Sexuality education has probably been one of the most controversial topics in the field of child and adolescent health. From western countries like the United States to Southeast Asian countries like India, the topic invites controversies, public debates, and political discussions of a broader variety. In recent times, two successive Indian governments have grappled with the issue and have also been under pressure due to political viewpoints, proposed policies, and initiatives on sexuality education programs for children. Public discussions on this topic are frequently fueled by religious, social, and cultural values, while receiving scant scientific attention.

Why has adolescent sexuality education become a burning topic of debate in India? One possible reason could be the demographic structure of India and its changing needs. Children less than the age of 21 years comprise more than a third of the Indian population. In addition, more than 1 in 10 children in India are teenagers or currently experiencing puberty, and more than a quarter of all children will transition to adolescence and puberty within the next decade. During this transition, adolescents will experience significant changes in lifestyle, behavior, growth, and development. Adolescence and puberty are a part of the complex process of growing up marked by vital biological and physical changes. With these changes, adolescents may also exhibit considerable amount of struggle for autonomy, engagement in risky health behaviors, and a need for education on sexuality and healthy lifestyles.

Risky sexual behaviors and lack of knowledge on sexuality-related topics are among the leading problems most associated with mortality, morbidity, and social ailments in adolescents. In this context, policymakers and schools in India must consider the burden of mortality and morbidity associated with lack of sexuality education. We propose four key considerations for adolescent sexuality education in India: (1) Sexually transmitted infections (STIs), (2) teenage and unwanted pregnancies, (3) menstrual health and hygiene, and (4) emerging issues in child and adolescent sexuality.

Sexually Transmitted Infections

Although there are no national estimates of the burden of STIs in Indian children, several regional studies have indicated the potential burden of STIs and the causal factors. Studies estimate that the prevalence of STIs in Indian children could range from less than 1% to more than 15%, with existing estimates for common bacterial and viral infections. What is most disconcerting is the substantial burden of HIV infections in children and young adults. Of all the cases of HIV in India, a major proportion (more than one in four) is seen in younger children.
individuals due to risky sexual behaviors such as unprotected sex and multiple sexual partners.\textsuperscript{[7,10,13]}

Sexually transmitted infections are preventable causes of morbidity and mortality. Unfortunately, Indian adolescents seem to be inadequately informed about signs, symptoms, and prevention of STIs. In one particular study from Delhi, more than one third of students did not understand the signs and symptoms of STIs. The majority (71\%) had not heard about genital herpes, and almost half had not heard about gonorrhea (44\%) or syphilis (43\%), which are the leading causes of STIs.\textsuperscript{[10]} With regard to HIV, there has been some amount of social marketing and public discourse among youth in India, but in-depth knowledge seems to be lacking.\textsuperscript{[10,13]} A study of more than 1000 students from Delhi reported that all the students (100\%) had heard about HIV, but majority of the students could neither write the full forms of HIV and AIDS, nor were they able to identify modes of prevention and transmission of HIV.\textsuperscript{[13]} In another study of adolescent females from Maharashtra, the majority (54\%) of study participants were not aware about the transmission mode of HIV/AIDS from one person to another. This is especially disconcerting, given that Maharashtra is one of the states with the highest burden of HIV.\textsuperscript{[11,13]} Interestingly, the state of Maharashtra does not have a provision for sexuality education in schools.

According to the National Family Health Survey of India, only 36\% of male and 20\% of female adolescents have comprehensive knowledge of HIV/AIDS.\textsuperscript{[13]} Adolescents’ knowledge and awareness about human sexuality could possibly prevent and alleviate the burden of STIs. A national study of unmarried women in India reported that majority of the recipients of sex and family life education had awareness of reducing and preventing STIs and HIV, whereas majority of those who did not get such education were not aware of STIs and HIV prevention.\textsuperscript{[7]}

**Teenage and Unwanted Pregnancies**

Pregnancy-related deaths and complications are a leading cause of mortality and morbidity in adolescent Indian females. A lot of pregnancies, especially in rural India happen to young females resulting in adverse maternal and child health outcomes. According to national estimates, almost one in six pregnancies in India is reported by women in the age group of 15-19 years. Several regional studies in India have also estimated the rates of teenage or early pregnancy to be in the range of 5\% to more than 30\%.\textsuperscript{[14-16]} These estimates could be a tip of the iceberg. There are pregnancies in adolescent females that are aborted or not reported, and there are adolescent females at perennial risk of early or unwanted pregnancy. Although there are substantial public debates and controversies on sexuality education, the grave public health issue of teenage pregnancy remains neglected. Estimating the medical, social, and economic consequences of teenage pregnancy in India, a report sponsored by the World Bank indicated that delaying of teen pregnancies to early 20\s would increase the nation’s productivity by more than US$7 billion.\textsuperscript{[7]}

The two major implicating factors for adolescent pregnancies in India are early marriage and lack of birth control or unprotected sex. In either case, sexuality education holds the potential for preventing early and unwanted pregnancies. Given that more than one fourth of Indian girls get married before the age of 18 years, the efficacy of child marriage ban in India remains questionable with regard to preventing early pregnancies. However, greater awareness about human sexuality has the potential to delay unwanted and unintended early pregnancies. In a national study, it was reported that unmarried young women in India who have received sex and family life education are more likely to know about birth control and contraception.\textsuperscript{[7]} Compared to India, youth in many developing countries have greater knowledge of contraception, birth control, and lesser prevalence of teen pregnancy. One putative cause could be the emphasis on sexuality education and implementation of standardized curriculums in schools of many western countries.

**Menstrual Health and Hygiene**

Menstrual health of adolescent females is a fairly well-researched and reasonably explored area of child sexuality in the Indian context. Several studies from various parts of India have assessed menstrual morbidity, knowledge, perceptions, sources of information, and educational needs of adolescent females with regard to menstrual health and hygiene.\textsuperscript{[4,5,8,19]} The common prominent observations from these studies are: A widespread lack of knowledge about menstruation (including information on anatomy and physiology); clouding of perceptions by religious, cultural, and social taboos/myths; need for education on menstrual hygiene practices; and a need for resources (e.g. water and sanitary pads) to promote menstrual health and hygiene. The problems are more profound in adolescent females from rural and socio-economically disadvantaged backgrounds.\textsuperscript{[4,6,8,19]}

Several professional organizations (e.g. UNICEF and WHO) have advocated for greater emphasis on menstrual health and hygiene in adolescent females of developing countries. Interestingly, adolescent Indian females seem to be fairly inquisitive and keen on receiving menstrual health education and promotion. Greater knowledge about sexuality is one possible solution for this unmet reproductive health need of adolescent females in India. In this regard, it is recommended that an evidence-based, standardized, and culturally relevant sexuality education/family life curriculum should be implemented across schools nationwide.\textsuperscript{[4-6,18,19]}

**Emerging Issues in Child Sexuality**

In addition to the key issues discussed above, there are several emerging issues that need specific mention in the context of child sexuality and sexuality education. Many of the emerging issues could be a result of the changing values/norms of the Indian society (e.g. westernization). First, there are issues that
interface with child sexuality and other disciplines in humanities. Prominent examples are child pornography, prostitution, child sexual abuse and poor parenting, adolescent dating violence or intimate partner violence, body image disorders, rape and abortion, female feticide and psychosexual disorders, homosexuality, masturbation and pornography consumption by adolescents. Second, in recent times, there has been a fair amount of research on sexual behavior and attitudes of adolescents in India. Studies have examined views about puberty and infertility; age at first sexual intercourse and engagement in premarital sex; number of sexual partners and emergency contraception, substance use and attitudes about sexual behaviors and virginity, and a cohort of other factors. A number of these factors are interconnected. For example, a recent study from Pune reported that adolescents who reported sexual abuse, poor relationship with parents, STI symptoms, and substance use were more likely to have engaged in early sexual activities. Knowledge about sexuality could serve as a vehicle for primary prevention and possibly counter the emergence of some of these issues that are new to the Indian society, but widely prevalent in some western countries.

Future Generation Needs and Solutions

It is fairly evident that the aforementioned child sexuality issues impose a substantial health-related, physical, and psychological burden on Indian adolescents. Given all the scientific evidence shared above, it is also important to understand public views on adolescent sexuality education in the Indian scenario. The broader themes are: (a) “Ban sexuality education and don’t talk about sex,” (b) “Sexuality education should focus solely on abstinence and avoidance of premarital sex,” (c) “Sexuality education should be comprehensive and address a broader variety of topics that can also count as life skills.” Therefore, the two key questions to be considered are: Should sexuality education be a part of growing up for Indian children? If yes, what should sexuality education comprise?

Successful health education and promotion programs have a major focus on the needs of target population (in this case, Indian adolescents). Tailored interventions for health problems have to be based on the information provided by individuals in the target population. Available scientific evidence suggests that Indian children have frequently expressed the need of and desire for formal sexuality education. In addition, the disclosure of unmet reproductive health needs, menstrual problems, symptoms of STIs, and the questions asked by cross sections of children nationwide, should also be considered as a proxy measure of children’s need for sexuality education. Parents and teachers in India have also supported the idea of sexuality education. Interestingly, not only have the Indian children expressed a need for sexuality education, but in many studies, they have also expressed the preferred channels for delivery of sexuality education. Family physicians, parents, and schools remain popular choices as sources of information and agents for delivering sexuality education. Considering the proven need for sexuality education, the other key factor is the content of sexuality education. There are two major and broadly known practices in the context of sexuality education for children: Abstinence-based and comprehensive sexuality education. Abstinence-based sexuality education focuses primarily on promoting abstinence outside of marriage. On the contrary, comprehensive sexuality education supports adolescents’ ability to decide whether and when to have sex and also prepares young people for skills and knowledge on healthy sexual behavior. Banning sexuality education or abstinence only education remains a favorite of conservative religious and political groups in India. The commonly publicized reason is that promoting sexuality education leads to promiscuous behaviors and early sexual activity. However, scientific evidence suggests the contrary.

In a recent meta-analysis from low- and middle-income countries, it was reported that compared with abstinence only group, the group of students who received school-based sexuality education had significantly greater HIV knowledge, self-efficacy related to refusing sex or condom use, fewer sexual partners, and lesser prevalence of early sexual activity. According to a major report commissioned by UNESCO that included a review of interventions from developed and developing countries, comprehensive sexuality education was found to reduce misinformation and increase awareness, enable youth to make healthy decisions, and have a positive impact on behavior. The report also found concrete evidence for the ability of comprehensive sexuality education to reduce risk behaviors, delay first sexual activity, reduce the frequency of sex and number of sexual partners, and increase contraceptive use. In another recent study of more than 900 adolescents of a vernacular school in Maharashtra, students who were not exposed to scientific literature on reproductive and sexual health were more likely to have initiated sex early. An intervention with adolescents in Chandigarh used a comprehensive reproductive health education program for the trial covering a broad array of topics including STIs, pregnancy, menstrual health, birth control, and medical termination of pregnancy. The vast majority (>80%) of parents, teachers, and students favored the educational program. In addition, the intervention group reported substantial gains in knowledge scores on a plethora of sexuality education topics.

Several other high-profile systematic reviews and meta-analyses have shown that comprehensive sexuality education has greater efficacy and cost-effectiveness (even in the developing countries) with regard to improving sexual health outcomes in adolescents. There is little evidence of success or inconsistent evidence for the efficacy of abstinence only or no sexuality education for adolescents with regard to sexual health outcomes. Although there are many philosophies about content of sexuality education, stakeholders in India must understand that sexuality education should aim beyond just the prevention of negative consequences of risky behaviors. Sexuality education should include teaching youth about the important role their sexuality plays in their personality, the many positive things one’s sexuality brings to
life, and the role our sexuality plays in connecting an individual to others. According to Sexuality Information and Education Council of the United States, what children may be exposed to through a sexuality education curriculum is a lifelong process of acquiring information and forming attitudes, beliefs, and values. The curriculum encompasses sexual development, sexual and reproductive health, interpersonal relationships, affection, intimacy, body image, and gender roles.[96]

**Conclusion**

Until the public demands that health education be designed to prevent morbidity and unwanted pregnancy, social agendas will drive much of the policy being made. There is profound scientific evidence on cost-effectiveness, outcomes, and cultural relevance of various types of sexuality education in the context of both developed and developing countries. Policymakers and stakeholders should keep scientific evidence at the core of policymaking and health program planning on sexuality education for adolescents in India. Informed and evidence-based decision-making for appropriate policies and scientific sexuality education programs have the potential to best serve a burgeoning adolescent Indian population. India takes pride in its modernization, and the future generation will thrive in a far more modern and westernized climate than political and religious leaders of today. Yes, we are bound by our culture, but isn’t “science” the “culture” of modernity?

**Acknowledgement**

Dr. Khubchandani is a recipient of Diversity Associate Scholarship from the Office of Institutional Diversity, Ball State University, USA.

**References**

1. Stanger-Hall KF, Hall DW. Abstinence-only education and teen pregnancy rates: Why we need comprehensive sex education in the U.S. PLoS One 2011;6:e24658.
2. Das A. Sexuality education in India: Examining the rhetoric, rethinking the future. Sex Educ 2014;14:210-24.
3. NY Times Editorial Board. India's Sex-Ed Controversy. NY Times, July 2014. Available from: http://www.nytimes.com/2014/07/10/opinion/indias-sex-ed-controversy.html. [Last accessed on 2014 Jul 09].
4. Santhya KG, Jejeebhoy SJ. Young People's Sexual and Reproductive Health in India: Policies, programs and realities. New Delhi: Population council, regional offices for South and East Asia. 2007, No. 19.
5. Chotte V, Khubchandani J, Seabert D, Asalkar M, Rakshe S, Firke A, et al. Students’ perceptions and doubts about menstruation in developing countries: A case study from India. Health Promot Pract 2014;15:319-26.
6. Bearinger LH, Sieving RE, Ferguson J, Sharma V. Global perspectives on the sexual and reproductive health of adolescents: Patterns, prevention, and potential. Lancet 2007;369:1220-31.
7. Tripathi N, Sekher TV. Youth in India ready for sex education? Emerging evidence from national surveys. PLoS One 2013;8:e71584.
8. Dhawan J, Gupta S, Kumar B. Sexually transmitted diseases in children in India. Indian J Dermatol Venerol Leprol 2010;76:489-93.
9. Mendiratta V, Agarwal S, Chander R. Reappraisal of sexually transmitted infections in children: A hospital-based study from an urban area. Indian J Sex Transm Dis 2014;35:23-8.
10. McManus A, Dhar L. Study of knowledge, perception and attitude of adolescent girls towards STIs/HIV, safer sex and sex education: A cross sectional survey of urban adolescent school girls in South Delhi, India. BMC Women's Health 2008;8:12.
11. Wadgave HV. Knowledge of HIV/AIDS transmission among the adolescent girls in slum areas. Indian J Sex Transm Dis 2011;32:139-41.
12. Lal P, Nath A, Badhan S, Ingle GK. A study of awareness about HIV/AIDS among senior secondary school children of Delhi. Indian J Community Med 2008;33:190-2.
13. Benzaken T, Palep AH, Gill PS. Exposure to and opinions towards sex education among adolescent students in Mumbai: A cross-sectional survey. BMC Public Health 2011;11:805.
14. United Nations Population Fund. Adolescent Pregnancy: A Review of the Evidence. Available from: https://www.unfpa.org/public/home/publications/pid/15772 [Last accessed on 2014 Jul 09].
15. United Nations Population Fund. Motherhood in childhood: Facing the challenge of adolescent pregnancy. Available from: http://www.unfpa.org/webdav/site/global/shared/swp2013/EN-SWP2013-final.pdf. [Last accessed on 2014 Jul 09].
16. Mukhopadhyay P, Chaudhuri RN, Paul B. Hospital-based perinatal outcomes and complications in teenage pregnancy in India. J Health Popul Nutr 2010;28:494-500.
17. Chaaban J, Cunningham W. Measuring the economic gain of investing in girls: The girl effect dividend. Available from: http://www-nds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2011/08/08/000158349_20110808092702/Renders/PDF/WPS5753.pdf. [Last accessed on 2014 Aug 12].
18. Deo DS, Ghattargi CH. Perceptions and practices regarding menstruation: A comparative study in urban and rural adolescent girls. Indian J Community Med. 2005;30:33-4.
19. Khanna A, Goyal RS, Bhaowar R. Menstrual practices and reproductive problems: A study of adolescent girls in Rajasthan. J Health Manag 2005;7:91-107.
20. Chaudhary A, Satija M, Sharma S, Singh GPI, Soni RK, Sachar RK. Awareness and perceptions of school children about female feticide in urban Ludhiana. Indian J Community Med 2010;35:302-4.
21. Sahay S, Nirmalkar A, Sane S, Verma A, Reddy S, Mehendale S. Correlates of sex initiation among school going adolescents in Pune, India. Indian J Pediatr 2013;80:814-20.
22. Kumar R, Raizada A, Agarwal AK, Kaur M. Adolescent behaviour regarding reproductive health. Indian J Pediatr 2000;67:877-82.
23. Puri S, Bhatia V, Swami HM, Singh A, Sehgal A, Kaur AP. Awareness of emergency contraception among female college students in Chandigarh, India. Indian J Med Sci 2007;61:338-46.
24. Ramadugu S, Ryali V, Srivastava K, Bhat PS, Prakash J. Understanding sexuality among Indian urban school adolescents. Ind Psychiatry J 2011;20:49-55.
25. Moore AM, Singh S, Ram U, Remez L, Audam S. Adolescent Marriage and Childbearing in India: Current Situation and Recent Trends. New York: Guttmacher Institute; 2009.

26. Thakor HG, Kumar P. Impact assessment of school-based sex education program amongst adolescents. Indian J Pediatr 2000;67:551-8.

27. Unni JC. Adolescent attitudes and relevance to family life education programs. Indian Pediatr 2010;47:176-9.

28. Saksena S, Saldanha S. Impact of a course on human sexuality and adolescence. Indian J Pediatr 2003;70:203-6.

29. Bhasin SK, Aggarwal OP. Perceptions of teachers regarding sex education in National Capital Territory of Delhi. Indian J Pediatr 1999;66:527-31.

30. Agrawal HK, Rao RS, Chandrashekar S, Coulter JB. Knowledge of and attitude to HIV/AIDS of senior secondary school pupils and trainee teachers in Udupi District, Karnataka, India. Ann Trop Pediatr 1999;19:143-9.

31. Boonstra H. Advancing sexual education in developing countries: Evidence and implications. Guttmacher Pol Rev 2011;14:17-23.

32. Fonner VA, Armstrong KS, Kennedy CE, O'Reilly KR, Sweat MD. School based sex education and HIV prevention in low- and middle-income countries: A systematic review and meta-analysis. PLoS One 2014;9:e89692.

33. United Nations Educational, Scientific and Cultural Organization (UNESCO). International technical guidance on sexuality education: An evidence-informed approach for schools, teachers and health educators. Available from: http://unesdoc.unesco.org/images/0018/001832/183281e.pdf [Last accessed on 2014 June 20].

34. Parwej S, Kumar R, Walia I, Aggarwal AK. Reproductive health education intervention trial. Indian J Pediatr 2005;72:287-91.

35. Vermund SH, Hayes RJ. Combination prevention: New hope for stopping the epidemic. Curr HIV/AIDS Rep 2013;10:169-86.

36. Sexuality Information and Education Council of the United States. Sexuality Education Q and A. Available from: http://www.siecus.org/index.cfm?fuseaction=page.viewpage and pageid=521 and grandparentID=477 and parentID=514. [Last accessed on 2014 June 20].