This is of interest to many stakeholders concerned with youth development and empowerment. The government of Ghana, civil society organizations, other non-governmental agencies and organizations, scientists, researchers, and adolescents would be guided by the findings of this study toward future research, program, policy, and intervention planning.

The government of Ghana has signed many international declarations indicating support for reproductive health and the rights of adolescents, including contraceptive use amongst them. Evidence is crucial bases for intervention planning and policy to improve the sexual and reproductive health and rights of adolescents. The ministries of health, education, gender, children, and social protection are responsible for policy formulation, program, and intervention planning to target teenage pregnancy and related sexual and reproductive health issues concerning adolescents. They will benefit from the findings of these studies. They will depend on the evidence provided to inform their policy formulations, programs, and interventions. They will also require such evidence to lobby for support and funding for their programs and policies.

NGOs and other civil organizations who plan interventions to improve the sexual and reproductive health and rights of adolescents, including the use of contraceptives among them, would be guided on which determinants to target and which group of adolescents for effective intervention planning.

Based on our findings, scientists who work in adolescent sexual and reproductive health will become aware of the gaps in adolescent hormonal contraceptive use research to formulate their research questions and develop their hypotheses.

Lastly, adolescents would be informed about what behavior they need to change, skills they need to learn or adopt to be successful in their HC use, and overall reproductive health.

The results of these studies have been made available through publications and manuscripts submitted to peer-reviewed scientific journals. The results will further be shared at scientific conferences to target scientists, the research community, civil society, and governmental agencies. During the mid-year and annual review meetings of district

and regional health management teams, the results from these studies will be shared to inform the programs and planning of managers of the various health directorates. Adolescents, community opinion, and religious leaders would be targeted through annual community yam festivals, durbars, and radio talk shows on adolescent health issues.

Summary

The correct and consistent use of hormonal contraceptive (HC) methods by sexually active adolescent girls can prevent pregnancy and avert health and social consequences for both the mother and her child. Despite these benefits, research shows HC use is low among adolescent girls globally, especially in low- and middle-income countries, including Ghana. This Ph.D. work aimed to improve our understanding of the individual and environmental factors determining the uptake and correct and consistent use of HCs among adolescent girls with and without HC experience. Four empirical studies are reported in this thesis.

The first study is reported in chapter two. A qualitative exploration of the individual and environmental factors that explain the non-uptake of HCs among adolescent girls without experience with HC use was done using IDIs and FGDs. Sixteen IDIs and two FGDs were used for data collection among adolescent girls aged 15 to 19 years (N=38). From this study, adolescent girls lacked in-depth knowledge of the different HC types at the individual level. They portrayed negative attitudes towards adolescent HC use and feared real and perceived side effects of HCs. Further, they lacked self-efficacy to access and use HCs and feared disclosing HC use based on fears of societal stigma toward premarital sexual intercourse among adolescents. At the environmental level, perceived peers, parents, and partners' disapproval of adolescent HC use discouraged HC uptake among the girls. Additionally, perceived religious and community disapproval of premarital sex and associated HC use among young girls were barriers to HC uptake among the girls in our context. The findings show that the non-uptake of HCs among adolescent girls is explained by a combination of individual, interpersonal, community, and institutional-based factors, shaped by social normative beliefs. It is concluded that HC uptake among adolescent girls could be improved with interventions that address these multifaceted social-psychological, interpersonal, and community-level factors.

Chapter three explored the personal determinants of correct and consistent HC use among adolescent girls experienced with HC use. In-depth interviews (IDIs) were used for data collection among adolescent girls aged 15 to 19 years. The results showed that adolescent girls had some knowledge of HC types and sources of obtaining them but lacked an in-depth understanding of how they work. Yet, they had high self-efficacy in organizing and using HC. Further, they were skilled at making personal decisions about HC use and disclosing their HC use to important people around them. They devised coping skills to access and use HC in unfavourable situations. Moreover, they portrayed positive attitudes toward HC, had high future ambitions, and perceived being at risk of pregnancy. These factors explained the correct and consistent use of

HC among them. In conclusion, the adolescent girls were resilient and highly favored HC use. They showed the possibility for correct and consistent HC use among adolescent girls if interventions target their attitude to hormonal contraceptives, their self-efficacy, disclosure skills, decision-making skills, and coping skills. Also, their pregnancy risk perceptions should be heightened, and they should be encouraged to pursue high future ambitions.

In chapter four, the third study examined the environmental determinants of correct and consistent HC use among adolescent girls experienced with using HC, focusing on perceived injunctive norms of parents, partners, peers, health service providers, religious leaders, and the community. In-depth interviews were used for data collection among sixteen adolescent girls aged 15 to 19 years. Adolescent girls in this study reported permissive injunctive norms of parents, partners, peers, and health service providers towards adolescent HC use. These motivated them to continue to use their HC methods. On the other hand, they perceived community and religious norms that prohibit premarital sex among adolescent girls and associated contraceptive use by young people as reasons that could discourage them from correctly and consistently using their HC methods. This study's findings show that the role of people in the adolescent girls' social network and socio-cultural and religious normative beliefs are important in the girls' HC decision-making and actual use. Any intervention aimed at improving the sexual and reproductive health of adolescent girls, including HC use, should consider these factors.

The fourth study, reported in chapter five, examined the social-psychological determinants of HC use intentions among young women. Through a cross-sectional study, we tested the relative significance of social-psychological factors identified in the previous three qualitative studies in determining HC use intentions among 1203 young women aged 15 to 24 years. Attitude towards personal HC use, self-efficacy towards access and use of HC, and previous HC use experience were found to determine HC use intention among the entire sample of respondents. Attitude towards personal HC use and self-efficacy towards access and use of HC also predicted HC use intentions among the four sub-samples studied (i.e., respondents with and without HC use experience, adolescent girls 15 to 19 years, and young women 20 to 24 years). For respondents with no HC experience, being a Christian instead of being affiliated with Islam, Traditional religion, or non-religious positively predicts future HC use, but this finding was likely by chance. From the results of this study, a comprehensive sexuality education that will inform all adolescent girls of the personal benefits of using HC and developing their skills to access and use HCs when needed could support their intention to use HC to promote their overall reproductive health and well-being.

In chapter six, the important findings from all four studies are discussed. Research gaps have been identified, and recommendations made toward intervention planning for effective HC use in pregnancy prevention among adolescent girls. The findings from all four studies described in this thesis demonstrate that different groups of adolescent girls need different interventions, focusing on different determinants for improved HC use. It is not one size fits all. However, attitude toward personal HC use and self-efficacy toward access and use of HC are two critical determinants for improving HC use intentions and actual use among all adolescent girls. The possible adaptation of successful interventions toward the determinants identified in this thesis from similar settings suiting the Ghanaian context will be extremely important to improve HC use among adolescent girls.

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Profile

Ellen Abrafi Boamah Kaali is a highly motivated female Social Scientist and a Public health expert, working with the Kintampo Health Research Centre (KHRC) as a Principal research fellow.

She graduated from the University of Cape Coast in Ghana with a Bachelor of Education in Population and Family Life. She holds a Master's in Public Health from the Vrije Universiteit in Amsterdam, Netherlands. She has undergone postgraduate certificate training in reproductive health and AIDS from the Mahidol University in Thailand, youth reproductive health from the Johns Hopkins Bloomberg School of Public Health (online), and in project identification, development, and management from the Maastricht School of Management in Maastricht, the Netherlands.

Ellen has extensive experience designing and implementing large epidemiological, implementation and intervention studies, particularly in maternal and child and adolescent reproductive health. She believes in evidence-based decision-making with the conviction that most health issues have roots in society. Consequently, over the past 15 years, Mrs. Kaali has systematically developed and contributed to research to understand scientific and socially relevant problematic areas of maternal and child health and adolescent reproductive health. She is passionate about implementing evidence-based interventions in these domains to provide appropriate solutions to identified problems.

Mrs. Kaali is a Ghana co-investigator and study coordinator on a multicounty-maternal and neonatal health study to estimate the burden of maternal, fetal, and neonatal deaths and selected maternal and newborn morbidities in Asia and Africa. The study is enrolling participants through population-based and clinic-based pregnancy surveillance and collecting standardized clinic data to characterize the health status of pregnant women and their babies during the antenatal, intrapartum, and postnatal periods. The study outcome will help better understand the burden of and primary factors influencing pregnancy risk in low- and middle-income countries. These would inform the development of algorithms for predicting maternal and infant risk factors during pregnancy, delivery, and post-partum and would inform interventions towards reducing maternal and child morbidities and mortalities in LMICs.

Ellen has previously worked on several projects in KHRC as a principal or co-principal investigator, performing administrative, managerial, and supervisory roles.

Ms. Boamah has a great sense of responsibility; she is initiative and result driven, self-motivated, hardworking, dependable, disciplined, and morally responsible. She is a good team player and skilled at working in collaborative structures involving people from multi-disciplinary backgrounds gained during her studies at home and abroad and work at the Kintampo Health Research Centre. She has over 50 peer-reviewed articles published to her credit.

Dedication

I dedicate this dissertation to the loving memory of my late father, Mr. John Kingsley Kwasi Boamah—forever in our hearts.

