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Influence of Socio-demographic Factors on Adolescent's Sexual and Reproductive Health and Behaviour

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Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

Adolescents form a significant portion of the population whose health must be safeguarded in order to ensure a future healthy population. Adolescent sexual development comprises a variety of physical, biological, social and psychological changes which give rise to a mature adult physique and personality. Because of these numerous changes, adolescents can be easily influenced by the factors surrounding them with resultant effects like sexually transmitted infection(s), teenage pregnancy and fatherhood, septic abortion which will affect their future reproductive and sexual lives. The socio-demographic factors identified to affect sexual and reproductive development and behavior include sex, age, peer group, family structure, culture, alcohol and drug use and socio-economic condition of the family all of which have been identified by research. It can be concluded that these factors can also influence adolescents' sexual and reproductive health and therefore need to be modified to prevent adolescent sexual risk behavior and achieve a healthy population. It is therefore necessary that a good parent-child relationship and communication exist between adolescents and their parents as family is the strongest unit of socialization for an adolescent and also the degree of support from the family will determine the outcome of the developmental stage. Therefore, the need of adolescent reproductive health services which can help reinforce parental efforts cannot be over-emphasized.

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1. INTRODUCTION

Adolescents (10–19 years of age) count for approximately 1.2 billion across the globe (US Census Bureau International Data Base [1]. Nearly, 70% of total adolescent (10-19 years of age) population of the world resides in developing countries [2]. Considering the population of this group, it has thus become imperative to study more about this population (especially in developing countries) considering factors like urbanization, education, changing cultural and traditional values and migration which has been shown to influence adolescent sexuality.

During adolescence, gonadal hormones, cortisol and many others play a role in causing the onset of puberty [3] and it is through these neuro-endocrine influences that the secondary sexual characteristics become expressed. But according to Sales, Smearman, Brody, Milhausen, Philibert and Diclemente [4], adolescents' sexual development can be better explained using the bio-psycho-social model which claimed that biological, psychological and social factors have equal influence on sexual development in adolescents. Identified biological factors include genetics and neuro-endocrine factors which influences psychological and biological sex. Individual personality and temperament as well as social and environmental factors (e.g parenting style, peer relationship and cultural influences) also influences adolescents' sexual development. Other than these three above mentioned factors are political, legal, philosophical, spiritual, ethical and moral values which significantly influence sexual development in adolescents [5]. In the same vein, internet also exposes the adolescents to literature and movies with sexuality content, influencing their perception about sexuality [6] so also is access to literature related to sexuality, sexual crimes and violence through the media [7].

In developing countries like Nigeria, adolescents' sexual development is being complicated by unsafe sexual practices, teenage pregnancy, early marriage, septic abortion and adolescent fatherhood. Worst of all is the increased risk of contracting sexually transmitted infections. Adolescents also have limited support from older adults and parents because of cultural reservations which do not permit discussions about sexuality. This culture usually encourages early marriage and pregnancy which make the society prepare children (especially girl-child) for this task from childhood which will ultimately affect the development and perception of such child about sexuality.

A review of literature however shows considerable attention on adolescents' sexual behavior and how risky behaviours contribute to poor sexual developmental outcomes in adolescents. However, only a few have explored those socio-demographic factors that influence adolescent sexual development and behavior as it relates to their overall sexual health. Hence, this paper aims to identify those factors that can influence adolescents' sexual health and the influence of each identified factor.

2. OVERVIEW OF ADOLESCENT SEXUAL DEVELOPMENT

Adolescence is commonly associated with physiological changes occurring with the progression from appearance of secondary sexual characteristics (puberty) to sexual and reproductive maturity [8]. It can be described as that period beginning at puberty (appearance of secondary sexual characteristics) and ending at the onset of adulthood. This period involves multiple intellectual, personality, physical and social developmental changes. According literature, adolescence describes the teenage years between 10 and 19 which can be considered the transitional stage of physical and psychological human development from childhood to adulthood associated with an emerging awareness of sexuality and an age-specific drive to experiment with sex [9].

Adolescence is a developmental stage of life that is shaped by changes in the body and mind, and by the environment [10]. The onset of which varies and can be linked with environmental and genetic factors and involve brain and body growth which leads to new sense of self and negotiating new responsibilities and relationships. Sexual maturation involves physical changes that support fertility and the achievement of fertility. In girls, it includes breast budding and menstruation while in boys, it involves testes enlargement and first ejaculation with hair, body and voice changes occurring later in puberty.

3. DEVELOPMENTAL TASKS ASSOCIATED WITH ADOLESCENCE

Developmental tasks are universal and can be defined as the attitude, knowledge, skills and functions that an individual must acquire during a certain developmental stage. These tasks are usually acquired through personal efforts, physical maturation and social expectations. Successful accomplishment will result into readjustment which will prepare the individual for other tasks ahead. Failure in the achievement of such tasks usually results into anxiety, lack of adjustment, social disapproval and inability to cope with difficult tasks ahead. In adolescents, it includes:

- Cognitive development
- Identity development
- Movement towards independence
- Ethics and self direction
- Physical changes
- Preparation for adulthood

4. STAGES OF ADOLESCENCE

The period of adolescence is continuous but for descriptive purpose, it can be broken down into three stages: early, middle and late adolescence with each stage having its unique characteristics.

4.1 Early Adolescence

This can be regarded as the first stage and occurs between the ages of 10 and 14 with puberty marking its onset. During this stage, persons become aware of their rapidly changing body which makes them worry about their physical appearance and might result into sexual curiosity, shyness, blushing and privacy. The sexual curiosity is usually expressed in terms of admiration of celebrities. They begin to neglect family relationship for peer relationships and are more likely to engage in risky behaviors like smoking and alcohol, use as well as acting-out.

4.2 Middle Adolescence

This occurs from ages 15 to 17 and concerns about looks become extremely important leading adolescent spending ample time grooming, exercising and modification of their physical appearance and being sexually attractive (particularly, for girls). They often try to assert independence and may pick up bad habits like not cleaning their rooms, refusing to bath, being deterrent to authority. They usually try to withdraw from their parents whom they see as preventing them from being independent making them value and confide in their peer more. Risky behaviors significantly increases while acting-out decreases because they can at this stage use words more as a means of expressing their feelings.

4.3 Late Adolescence

This can be regarded as the last stage of adolescence occurring from age 18 through 21. Here, physiological development must have been completed with only increase in height (for males). They now have a clearer sexual identity and become less concerned about their bodies but more concerned about forming intimate relationships with the opposite sex. They also have decreased interest in peer relationships with just few important friends which in turn make them regard their parents more than before and seek their advice. Risky and acting-out behavior decreases.

5. SEXUAL DEVELOPMENT IN ADOLESCENT

Sexual development including puberty, sexual attraction and behavior, sexual and gender identity and negotiating intimate relationships is a complex and critical aspect of adolescence [11]. The sexual maturation process produces sexual interest which can be linked with increasing levels of sex hormones (androgen in males and estrogen in females) which reach the target sexual organs and begin their maturation. The development of sexual interest usually leads to sexual behavior seen in adolescents.

Sexual development occurs majorly in adolescence during which puberty occur. Puberty involves socio-cultural development, psychological development, sexual maturation and physical growth which occur at varied time in adolescents. This has been identified by Lynne, Graber, Nichols, Brooks-Gunn and Botvin [12] who stated that adolescent development is non-linear with sudden growth spurts and new levels of maturity that seem to appear and disappear. This development is usually healthy leading to positive sexual health when each of the processes is appropriately supported in a young person's environment [13]. This development usually prepares the adolescent for a productive, meaningful and fulfilled life and the adolescent

also begins to establish his or her own independence and identity. They also begin to evaluate their personal strengths and weakness, make long term decisions and goals and make more realistic expectation about their future unlike previously.

This process also includes identity development which encompasses sexual orientation and gender identity during which creates a strong sense of self in the adolescent.

5.1 Sexual Behavior in Adolescents

These are a variety of behavior that are common in health sexual development in adolescents and have no negative health effects but serve as a means of preparing them for positive sexual lives, they include: masturbation, same sex touching and sexual intercourse. Although, the appropriateness of these acts depends on a number of factors, therefore, it is important to educate them sex education.

5.2 Summary of Sexual Maturation in the Adolescent [14]

Even though adolescents' growth rate varies from child to child, a sequence has been identified as described in Table 1.

5.2.1 Puberty

Discussing sexual development without puberty will be incomplete. Puberty has been shown to occur as a result of a surge in hormone levels triggered by the hypothalamic-pituitary-gonadal axis. During puberty, the hypothalamus begins secreting Gonadotrophin-releasing hormone (GnRH) to the pituitary gland. The pituitary gland in turn begin secreting luteinizing hormones (LH) which will stimulate the cells in the testes (leydig cells) in males and ovaries (in females) to produce sex hormones testosterone and estrogen. These hormones are associated with body growth, sexual and reproductive maturation together with a series of cognitive, behavioral, social and emotional transformation which results into the maturity associated with adulthood with subsequent ability to reproduce. This usually begins between the ages of eight and twelve in girls and between the ages of ten and fourteen in boys [15]. The summary of this development in both sexes are as follows:

- The adolescent growth spurt: Increased height which is usually an early sign of the developmental process.
- Development of the primary sexual characteristics: This involves development of the organs directly involved in reproduction. E.g. enlargement of the penis, development of the breast.
- Development of the secondary sexual characteristics: It involves signs of sexual maturity that do not involve the reproductive organs directly. E.g. widening of the hips, thinning of the voice (in females); coarseness of the voice, widening of the shoulder and thinning of the hips (in males).

Table 1. Summary of sexual maturation in the adolescent

In males	In females
• Increase in size of the testes and scrotum • Appearance of pubic hair • Penis enlargement and adolescent growth spurt • Growth of larynx and voice deepening • Hair growth on the upper lip • Nocturnal emissions may occur as sperm production increases • Growth spurt reaches its peak and pigmentation of pubic hair occur • Enlargement of prostate gland • Growth of axilla hair • Sperm production become sufficient for fertility • Physical strength reaches its peak	• Adolescent growth spurt • Appearance of non-pigmented pubic hair (downy) • Breast budding, rounding of the hips and appearance of downy axillary hair • The uterus, vagina, labia and clitoris increase in size • Pubic hair growth becomes rapid and slightly pigmented • Breast development advances, nipple pigmentation begins and increase in size of the areola. The axillary hair also becomes slightly pigmented. • Growth spurt reaches its peak and then declines • Menarche occurs • Pubic hair development is completed followed by breast development and axillary hair • Adolescent sterility ends and the girl becomes capable of conception

Table 2. Signs of puberty in the adolescent

Signs of puberty in girls include:	Signs of puberty in boys include the following:
• Appearance of underarm and pubic hair • Breast development • Growth spurt (period of rapid growth; girls usually reach their adult height by about 16 years of age) • Menstruation (menstrual periods) • Increase in subcutaneous (under the skin) fat in the pelvis, breasts, and upper back	• Appearance of underarm, chest, facial, and pubic hair • Deepening of the voice • Ejaculation (reflex in which semen is ejected from the penis; usually follows an erection and may happen during sleep) • Growth spurt (period of rapid growth; boys usually reach their adult height by about 18 years of age) • Gynaecomastia (condition in which a hard nodule forms under each nipple; usually disappears within 2 years) • Growth of the penis and testes (testicles) • Increase in muscle mass

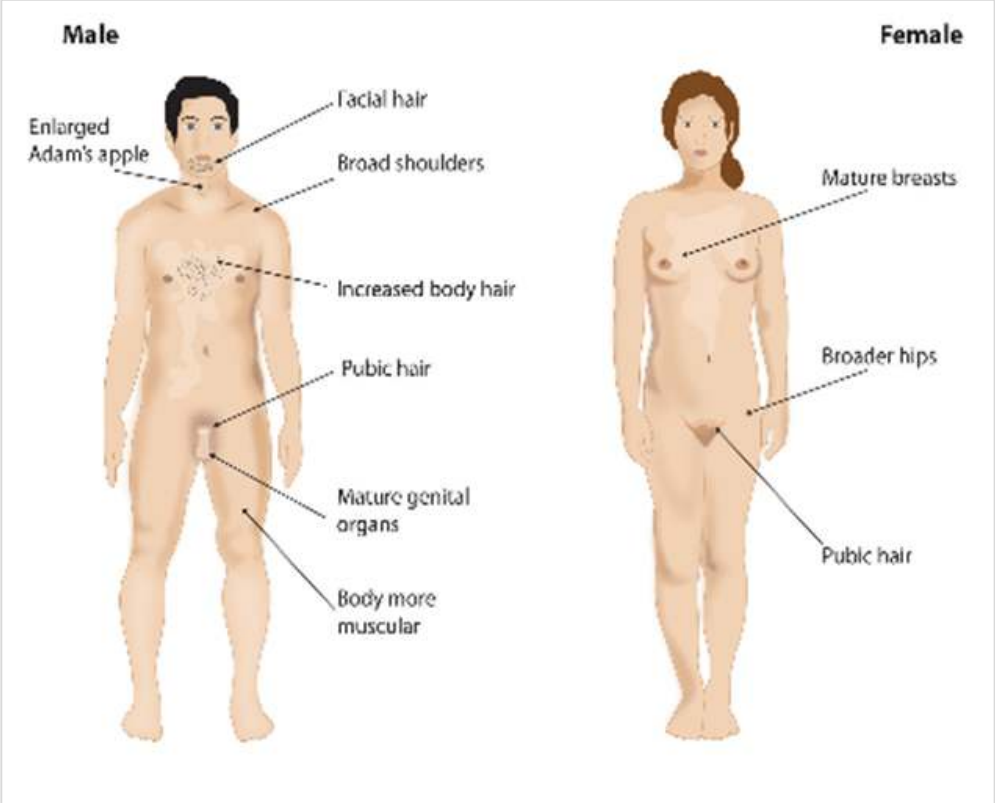

Fig. 1. Physical signs of puberty in males and females

6. INFLUENCE OF SOCIO-DEMOGRAPHIC FACTORS ON ADOLESCENT SEXUAL HEALTH

Adolescent sexuality is a vital stage of human sexuality that involves sexual feelings, behavior and development. Sexual behaviour of adolescent is usually influenced by their culture and social control, moral, norms and sexual orientation. Sexual expression can take the form of masturbation or sexual intercourse with a partner; although, it can vary to that of adults which is associated with various risks like unwanted pregnancy and sexually transmitted infections (STIs). These risks are more for adolescents because their brain may not be

neutrally mature enough to make better choices, minimal self-control and to make better risk analysis.

A western population was studied as regards to sexual behavior patterns of adolescents and explored the factors contributing to sexual behavior. In this study, about 11,000 adolescents between age 18 and 27 were recruited and more than 90% had lost their virginity before marriage. The virgin population was found to be younger in age, have poor physical maturity, higher body mass index, more religious inclination and often perceived disapproval for sex during adolescence by parents [16]. They further identified the following factors:

6.1 Social Factors and Sexual Decision Making

Adolescents, sexually active or not are influenced by a range of individual and social factors that includes parents and family dynamics, community, media, school, peers and social policy [17]. How adolescents make decisions about relationships, participating or abstaining from sex, practicing safe sex can have immediate and long-lasting implications for their future health outcomes and are influenced by a variety of factors (as identified above). Therefore, understanding the basis of social influences on adolescents' decision making will provide significant insight for effective health interventions and policy making.

6.2 Culture

Culture can be described as a system of values, languages, beliefs and behavior that varies from one group to another. These variations have varying impact on adolescent development because of the impact on family and peers, social and environmental factors which have significant impact on adolescent development. An example of cross-cultural variation is nutrition which has been shown to be associated with the onset of menarche. Therefore, girls in developed countries have an earlier age of menarche than their counterparts in developing countries; also, girls in families with higher socio-economic status tend to reach menarche sooner than girls from low socio-economic background. This was also supported by Daniel, [14], that "well-off" Nigerian adolescents from Ibadan start menstruation approximately 5 years earlier than their "poor" counterparts which may be linked with better quality of food.

6.3 Gender Norms and Sexual Cultures

Research has identified significant variations across cultures in the ways in which concepts of masculinity and femininity are socially constructed, or "scripted", and in the hierarchically structured gender systems in which they are embedded [18,19]. Gender roles are those acted out in the context of one's sexual culture. Although, the ideology of male power and domination prevails in most culture but it is sometimes shared by girls and women. A World Health Organization (WHO) multi-country study found widespread acceptance among women of justifications for wife beating under at least some circumstances [20], including married and cohabiting 15–19-year-old girls [21]. Ideologies like this have clear implication to what adolescents are learn about what is desirable and permissible for males and females which will affect their sexual and other aspect of life.

A prohibitive sexual culture disapproves strongly all sexual relations outside marriage whereas a conservative culture might tolerate premarital intercourse with an intended spouse may be permitted but that with other partner may not be permitted. On the other hand, a moderate sexual culture would tolerate non-marital sexual relation with a steady or random sexual partner. These rules however, have varying degree of tolerance for males and females.

6.4 Family Structure

The family is a basic unit in which children are socialized into male and female behaviors and sexual identities from infancy, primarily through processes of imitation and reward and punishment within the family unit [22]. Adolescents from a family with a polygamous structure are more likely than adolescents from a monogamous situation to have had sexual intercourse and that the association between polygamy and adolescent sexual behaviour is mediated by the adolescents' sense of connectedness to their parents [22].

6.5 Age and Gender

Several studies have investigated the impact of gender on sexual development and the consensus is that gender does affect adolescent sexual development [23]. For example, six percent of young women aged (15 to 24 years) reported having sex by the age of 15 compared with 12% of young men. And by the end of their

childhood (18 years), 42% of women and 63% of men had become sexually active [24].

6.6 Living Arrangements

Living arrangements of adolescents also influence their sexual behavior and development in that family structures (like parents who are divorced, separated, single-parent) have been discovered to serve as a risk factor for sexual initiation when compared with the traditional family structure (adolescents with both biological parents and step families). In South Africa, McGrath et al. [25] found that hazard of first sex was statistically significantly higher for women and men whose mother or father had died while on the other hand, the hazard of first sex was significantly lower for women whose mother or father was a co-member of the same household.

6.7 Alcohol and Drug Use

Alcohol intake in adolescents is a major concern because it has been linked with various risky behavior like unsafe sex, teenage pregnancy, school drop-out and delinquent behavior. These risky behaviours associated with alcohol and drug use can be supported by a research in South Africa by Simbayi, Mwaba and Kalichman, [26] in which they observed that alcohol intake among South African adolescents has been linked with risk behaviors including unsafe sex, teenage pregnancy, dropping out school and delinquent or criminal behavior. In another study of Eighth Grade pupils in South Africa, Palen et al. [27] found that during their most recent sexual encounter, 39% of the adolescents reported using alcohol or marijuana. Among those who used these substances, 23% reported that substances influenced their decision to have sex, and 26% reported using substances in order to feel more comfortable with their partner; youth who had ever used alcohol or marijuana in their lifetime were significantly more likely to have ever had sexual intercourse.

6.8 Religion

Religious affiliation can be substantially linked with adolescents' perception of his/her sexual identity and how they evaluate the appropriateness of sexual intercourse during adolescence. Several scholars have also observed that adolescents who attached importance to religion were significantly more aware of the dangers of HIV/AIDS than their non-religious counterparts; they are more likely to delay sexual involvement than those with lower levels of religiosity [28,29], and [30] as cited in [17] It has been also identified that the religious group to which people identify appears to be substantially correlated with how they evaluate the appropriateness of premarital sexual behavior and with the sexual attitudes they choose to follow in their own lives including first sexual intercourse and less permissive attitudes about premarital sex [31].

6.9 Household Income

Poverty tends to weaken moral values which will in turn affect appropriateness of sexual behavior. In particular, female adolescents may be easily lured with money to participate in sexual intercourse by rich adults or peers.

6.10 Peer Influence and Grade Level

Adolescence is characterized by independence which they usually exert by turning away from family to peers. Just like the family, the peer group becomes a significant social unit which influences adolescents' behavior including their perception of what is right or wrong and the tendency to participate in sexual relationships.

7. CHALLENGES TO ADOLESCENT SEXUAL HEALTH

The challenges adolescents face during this period can be closely linked with the various biological and physiological changes occurring at this stage in which many adolescents are not fully capable of coping with usually leading to stress. Family and societal attitude to them may also become a source of stress. This can be buttressed by the definition of adolescence by Patton and Viner, [32] who described it as a "cascade of endocrine changes" accompanied by series of cognitive, emotional and behavioral changes.

Sexual exposure during adolescence also exposes them to the risk of transmission of Sexually Transmitted Infections (STIs), teenage pregnancy, forced marriage and adolescent fatherhood (as a result of unprotected sex) which is of great concern. Early marriage leading to early sexual exposure and pregnancy also has adverse consequences on the reproductive health of adolescents [33]. Worst of all is inadequate formal sex education in schools in many developing countries coupled with poor child-parent relationship and communication

which makes majority of these adolescents inadequately prepared for the challenges of adolescence and according to [34,35], sexuality and relationships education curricula in the schools as well as out-of-school health-promotion, life-skills and capacity-building programs provide opportunities for young people to question the content of prevailing male and female gender scripts and adopt new ways of thinking and behaving.

Another challenge worthy of note is interpersonal violence which may be physical or sexual; all of which the society has little or no facility to cater for. Even the available clinical and educational interventions on adolescent sexuality focus mostly on coital sexual activities of adolescents. However, there is plenty of evidence regarding adolescent's involvement in non-coital activities, which are potential routes of transmission of sexual diseases including HIV infection [36]. This means there is a need to also focus on non-coital sexual activities during clinical assessment and health education. In many studies in US, by the late teenage and early twenties, most individuals experience oral or vaginal sex irrespective of marital status [37]. The implication of this is that adolescent health in Nigeria need to be given more attention because of the population of adolescents involving in sexual activities is more than imagined owing to increasing globalization and urbanization which tend to be permissive to premarital sexual activities.

8. CONCLUSION

This paper sought to fill the gap in literature by examining the influence of socio-demographic factors on adolescent sexual development. From literature, it can then be concluded that adolescent anti-social sexual behavior in particular are affected by both personal characteristics and societal conditions like family, school and peer influences. This can serve as a predictor of adolescent sexual behavior. Therefore, parent-child relationship in the form of parent-child communication is very important in engendering pro-social attributes in the adolescent and also to exhibit how much parents value their adolescents, peers and other social circumstances surrounding the adolescent.

9. RECOMMENDATIONS

- Adolescents need to be educated on the negative influence of peer and parents of adolescents should also be encouraged to be supportive of the adolescent in order that they may see them as a confidant and advisor.
- Governmental and non-governmental organizations should reinforce efforts towards the provision of adolescent friendly centers where their health needs can be adequately attended to.
- Adolescents should be provided with opportunities in which they can seek clear and correct information about the period of adolescence and teaching coping skills which will help adolescents develop into a sexually matured adult.
- Adolescent should be helped to understand the implication of faulty sexual and reproductive development during adolescence and its implication on future sexual and reproductive health.

CONSENT

It is not applicable.

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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