Mini-Review

Age at Time of Initial Sexual Intercourse and Health of Adolescent Girls

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A B S T R A C T

Adolescence is characterized by marked changes in the body, psychology, and sexual behavior due to increasing production of hormones. In this review we aimed to assess the effect of age at the time of first sexual intercourse (sexarche) on the health of adolescent girls, and identify factors that might protect against early initiation of sexual relations in girls. The PubMed, Lilacs, and Google Scholar databases were searched for clinical trials, comparative studies, case-control studies, cross-sectional studies, cohort studies, multicenter studies, observational studies, meta-analyses, and systematic reviews published up to December 2014 on this theme. The search terms were: "sexual debut," "coitarche," "sexarche," and "young people," "adolescent," "unplanned pregnancy," "adolescent contraception," and "STDs." Data were extracted from 28 studies and 41 references were used to introduce the theme and to support the discussion. Sexarche has been occurring in increasingly younger girls. A young age at sexarche can lead to subsequent risky sexual behavior. Girls who have sexarche when they are 14 years old or younger are less likely to use contraception on this occasion, take more time before they start using contraception in subsequent sexual relations, are more likely to have several sex partners, have a higher risk for depression, have lower self-esteem and more episodes of repentance, and have a higher risk for a sexually transmitted disease and cervical cancer. Girls with low educational, socioeconomic, and cultural status, little parental monitoring, parental separation, and absence of religiosity tend to experience sexarche at a younger age. Adolescent girls who postpone sexarche until they are 16 years old are physically and psychologically healthier than those who have sexarche at a younger age. This suggests that providing adolescent girls with appropriate education about sexual relations might reduce the negative effect of sexual relations at a young age.
Key Words: Sexual debut, Sexarche, Young people, Adolescent, Adolescence, Sexuality, Coitarche

Introduction

Adolescence is characterized by marked changes in the body, psychological, and sexual behavior that result from increasing production of hormones.[1] Estrogen and testosterone affect the cognition[2] and psychoemotional aspects of adolescent girls.[3,4] The increased level of circulating estradiol results in modification of a girl's body shape, changes in genitalia[5] and development of clitoral body volume, which changes according to the phase of menstrual cycle under the influence of estrogen levels.[6] During childhood, testosterone seems to influence neurosexual development and gender preference.[7–9] Starting at puberty, individuals have increasing interest in sex due to the increasing levels of androgens.[10]

In parallel to these biological changes, the social environment also affects the psychosexual behavior of adolescent girls. Thus, the family and school environments[11,12] and religious beliefs[13] can modulate their behavior and sexual activities. The development of female sexuality starts at a young age within the family, because the parents help the child to interpret the environment in which she lives and the parents' relationship becomes a reference for the young girl. On the basis of her social life, the girl's learning expands, and she incorporates concepts from the environment that influence the way she will express her sexuality.[14,15] A healthy sexuality results from an appropriate balance of positive and negative experiences.[16] Thus, a healthy sexuality has been defined as "a central aspect of being human throughout life and encompasses sex, gender identities and roles, sexual orientation, eroticism, pleasure, intimacy, and reproduction. Sexuality is experienced and expressed in thoughts, fantasies, desires, beliefs, attitudes, values, behaviors, practices, roles, and relationships."[17] In other words, the social environment can affect the sexual behavior and sexual expression of adolescent girls.[18]

The first experience of sexual intercourse (sexarche) is occurring in increasingly younger girls.[19] This has important implications for the health of adolescent girls because of the association of young age at sexarche with the subsequent health problems and subsequent risky sexual behavior. There are many factors associated with young age at sexarche, such as low socioeconomic status, limited education, divorced parents, living with a partner, not practicing a religion, smoking, and drug use.[20–24] Other factors protect against a young age at sexarche, including a higher socioeconomic status, affiliation with a religious group, sex education, parental monitoring, and knowledge of

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reproductive health.[15] The objective of this mini-review was to assess the implications of a young age at sexarche on the health of adolescent girls and to identify factors that might protect against early initiation of sexual relations.

Methods

The PubMed, Lilacs, and Google Scholar databases were searched for clinical trials, comparative studies, case-control studies, cross-sectional studies, cohort studies, multicenter studies, observational studies, meta-analyses, and systematic reviews published up to December 2014 that used structured and semistructured questionnaires to determine the sexarche of female adolescents. The search terms were ((sexual debut) or (sexarche) or (coitarche)) and ((young people) or (adolescent) or (unplanned pregnancy) or (adolescent contraception) or (STDs)). For data extraction, 2 researchers read the titles of 680 studies and determined that 154 of these studies were possibly eligible for inclusion. Seventy-eight of these 154 studies were ultimately considered suitable for data extraction. We read the abstracts of all 78 studies, and also read the methods and results when the full text was available. Data were extracted from 36 studies and 55 references were used to introduce the theme and to support the discussion.

Results

Implications of Early Age at the Time of First Sexual Intercourse in the Health of Adolescent Girls

Girls who have sexarche at age 14 or younger are less likely to use a contraceptive in this relationship, take more time to start using contraception,[25] and are more likely to use contraception irregularly.[26] More than one-third of all adolescent girls do not use contraceptives during their first sexual relationships,[27] and this increases the risk of an unplanned pregnancy at an early age. In a random sample of 213 (53.5%) male and 185 (46.5%) female youths between 10 and 24 years of age attending a Tanzanian youth health clinic between September 1997 and August 1998, the mean age at coitarche was 16.5 for male and 17.0 years of age for female youths. No contraceptive use was reported by 29.7% of the male and 40.3% of the female youths. More than half of girls had already been pregnant.[28] In addition, pregnant adolescent girls have increased risk of experiencing preterm neonatal birth, low birth weight babies, perinatal death, early neonatal death, late neonatal death, postneonatal death, and infant death.[29,30] An early age at first pregnancy (younger than 16 years) also predisposes adolescent girls to repeated unplanned pregnancies.[28,31] The lack of knowledge of sexual health, their attitude toward school, as well as living in a family with alcohol abuse are risk factors associated with teenage pregnancy.[32] Also, girls with an early first intercourse were more likely to be victims of sexual abuse in relation to girls who had coitarche later.[33] An early age at sexarche is also associated with a higher risk of depressive symptoms,[34] a distorted self-image,[35] and repentance about the initiation of sexual behavior that was due to partner pressure or impulsiveness. Thus, sexarche is often not a well-considered and conscious choice by young girls.[36] This is particularly the case when the partner is older, and increases the probability of unprotected sexual relations.[37]

Also, there is evidence that sexual abuse was more prevalent in a sample of Swedish girls who had their first intercourse when they were younger than 15 years old in relation to girls who had coitarche later.[33]

A study from 1992 reported associations of certain habits with early sexual activity,[38] and a more recent study from 2012 showed an association of young age at sexarche with smoking and excessive alcohol consumption.[39] Alcohol abuse before sexual relations is associated with risky sex because of inconsistent use of condoms.[40] Other studies have confirmed the relationship between certain habits and risky sexual behavior in young women.[41]

In a recent prospective study the sexual behavior of 1512 adolescent twins of the same sex, 50.2% of whom were girls, was assessed. The results indicated an association of delinquent behavior with younger age at sexarche, and the additional influence of genetic and environmental factors.[42] An environment of physical, emotional, and sexual violence or negligence can also affect the sexual behavior of adolescent girls.[43,44]

The presence of proactive and assertive parents has a positive effect on the general health of adolescent girls.[45] Girls whose fathers are not present (ie, girls with separated parents) have an increased risk for sexarche at a young age and for engaging in risky sexual behavior.[46] Parents are frequently not fully aware of the social and sexual behavior of their children, and this contributes to an increased chance of risky behavior related to early age at sexarche, alcohol abuse, and use of illicit drugs.[47] Girls with a sexual debut when they were 15 years started drinking alcohol and smoking tobacco earlier.[48]

Another important consideration is that girls who have sexarche at a young age will eventually have more partners, and this increases their risk for sexually transmitted diseases (STDs), cervical cancer, and HIV infection.[28,49] As shown previously, smoking habit, sexual behavior, not living with parents, and the earlier age at the time of the first intercourse are factors associated with a high risk of human papilloma virus (HPV) and cervical atypias in women as well as a greater number of STDs,[50] confirming that early sexual debut is an important indicator for risk behavior regarding sexual health.[48] In particular, adolescent girls who had sexarche when they were younger than 14 years old had a 3.8-fold greater chance of having more than 10 sexual partners in their lifetimes, and were more likely to have 2 or more recent sexual partners, STDs,[39] and alteration of the cervix due to HPV. A retrospective analysis of 1,516,407 cervical cytology examinations of adolescent girls from 1999 to 2005 indicated an increase of cervical intraepithelial neoplasia from 6.4% to 12.4% during this time.[51]

Population studies from 1993 reported that 40% of adolescent girls with multiple sexual partners had unprotected sexual relations.[52] In addition, girls who had more sexual partners were less likely to use condoms.[52,53]

There are controversies as to whether sex education programs have some effect on the use of protected sexual intercourse. Sweden is a country that has been investing the

most in sex education in schools. The results of such investment were shown in a comparative study on sexual behavior and attitudes toward sexuality among first-year high school students with a mean age of 16 years in 1999 in relation to the sexual behavior of students from 1979 and 1989. They showed that 46% of students had had intercourse and that the age of coitarche was 15 years for both sexes, which was similar to the age of coitarche over the 20-year period. Other positive findings were that contraceptive use at the time of coitarche has increased and alcohol use decreased. However, the level of commitment of students with their education seems to influence their sexual behavior because students attending practical programs continue to put themselves at more health risk behavior than students in college preparatory schools.[54] However, the 2002 National Survey of Family Growth was conducted to characterize the relationship between formal sex education and the use and type of contraceptive method used at coital debut among female adolescents. Contraceptive use and type used were compared among sex education groups (abstinence only, birth control methods only, and comprehensive). Of 1,150 female adolescents aged 15-19 years, 91% reported formal sex education, 20.4% constituted the abstinence only group, 4.9% related to the birth control only group, and 65.1% formed the comprehensive group. There was no association between type of formal sex education and contraceptive use at coitarche. However, there was an association between abstinence-only messaging and decreased use of reliable contraceptive method at coitarche.[55] It seems that teens who use contraception at coitarche stop doing so as they mature sexually because they begin to doubt the necessity and desirability of using contraceptives. In this line, one study aimed to identify factors relating to contraceptive discontinuation among teenagers and showed those who discontinued contraceptives were older and scored significantly higher on scales that assessed inability to plan for sex, belief that pregnancy is unlikely, and lack of desire to remain nonpregnant. Those who were sexually active for at least 6 months were 2.9-fold more likely to stop contraceptive methods, those who believed that pregnancy was unlikely to occur were 3.8-fold more likely to stop contraceptive methods, and those who lacked the desire to remain nonpregnant were 2.7-fold more likely to stop using contraception.[56]

The age of the girl and enjoyment of the experience at sexarche can affect the sexual satisfaction that a woman experiences in subsequent years. A positive first sexual experience is associated with subsequent physical and emotional satisfaction.[57] In contrast, a negative first sexual experience can damage the self-image and wellbeing of an adolescent girl.[35] Sexually active adolescent girls also have increased risk for depression,[34] mental health problems, attention deficit, tendency for delinquent behavior, aggressive behavior, and difficulty in interacting with others.[22]

Discussion

A review of the literature indicates that factors that protect against early age at sexarche vary according to the study design and population under study. However, a moderate or high level of education, receipt of information about sexual and reproductive health,[58] parental monitoring, and living with both parents[59] seem to be universally associated with later age at sexarche. Ancient studies showed the association of earlier sex debut and a high number of sexual partners in adolescents living in a reconstituted family with a stepparent.[60,61] These findings are consistent with earlier studies that showed such associations. A sample of 179 Icelander adolescents showed that those whose parents were divorced reported more negative emotional experiences and had looser family ties, had first intercourse at a young age, had a greater number of short love affairs, and had a greater number of sexual partners compared with those whose parents remained married.[61] In an analysis of French women, 25% had had sex before age 16 years, and their early sexual initiation was associated with living with a single parent or in a stepfamily, and perceived low level of parental monitoring.[62] Confirming the importance of double parents to protect against earlier debut for women, the National Longitudinal Study of Adolescent Health analyzed a large sample of youth in the United States, and showed that a greater concentration of married households was associated with later sex debut in women.[63] A Spanish study showed that sexual practice such as mutual masturbation, intercourse, and oral sex was higher among adolescents whose parents had broken their marital relationship[64] in relation to those with non-separated parents. Notwithstanding all of this evidence, the real effect of these 2 family structures, single- and 2-parent homes, on adolescent sexual behavior is still a subject of controversy because of social, cultural, racial, and gender implications. Ancient studies showed that white women from 2-parent families were more likely to be virgins but did not show this for black female adolescents. However, once having had sexual intercourse, white women tended to have a higher level of sexual activity than did black women from 2-parent homes.[65] Additionally, a cohort study of 1,927 adolescents who lived in 2 slums in Nairobi, Kenya showed that approximately 6% of male adolescents who reported communication with their mothers were less likely to transition to first sexual intercourse, and for female adolescents, communication with fathers predicted transition to first sexual intercourse.[66] Also, there is an association with lower levels of sexual activity across all age groups and genders with dual-parent families, higher socioeconomic status, residing in rural areas, higher school performance, concerns about the community, and higher rates of religiosity.[67] Thus, there is a need for more controlled studies to determine the real effect on the presence of both parents as a factor to predict sexual behavior during the adolescence period. It seems that the quality of parental monitoring might be the more important determinant of sexual initiation and practice. Girls might perceive high rates of parental monitoring as unwarranted or overzealous strictness, which could in turn lead to actions that symbolize their own autonomy. This was shown in American adolescents who were more likely to engage in high-risk sexual behavior when perceiving their parents to allow them less autonomy.[68] In line with these findings, a

population study with 26,023 students showed that high parental expectations were a significant protective factor for male but not for female adolescents.[67]

Adolescent girls from families in which there is a cooperative relationship between the parents and in which the mother plays a more active role in family decisions tend to be older at sexarche.[69] Moreover, adolescents whose parents are more cultured,[70] who feel safer, and who are aware of HIV transmission tend to be older at sexarche.[71]

The relationship between any type of child sexual abuse (CSA) and early coitarche was shown in several studies.[72–74] Sexually abused girls are more likely to have sleep and eating disorders, use of alcohol and illicit drugs at an early age, and consensual coitarche before age 15; this was reported significantly more often by abused than nonabused girls as well as self-destructive behavior or suicide attempts.[75] Adolescent girls who reported severe CSA were characterized by significantly higher rates of early onset (consensual) of sexual activity. One explanation of this relationship is that exposure to CSA increases the likelihood of early onset sexual intercourse that, in turn, leads to increased sexual risks in adolescence.[72] In this study we found that exposure to CSA is associated with an increased rate of early onset of consensual intercourse, which acts to increase the individual's risk of exposure to unprotected intercourse, multiple sexual partnerships, and STDs. Child sexual abuse was also associated with developmental factors such as age at time of first intercourse and first STD, unprotected sex including STDs and unintended pregnancy, substance use that might impair decision-making and risk-taking, and adult sexual and physical assault.[73] Moreover, although the average age at the time of first consensual sexual intercourse was lower among sexually abused adolescent girls than among those who had not been abused, one-third of adolescent girls who suffered from CSA with penetration reported that the consensual intercourse occurred chronologically before the first abuse (14 years old or younger).[74] These findings suggest that associations between exposure to CSA, young age at time of first intercourse, and victimization are an issue of interest for further research.[74]

Although adolescents who are better informed about sexual and reproductive health tend to be older at sexarche, little is known about the effects of different types of sex education on age at sexarche. The preferred sources of such information are educators and health care professionals, who are considered to be experienced and reliable. Sociocultural barriers often limit the role of parents as sources of information about sexual relationships. Schools, although considered by adolescents as an important source of sex education, have been underutilized, as has the media.[76] In general, adolescents obtain information about sex and contraception from friends and the internet, with smaller contributions (<20%) from parents, relatives, schools, and health support groups.[27] In Brazil, 45% of boys and girls (average age: 12.4 years) reported their parents as the main source of information about sex and contraception, followed by friends (26%) and others (<10%).[77] A program for the prevention of risks that provided guidance about the benefits of sexual abstinence and training for use of condoms was effective in postponing any type of sexual experience (oral, vaginal, or anal sex) and in reducing unprotected sex[78]; a follow-up of this study indicated a higher prevalence of abstinence from sexual activity in the participants of this program.[79] The encouragement of religiosity, providing information about HIV and AIDS, parental monitoring, and higher educational level protected against sexual initiation among adolescents.[80] In Table 1 the factors that reduce the risk for young age at sexarche are summarized.

Medical Approach to Providing Sex Education to Adolescent Girls

The intermediation of a doctor in the parent-adolescent relationship can be fundamental for delaying sexarche in adolescent girls. Although communication with the parents on this topic can be difficult, adolescent girls usually prefer to obtain this information from their mothers. However, most sex education programs mainly focus on prevention of STDs and devote less attention to the prevention of pregnancy, use of condoms, changes during puberty and adolescence, sexuality, and relationship issues.[76] Adolescents who are educated in sexual health programs that insist on abstinence tend to have higher incidences of vaginal sex than those who are educated about the use of condoms and contraception.[78]

It has been argued that adolescents, regardless of age, should be respected in their sexual and reproductive choices, including the use of contraceptives, as long as they show an appropriate level of psychoemotional and cognitive development for making decisions on these matters.[82] Thus, communicating about sexuality with adolescent girls is a part of overall medical care, and such communications should be based on evidence, with no introduction of personal prejudices or beliefs by the health care professionals.[83] The doctor should see the adolescent patient without her parents or responsible caregivers if she desires, and without breaching of confidentiality. Confidentiality should only be breached when there is a risk to the adolescent girl and/or a third party of death or sexual violence, or when the patient reports suicidal thoughts or information about homicides.[84]

On the basis of our review of the literature, the measures that seek to educate adolescent girls about sex should include counseling about an appropriate age for the first sexual relationship, preventing problems related to young

Table 1
Factors that Reduce the Risk for Sexarche at a Young Age in Adolescent Girls

Study	Variable
Asubiaro and Fatusi[80]	• Inner religious beliefs and external religiosity including community actions, and attending mass • Knowledge of the risk of HIV/AIDS
Lammers et al,[67] Ireland et al. (2000)	• Living with both parents • Higher socioeconomic status • Greater involvement with school • Better grades at school
Wheeler[81]	• Feeling that parents care for them
Sieverding et al[59]	• Parental monitoring; parents who are not separated
Kennedy et al[76]	• Sex education at school

age at sexarche (psychological problems, STDs, HPV, unplanned and recurrent pregnancy), and promoting a healthy and pleasurable sexual experience. To this end, these efforts should seek to delay sexarche, reduce the number of partners, and promote consistent use of condoms; these educational goals should be complementary with initiatives that seek to prevent gender discrimination and sexual violence, such as sexual child abuse and nonconsensual sex.[85] It is of fundamental importance for doctors to provide adolescent girls with a contraceptive method that they can follow. If the option is for hormonal contraception, a preference should be given to continuous oral or injectable contraceptives. It should be pointed out that unplanned pregnancy occurs in one-third of adolescent girls, and the risk of a second unplanned pregnancy in such girls was estimated at 18.8%.[86] Better compliance with contraception is associated with higher educational level (high school or higher education) and residence in an urban area.[58]

At times, parents might not accept contraceptive use by their adolescent girls because they fear it might encourage earlier or more frequent sexual relationships. However, the decision of an adolescent to have sex goes beyond the wishes of the parents, because it is based on the inherent sexual feelings of young people, globalized via the internet.[87] In addition, there are well known benefits to using contraceptives before the first sexual relationship. Among French adolescents who had sexual relations, 70% reported that they used some form of contraception during their most recent sexual intercourse.[38] This is a practice that also varies according to cultural and educational level, with different cultures preferring different methods of contraception.[88] Adolescents who have more education are more likely to use contraception during in their first sexual relationship.[27] The French National Fertility Survey showed that numerous variables influenced the use of contraception including age of the woman, country of birth, educational level, ability to talk easily talk with her mother about sex, and age at time of the first sexual relationship. Women who started to use contraception at an older age had a 1.8-fold greater probability of unplanned pregnancy.[89] In the 1980s and 1990s several reports called attention to the importance and the safety of hormonal contraception for girls younger than 16 years.[90,91] There is now evidence that use of hormonal contraceptives by girls younger than 18 years has no effect on height or weight, although there is some weak evidence that they might affect bone mineral density.[92]

Available evidence supports the view that adolescent girls should be at least 16 years old at sexarche and also suggests the importance of providing appropriate information about sexual activity to reduce the risk of causing physical and psychosexual health problems. A recent publication summarized the key points of the Congress and the Community Embedded Reproductive Health Care for Adolescents Project, whose objective is to guide future Adolescent Sexual and Reproductive Health research and policy in Latin America.[93] This publication recommended several measures to improve the sexual and reproductive health of adolescents, including provision of comprehensive sex education, and also proposed several methods that educators and health professionals could use to reduce sexual problems. Girls might benefit from postponing sexual initiation because when they start sexual activity in older age they are more likely to have better knowledge about STDs and the need for coitus protection. Unfortunately, the same study showed that even with better knowledge almost all girls denied the possibility of having acquired or transmitted STDs and had little influence on their sexual behavior.[94] Thus, doctors can provide adolescent girls with information about genital anatomy and hygiene, different types of hymens, potential problems at the first sexual relationship (pain, bleeding), male and female sexual responses (desire, excitement, orgasm), risk of pregnancy, use of contraceptives, and recognition of sexual expression as a source of pleasure that can be experienced by autoerotism or by sex with a partner. It is also important to inform adolescents about the known risks associated with young age at sexarche, and to provide vaccinations against HPV and hepatitis B within the context of sexual counseling. The distribution of information leaflets about sexual health is another beneficial and cost-effective measure, and might be especially useful for adolescents who do not have easy access to health care or who feel embarrassed talking about this topic (Table 2).[95] There is also a need for public policies that encourage the implementation of sex

Table 2
Evidence-Based Measures that Prevent Health Problems due to Young Age at Sexarche

Intervention	Information
Recognizing that sex is an important aspect of life	A sexual relationship is a natural source of pleasure that can be experienced by autoerotism or interpersonal relations[66]
Age at first sexual relationship	There is reduced risk to sexual health when sexarche occurs after 16 years of age. Early sexarche is associated with depressive symptoms,[24] distorted self-image,[25] higher risk of pregnancy due to failure to use contraception in the first sexual relationship,[18] and irregular use of contraception in subsequent relationships[19] Information should be provided about potential problems during the first sexual relationship (pain, bleeding, etc).
Information about genital anatomy	Figures or media should be used to show genital anatomy. Explanations should be provided about the hymen (variation, irrigation, and innervation)
Care of the genital area	Use of liquid soap with a pH of 4.5-5.5,[67] washing underwear, partial depilation of the vulva at longer intervals to prevent drying and irritation of the skin[68]
Information about the human sexual response	Desire/excitement, orgasm, and sexual satisfaction[69] Discuss autoerotism
Contraceptive methods	Encourage the use of condoms A window of opportunity to offer a hormonal contraceptive. Encourage the consistent use of contraception[65]
Mediating the relationship with the parents	Encourage the adolescent to talk with her parents about sexuality[65] Provide space and assistance to the adolescent when starting a conversation with her parents
Prevention of STDs	Consistent use of a condom in all sexual relationships[65] Vaccination for HPV, hepatitis B, and other STDs

HPV, human papilloma virus; STD, sexually transmitted disease.

education programs in schools and the media (television, radio, and social networks), and for actions by health professionals who are qualified to educate adolescent girls on sexual health.

Summary

The risks of early sexual initiation include unwanted pregnancy, infection with STDs and HIV, and psychological problems, so it is necessary to develop effective programs that prevent these problems in young people. Future studies to help postpone sexarche might include the following strategies: appropriate sex education should be emphasized to parents, school, media, and church to provide unprejudiced information about sex to adolescents, a preventive approach should be used in schools and at home, and adolescents should receive age-appropriate information about sexuality and the use of alcohol and drugs to enable adolescent girls to make informed and autonomous decisions about when to begin sexual relationships. Reducing the rates of unwanted pregnancies and STDs among adolescents requires multidisciplinary prevention programs, and the participation of schools and parents is essential.

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