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SPECIAL ARTICLE

Reproductive Health in Adolescent Women

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ABSTRACT

Adolescence is a crucial period in human life. Several changes have occurred. Understanding the physiological and emotional changes that occur in adolescent girls and women (GW) and also knowing and having comprehensive knowledge on the common issues that adolescent GW often seek care for in order to provide them correct and appropriate care. According to several studies, health problems will follow sexual intercourse. Thus, adolescent GW should be encouraged to have no sex as the first choice. If adolescents have sex, encourage them to use effective contraception, along with condoms, to protect them from the sexually transmitted infections.

Keywords: Adolescence, girl, reproductive, sex, development.

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Introduction

Adolescence refers to a girl/woman (GW) between the ages of 10 and 19 years[1]. Generally, adolescent GW are growing up under the care of their parents, families, and educational providers. These adolescent GW are the nation's hope to become the most valuable key persons for the future development of the nation. Adolescence is a period of change in several aspects, especially physical, emotional, and behavioral that may influence their relationships with people and the environment around them. Therefore, proper care from parents/families and surrounding adults, along with welfare support from the government, is likely to help them grow and live a quality life. Initially, health care providers should understand the physiological and emotional changes that occur in adolescent GW and also know and have comprehensive knowledge of the common issues that adolescent GW often seek care for in order to provide them with correct and appropriate care. This article is categorized into sections covering the physiologic change in adolescent GW, adolescent GW in Thailand, and common issues

frequently addressed by adolescent GW, including adolescent contraception, pregnancy-related health care, care-seeking for care, and testing for sexually transmitted infections (STIs)[1].

Physiological changes in adolescent GW

The adolescent GW period typically spans from 10/11 years old (ranging from 8 to 13 years) and encompasses a duration of 6 years until stopping at around 17/18 years old[2]. During the first 3-year period (junior high school), physical development rapidly presents and then gradually matures until it nearly reaches an adult level around high school[2]. Physiologic changes in adolescent GW are described as follows[3]:

1. Physical characteristics: Height, weight, and body image show changes. Rapid height increasing, or growth spurts, begin on average at 10-11 years old (range 8-13 years old), and they reach their adult level around 10-16 years old[3]. Individual adult height depends on several factors, including genetics, nutrition, medical condition, and medication[3]. Asian ethnicity tend to have limbs (arms and legs) that are slightly shorter relative to their trunk (torso)[4]. Widening of the hip is also observed. Consuming adequate and balanced nutrition is one of the most important factors influencing the onset and progression of pubertal development. Excessive intake of some types of protein, fat, minerals, and vitamins may lead to early puberty. Malnutrition of essential amnio acids, calorie deprivation and some micronutrient deficits can delay the progress of growth and bone maturation, cause physical growth retardation, reduce intellectual capacity, and increase the risk to infections. There is some literature review suggesting that increased caloric, protein, iron, calcium, zinc, and folate needs must be arranged during the critical period of rapid linear growth and bone maturation[5].

2. Breast development: Usually, breast development is the first visible secondary female sexual characteristic. It occurs around 10 years old and takes several years to gradually develop to an adult state. Parents should provide the proper bra, a soft crop top, or a sports bra to adolescent GW[3].

3. Axillary hair and facial acne: Axillary hair usually grows following the breast development initiation[3]. Facial acne occurs because of the overactivity of sebaceous gland function. Moreover, increasing sweat glands can lead to body odor. These cosmetic appearances and body odors may affect adolescent self-esteem[6]. Counselling for hygiene care is important.

4. External genitalia (vulva and pubic hair): Enlargement of external genitalia and growth with darkening and thickening of pubic hair are observed in adolescent GW.

5. Internal reproductive organs and menstruation: Pubertal development can be divided into gonadarche and adrenarche development, depending on the different hormone influences[7]. Gonadarche is the process of reactivation of the hypothalamic-pituitary-ovarian axis. Synthesis of gonadotropin-releasing hormone, luteinizing hormone and follicle-stimulating hormone initiated the pubertal process. The ovary starts estrogen production. Estrogen is the main hormone for female adolescent development. Estrogen controls the breast stage development, vaginal keratinization, and uterine growth. Clear white secretion presents from the adolescent GW vagina several months before their menarche (the 1st menstrual period). Proper use of panty liners or underwear should be provided and advised. Adrenarche is the development of pubic/axillary hair and sebaceous gland function[2].

6. Brain and cognitive: The brain has developed both in size and maturation. 7 things to know about the teen brain are as follows:[8]

- Adolescence is an important time for brain development. Growing in size during the early adolescent period and then followed by fine-tuning how the brain works.

- Brain development is related to social experiences during adolescence. Emphasis on peer relationships could be developed in both negative (dangerous) and positive ways. Positive relationships, such as joining a sport and proper classmates, should

be provided.

- The teen brain is ready to learn and adapt. Encourage taking challenging classes, exercising, and creative activities.

- Teen brains may respond differently to stress.

- Most teens do not get enough sleep. Adolescent melatonin (sleep hormone) levels are secreted in a different way from those of children and adults. It may explain why many adolescent GW stay up late and struggle with getting up in the morning. About 9-10 hours of sleep a night should be advised. A lack of sleep can make them have difficulty to paying attention and increase impulsiveness and irritability or depression[3].

- Several mental illnesses may begin in adolescent GW.

- The teen brain is resilient.

Adolescent GW in Thailand

The Bureau of Registration Administration (BORA), Thailand, reported the number of Thai adolescent GW in January 2025. The number of early adolescent GW (11-15 years old) and late adolescent GW (16-20 years old) were 1,878,377 and 1,940,449 persons, respectively. The number of adolescent GW trends decreased compared to the past because the birth rate continuously reduced[9].

Adolescent contraception

Sexual intercourse in adolescent GW has been concerned in several aspects, such as unintended pregnancy, sexually transmitted infections (STIs), and violence[10]. Thus, proper contraception counselling, prescribing, and management are important skills that gynecologists, general practitioners, pediatricians, and health care providers should able to perform effectively. The report about adolescent pregnancy in Thailand in the years 2024-2026 from the Bureau of Reproductive Health, Ministry of Public Health, presented that the most common maternal age of adolescent pregnancy was 15-19 years old. Most of them got pregnant while learning in high school[11]. Factors that were found to be the risk of early sexual activity in adolescents were low socioeconomic status, living in a single-parent home, engaging in risk-taking behavior (illicit drug use), etc[12]. Moreover, the association of long-duration use of social media (more than 7 hours a day) was associated with illicit drug use[13]. A specific law in Thailand regarding prescribing contraception to adolescent GW was announced in the year 2019 that adolescent GW over the age of 15 can access contraceptive services by themselves without the consent or permission of their parents.

Anyway, we remain to encourage the adolescent GW to have this discussion with their parents about contraceptive risks, and it also assists in satisfying the competence decision. The important issues about adolescent contraception are categorized according to contraceptive types as follows:

- Combined oral contraceptive pill (COCP): It is short-term contraception, has a chance of unintended pregnancy, and cannot protect and prevent STIs. A previous study found that 39% of unintended pregnancies occurred while using COCP[14]. It has the benefit of regulating menstruation and timing, reducing dysmenorrhea and acne, and controlling hirsutism. The cost and availability are advantages. There is no evidence that COCP impacted the development of the female reproductive system[15]. Caution should be concerned in an adolescent GW at risk for mood disorder because it appears to be increased in rates of depression[15].

- Depot medroxyprogesterone (DMPA): It is a long-acting hormonal method. Thus, no need for daily compliance and no interruption of the sexual arousal process are the advantages. Anyway, it still requires visiting the health care provider, and menstrual cycle irregularities are concerned. Menstrual irregularity/spotting occurs in around 25-50% of 12-week DMPA users in the first 6-12 months after initiation[16]. Then, most DMPA users become amenorrheic or oligomenorrheic. Some adolescent GW felt it to be a positive aspect of DMPA[12]. Historically, the concern was about bone mineral density (BMD); it is now generally accepted that decreasing in expected BMD

is reversible after DMPA discontinuation[17].

- Barrier methods (condom): Condoms are not a recommended contraceptive method for adolescent GW because failure rates with barrier methods reach 18-21 pregnancies per 100 in a year with typical use[15]. However, condoms are still an important way for STIs prevention[15].

- Subdermal implant (Implanon®): Efficacy for pregnancy prevention is excellent. The failure rate of these long-acting reversible contraceptives was reported to be only 0.001%, which is superior even to tubal ligation[18]. It is of limited use in case of disclosure using requests because it is physically obvious.

- Emergency postcoital contraception: It should not be recommended for routine use. It is limited to adolescent GW who has had unprotected sexual intercourse in the prior 72 hours, such as victims of sexual assault and individuals whose usual method failed (broken condom). Moreover, baseline pregnancy tests and STIs screening and prophylaxis should be provided.

- Intrauterine device (IUD): An IUD is a highly effective contraception method, with a success rate of 98-99%[19]. Although concerns about IUD insertion in women at risk of STIs have decreased because the previous studies have shown it does not increase the incidence of pelvic inflammatory disease[20]. High risk for STIs: Adolescents should be careful to be IUD users. Lastly, IUD use has not been found to compromise infertility[21].

Sexually transmitted infections (STIs) in adolescent GW

According to the Centers for Disease Control and Prevention recommendation, prevention of STIs in adolescent GW should be applied to all adolescent GW as follows:

- The healthcare provider should give the adolescent GW time alone for assessment of their sexual behavior and identify their high individual risk for STIs such as substance misuse, exchanging sex for drugs or money, and multiple sex partners.

- In United States of America, routine screening for Chlamydia trachomatis and Neisseria gonorrhoeae is recommended for all sexually active females aged less than 25 years[22]. In Thailand, there is no routine gonococcal and chlamydial infection.

- Human Papilloma Virus (HPV) vaccination is recommended. In Thailand, Thai adolescent girls aged 11-12 years have been receiving the HPV vaccine as a part of the national public health policy since 2017.

- Hepatitis A and B vaccination (HAV, HBV) series should be recommended to adolescent GW who have not previously received the universal HAV or HBV series during their childhood[23].

- All adolescent GW should receive comprehensive knowledge and information about human immunodeficiency virus (HIV) infection regarding the following topics: how it is transmitted, prevention, HIV PrEP (pre-exposure prophylaxis) and diagnostic testing.

Moreover, we suggest that sexual knowledge should be integrated into the educational curriculum for adolescent GW since their junior high school level.

Adolescent pregnancy

Globally, around 11% of births are to girls aged 15 to 19, and 95% of these are in low- and middle-income countries[24]. Since 1989, Thailand's adolescent birth rate has declined from 70 to 43 births per 1000 in 2008 and lastly 31.7 in 2021[25, 26]. Pregnancy concern risk is described:

- Unintended pregnancy and sometimes induced abortion requests. According to Thai law, induced abortion can be provided for unintended pregnancy at a gestational age of less than 12 weeks. The aim of the law is to prevent the adolescent GW from the dangerous process of illegally induced abortion[27].

- Adolescent pregnancy increased several adverse pregnancy and neonatal outcomes such as preterm birth, cesarean section, neonatal low birth weight, and neonatal death[28-30]. Thus antenatal and intrapartum care for high-risk pregnancy must be

performed.

- A previous study found that infants of adolescent mothers who have inadequate prenatal care are at increased risk of neonatal intensive care unit admission, have low Apgar scores and require long hospital stays[31].

Conclusion

In conclusion, health care providers should encourage adolescent GW not to have sex; it should be the first choice. If adolescents have sex, encourage them to use effective contraception, along with condoms to protect them from STIs.

Potential conflicts of interest

The authors declare no competing interests.

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