NORTH INDIA GYNAECOLOGIST FORUM
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iAHW INTERNATIONAL ADOLESCENT HEALTH WEEK

SHUBH NAVRATRI and DIWALI

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Guest Editor
Dr. Arun Arora

Theme :
"Comprehensive Adolescent Health"

NIGF E BULLETIN

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Highlights and Glimpses of 2nd Annual Conference of North India Gynaec Forum

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Patron MESSAGE

Dear Colleagues,

As gynaecologists, we are the guardians of reproductive health, not only for women in their prime but also for the young adolescents whose bodies and minds are at the threshold of womanhood. Adolescent health is not just a medical responsibility but a societal necessity. It is in these formative years that we must ensure a strong foundation for lifelong wellness. And yet, how often do we overlook the unique challenges faced by our adolescent patients?

We must ask ourselves: Are we doing enough? Are we addressing the silent struggles of menstrual health, endometriosis, reproductive rights, and sexual education with the gravity they deserve? It is time to bring a transformative change in how we, as gynaecologists, approach the needs of our young patients.

Adolescents require tailored, empathetic, and informed care that goes beyond routine check-ups. They need our attention, our expertise, and most importantly, our willingness to listen and to educate. By embracing a holistic approach to adolescent health, we can empower young girls with the knowledge and support they need to thrive. Every case of heavy menstrual bleeding, every untreated case of adolescent endometriosis, is a missed opportunity to improve a young life. Let's not let these moments slip away.

This bulletin serves as a clarion call to all of us. Let's make adolescent health a priority—not just in words but in practice. The future of women's health starts with our adolescents today. Together, we can create a culture where early intervention, preventive care, and open dialogue shape the healthy adults of tomorrow.

I urge each of you to reflect deeply on the role we play in shaping the reproductive health of the next generation. Our efforts now will echo through their lifetimes. Let's be the change-makers our adolescents need.

Warm regards,
Dr. Sharda Jain
Patron

Presidential MESSAGE

It gives me immense pleasure to release 4th issue of North India Gynaec Forum Bulletin on auspicious occasion of Navratri Festival. Theme of the Bulletin – **Comprehensive Adolescent Health is chosen aptly as we celebrate women power in these nine days as well world celebrates International Adolescent Week.**

In short span of two years North India Gynaec Forum has travelled a worthy journey. We have accomplished our vision and mission to connect with Ob Gyn of all cadres & all ages of all 7 states and two union territories as well we have worked together for our key women health priorities – **Anemia & Cervical Cance Free India, Preventing Preventable Mortality & Prevention of Birth Defects**. Beside we are working for creating sensitivity & knowledge for medicolegal issues in OB Gyn practice.

North India Gyneac Forum organized a highly successful 2nd Annual Conference. Conference had 350 plus participants, 3 workshops, 8 key notes and 2 orations, 7 panel discussions and 70 plus research papers and innovative sessions like Behavior change communication with role plays, It was great show of height of great expertise from doyens, teachers & seniors from various sub & superspecialists. Youngsters amazed us with their enthusiasm and talent. Fellowships at cultural evening was enjoyable and felicitations of our Orators, Teachers and contributors was our pride and honor. All states and UT of NIGF participated in the conference & I thank immensely everyone for their precious time and contributions.

This Bulletin will cover every aspect of Adolescent health by various articles from distinguished as well young authors. Content have been carefully crafted and includes promotive and positive measures like nutrition, vaccination, life style to updates on important subjects like adolescent PCOS, Endometriosis, Reproductive and sexual health issues.

It is a pleasure to concise all the great work of NIGF in form of publication as it sets the ways and direction of our future journey. Regular twice monthly quiz, Kannon Ki Pathshala & Expert Series have become landmark programs for our members.

I thank NIGF office bearers and members for their consensus to have me as NIGF President for one year more. I also thank for your full-hearted support for electing me as Indian College of Ob Gyn (ICOG) Vice Chair Elect 2025.

We are committed for our key vision and mission and together have great future ahead.

World Shrinks or Expands in proportion to our courage –

So, show case your talent, share your experience and expertise, innovate & implement at NIGF.

Dr. Sadhana Gupta
President NIGF
Chief Editor NIGF Bulletin
ICOG Vice Chair Elect 2025

Editorial

Adolescence

Adolescence is the phase of life between childhood and adulthood, from ages 10 to 19 (WHO). In the broadest sense, adolescence refers to the period marking the transition from childhood to adulthood. Historically, this typically spans from 12 to 18 years of age, which roughly corresponds to the time from pubertal onset to guardian independence. G. Stanley Hall was the first person to systematically examine the term "adolescence" for scientific purposes in the early 1900s. In his opinion, adolescence was a chaotic, troubled time that, if the child did not first self-destruct, was only a transition to something saner.

The western concept of guardian independence at 16/18 years has probably led to all the troubles of this group when they are assumed to be mature and capable of handling all pressures of this world, when in reality they are not. Due to its extreme behavioral and developmental variability, it is better to think of it as a developmental phase rather than a single chronological moment. The concept and time period of adolescence have been broadened by recent research to encompass young adulthood, generally up to the age of 25 or occasionally 30. I recall our elders reminding us that until they are about this age, you must protect and nurture them.

Although this covers some of the brain alterations that happen beyond the age of 18, it poses problems for therapeutic strategies for teenagers and the laws that govern them. Because a 12-year-old's brain, behavioral profile, and social needs and roles are very different from those of a 24-year-old, it also makes studying and treating young individuals during this period more difficult.

Nonetheless, the broadened concept of adolescence aligns with the lengthening of adolescence, a phenomena that is recognized in both biology and society. This alludes to an early beginning of puberty, especially in females. Similarly, in terms of the social/personal responsibility associated with adult roles, adolescence has stretched into the early 20s, with more persons delaying typical adult responsibilities (e.g., starting a family or full-time employment, owning property) in contemporary societies.

Adolescence frequently co-occurs with puberty, a biological phenomenon defined by a constellation of events that are driven by increases in adrenal and gonadal hormones, including the development of secondary sex characteristics and modulations in muscle and fat. It is associated with a period of increased risk-taking behaviours as well as increased emotional reactivity. This is typically coincident with changes in the social and school environment, such as spending less time with parents and more with peers, as well as an increase in autonomy. These behavioural changes occur in the context of developmental changes that are influenced by both external environmental and internal factors that elicit and reinforce behaviours.

Adolescence is a unique stage of human development and an important time for laying the foundations of good health. Adolescents experience rapid physical, cognitive and psychosocial growth. This affects how they feel, think, make decisions, and interact with the world around them. The young people reason powerfully; make their own choices about their social and sexual relationships; adapt to their schools in a manner consistent with their own motives and concerns; navigate the complexity of influences that they encounter in their families, neighborhoods, mass media, and legal system; and end up forging their own judgments about who they are and what they believe in. Sometimes their judgments work for the better, sometimes for the worse. There are real risks and casualties associated with this age period. This we have long known. But there is also an infinite promise and positive excitement associated with youth. This, too, has long been known but perhaps was put out of mind too often in our initial century of adolescent research.

Despite being thought of as a healthy stage of life, there is significant death, illness and injury in the adolescent years. Much of this is preventable or treatable. During this phase, adolescents establish patterns of behaviour – for instance, related to diet, physical activity, substance use, and sexual activity – that can protect their health and the health of others around them, or put their health at risk now and in the future. Adolescence is also a distinct developmental period during which the incidence of many psychiatric illnesses rises dramatically.

To grow and develop in good health, adolescents need information, including age-appropriate comprehensive sexuality education; opportunities to develop life skills; health services that are acceptable, equitable, appropriate and effective; and safe and supportive environments. They also need opportunities to meaningfully participate in the design and delivery of interventions to improve and maintain their health. Expanding such opportunities is key to responding to adolescents' specific needs and rights.

I would conclude by summing up the Eriksonian concept of psychosocial identity by saying that it would resemble "a stable personal commitment to an adult role." The period between the advent of puberty and a stable commitment to an adult role may not hold up long as a scientific definition, at least without lots of further definitional work on both ends. That being said, it's not a bad place to start.

Dr. Arun Arora
MD, FICOG

Vice President MESSAGE

Its a moment of great pleasure and pride that the 4th bulletin of NIGF focussing on "Adolescent Health" is being released on 9th October 2024. Adolescence is a unique stage of person's development that lays foundation of individual's future health. There are rapid physical, cognitive and psychosocial growth changes during this period. This affects how they feel, think, interact, take decisions and behave in their future life. This is the most important age of shaping ideas and attitude that forms the base of happy and healthy adult. In the long run this helps in shaping nation's future.

Parents, family and teachers have great role in adolescent health. There is need to spread education about nutrition, exercise, optimisation of BMI, Haemoglobin status, personal hygiene, menstrual hygiene, vaccinesa for prevention of diseases and mental health. Age appropriate sex education, safe sex practices, contraceptive knowledge, rotection from STIs needs special attention for future reproductive health.

I wish this current 4th NIGF bulletin covering adolescent health will surely benefit all the adolescents. The experts have shared their vast knowledge on different health aspects in this delicate period of life.

Let us join our hands on improving adolescent health in our country.

Regards

Dr. Amrit Pal Kaur
Vice President NIGF

Presidential Elect

MESSAGE

It is a matter of pride for NIGF to release its new bulletin on a subject of great importance.

I congratulate Dr Sadhana Gupta President NIGF and all the contributors for bringing out this well executed bulletin.

As we come together to celebrate **Adolescent Health Week**, we acknowledge the pivotal role that the health and well-being of our youth plays in shaping the future of India.

Our adolescents today face numerous challenges, ranging from the need for proper nutrition to the growing concerns around mental health, access to accurate sexual and reproductive health information, and the pressure of navigating a rapidly changing world. By promoting education and open dialogue around physical, mental, and emotional health, we empower our youth to make informed decisions. Schools, healthcare institutions, and local communities must collaborate to create a supportive environment for them.

Thanks to the concerted efforts of the government and health organizations, significant strides have been made in addressing adolescent health concerns. However, we must remain committed to ensuring that every young person has the opportunity to grow into a healthy, confident adult. The work is ongoing, and together we can build a stronger, healthier future.

"As we mark this important week, let us all pledge to continue working towards a healthier, happier, and more empowered generation. The health of our adolescents is the health of our nation—let us protect and nurture it."

Together we can make a beautiful world for our coming generation.

Jai Hind

Jai NIGF

Dr. Ragini Agrawal
President Elect NIGF

Secretary General MESSAGE

It gives me a great pleasure and privilege to celebrate the publications of the 4th Bulletin of NIGF on Adolescent health.

Adolescence is a crucial stage of life marked by significant physical, emotional, and social changes. Ensuring good health during this period is vital for laying a strong foundation for adulthood.

Adolescents experience rapid growth and development, requiring adequate nutrition and regular exercise. A balanced diet rich in fruits, vegetables, whole grains, and lean proteins is essential for optimal growth. Physical activity helps maintain a healthy weight, strengthens bones and muscles, and improves cardiovascular health.

This is a time of emotional turmoil and identity exploration. It's important to address mental health concerns promptly. Open communication with parents, teachers, or healthcare providers can help identify and address issues such as anxiety, depression, or stress.

Education about sexual health is crucial for making informed decisions. Understanding sexually transmitted infections (STIs), contraception, and consent is essential for preventing unwanted pregnancies and protecting against STIs.

Adolescence is a vulnerable period for experimentation with substances. Education about the dangers of alcohol, tobacco, and drugs is vital. Encouraging healthy coping mechanisms and providing support can help prevent substance abuse.

Adequate sleep is essential for both physical and mental well-being. Adolescents need around 8-10 hours of sleep per night to support growth, learning, and mood regulation.

By prioritizing adolescent health, we can help young people develop into healthy, happy and successful adults.

This bulletin addresses all these issues and I am sure it will help in global development of all our adolescents.

Long live NIGF

Dr. Mala Srivastava
Secretary General, NIGF

RAJASTHAN CHAPTER

President MESSAGE

Adolescent health : **Empowering the future**

Adolescence is a period of significant physical, emotional and social changes.

India has the largest adolescent population in the world (253 million). Ensuring their well being is vital for a healthy productive future of our country.

We must recognize the importance of creating a safe, informed, and supportive environment for adolescents to ensure their mental, physical and social health.

Stepping in this direction, every hospital must have an adolescent friendly health clinic covering promotion, preventive and curative aspects.

We must aim the adolescents at grass root level, ie at schools.

Proper knowledge and counselling will definitely lead them towards healthy life and healthy future.

Dr. Veena Acharya
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Life style changes in Indian Adolescent

Adolescence is the stage of life (10–19 years) in which a child transitions into an adulthood. It is characterised by accelerated growth, sexual maturation, substantial brain re-modelling and an increase in the complexity of social interactions. The key areas which need to be addressed during adolescence are nutrition, physical activity, behaviour, substance abuse and sexual interactions.

Nutrition-

The Adolescent period has a special importance for long-term health because it is a critical period of development, in which the physical, psychological, behavioural, social and economic foundations of adult health are consolidated. It has been suggested that adolescence is also a critical period in which optimal nutrition could mitigate the effects of poor foetal and infant nutrition. Also, Adolescents are the future parents and it is well known that the Parents' knowledge of and attitudes to nutrition has a significant impact on the way they feed their children and their children's dietary preferences. Thus, Optimising adolescent diet and nutrition, has the potential to deliver triple benefits: to (i) increase physical, psychological and cognitive capital; (ii) protect against future disease and (iii) improve the development and health of the next generation.

In India we see a mixed population of rural and urban adolescents.

Rural Indian adolescents face problems of undernutrition and infectious diseases. The gap between boys and girls worsens as they progress from childhood to adolescence. Adolescent girls showing more of anaemia, malnutrition and stunting. Due to early marriage and childbearing this malnutrition is transmitted to the next generation also. Thereby increasing maternal and foetal complications during pregnancy.

Urban Indian adolescents on the other hand suffer from problems of abundance. Easy access to energy-dense, micronutrient-poor processed foods and insufficient physical activity are leading to higher prevalence of obesity and metabolic disorders. These two combined lay down the foundation for a future burden of diabetes and CVD. All these dietary problems arise because this group is very vulnerable to marketing and social pressures, they are acutely sensitive to the opinions of peers and physical activity declines with the increasing academic pressure. In one cross sectional study involving 538 adolescents at Mumbai, it was found that over 84% adolescents regularly consumed junk food, Maggie and chocolates. Junk food not only is associated with obesity, hypertension and hypertriglyceridemia[1] but also it is reported to be adversely affecting neurodevelopment of individual. Another author emphasized that the increased neuroplasticity during adolescence may render the brain vulnerable to the negative effects of these foods on cognition and behaviour[2].

All this emphasizes that adolescents should be given a healthy balanced diet which should have all the essential micronutrients and minerals. Adolescent boys and girls should be taught at school the importance of a balanced diet and the appropriate authorities should keep a watch at what is being served in school canteens and school premises. Teachers and parents together should time and again reiterate

to this age group the importance of balanced diet, home cooked food and the health problems that can develop due to overconsumption of junk food.

Physical activity-

WHO has stated in its factsheet that 81 % of adolescents are physically inactive. Also, there is a gender difference, Adolescent girls are less active than adolescent boys, with 85% vs. 78%, not meeting WHO guidelines[3]. Evidence shows sedentary behaviour is associated with the following poor health outcomes like increased adiposity, poorer cardiometabolic health, and reduced sleep duration in adolescents.

Physical activity promotes bone health, encourages healthy growth and development of muscle, and improves motor and cognitive development in adolescents. Physical activity also promotes bonding, friendship and pro social behaviour. To achieve these benefits, international recommendations from WHO and 2018 US guidelines call for adolescents to do 60 min or more of daily physical activity of moderate-to-vigorous intensity. Recognising the importance and urgency of reducing global levels of insufficient physical activity, WHO member states have endorsed a global action plan on physical activity (GAPPA)[4], at the World Health Assembly in 2018. They have set a new target of a 15% relative reduction in insufficient physical activity among adolescents by 2030.

Comprehensive action plan should be made which requires engagement and coordinated responses across multiple sectors including, but not limited to, schools, families, sport and recreation providers. Therefore, both schools and parents should ensure regular physical activity. Schools should have dedicated time for daily sports activities, daily games period should be a part of the school curriculum. Adolescents should be supervised by dedicated sports teachers; both individual and group sports should be motivated. Adolescent girls should be especially motivated to decrease the gender gap in physical activity. At home which is the first school, parents should take keen interest in sports activities. Adolescents should be encouraged to make a sport activity as their daily routine. Outdoor sports such as running, jogging, cycling, badminton should be promoted. Where facilities of open parks or sports complex is not available skipping, aerobics or other dance activities should be promoted. Academics does play an important role at this point, but one hour of dedicated sports is equally important for a healthy life.

Daily routine-

Having an organised and predictable daily routine can have the following benefits

- routines at home can help teens to feel safe and secure, and can provide stability to them during this time of change
- routines that include time for fun or spending time together can strengthen family relationship
- having an important job to do in their daily routine (such as feeding and walking the dog) can help teenagers to develop a sense of responsibility
- routines can help teenagers to develop basic work skills and time management.

Daily routine should be made by setting a same wake up time and sleep time every day. Time should be allocated to school and academics, meals, physical activity, recreation and family bonding. Teenagers should be encouraged to follow their daily schedule, however if one misses a beat positive attitude should be continued as no one is perfect and they are still learning. If on the other hand the adolescent is continuously following his or her daily routine, an incentive should always be given. Positive reinforcement always helps in converting a small change into a habit. Parents should take help of old-fashioned chore charts as well as newer gadget-based notifications to help in formation of daily routines.

Screen based media-

Media forms an important part of the life of adolescents. There is a growing concern of the influence of both old media (television) and new media (smartphones, desktop, tablets, game consoles) on every aspect of health of children and adolescents. Screen time (ST), that is, the time spent in sedentary behaviour involving screen-based media (SBM) like watching television, playing games, and using computer and smartphones, as recommended by the American Academy of Paediatrics, is not more than 2 h/day for all age group above 2 years[5]. About 95% of the population in India has availability of television. So, both teenagers in rural and urban India are facing the similar challenges. A study

done in a suburb of Delhi has shown that the average screen time for teenager is 3.7 hrs[6]. Excessive use of screen-based media has the following disadvantages.

- Adolescents get lured to the advertisements and this promotes unhealthy eating
- Increase in screen time leads to decrease physical activity and increased sedentary behaviour, both of them leading to increase in adiposity and poorer cardiovascular health in later life.
- Increased screen time has also been linked to sleep disturbances, longer sleep onset latency with most of the teenagers sleeping less than 6.5 hrs every day.

Engagement of adolescents in high SBM usage calls for the need of immediate attention from the parents. As has been mentioned before formation of a daily routine and increasing recreational activities like outdoor sports will help reduce the screen time.

Substance abuse –

Approximately 22.8% population of India is adolescents, and the prevalence of substance abuse is increasing every decade. This reason behind this rise is because India is sandwiched between the golden crescent (Pakistan, Afghanistan, Iran) and the golden triangle (Thailand, Laos, Burma, Vietnam). These are the two world's largest producers of cannabis. 70% of the victims of substance abuse show their onset of drug use in adolescence. Cannabis, heroin and Indian produced pharmaceutical drugs are the most frequently used substance abuse drugs. Every year June 26 is celebrated as day to against substance abuse and illicit trafficking. Both intrinsic and extrinsic factors contribute to substance abuse like,

Intrinsic-

- Stress
- Anxiety
- Depression
- Low self esteem
- Rebellious nature
- curiosity
- Children with ADHD
- Autism

Extrinsic factors-

- Broken homes
- Loss of parent, sibling
- Childhood abuse or neglect
- Academic problems
- Peer pressure
- Poverty/unemployment at home
- Addiction at home
- Uneducated parents
- Easy availability of drug

Substance abuse can be easily recognized by parents and care givers with the following symptoms

- Constant fatigue
- Decreased appetite, weight loss
- Irregular sleep pattern
- Redness in eyes
- Lack of personal hygiene
- Poor academic performance
- High risk behaviour, impulsiveness
- Loss of interest in previously pleasurable activities.

Drug use/addiction follows a sequence and can be memorized as

TRAP - **T**rial of drug

Regular use

Addiction

Physical and **P**sychological Addiction.

India also shows regional variation, Opioid use is seen maximum in Punjab and north Eastern states show dependence on Sedatives. Tips which parents and care givers should adopt to prevent children from falling into the TRAP are as follows

- Communicate
- Listen
- Set a good example
- Strengthen the family bond
- Parental monitoring and supervision
- Praising the young mind
- Know your teenagers' activities
- Establish rule and consequences
- Use authoritative parenting style
- Know your teenagers' friends
- Teach life skills
- Adopt healthy lifestyle
- Encourage outdoor sports
- Restrict use of media/screen time

- Keep track of prescription drugs

High risk sexual behaviour - Adolescents in both rural and urban India are showing high risk sexual behaviour. Sexual exposure during adolescence is a matter of grave concern due to the risk of transmission of sexually transmitted infections, including HIV infection/AIDS, teenage pregnancy, and adolescent fatherhood. Adolescents and young individuals often get fascinated by mass media, friends, and peer pressure without sufficient knowledge of prevention, which inspires them to indulge in hazardous ways of life such as smoking, alcohol or drug use, and sexual activity. This group of individuals has also shown inconsistent condom use and multiple sexual partners . A study comparing 25,538 adolescents and young men in 2005 to 35,112 adolescents and young men in 2015 found that high risk sexual behaviour had increased from 64% to 70 %. The trend of live-in relationship has increased among adolescent boys of rural areas (0.6 to 6.0%) as well as in urban areas (3.1 to 10.9%) over the last 10 years. Adolescent boys having 10th and above years of schooling (AOR = 1.98; $p<0.01$), residing in urban areas (AOR = 2.23; $p<0.01$), and belonging to the affluent class of households (AOR = 1.41; $p<0.05$) were more likely to engage in high-risk sexual activity than the young men in India. Making adolescents understand the long-term health impacts of this high-risk behaviour is very important and this requires a multifaceted approach. It is crucial to offer thorough sex education that addresses subjects like reproductive health, contraception, and safe sexual practices to address these issues. This instruction needs to be given in a setting that fosters open communication between instructors, parents, and students' peers. The availability of contraception, safe abortion services and access to other reproductive health treatments should also be increased. The social taboo on premarital sex should not be a barrier in making adolescents understand need for safe sexual practises.

Key points

- Adolescents diet should be well balanced having all essential micro nutrients and minerals.
- WHO 2018 recommends that all teenagers should adopt a physically active lifestyle. 60 mins or more of moderate to vigorous physical activity is recommended on a daily basis.
- Adolescents along with their parents should make a daily routine which should be followed as much as possible.
- Screen based media and daily screen time should be minimized and kept less than 2 hrs per day.
- Adolescents should be given education about the ill effects of substance abuse and high risk sexual behaviour.

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Menstrual Hygiene

Introduction

Menstruation is a distinctive biological process experienced by females, marking a significant transition during adolescence. The initial menstrual cycle, or menarche, typically occurs between the ages of 11 and 15, with an average onset at 13 years. Adolescent girls, particularly in India, represent a vulnerable demographic due to societal neglect and the stigmatization of menstruation as an unclean or taboo subject. The level of awareness and understanding about menstruation can significantly influence a girl's reaction to menarche. Despite being a natural process, menstruation is often associated with numerous misconceptions and practices.

Menstrual hygiene refers to the practice of maintaining cleanliness during menstrual flow, necessitating basic amenities such as suitable clothing, absorbent materials, water, soap, and private toilet facilities. Inadequate menstrual hygiene can lead to issues like perineal itching or rashes, unpleasant odor, and severe complications like pelvic inflammatory disease and toxic shock syndrome[1]. Despite its importance, menstrual hygiene is often overlooked and underemphasized[3]. Proper hygiene practices, including the use of sanitary pads and thorough washing of genital areas, are crucial during menstruation. Women and girls of reproductive age require access to clean, soft, absorbent sanitary products to protect their health from various infections[4].

Challenges

Managing menstrual hygiene can be particularly challenging for girls and women in developing countries due to inadequate clean water and toilet facilities. Cultural norms often discourage open discussions about menstruation, limiting access to essential information about their bodies' normal functions for women and adolescent girls. This lack of information directly impacts their health, education, and dignity, and can be considered a violation of human rights[11][12].

Currently, there are approximately 3.73 billion women worldwide. According to the World Health Organization (WHO), 52%, or 1.9 billion, of these women are of reproductive age and thus menstruating (WHO, 2018)[13]. At some point in their lives, all women will experience menstruation. It is estimated that 300 million women menstruate daily, spending an average of 3,500 days of their lives menstruating[14].

Many adolescent girls and menstruating women live in socio-economically disadvantaged environments. 663 million people lack basic access to safe water, and 2.4 billion people lack adequate access to basic sanitary conditions[15]. For women and girls, the lack of safe, accessible water, sanitation, and hygiene (WASH) is particularly problematic during menstruation and childbirth. It is estimated that half a billion (or 13%) of women lack a place to defecate, have little to no privacy for menstrual hygiene management, and three-quarters of those lack access to soap and water[16].

A 2014 study conducted in India found that 42% of participating women were unaware of sanitary pads or the anatomical origin of

menstruation, with most expressing fear or worry upon their first menstruation[17]. More recent studies have shown that 50% of women in India have experienced a urinary tract infection (UTI) related to the inability to safely manage their period[18]. If left untreated, UTIs can lead to kidney failure. In 2018, one in three women worldwide did not have access to a working toilet at all. Menstrual hygiene management issues have been largely ignored by professionals in the WASH, health, and education sectors.

Health and Psycho-social Aspects

Poor menstrual hygiene measures can lead to reproductive tract infections, which may interfere with future reproductive health for adolescent girls if left untreated. The prevalence of such infections may be as high as 30-40% of prenatal infections. In India, due to certain prejudices, some girls refrain from eating and bathing during menstruation.

Sanitation Facilities at Schools

The onset of menstruation can pose challenges for school-going girls in low-income settings. Often, girls skip school or class due to fear of teasing, staining their clothes, lack of knowledge, lack of communication, lack of water supply, and lack of availability of menstrual products. Menstrual waste is largely ignored in schools in developing countries, despite it being a significant problem. Girls' access to water and sanitation at school is only available at 47% and 46% of all schools globally[11]. Often, school toilets for girls (if they even exist) lack bins for menstrual waste collection, resulting in pads being scattered around the school compound area. This not only pollutes the environment but also causes embarrassment for the school girls.

- **Menstrual hygiene Materials:** These include sanitary pads, tampons, menstrual cups, menstrual discs, and period underwear. The type of product choose may depend on ones flow, lifestyle, abilities, and personal preference. For example, pads and period underwear may be easier and quicker to use, while tampons and menstrual cups may require some practice.
- **Supportive items:** These include soap, underwear, and pain relief.

Asses to Menstrual hygiene material

In low-income countries, girls' choices of menstrual hygiene materials are often limited by costs, availability, and social norms. Women who cannot afford commercially produced materials may resort to using sand, ash, small hole in the earth, cloth, whole leaf, leaf fiber (such as water hyacinth, banana, papyrus, cotton fiber), paper (toilet paper, re-used newspaper, brown paper bags, pulped and dried paper), animal pelt (such as goat skin), double layer of underwear, socks, skirt, or sari. The lack of affordable hygiene products often leads to the use of inadequate, unhygienic alternatives, posing a serious health risk. Menstrual cups offer a long-term solution compared to some other feminine hygiene products because they do not need to be replaced monthly. The quality of the material also makes them a reliable and healthy menstrual hygiene solution, as long as there is access to clean water for washing them.

Menstruation can be a barrier to education for many girls, as a lack of effective sanitary products restricts girls' involvement in educational and social activities. Often they do not attend school due to fear of leaking, shame or embarrassment, period pain, or inadequate sanitation facilities that do not allow them to wash or change in privacy. This mainly applies to schoolgirls from low-income families, as disposable hygiene products are a monthly expense that many people simply cannot afford. Adequate sanitation facilities and access to menstrual hygiene products are just one part of the solution to menstrual taboos that impede women's progress in many developing countries. Knowledge is critical for girls to feel comfortable with menstruation and to gain a positive awareness of their bodies.

Swachh Bharat Mission Gramin (SBM-G) is sensitive to menstrual hygiene needs of adolescent girls and women. Towards this end, guidelines on Menstrual Hygiene Management have been issued by the Ministry of Drinking Water & Sanitation in 2015 and must be adhered to. The SBM(G) implementation should ensure that the MHM facilities take into consideration issues such as ventilation. According to this mission someguidlines are as follow-

Adequate water and space inside the toilet should be ensured for the women users to change napkins/cloth and to wash themselves.

Toilet cubicles may be provided with a shelf, hooks or niche to keep clothing and menstrual adsorbents dry.

- Disposal bins with lids should be placed within the toilet, as the initial point of waste collection.
- Funds under SLWM head may be used for setting up incinerators in community toilets.
- The MHM guidelines have a description of possible interventions.
- Efforts must be made through the IEC activities to emphasize that menstruation is a biological function and rid the community of taboos and superstitions associated with menstruation.
- CSOs and SHGs may be engaged to inform the communities about safe menstrual hygiene Practices and develop economic models to meet the demand for low-cost sanitary napkins.
- Studies show that when fathers of adolescent girls are made aware about the MHM needs of their daughters.
- Schools must have segregated toilets that are kept open and accessible during school hours, and have the above systems in place for menstrual waste management.
- Provision of MHM related facilities to schools including Communication interventions and as well as infrastructure creation, may be supported under the SLWM component of SBM (G).
- Counseling for adolescent girls, and special educational sessions around menstrual healthand hygiene should be organized by qualified professionals as part of school education.
- Similarly, menstrual health and hygiene awareness camps may be organized for women in the community, at local health centres, Anganwadis, etc. by qualified professionals

Disposal of Used Materials-

Unsafe Safe- Throw them unwrapped into fields, rooftops, etc. Wrap them in paper/ plastic bag and throwing them outside Throw them in latrine / toilets Burn it (rural areas and peri-urban areas)

Safe practice- Drying, wrap in paper/plastic bag and throw in dustbins (mostly non-rural) Burry them for de-composting, Use small scale incinerators (community or school level) Municipal waste management / burning in health clinics (more urban)

Source: MHM Guideline 2015

A review in 2018 found that disposal of menstrual waste is often neglected in sanitation systems, leading to improper disposal and negative impacts on users, the sanitation systems, and the environment. Solid waste disposal systems in developing countries are often lacking, which means women have no proper place to dispose of used products, such as pads. Inappropriate disposal of used materials also creates pressures on sanitation systems as menstrual hygiene products can create blockages of toilets, pipes, and sewers.

In developing countries, women experience a lack of access to affordable menstrual hygiene products in addition to a lack of access to other services such as sanitation and waste disposal systems needed to manage their menstrual cycles. Lack of access to waste disposal leads women to throw used products in toilet systems, pit latrines, or discarded into open areas such as bodies of water. These practices pose dangers to workers who handle these wastes as it increases possible exposure to bloodborne infections in soaked menstrual products and exposure to chemicals found in menstrual hygiene products. Inappropriate disposal also creates pressures on sanitation systems as menstrual hygiene products create sewage blockages. The effects of these inadequate facilities have been shown to have social effects on girls in developing countries leading to school absenteeism

According to guidelines of India there should be responsibility of different group at different levels

At Villages/Panchayat Level: At villages and Pachayat areas not having access to common incinerators, may dispose used home-made sanitary napkins made of natural tissues/paper/ cloth/cotton as well as re-usable commercial cotton napkins in small burial pits of more than 50 cm deep or into pit latrines. In case of commercial sanitary napkins made with plastic and liners, low cost incinerators like Matka Incinerator kept in open areas (such as open backyard, open fields, terrace of the house, etc.)..

At city levels-By Private Agencies: (a) Segregated sanitary waste can be disposed by Incineration through authorised common Biomedical Waste Treatment and Disposal Facilities. An authorised waste picker by local authorities (as per SWM Rules, 2016) can provide such services on commercial basis.

The SPCBs may authorise common CBWTDFs to receive sanitary waste from such service providers, only in case the existing CBMWTDF has adequate capacity to dispose the same.

(b) In small cities, the sanitary wastes can be composted if cotton/clothes are separated from the products. Other-wise, the sanitary waste will go along with dry waste for disposal.

(c) In Class I cities sanitary waste can be landfilled. The sanitary wastes also can be utilized in waste-to-energy or co-processing in cement kilns/power plants.

Taboos

Despite menstruation being a healthy biological process, it is often approached with hesitance and misinformation due to deeply-rooted cultural taboos surrounding menstruation. Cultural, religious, and traditional beliefs, particularly in developing countries, can lead to restrictions that women or girls face during their period. In some societies, women do not wash their bodies, shower, or bathe during menstruation. They may not be allowed to use water sources during menstruation. Even if they have access to toilets, they might not use them because of the fear of staining the toilet bowls (in the case of dry toilets or flush toilets where the flush is not powerful). This impairs the use of menstrual cups compared to pads as the cups are normally emptied into toilets.

Approaches for Improvements

Menstrual Hygiene Management (MHM) in schools should not be a standalone program but should be integrated with existing programs on WASH in schools, school health and nutrition programs, puberty education programs, and emergencies. In India, comic books like Menstrupedia have been used to educate children, street theatre performances to educate men and women, wall paintings and murals to engage community youth, and art workshops and exhibitions to break the stigma and shame. Improving MHM requires community-wide attitudinal changes. Involving men in MHM is key in order to get them to support their wives and daughters. Other organizations have also worked with games and stories to teach MHM, dispel common myths, and start conversations. Games help to create a positive atmosphere around a topic generally associated with shame and embarrassment[4]. An under-researched area is how people living with disabilities cope with the challenges of menstruation, and how their caregivers have to manage their menstrual hygiene and health for them. Further research investigation and practical assistance is also needed for those living in temporary shelters due to migration, climate change, flooding, earthquakes, communal riots, or other such reasons for displacement.

In 2014, Wash United initiated Menstrual Hygiene Day on May 28. Menstrual Hygiene Day creates an occasion for publicizing information about menstrual hygiene management issues in the media as a way to raise awareness, celebrate and normalize menstruation and menstrual hygiene. The day offers an opportunity to actively advocate for the integration of menstrual hygiene management into global, national, and local policies and programs.

Conclusion

In conclusion, menstrual hygiene is a critical aspect of health and well-being for women and girls worldwide. Despite its importance, it remains a neglected issue, particularly in developing countries. The lack of access to clean water, sanitation facilities, and affordable menstrual hygiene products, coupled with societal taboos and misconceptions, pose significant challenges. However, with increased awareness, education, and advocacy, it is possible to break the stigma surrounding menstruation and improve menstrual hygiene management. This not only promotes the health and dignity of women and girls but also contributes to their social and educational advancement.

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"The power of youth is the commonwealth for the entire world. The faces of young people are the faces of our past, our present, and our future. No segment in the society can match with the power, idealism, enthusiasm, and courage of the young people."

- Kailash Satyarthi

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Challenges and Solutions in Mental Health Issues among Indian Adolescents

Introduction

Adolescence is a critical phase, and mental health issues among Indian adolescents are often overlooked due to stigma, lack of awareness, and limited mental health infrastructure. The growing prevalence of conditions such as depression, anxiety, substance use, and suicide among adolescents necessitates a coordinated approach across sectors like education, healthcare, and policy reform [1,2].

Prevalence and Patterns of Adolescent Mental Health Disorders

Globally, 10–20% of adolescents experience mental health disorders, but many remain undiagnosed, especially in developing countries [1]. In India, the **National Mental Health Survey (2015-2016)** revealed a 7.3% prevalence of psychiatric disorders among adolescents aged 13–17 years, with depression, anxiety, substance use, and conduct disorders being the most common [2]. Adolescent girls show higher rates of depression, especially in urban and school-going settings [2].

Table 1: Prevalence of Mental Health Disorders in Indian Adolescents

Disorder	Prevalence	Age Group
Depression	10–20%	13–17 years
Anxiety Disorders	Comorbid in 40–90%	Adolescents
Substance Abuse	21% (in some states)	Adolescents
Suicide	Leading cause of death	Adolescents

Major Psychiatric Disorders in Adolescence

The transition from childhood to adolescence sees a sharp rise in mental health issues like depression, anxiety, and substance abuse. Depression, often comorbid with other disorders, is a prominent concern, especially in late adolescence. Suicide rates are alarmingly high, particularly among adolescent girls, with factors such as family pressure and academic stress contributing significantly [3].

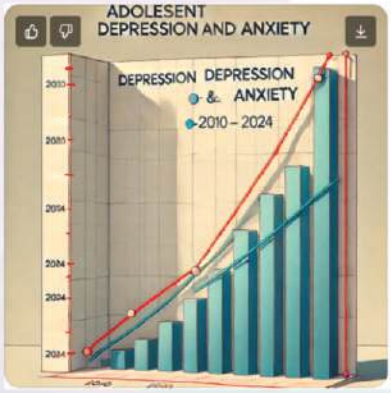

Figure 1: Suicide Rates in Indian Adolescents
[Figure illustrating suicide rates in adolescent boys and girls in India]

Substance abuse is another rising concern. Studies like **Majumder et al.** highlight that substance use disorders account for nearly 37% of psychiatric diagnoses among adolescent boys [3]. The onset of drug use during adolescence increases the likelihood of long-term substance dependence, highlighting the urgent need for prevention programs.

Internet and Social Media Addictions

The rapid rise of internet use among Indian adolescents has introduced new mental health challenges. Studies show that nearly 90% of adolescents in India use the internet, with approximately 11.8% showing signs of addiction

Table 2: Internet Use and its Mental Health Impact on Adolescents

Internet Use Behavior	Percentage of Adolescents Affected	Associated Mental Health Issues
Regular Internet Use	90%	Mild anxiety, depression
Internet Addiction	11.8%	Severe anxiety, depression, suicide

[4]. Pathological internet use correlates with altered sleep patterns, mood disorders, and higher rates of anxiety, depression, and suicide [5].

Influential Factors on Adolescent Mental Health

Adolescent mental health is shaped by a complex interaction of biological, social, and environmental factors. Family dynamics, school pressures, and social expectations significantly contribute to mental health outcomes [1].

Box 1: Key Risk Factors for Adolescent Mental Health in India

- **Family environment** : Conflict, lack of support, and academic pressures
- **School environment** : Bullying, stress due to academic expectations
- **Social media use** : Increased exposure to cyberbullying, addiction
- **Substance abuse** : Early experimentation with drugs, alcohol, and tobacco
- **Cultural factors** : Gender-based disparities, stigmatization of mental health

Barriers to Mental Health Care

Mental health care for adolescents in India is hindered by several barriers, including societal stigma, lack of mental health literacy, and a shortage of mental health professionals [6]. The National Mental Health Survey found that only a third of families in India recognized mental health issues in their children, resulting in delayed treatment and lack of timely care [2].

Table 3: Barriers to Mental Health Care in Indian Adolescents

Barrier	Impact
Stigma Infrastructure	Prevents help-seeking behavior
Lack of Awareness	Delays recognition of symptoms
Insufficient	Limits availability of treatment
Shortage of Professionals	Results in inadequate mental health services

Solutions and Interventions

Addressing mental health issues in Indian adolescents requires a multifaceted approach, focusing on universal, targeted, and clinical interventions. **Universal interventions** include school-based programs that provide mental health education, stress management, and resilience-building activities. Yoga, meditation, and life skills training have proven to be effective in enhancing mental well-being [5,6].

Targeted interventions are necessary for at-risk adolescents, particularly those grappling with substance use or depression. Cognitive-behavioral therapy, family counseling, and pharmacological interventions can help manage severe cases [3,7]. School-based programs focusing on substance abuse prevention and promoting awareness about mental health are essential to reaching adolescents early.

Figure 2: Model for Adolescent Mental Health Intervention [Flowchart showing universal, targeted, and clinical interventions for adolescent mental health]

Community-based Interventions and Policy Approaches

Community-based programs such as mobile health clinics and telemedicine can improve access to mental health care, particularly in underserved areas. Collaborations between schools, health services, and parents are necessary to ensure holistic care for adolescents [6].

From a policy perspective, India's **National Mental Health Program** needs to focus on adolescents by integrating mental health services into primary care and educational institutions. Scaling up adolescent mental health services through public health approaches, training professionals, and promoting mental health literacy is essential for improving outcomes [8].

Box 2: Key Policy Recommendations

- **Integrate mental health into primary care** : Early identification and treatment
- **Expand school-based programs** : Incorporating mental health education and resilience-building
- **Leverage technology** : Use telemedicine for remote counseling and support
- **Increase mental health literacy**: Target parents, teachers, and community leaders
- **Enhance workforce capacity** : Train pediatricians and general practitioners in adolescent mental health care

Conclusion

Mental health issues among Indian adolescents are becoming increasingly prevalent, with depression, anxiety, substance use, and suicide being the most common problems. Addressing these challenges requires a multi-tiered approach that incorporates school-based programs, community outreach, and strong policy reforms. Collaborative efforts between healthcare providers, educators, families, and policymakers are critical to improving adolescent mental health outcomes in India. Expanding access to care, reducing stigma, and leveraging technology will be key to transforming mental health services for India's youth.

Key Points (Ready Reckoner)

1. **Prevalence**: 7.3% of Indian adolescents suffer from psychiatric disorders[2].
2. **Common Disorders**: Depression, anxiety, substance abuse, and conduct disorders are the most common[3].
3. **Suicide Rates**: Suicide is a leading cause of death among adolescents, with girls being particularly vulnerable[2].
4. **Internet Addiction**: 11.8% of adolescents suffer from internet addiction, correlating with higher mental health issues[5].
5. **Barriers**: Stigma, lack of mental health literacy, and insufficient infrastructure hinder access to care[2].
6. **Interventions**: School-based mental health programs and community outreach can provide early support[5].
7. **Policy Reforms**: A public health approach is required to integrate mental health services into primary care and education[6].
8. **Role of Technology**: Telemedicine and e-mental health initiatives can increase access to mental health care[6].
9. **Parental and Teacher Involvement**: Essential for early detection and intervention in adolescent mental health issues[2].
10. **Workforce Capacity**: Training pediatricians and mental health professionals is critical to addressing adolescent mental health needs[8].

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Adolescent Health and Environmental Challenges: A Call to Action

Adolescence, derived from the Latin word adolescence meaning "to grow into maturity," is a critical phase in human development that bridges childhood and adulthood. According to the World Health Organization (WHO), adolescence encompasses individuals between the ages of 10 and 19, a period characterised by rapid physical, emotional, and psychological development. This transition phase is crucial for forming lifelong habits and attitudes, which can be significantly influenced by the environment.

The adolescent stage is typically divided into three phases:

1. **Early adolescence (10-13 years):** Marked by a significant growth spurt and the onset of puberty, adolescents in this stage begin developing abstract thinking skills and start navigating their identity.
2. **Mid-adolescence (14-15 years):** Physical changes are often complete by this stage, and adolescents become more independent, forming stronger bonds with peer groups and developing reflective thinking.
3. **Late adolescence (16-19 years:** Adolescents at this stage solidify their identity, opinions, and ideas. They begin to establish their distinct adult roles, preparing for adulthood.

As adolescence is a period of vulnerability, external factors like environmental conditions play a key role in shaping their physical and mental well-being. WHO defines health not only as the absence of disease but as a state of complete physical, mental, and social well-being. Adolescents, due to their growth, are particularly susceptible to environmental challenges that may disrupt this delicate balance. As the world faces the escalating climate crisis, pollution, and depletion of natural resources, the impact on adolescent health is increasingly alarming.

This article explores how various environmental challenges affect adolescent health and the urgent need for global, integrated solutions to safeguard their well-being.

The Impact of Climate Change on Adolescent Health

Climate change is one of the most significant global health challenges today, and adolescents are particularly vulnerable to its effects. Rising global temperatures, erratic weather patterns, and increased natural disasters are creating an environment that directly and indirectly impacts adolescent health. Some of the most immediate and serious concerns include:

Heat Stress and Temperature-Related Illnesses

Rising global temperatures are associated with an increased risk of heat-related illnesses, such as heatstroke, dehydration, and respiratory conditions. Adolescents, whose bodies are still developing, are more prone to heat stress as their ability to regulate body temperature is not fully matured. This is particularly concerning for adolescents in hot climate regions, where high outdoor temperatures and physical activities can lead to dangerous conditions.

Studies have shown that extreme heat exposure not only affects physical health but can also contribute to mental health issues. Prolonged periods of heat can increase irritability, aggressiveness, and the risk of anxiety and depression. Adolescents, who are already dealing with emotional and psychological changes, are more likely to experience heightened distress due to extreme weather conditions.

To mitigate these risks, there needs to be increased awareness of the dangers of heat exposure among adolescents. Schools and community centres should ensure that outdoor activities are limited during periods of extreme heat and that adolescents are educated on the importance of hydration and sun protection. Governments must also work to create heat adaptation strategies, especially in regions experiencing significant temperature increases.

Air Quality and Respiratory Health

Air pollution is one of the most pervasive environmental health risks affecting adolescents today. Climate change worsens air quality through increased wildfires, higher pollen levels, and rising ground-level ozone. Adolescents living in polluted urban areas, especially those in low-income communities, are more likely to suffer from respiratory conditions such as asthma, bronchitis, and other chronic lung diseases.

Long-term exposure to poor air quality during adolescence can impair lung development, leading to lifelong respiratory complications. In fact, studies have shown that adolescents who grow up in areas with high pollution levels are at increased risk of developing chronic respiratory diseases later in life.

To address this, there is a need for both local and global actions to improve air quality. At the international level, reducing fossil fuel consumption and transitioning to renewable energy sources are critical steps in combating air pollution. On an individual level, adolescents should be encouraged to avoid areas with high pollution levels, wear masks in polluted environments, and use air purifiers indoors. Healthcare providers play an important role in educating adolescents about the risks of air pollution and offering preventive care for respiratory health.

Water and Food Security

Climate change is disrupting agriculture and food production systems worldwide, leading to food shortages and compromised nutrition. Adolescents, who require increased nutrition for their rapid growth and development, are particularly vulnerable to malnutrition. Inadequate access to healthy, nutritious food can result in growth retardation, weakened immune systems, and cognitive impairments.

In regions facing food insecurity, adolescents may suffer from stunted growth, anaemia, and other nutrient deficiencies. Furthermore, changes in weather patterns, such as increased flooding and droughts, can contaminate water sources, making it harder for communities to access clean water. Adolescents who lack access to safe drinking water are at increased risk of waterborne diseases such as cholera, dysentery, and diarrhoea. These conditions not only lead to dehydration but can also exacerbate malnutrition.

Addressing these challenges requires coordinated efforts from governments, NGOs, and communities. School meal programs should be strengthened to provide nutritious meals for adolescents, especially in regions where food security is a concern. Governments should also invest in water sanitation infrastructure to ensure that all communities have access to clean drinking water. Healthcare providers should focus on treating malnutrition in adolescents through targeted nutritional interventions.

Vector-Borne Diseases

The increasing range of vector-borne diseases, such as malaria, dengue, and Zika virus, is another growing concern due to climate change. Warmer temperatures and shifting precipitation patterns allow mosquitoes and other vectors to thrive in previously unaffected areas. Adolescents, who tend to spend more time outdoors, are particularly vulnerable to these diseases, especially in tropical and subtropical regions.

Many adolescents lack adequate knowledge about how these diseases spread and how to protect themselves from infection. Moreover, those living in low-income areas may have less access to preventive measures such as insect repellents, mosquito nets, or healthcare services.

To combat the spread of vector-borne diseases, educational campaigns must be implemented to teach adolescents about the importance of using protective measures such as insect repellents, wearing long sleeves, and using mosquito nets while sleeping. Governments and healthcare providers should also ensure that vaccination programs and other preventive treatments are readily available in regions prone to vector-borne diseases.

Chemical Exposure and Its Effects on Adolescent Development

In addition to climate change, chemical exposure poses a serious threat to adolescent health. Adolescents are more sensitive to chemicals like phthalates and bisphenol A (BPA), which are commonly found in plastics, pesticides, and other industrial products. These chemicals, known as endocrine disruptors, can interfere with the body's hormonal regulation, leading to reproductive health issues, delayed puberty, and developmental disorders.

Furthermore, toxic heavy metals like lead, mercury, and arsenic, often found in polluted water and food, can have severe consequences for adolescent neurological development. Exposure to these substances can result in learning disabilities, behavioural problems, and cognitive impairments, affecting adolescents' academic performance and long-term success.

Addressing Lifestyle and Built Environment Factors

In addition to direct environmental threats like climate change and pollution, lifestyle factors related to urbanization and digital overexposure are also contributing to a growing health crisis among adolescents.

Sedentary Behaviour and Physical Inactivity

Urbanization has led to a significant decrease in physical activity among adolescents, as many urban areas lack green spaces and safe environments for outdoor play. Sedentary behaviour, which has been exacerbated by the widespread use of digital devices, is contributing to rising rates of obesity, diabetes, and cardiovascular disease among adolescents.

Sedentary lifestyles, combined with environmental stressors such as overcrowding, noise pollution, and lack of access to natural spaces, also have a significant impact on adolescents' mental health. Research has shown that these environmental factors are linked to higher levels of anxiety, depression, and stress in adolescents.

To address this, urban planning should focus on creating more green spaces, parks, and recreational facilities where adolescents can engage in physical activities. Schools should also promote physical education and encourage outdoor activities to combat the rising trend of sedentary behaviour.

Digital Overexposure and Mental Health

The increasing reliance on digital devices has contributed to a range of mental and physical health problems among adolescents. Excessive screen time has been linked to sleep deprivation, eye strain, vision problems, and sedentary behaviour. Furthermore, adolescents who spend too much time on social media and other digital platforms are more likely to experience cyberbullying, social isolation, and increased levels of anxiety and depression.

Digital overexposure also affects adolescents' cognitive development, as it reduces attention spans, critical thinking skills, and face-to-face communication abilities. Adolescents who become addicted to gaming or social media may struggle with emotional regulation and have a harder time forming meaningful social connections.

To combat these issues, digital literacy education should be introduced to teach adolescents about the importance of responsible technology use. Parents should monitor their children's screen time and encourage physical activities and face-to-face interactions. Schools and communities should promote balanced use of technology and provide mental health support for adolescents dealing with the negative impacts of digital overexposure.

Empowering Adolescents Through Climate Advocacy and Mental Health Support

Many adolescents are at the forefront of climate advocacy and environmental justice movements, raising awareness about the dangers of climate change and environmental degradation. However, the pressure of activism can also take a toll on adolescents' mental health. The slow pace of progress on global climate policies can lead to feelings of frustration, burnout, and eco-anxiety, which can exacerbate existing mental health challenges.

It is important to recognize and address the mental health challenges that arise from climate-related anxiety, commonly referred to as *eco-anxiety*. Adolescents, in particular, may feel overwhelmed by the magnitude of environmental issues, leading to feelings of helplessness, frustration, and despair. This can manifest in chronic stress, anxiety, and depression, which are detrimental to their overall well-being.

Providing Mental Health Support for Adolescents

To combat eco-anxiety, it's essential to provide mental health support tailored specifically to adolescents. Schools should incorporate mental health education into their curricula, teaching students how to cope with stress and anxiety related to environmental issues. Counselling services should be made available for adolescents dealing with climate-related stressors, offering a safe space to discuss their concerns and fears.

In addition, peer support groups and community-based initiatives can help adolescents connect with others who share similar concerns, fostering a sense of community and collective action. By encouraging adolescents to engage in local environmental projects, they can channel their anxiety into positive, proactive efforts. This can give them a sense of control and purpose, helping them realise that their actions can make a difference, no matter how small.

Engaging Adolescents in Climate Action

Empowering adolescents to take action against climate change is crucial for their mental well-being and for the future of the planet. Involvement in environmental advocacy not only helps alleviate eco-anxiety but also fosters a sense of purpose and community among young people. By participating in local sustainability projects, climate strikes, or global movements, adolescents can feel that they are contributing to a larger cause, giving them hope and motivation to continue the fight against environmental degradation.

Educational institutions and governments should support these efforts by providing platforms for youth voices. This can include organising climate workshops, sustainability fairs, and environmental clubs where adolescents can collaborate on projects and share their ideas. Social media and digital platforms can also be leveraged to spread awareness and mobilise collective action, allowing adolescents to connect with a global network of peers advocating for climate justice.

The Role of Policy and Global Cooperation in Addressing Environmental Challenges

Addressing the environmental challenges that affect adolescent health requires coordinated global efforts and strong policies at local, national, and international levels. Governments, NGOs, and international organisations must collaborate to mitigate the impacts of climate change, reduce pollution, and protect natural resources to ensure a healthy environment for future generations.

Government Initiatives and Policy Changes

Governments have a crucial role in creating policies that prioritise environmental health and adolescent well-being. This includes implementing climate adaptation strategies, reducing greenhouse gas emissions, and promoting the use of renewable energy sources. Policies that regulate air and water quality standards, control industrial waste, and protect biodiversity are essential to mitigating environmental harm.

Moreover, governments must invest in infrastructure that improves access to clean water, nutritious food, and healthcare services, particularly in underserved and vulnerable communities. By focusing on sustainable development, governments can promote long-term economic and environmental resilience, ensuring that future generations have the resources and opportunities to thrive.

To hold governments accountable, adolescent voices should be included in policy-making processes. Initiatives such as *youth climate councils* or *youth advisory boards* can give young people a seat at the table, ensuring their perspectives and needs are considered in decisions that directly impact their future.

International Cooperation

Environmental challenges do not recognize borders, making international cooperation vital to addressing global issues like climate change, pollution, and biodiversity loss. Multinational agreements, such as the Paris Agreement, aim to unite countries in the fight against climate change by setting targets for reducing carbon emissions and limiting global temperature rise.

However, these agreements must be implemented and enforced to have a meaningful impact. International organisations like the United Nations, WHO, and UNICEF must continue to work together to ensure that global health, environmental, and climate goals are met. Funding mechanisms like the *Green Climate Fund* can provide resources to developing countries, helping them to adapt to the effects of climate change and build resilience against environmental disasters.

In addition, there should be a stronger focus

on *environmental justice*, ensuring that vulnerable populations, including adolescents from marginalised communities, are protected from the disproportionate impacts of climate change. These groups often face the greatest risks and have the least resources to cope with environmental hazards, making it crucial to prioritise their needs in global climate policies.

Fostering Sustainable Lifestyles and Environmental Stewardship Among Adolescents

Educating adolescents about environmental sustainability is key to fostering long-term changes in behaviour that will benefit both individual health and the planet. By promoting sustainable lifestyles, such as reducing waste, conserving water, and minimising energy consumption, adolescents can contribute to a healthier environment and improve their own well-being.

Environmental Education in Schools

Schools play a vital role in instilling environmental consciousness in adolescents. Environmental education should be integrated into school curricula, teaching students about the importance of sustainability, conservation, and climate change. Hands-on activities, such as planting trees, recycling projects, or energy-saving campaigns, can make these lessons more engaging and practical, allowing adolescents to see the real-world impact of their actions.

Additionally, schools should provide opportunities for students to take leadership roles in sustainability initiatives. Student-led eco-clubs or sustainability councils can empower adolescents to take ownership of environmental projects, whether it's reducing the school's carbon footprint, organising clean-up drives, or promoting sustainable transportation options.

Encouraging Sustainable Habits at Home

Parents and caregivers also have a significant influence on the habits and attitudes that adolescents develop toward the environment. By modelling sustainable behaviours such as reducing plastic use, conserving water, or using energy-efficient appliances, adults can teach adolescents the importance of environmental stewardship. Encouraging family discussions about environmental issues can also help adolescents become more informed and proactive about climate change.

Moreover, families can participate in sustainability activities together, such as composting, gardening, or reducing household waste. These practices not only foster a sense of responsibility but can also strengthen family bonds through shared goals and activities.

Leveraging Technology for Environmental Solutions

While excessive digital use can have negative effects on adolescents, technology can also be harnessed to promote environmental awareness and action. Digital platforms, apps, and social media can provide educational content on sustainability, offer tips for reducing carbon footprints, and connect adolescents with global movements focused on environmental protection.

Adolescents can use these tools to monitor their energy use, learn about climate-friendly food choices, and track environmental changes in their communities. For example, *citizen science* platforms allow adolescents to contribute to environmental data collection, giving them the opportunity to participate in research projects on topics such as biodiversity loss or air quality monitoring.

By leveraging technology in this way, adolescents can become active participants in environmental problem-solving, using their digital skills to contribute to a more sustainable future.

Conclusion: A Collective Effort for a Healthier Tomorrow

The health of adolescents is deeply intertwined with the health of the environment. As the world faces unprecedented environmental challenges, it is crucial to recognize the unique vulnerabilities and needs of adolescents in this context. Climate change, pollution, and other environmental hazards threaten not only the physical health of adolescents but also their mental and emotional well-being.

Addressing these challenges requires a collective effort from governments, communities, families, and adolescents themselves. By fostering environmental awareness, promoting sustainable lifestyles, and advocating for policy changes, we can protect the health of the planet and its future generations.

Adolescents must be empowered to take action whether through education, activism, or everyday choices so they can be leaders in creating a more sustainable and resilient world. By investing in the health of adolescents and the environment today, we are securing a brighter, healthier tomorrow for all.

Dr Smita Ramachandran

Precocious Puberty

Precocious puberty is a prevalent endocrine disorder that affects children worldwide. It is defined as the appearance of secondary sexual characteristics before the age of 8 years in girls and 9 years in boys (1).

It results due to the activation of the hypothalamic pituitary gonadal axis resulting in episodic secretion of gonadotropins and increased sensitivity of pituitary to gonadotropic cells leading to secretion of LH, FSH from the anterior pituitary, which in turn act on gonads.

Precocious Puberty (PP) can be classified into two types based on the underlying pathogenesis:

- Central precocious puberty (CPP) or gonadotropin dependent precocious puberty, due to premature activation of hypothalamic pituitary gonadal axis
- Peripheral precocious puberty (PPP) or gonadotropin independent precocious puberty.

Physiology of puberty

Puberty starts as a result of the activation and maturation of the hypothalamic-pituitary-gonadal (HPG) axis. Mini-puberty of infancy, happens when there is a brief activation of this axis after birth and regresses over the first two years of life. This is clinically not significant as the HPG axis remains dormant till adolescence.

The HPG axis leads to a pulsatile secretion of gonadotropin-releasing hormone (GnRH) from the hypothalamus, this acts on the anterior pituitary causing the release of follicle stimulating hormone (FSH) and luteinizing hormone (LH) from the gland. FSH and LH initiate oogenesis and the release of estradiol in females. Activation of the gonads is known as gonadarche, which lead to the appearance of secondary sexual characteristics(2).

Hypothalamic is the centre of regulation and the kisspeptins neurons serve as the nodal regulatory center of reproductive function. The expression, synthesis and release of kisspeptin regulated by metabolic triggers at different levels. Certain metabolic, nutritional factors and neuropeptides like leptin and ghrelin which control energy homeostasis, are also participatants in the control of puberty (3)

Thelarche is the development of breasts, pubarche is the development

of pubic hair, adrenarche is the onset of adrenal androgen production, which contributes to pubarche.

Table: Etiology of Precocious Puberty

Gonadotropin dependent precocious puberty or central precocious puberty.	Gonadotropin independent precocious puberty or peripheral precocious puberty.
Idiopathi • Familial • Sporadic	Autonomous gonadal function • McCune Albright syndrome • Peutz-Jeghers syndrome • Testotoxicosis • Ovarian cysts
Genetic Mutation in MKRN 3,KISS-1,KISS1R,DLK-1	Severe primary hypothyroidism
CNS disorders, Hypothalamic hamartoma, Hydrocephalus, Congenital anomalies, Cysts, Neoplasms, Histiocytosis X, Vascular lesion, Global CNS injury, Irradiation Infection • Meningitis • Encephalitis • Abscess	Tumours • Ovariano ❖ Granulosa cello ❖ Theca cello ❖ combination • TesticularoLeydig cello ❖ Sertoli cell • hCG secreting tumorso ❖ hepatoblastomao ❖ germinomao ❖ thymic tumorso pinealomao ❖ Testicular tumors
	Exogenous steroid exposure
Syndromes • Neurofibromatosis type 1 • Russel Silver syndrome • Pallister Hall syndrome	Adrenal disorders • Congenital adrenal hyperplasia • Adenoma • Carcinoma

It is essential to differentiate between CPP and PPP as the management and treatment protocols are completely different for both.

CPP has an increased incidence in girls compared to boys and globally there has been an increase in the incidence of CPP in various countries (4). Several factors could influence the timing and tempo of puberty, it is an interplay of genetic, environmental and nutritional factors.

The clinical hallmarks of CPP include(5)

- Progressive breast development in girls (<8yrs) and increase of testes volume in boys (<9yrs)
- Onset of pubic or axillary hair growth (maybe seen in both CPP and PPP)
- Accelerated growth velocity (>6 cm/y)
- Advanced bone age (higher than 1 year or 2 SD score of chronological age)
- Hormonal findings: include pubertal basal or GnRH-stimulated LH levels.

Table 2: Differentiation between CPP and PPP

Central Precocious Puberty	Peripheral Precocious Puberty
True PP	Pseudo PP
Gonadotropin dependent	Gonadotropin independent (results from the production of sex steroids)
Isosexual	Isosexual/ contrasexual
Increased estrogen or testosterone with pubertal LH/FSH	Increased estrogen or testosterone with pre-pubertal LH/FSH
Pubertal gonadotropin response to GnRH stimulation test	Pre pubertal gonadotropin response to GnRH stimulation test

Investigation

1. X ray of non- dominant hand is done to assess bone age (Left hand and wrist). Children with CPP usually have a Bone age > chronological age > height age.

2. Estradiol levels are (in girls) usually increased in both CPP and PPP.
3. 17 hydroxyprogesterone, if features suggestive of Congenital Adrenal Hyperplasia and should be done in all girls and boys with precocious puberty.
4. TSH, free T4 should be part of the first tier evaluation.
5. MRI brain and pituitary to rule out anatomic anomalies or lesions is usually indicated in girls <6yrs.
6. USG of testis or abdomen. An ultrasound of the uterus can aid in diagnosis, length > 3.5cm and volume of ovary > 2ml is suggestive of puberty. The prepubertal uterus is tubular in shape while prepubertal uterus becomes piriform in shape.
7. The confirmatory test to diagnose PP is the GnRH stimulation test. It is originally done with GnRH molecule but however it is not available in India, GnRH analogues (GnRHa) are used. Leuprolide or Triptorelin are analogues used for treating CPP and can be used for the stimulation test. A 0min, 4 hour sample of LH, FSH are taken, 24hours later sample of estradiol is taken

Table 3: Interpretation of GnrH testing:

LH		Time	Values (IU/L)	pg/ml	Sensititvity	Specificity
Prepubertal			>0.2	91	100	
Unstimulated			>0.3		77	100
PeaK LH	GnRH		>6.7		94	100
Stimulated LH	GnRHa					
	Leuprolide (20 µg/kg)	30 min	>9.2			
		2hrs	>5			
	E2 at 24 hrs			>50		
	Triptorelin (0.1 mg)	60 min	>6		89	91
		3 hr	>8		76	100
	E2 at 24 hrs			>80	94	100

Management

Treatment should be offered to a child with CPP especially if she has has rapidly progressing symptoms or if bone age is significantly advanced. The main goals of treatment are

- To alleviate the psycosocial stress these children undergo with the onset of menarche, sometimes leading to absence from school (6)
- Early intervention leads to the child achieving near normal adult height.

GnRH agonists are the standard of care worldwide, the commonly used preparations are Leuprolide, Triptorelin, Boserelin, Histerelin. These are available in different strengths used as depot preparations. The commonly used analogues in India are Leuprolide and Triptorelin available as 3.75mg, 11.25mg used as monthly and 3 monthly depots respectively.

GnRH analogues are generally considered safe, with no reported significant adverse events. The most common adverse events include local skin reactions (intramuscular pain, sterile abscesses) and post-menopausal symptoms (hot flushes). There can be bleeding or spotting after the initial doses before complete hormonal suppression.

Monitoring

The child who is started on GnRH analogues are monitored periodically for pubertal progression, growth velocity, skeletal and biochemically at regular intervals (7).

Keypoints

- There has been an increase in the early appearance of secondary sexual changes but the age of menarche before 10 yrs is precocious and needs to be treated.
- Treating precocious puberty has positive impact in final height gain in children and psychological well being
- Girls treated for precocious puberty have improved fertility outcomes compared to the same cohort when not treated.
- The treatment is safe and is not associated with any long term complications.
- Early onset of precocious puberty is NOT the new normal.

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"Arise, awake, and stop not until the goal is reached."

- Swami Vivekananda

"The youth of today are the leaders of tomorrow."

- Nelson Mandela

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Management Approach In Delayed Puberty

Background

Puberty can be a stressful and concerning time for adolescents and their families, as it represents a period of significant emotional and physical changes in the body.

In girls, delayed puberty is diagnosed if 1 of the following occurs:

- No breast development by age of 13 years
- > 4 years elapsed between the beginning of breast growth and menarche
- Menstruation does not occur by age 15 (in the presence of normal secondary sexual characteristics)

In boys, delayed puberty is diagnosed if 1 of the following occurs:

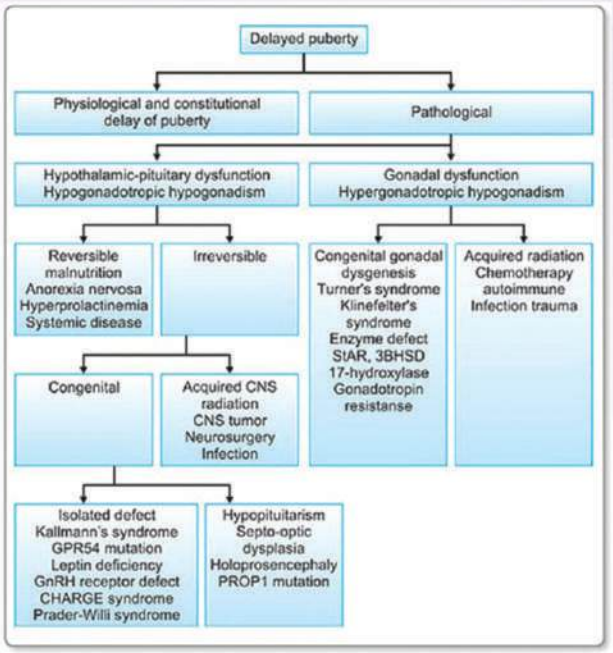
- No testicular enlargement by age 14 years
- > 5 years elapsed between initial testicular enlargement and completion of puberty.[1]

Causes of Delayed Puberty

TABLE No. 1 Etiology of delayed puberty

1. **Anatomic Abnormalities Of The Genital Tract**
   - A) Mullerian dysgenesis (MRKH syndrome)
   - B) Distal genital tract obstruction
     - i) Imperforate hymen
     - ii) Transverse vaginal septum
2. **Hypergonadotrophic (FSH >30MIU/MI) Hypogonadism (Gonadal Failure)**
   - A) Gonadal dysgenesis with stigmata of Turner syndrome
   - B) Pure gonadal dysgenesis (46XX, 46XY)
3. **Hypogonadotrophic (LH and FSH <10 MIU/ML) Hypogoandism**
   - A) Kallman syndrome
   - B) Prader Labhart Willi syndrome
   - C) Laurence Moon Bardet Biedl syndrome
4. **Neoplasms of the Hypothalamic – Pituatary Area**
   - A) Craniopharyngiomas
   - B) Pituitary adenomas
   - C) Other
5. **Infiltrative Process (Langerhans Cell Type Histiocytosis)**
6. **POST Chemotherapy (especially alkylating agents, Post Radiotherapy of CNS)**
7. **Severe Chronic Illness with Malnutrition**
8. **Anorexia Nervosa And Related Disorders**
9. **Antidopaminergic And Gonadotrophin Releasing Inhibiting Drugs (Especially Psychotropic Agents, Opiates)**
10. **Primary Hypothyroidism**

Figure No. 1 Physiological and pathological causes of delayed puberty



History

When patients and their families come with a concern for the pubertal delay, obtaining a good history is essential to a thorough evaluation.

- **History of Present Illness**: Detailed history of breast development, testicular enlargement, axillary hair, pubertal hair and acne should be elicited. The occurrence of adrenarche versus puberty should be distinguished. Fatigue or weight loss could be concerning for a chronic condition such as sickle cell anaemia, depression, or malnutrition. Complains of headaches and blurry vision should undergo evaluation for a brain mass.
- **Medical History:** Birth history, immunization status, and the involvement of other specialties in the child's care are all pertinent to medical history to rule out medical conditions like asthma or cystic fibrosis.
- **Medications/Treatments**: If the patient has a history of any chronic drug intake/ malignancy/radiation exposure.
- **Family History**: Were any biological siblings or parents considered "late bloomers" in their family?
- **Surgical History:** History of any previous surgical correction of cryptorchidism/any other surgery.
- **Social history:** History concerning behaviour or mood instability should also merit investigation.
- **Development:** History of missed milestones/ developmental delay to rule out disorders such as Klinefelter syndrome.

Physical Examination

A complete physical exam should always be done to assess

- Vital signs including height, weight and body mass index (BMI).
- Growth chart plotting using growth curves that are appropriate for age and sex will help portray any concerning patterns.
- Arm span ratio
- Upper/Lower limb ratio
- Optic disc and visual field charting
- Olfaction
- CNS and CVS examination
- Tanner staging

Development of acne, axillary or pubertal hair, and body odour are a result of adrenal androgen secretion and defined as adrenarche.[2] Adrenarche is independent of the HPG axis. Therefore, **a child could display signs of adrenarche but still have a diagnosis of pubertal delay.**[3]

Investigations

Before ordering further testing, **the child's predicted target height, based on the biological parents' adult heights and bone age (X ray of left wrist/hand) can help determine the child's current growth status.**

Common tests to include are :-

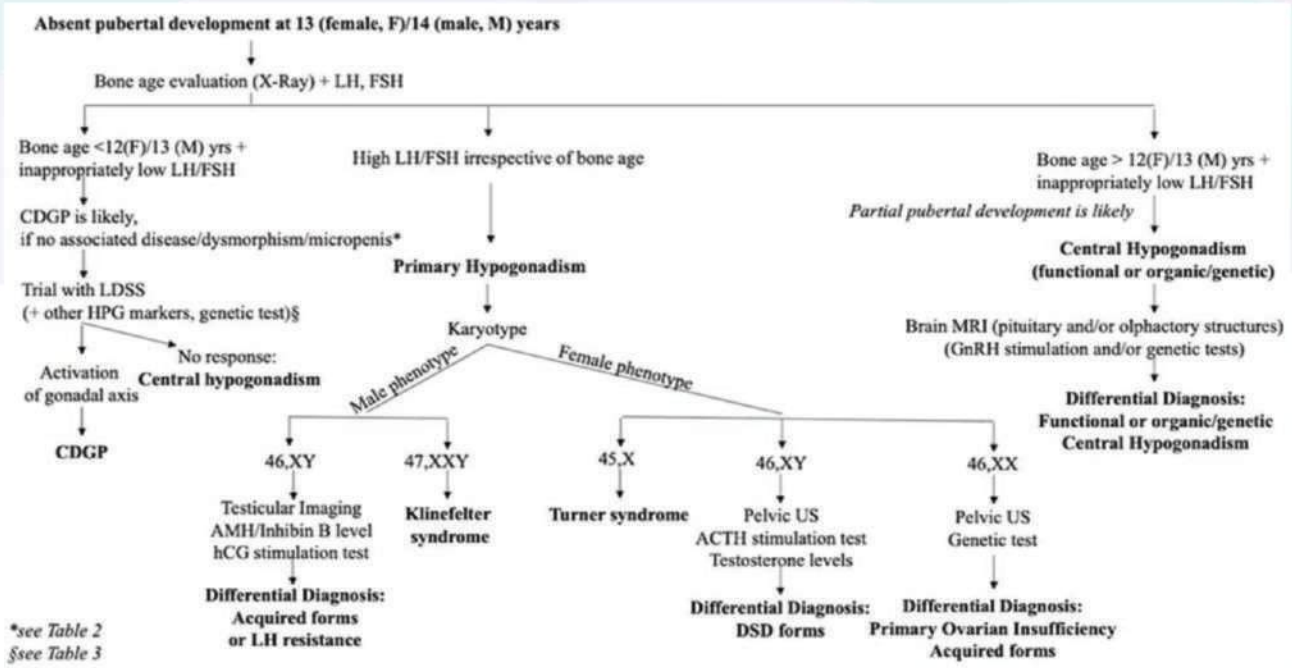
- Serum LH, FSH, estradiol in females, and total testosterone in males.
- Complete blood count,
- Complete metabolic panel,
- Free T4 and thyroid-stimulating hormone for thyroid function, and
- Erythrocyte sedimentation rate for chronic inflammatory conditions.
- Serum prolactin (in patients with galactorrhoea for evaluation of prolactinoma)
- DHEA-S (for assessment of adrenarche)
- Insulin-like growth factor 1 (IGF-1)

(panhypopituitarism/growth hormone deficiency)[4,5]

- Abdominal ultrasound (streak ovaries/ cryptorchidism)
- Brain MRI (craniopharyngioma)

A paediatric endocrinologist may choose to perform a GnRH stimulation test in the future, but this is usually not included in the initial evaluation for delayed puberty. Lastly, if there is any suspicion for a syndrome, testing for karyotype should be considered.[3]

Figure No. 2 Diagnostic flow chart for delayed puberty.



CDGP constitutional delay of growth and puberty, LDSS low dose sex steroid, HPG axis hypothalamus–pituitary–gonadal axis, US ultrasound

Constitutional delay of growth and puberty (CDGP) is the **most frequent form**(53%) and is a pathophysiological self-limited condition. Due to the common isolated presentation, the most frequent differential diagnoses of CDGP is congenital hypogonadotropic hypogonadism (CHH, 0.02%).CDGP can be diagnosed only after exclusion of pathologically absent puberty such as hypergonadotropic hypogonadism or CHH. However, **differentiating between CDGP and CHH can be extremely challenging in adolescence.**

Various tests have been used to differentiate children with delayed puberty such as the GnRH stimulation test, human chorionic gonadotropin stimulation test, thyrotropin releasing hormone-stimulated test, overnight frequent LH sampling, urinary LH evaluation, and repetitive intravenous GnRH testing.[6,7,8,9] Of these, **the GnRH stimulation test appears to be the most widely used**, is simple, effective, and relatively inexpensive, and well-tolerated considering that other options are time-consuming, expensive, and difficult to perform on an ambulatory basis.

Figure No. 3 Differentiating features between CDGP and CHH

	CDGP	CHH
Pubertal delay	Yes, but transient	Yes, but permanent
Syndromic features	Uncommon	Common (e.g. anosmia, midline defects)
Bone age	Retarded	Retarded
Testo/E2	Low	Low
LH/FSH	Inappropriately low	Inappropriately low
GnRH test	Blunted/appropriate response	Absent/blunted response
AMH, Inhibin B, INSL3	Low-normal	Low
HCG stimulation	Normal Testosterone rise	Often subnormal testosterone rise
Genetic studies	*IGSF10* and HS6ST1 monoallelic variants + wild-type classic CHH genes (ie. GnRHR, TAC3, TACR3, HS6ST1)	Pathogenic variants in candidate genes, oligogenic involvement

Treatment

The aim of treatment should be:-

- Development of age-appropriate secondary sex characters
- Induction of growth spurt without inducing premature epiphyseal closure
- Reversal of GnRH deficiency
- Promotion of psycho social well being

CDGP constitutional delay of growth and puberty, LDSS low dose sex steroid, HPG axis hypothalamus–pituitary–gonadal axis, US ultrasound

Conservative management with observation over 6 months to 1 year is warranted. A short-course treatment with low doses of testosterone for males or estrogen for females is often initiated when puberty and growth are true psychosocial causes of stress and low self-esteem for a child.

In females, an oral/IM form of estrogen are available, but oral estrogen (conjugated estrogen 0.3mg per orally daily for 3 – 6 months) is more often the therapeutic choice. After a few months of therapy, the provider may choose to stop sex-steroid treatment to evaluate for continued pubertal development while off therapy.[3]

For patients that are more concerned with short stature than with delayed puberty, growth hormone therapy has been used to augment height. However, it has not been shown to truly impact final adult height in adolescents with CDPG, and is thus, not recommended for treatment.[10]

Permanent Hypogonadism

Patients diagnosed with permanent hypogonadism, either from primary gonadal failure or permanent lesions in the HPG axis, will **require a more prolonged course of sex-steroid therapy.**

In females, a low dose of oral estrogen is the preferred initial treatment of choice. Estrogen is increased incrementally (0.3 mg on alternate days followed by 0.3 mg every day then 0.6 mg every day followed by 1.2mg every day) over time (6 monthly) until breakthrough vaginal bleeding occurs or 12 to 24 months of treatment have passed. Progesterone is added after 2 years of estrogen therapy/full breast development and recommended in the form of medroxy-progesterone 5–10mg/micronized progesterone 200mg/day for 10–14 days.

Following the above protocol, a combination of estrogen and progesterone therapy for normal monthly withdrawal bleeding is recommended. The transition helps the body to experience more normal physiological menstrual cycles.[3] Commonly

used hormone replacement therapies include oral contraceptives or transdermal estrogen patches with oral progesterone.

In some cases of hypogonadotropic hypogonadism, pulsatile administration of Injection GnRH or parenteral gonadotrophin treatment (synthetic LH/hCG and recombinant FSH) has resulted in induction of puberty. Although the isolated administration of hCG is sufficient, combined treatment with hCG and FSH appears to have better results. The individual dose of GnRH and the time necessary to achieve maximum effectiveness are variable, ranging from 25–600 ng/kg and requiring a minimum of 2 years. SC administration is the preferred route for long-term therapy

Figure No. 4 Management of delayed puberty

Prognosis

The prognosis of delayed puberty depends on the underlying condition. CPDG generally has a good prognosis with either expectant therapy or treatment. The more complicated causes of pubertal delay may require additional specialists for support and care.

Delayed puberty is often first recognized by the child's primary care provider. Once delayed puberty is suspected, further evaluation and management is necessary and prompt referral to a paediatric endocrinologist in complicated cases should not be delayed.

Conclusion

1. **Broader Impact of Delayed Puberty:** Delayed puberty affects not just physical development but also emotional, social, and academic aspects of a child's life.
2. **Interprofessional Management**: The condition

requires a collaborative approach from an interprofessional team that addresses both physical and psychosocial factors.

3. **Role of Primary Care Providers:** Delayed puberty is typically first identified by the child's primary care provider, who then refers the patient for further evaluation.
4. **Involvement of Specialists:** If the cause is complex, specialists such as neurologists and oncologists may need to be involved, particularly in cases like malignant brain masses.
5. **Mental Health Support:** Children exhibiting poor self-esteem or depression should be referred to mental health professionals for counseling and support.
6. **Parental Education and Support Services:** Parents need education regarding the disorder, and social workers should ensure adequate support for the patient's social and financial needs.
7. **Monitoring and Follow-Up:** Continuous monitoring and communication among the healthcare team are essential to ensure treatment effectiveness and address any milestones not being met.

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"Do not wait for leaders; do it alone, person to person."

- Mother Teresa

Dr Gunjan Bhatnagar

Imaging in Adolescent Gynaecology

Introduction

Ultrasound examination in adolescents requires a sensitive and patient-centered approach, given the potential for anxiety and discomfort in this demographic. Clinicians should establish clear communication with the patient and, when appropriate, involve parents or guardians in the discussion to alleviate concerns.

Challenges in adolescent imaging

Adolescent imaging poses various challenges to the performer.

- In the paediatric and adolescent population, scan techniques are essentially limited to a transabdominal or transperineal approach.
- Many gynaecological conditions commonly encountered in adults, such as fibroids and adenomyosis, are not encountered in children and rare in adolescents.
- Similarly, common pathologies affecting adults such as endometriosis and polycystic ovarian syndrome (PCOS), which may be present in the adolescent age group, are challenging or impossible to diagnose based on ultrasound criteria.

Know the normal!!

Normal uterus-Following the onset of menses, the adolescent uterus has the same appearance as the adult uterus with a 'pear' shape and F C (fundus- dervix) ratio of 2–3:1 (Figure 1)

The endometrium at this stage should have a normal cyclic appearance as seen in the adult population.In the pre pubertal age group, the uterus is smaller relative to the cervix, has a tubular shape and an F C ratio of 1:1.[1]

Fig. 1- A normal midsagittal image of the uterus in a 16 year old girl (pubertal) with the classic pear shaped appearance seen in adult women

Normal ovaries

Multifollicular (>20 follicles <10 mm) ovarian appearances are common throughout adolescence (Figure 2).

Pelvic ultrasound is not recommended for diagnosis of PCOS within 8 years post menarche.[2]

Fig 2. Normal multi follicular adolescent ovary

Equipment

A curved/convex array transducer of 3 to 5 MHz is used for transabdominal ultrasound in adolescents. A full bladder is recommended and required for adequate visualization of the pelvic organs.

Transvaginal sonography is not performed except in sexually active adolescents.

Transrectal ultrasound may be performed after due consent and counselling , if needed.

Transrectal scanning should be used liberally after proper patient selection and counseling. The images obtained are superior to TAS and comparable to those obtained by TVS.[3]

Indications of scanning in adolescents-

1. Amenorrhoea-

A. *Agenesis:* Müllerian agenesis is also known as Mayer-Rokitansky-Küster-Hauser syndrome. Ultrasound shows features of vaginal atresia, rudimentary or absent uterus, and normal ovaries.[4] The rudimentary uterus can be unicornuate or bicornuate, and if it has a functioning endometrium, it results in hematometra due to associated vaginal atresia. It can be associated with renal, auditory, and skeletal anomalies. So the scan should be extended to include the kidneys. Differentiating between uterine agenesis and uterine hypoplasia, can be very challenging on a transabdominal scan, an MRI may be required for confirmation. the scan should be extended to include the kidneys.

Fig 3.- A midsagittal transabdominal view of the pelvis in a 19 year old female with known Mayer–Rokitansky–Küster–Hauser syndrome (MRKH). no uterine or vaginal tissue could be seen.

B. *Obstructive Mullerian anomalies:* These include vaginal septum, hymen, or cervical dysgenesis. In adolescents, menstrual fluid accumulates in the uterine, cervical, and vaginal cavity, known as hematometrocolpos.[5] Ultrasound demonstrates fluid with debris (low level echoes) in the endometrial and vaginal cavity and sometimes in the fallopian tubes as well. Appearances of the normal pelvic anatomy can be greatly distorted making these examinations challenging.

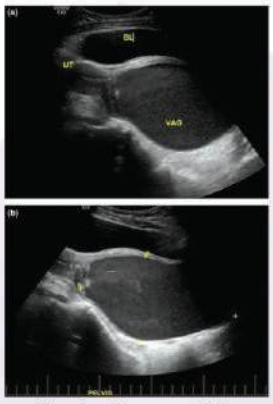

Fig 4.- Sonographic examination will reveal a distended vagina and/or uterus filled with fluid containing low level echoes.

C. *Turner syndrome:* It is an X chromosomal abnormality with 45 XO karyotype. The ovaries are fibrous, streak-like, and not visible on ultrasound.[6] The uterus remains prepubertal in size, although puberty may appear spontaneously in a few patients.

D. *Androgen insensitivity syndrome (AIS)* - People with AIS have a 46 X Y karyotype yet are phenotypically female due to a resistance of androgens needed for foetal development of male external genitalia and development of male secondary sexual characteristics.[7] Like MRKH, the typical presentation is that of primary amenorrhoea in a phenotypic female adolescent. Ultrasound will reveal an absent uterus. If an absent uterus is the only ultrasound finding, differentiating MRKH from AIS is impossible. It should be noted that those with AIS will have gonads as they are genetically male. These may be located within the abdomen, inguinal canal or labia .

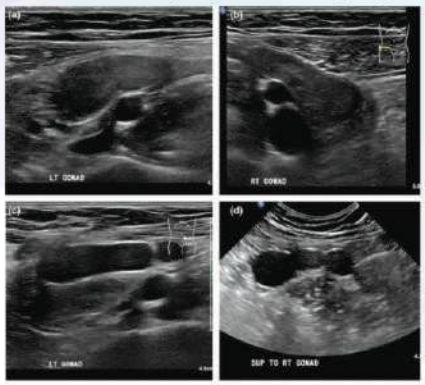

Fig 5. androgen insensitivity syndrome (AIS). a and b represent the gonads present within the inguinal canal. c and d represent fluid filled tubular structures superior and lateral to each gonad with no associated vascularity.

2. Pelvic pain

A. *Pelvic inflammatory disease*: The greatest risk of PID is seen among adolescent girls who are biologically susceptible and socio-behaviorally predisposed, and are also exposed to the long term sequela of recurrent infections. Early pelvic inflammatory disease (PID) changes are subtle on ultrasound and appear as hyperemia and thickening of the pelvic structures and free fluid in the cul-de-sac. Long-standing PID can lead to pyosalpinx,

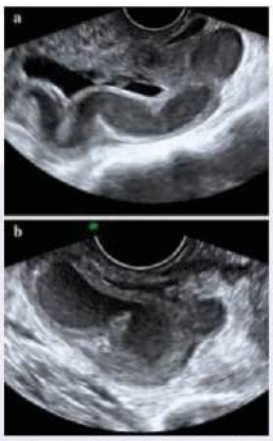

Fig 6. Thick tubal walls proved to be a specific and sensitive ultrasound sign of acute PID.

pyometra, and tubo-ovarian abscess. Pyosalpinx appears as a tubular, round, or oval thick-walled structure with low-level internal echoes. [8] The ovary, when involved, is enlarged and becomes echogenic. Tubo-ovarian abscess appears as a complex collection with moving echoes and debris.

B. *Torsion*: The ovary can get twisted around its supporting ligaments, i.e., utero-ovarian ligament and infundibulopelvic ligament. The fallopian tube can also be involved in the torsion- adnexal torsion. The majority of the patients are of childbearing age, with only 20% occurring in premenarchal ovaries.[9] The typical feature of torsion includes enlarged and edematous hyperechoic central stroma with peripherally situated multiple small (8 to 12 mm) follicles.

Torsion results in venous and lymphatic obstruction, and the torsed ovary becomes engorged. It appears edematous and enlarged in volume in comparison to the normal contralateral ovary. The blood supply may be decreased or absent in torsion.However, the ovary has a dual supply from the uterine and ovarian arteries, and it is very uncommon to show absent vascular flow. The venous flow usually obstructs. Color Doppler often demonstrates twisting of the vascular pedicle of the ovary. A "follicular ring sign"[10] may be seen due to perifollicular edema, which refers to a hyperechoic ring around the antral ovarian follicles.

C. *Ectopic pregnancy*: It can occur in adolescent girls, though incidence is lower than in adults, and is often associated with sexually transmitted diseases—inflammation or PID, especially involving fallopian tubes. Extrauterine pregnancy can be seen in the cervix, abdomen, ovary, or uterine cornua and appears as an echogenic ring with an anechoic area. The yolk sac is not visible in early pregnancy. Ruptured ectopic pregnancy demonstrates associated hematoma seen as a hyperechoic lesion. Hemoperitnoeum may occur and is seen as fluid with echoes in the peritoneal cavity. It can lead to hemodynamic instability, and early diagnosis is critical.

D. Endometriosis- Dysmenorrhoea severe enough to affect the quality of life should not be dismissed as normal and it requires investigations and work up to identify endometriosis and reduce the disease progression.

Adolescent endometriosis is generally underestimated as the imaging evaluation remains challenging.Ultrasound data could be normal in adolescents presenting the initial stages of endometriosis, as superficial endometriosis may not be visualized, and that does not rule out the disease. [11] Despite the continual improvement of imaging techniques and digital tools for data interpretation, pelvic sonography provides low diagnostic accuracy for endometriosis—except for advanced stages (ovarian endometriomas and deep infiltrative lesions) that are rarely found in adolescents.MRI is more helpful in these cases.

3. Abnormal uterine bleeding/ Irregular menses

Despite the fact that most cases of abnormal uterine bleeding (AUB) in adolescence are due to an immature hypothalamic-pituitary-ovarian (HPO) axis, the current approach to investigating adolescents who present with AUB often includes pelvic ultrasound to exclude rare structural causes. However, there is limited evidence that ultrasound alters management protocols in majority of cases. Structural causes like polyps, fibroids, adenomyosis etc are rare in adolescents.

In a study done by Pecchioli et al,incidental findings were identified in 17.9% (28/156) and polycystic ovary syndrome morphology in 6.4% (10/156). Structural causes of AUB were found in only 2 (1.3%) of the adolescents imaged.[12]

A. Endometriosis: Endometriosis affects up to 1 in 10 women. The incidence in adolescence is unknown but it is believed to affect as many a 25–38% of girls with pelvic pain .The clinical diagnosis of endometriosis is difficult in all women. Associated gastrointestinal pain is common in adolescents further complicating the diagnosis. Both endometriomas and DIE are rare within the adolescent.

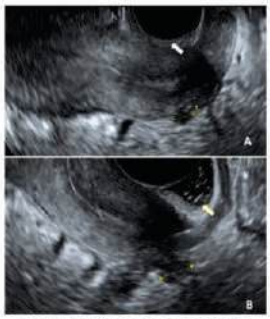

Fig 7.Ultrasonographic image of a DIE nodule affecting uterosacral ligament with and without sonovaginoscopy.

As such, caution should be taken when reporting endometriomas in this population particularly on transabdominal ultrasound.

B. Adenomyosis : Can affect adolescent patients with varying prevalence ranging from 5% to 17.4%.It is usually diagnosed with noninvasive exams, including ultrasound and MRI. Adenomyosis may reveal itself in diffuse or focal forms, such as myometrial cysts or adenomyomas.

According to the MUSA criteria the sonographic diagnosis of adenomyosis was made in 27.4% of patients, with the diffuse type the most prevalent. Uterine wall asymmetry, hyperechoic intramyometrial islands, translesional vascularity and an interrupted junctional zone were the most common features.[13]

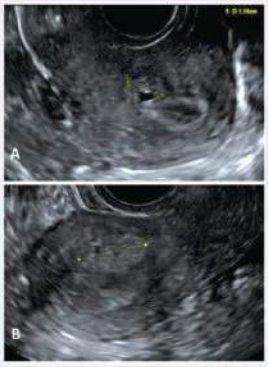

Fig 8.Ultrasonographic image of a focal adenomyosis. (A): measurement of a myometrial anechoic cyst; (B): measurement of a hyperechoic myometrial island.

C. Polycystic ovarian syndrome: According to the international guideline published in 2018, 'ultrasound should not be used for the diagnosis of PCOS in those with a gynaecological age of <8 years (ie. <8 years after menarche), due to the high incidence of multifollicular ovaries in this life stage'.As such, the use of the term polycystic ovaries in the paediatric and adolescent population should be avoided. If the criteria for PCOS are met (i.e. >20 follicles on one ovary seen on TVS) the term 'multifollicular' ovaries should be used. It should be noted, however, that although PCOS cannot be diagnosed sonographically in adolescents, PCOS still affects this group.

4. Benign Masses

A. Simple cyst: A simple ovarian cyst appears as a thin-walled, anechoic lesion, mostly seen in adolescent /post-pubertal girls, although they may be seen at any age. In post-pubertal girls, it results when the dominant follicle does not regress/ rupture. Functional cysts are radiologically described as anechoic thin-walled cysts with distal acoustic enhancement.

Fig.9 - Benign cyst with posterior acoustic enhancement

B. Hemorrhagic cyst: A hemorrhagic cyst usually develops in the corpus luteum. Hemorrhage has a variable appearance on ultrasound, with acute hemorrhage appearing hyperechoic to the ovarian stroma. With time, the hemorrhagic cyst appears heterogeneous with multiple thin layering septa and low-level echoes. These usually regress on their own. Follow-up US after 6 to 12 weeks is recommended.

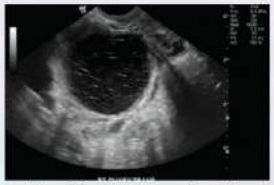

Fig 10. Haemorrhagic cyst showing reticular network

C. Mature cystic teratoma/Dermoid cyst: Mature teratoma/ dermoid is a benign mass containing components of mesoderm, ectoderm, and endoderm. It appears as a heterogeneous solid and cystic mass within the ovary. It may show fluid-fluid levels due to different densities of fluid and fat within the cyst. Calcification is usually present and appears as a hyperechoic focus with posterior acoustic shadowing (Rokitansky nodule).Fat within the mass is also hyperechoic but without shadowing and often difficult to distinguish from the bowel gas (echoic white balls).

Fig 11: Dermoid Cyst showing Dermoid Mesh

D. Cystadenomas: They are epithelial tumors. Serous cystadenomas appear as thin-walled, usually unilocular masses with wall thickness measuring less than 3 mm. Thin septations and papillary projections can be seen. They can be unilateral or bilateral (20%) and usually smaller than the mucinous cystadenoma. Mucinous cystadenoma appear as a multilocular mass with multiple thin septations. These are larger than serous cystadenomas and contain mucin, which appears as low-level internal echoes.

Fig 12a: serous cystadenoma

Fig 12b: mucinous cystadenoma

5. Malignant masses

While cystic lesions are reassuring for a benign process, heterogeneous masses raise concern for malignancy. Ultrasound findings consistent with malignancy include a solid lesion, increased vascular flow, septations of 3 mm or greater, and presence of ascites . [15] Size of tumor have not been shown to be a predictor of malignancy, although persistent or enlarging cysts are concerning for a malignant process.

Keynotes

- Ultrasound in adolescents should be done by experts.
- Sound knowledge of differences in pelvic anatomy.
- Whilst it is obvious that a missed or delayed diagnosis can have a significant adverse impact on the patient, it is equally important to consider the potentially harmful long term effects of a negative scan experience in these formative years.
- PCOS should not be labelled based on Usg findings in adolescents.
- Transperineal or transrectal approach can be used.
- Benign cystic masses should be followed over 2-3 menstrual cycles. Surgery is rarely necessary.

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"The future belongs to those who dare to dream beyond boundaries."

Adolescent PCOS

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Polycystic ovary syndrome (PCOS) represents one of the most prevalent endocrine disorders, influencing approximately 3.4–19.6% of adolescent girls, depending on the specific diagnostic criteria employed.[1]

Translating adult diagnostic criteria for PCOS to adolescents has proven particularly challenging, primarily due to the overlapping symptoms associated with normal puberty. The points of dilemma in diagnosing PCOS are summarized in table 1.

Table 1: Navigating the diagnostic dilemma in adolescents

Aspect	Details
Anovulatory Cycles	Frequent in adolescents.
Signs of Hyperandrogenism	The common signs of adult hyperandrogenism are less reliable in adolescents than in adults.
Hirsutism	Hirsutism is in a developmental phase.
Acne Vulgaris	Acne vulgaris is common.
Testosterone Levels	Testosterone serum levels rise during anovulatory cycles.
Androgen Norms	There is a paucity of reliable norms for androgen levels in adolescent girls.
Predictive Uncertainty	The extent to which adolescent hyperandrogenism predicts adult hyperandrogenism is unclear.
Polycystic ovary morphology	Polycystic ovary morphology is common in normal adolescents by adult standards

The evolution of criteria for diagnosis of PCOS has been tabulated in table 2.

Table 2: Consensus/guidelines criteria for diagnosis of PCOS[1-5]

S. No.	Consensus/ guidelines	CRITERIA	PITFALL
1	Stein and Leventhal, 1700	Triad of menstrual irregularities, hirsutism, and large ovaries with many follicles	
2	National Institute of Health,1990	Clinical or biochemical evidence of hyperandrogenism and ovulatory dysfunction- oligo-ovulation (<6 menses/year)	Polycystic ovarian morphology (PCOM) was not incorporated into these criteria. Two out of two criteria were needed for diagnosis
3	ESHRE/ASRM 2003/ Rotterdam	Any 2 of the following: 1. Oligo- or anovulation. 2. Hyperandrogenism – clinical (hirsutism or	Criteria were not defined for adolescents.

	Criteria in 2003	persistent acne) and/or biochemical. 3. Polycystic ovaries (12 or more follicles of 2–8mm diameterand/or an ovarian volume of -10cm^3)	
4	NIH 2012 extension of of ESHRE/ ASRM 2003	Hyperandrogenism (HA) 2. Ovulatory dysfunction (OD) 3. PCOM1. Two of three criteria required; and2. Identification of specific phenotypes included: A: HA + OD + PCOM B: HA + OD C: HA + PCOM D: OD + PCOM	Criteria were not defined for adolescents
5	Ibanez L et al. 2017, International Consortium of Paediatric Endocrinology Update	1. Menstrual Irregularity/Ovulatory dysfunction: a. Irregular cycles two years post-menarche b. Menstrual cycles > 90 days 1-year post menarche c. Primary amenorrhea in girls that completed puberty 2. Hyperandrogenism a. Clinical: progressive hirsutism and/or moderate to severe acneunresponsive to topical therapy (severe cystic acne) Rarely alopecia b. Biochemical: confirmation test ingirls with hyperandrogenismusing high quality assays. *The presence of PCOM in an adolescent whodoes not have hyperandrogenism/oligo-anovulation does not indicate a diagnosis of PCOS.	No clear cut off for testosterone given
6	Pena AS et al. 2020, Adolescent PCOS according to the international evidence-based guideline	1. Menstrual Irregularity Ovulatory dysfunction: a. Strict definition according to time post-menarche-Irregular cycles are normal 1st year post-menarche, Menstrual cycles < 21 and >45 days 1–3 years post-menarche, Menstrual cycles < 21 days and >35 days 3 years post-menarche (<8 cycles per year). b. Menstrual cycles > 90 days 1 year post-menarche c. Primary amenorrhea by 15 years or after 3 years post thelarche 2. Hyperandrogenism: a. Clinical: Hirsutism defined as modified Ferriman Gellway score- 4–6 and/or severe acne, Rarely alopecia b. Biochemical: In females with irregular cycles yet without hyperandrogenism testosterone, free testosterone of free androgen index can assist with diagnosis. *Pelvic ultrasound should not be used for the diagnosis of PCOS in those with a gynecological age of <8 years.	No clear cut off for testosterone given

The criteria for diagnosing adolescent PCOS includes a clear definition of irregular menstrual cycles according to time post menarche and clinical hyperandrogenism, including severe acne and hirsutism and/or biochemical hyperandrogenism, after exclusion of other conditions that mimic PCOS. The use of pelvic ultrasound for diagnosis in females less than 8 years post menarche should be avoided due to the overlap with normal pubertal physiology, the lack of specificity of polycystic ovarian morphology for PCOS diagnosis in this age group and the avoidance of transvaginal ultrasound in those not yet sexually active.

The concept of "At risk" adolescents has been highlighted, nowadays. Adolescents presenting

with isolated irregular menstrual cycles or cycles that don't meet irregularity criteria based on time since menarche can be defined as "at risk of PCOS" and require follow up. It is recommended to reassess adolescents at three years post-menarche for menstrual irregularities and at eight years post-menarche through pelvic ultrasound to evaluate ovarian morphology. This strategy allows for identifying those with one symptom cluster as "at risk" for PCOS, facilitating targeted symptom management without premature labeling. The criteria are shown in figure 1.

Figure 1: Criteria for 'At Risk' Adolescents that need regular follow up and a healthy life style.

Further investigations are important for ruling out other conditions that can cause menstrual irregularities and hyperandrogenism, as well as for identifying comorbidities associated with PCOS. These investigations include blood tests, pelvic ultrasound, anti-Müllerian hormone (AMH) measurement, and assessments for insulin resistance. The blood tests should include beta human chorionic gonadotropin (for sexually active individuals), LH, FSH, thyroid function tests, prolactin, midnight salivary cortisol, and 17-hydroxyprogesterone (17-OHP). The 17-OHP test is particularly crucial for differentiating between PCOS and non-classic congenital adrenal hyperplasia. While mildly elevated DHEAS levels may be seen in adolescents with PCOS, significantly high DHEAS levels are more indicative of an androgen-secreting tumor. Although AMH levels alone are not sufficient for diagnosing adolescent PCOS, they can support the diagnosis when irregular menstrual cycles and hyperandrogenism criteria are met.[1]

To summarize, the diagnostic algorithm for adolescent PCOS is as follows in figure 2:

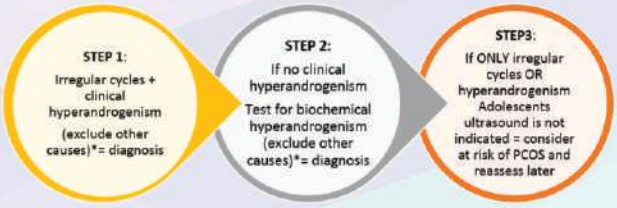

Figure 2: Diagnostic algorithm for adolescent PCOS

**Exclusion of other causes = TSH, prolactin, 17-OH progesterone, FSH or if clinically indicated exclude other causes (eg, Cushing's syndrome, adrenal tumours). For hypogonadotrophic hypogonadism, exclude clinically and with LH and FSH levels. TSH- thyroid stimulating hormone, LH-Luteinizing Hormone, FSH- Follicle Stimulating Hormone.

Pathophysiology

The pathophysiology of PCOS in adolescents is frequently described using the "two-hit" paradigm. This refers to a step-by-step process in which the first "hit" is an inborn congenitally programmed predisposition, and the second "hit" comes from a stimulating factor such as insulin resistance. The key pathophysiologic features include-

1. Primary ovarian pathophysiology
2. Hyperinsulinemia/insulin resistance
3. Neuroendocrine alterations
4. Genetics/epigenetics
5. Altered sympathetic tone

1. Ovarian Pathophysiology

In PCOS, the balance between androgen production, Anti Müllerian hormone (AMH), and follicle-stimulating hormone (FSH) is disrupted, causing follicular arrest and chronic anovulation. This results in the growth of small follicles but their eventual stunted development, leading to the characteristic PCO morphology. Additionally, theca cells in PCOS exhibit increased steroidogenic activity, particularly elevated CYP17A1 (P450c17), contributing to excessive ovarian androgen production.[6]

2. Hyperinsulinemia/insulin resistance (IR)

IR reflects the complex interplay of genetics, intra and extra-uterine environmental factors and inherent differences in energy expenditure. Puberty naturally induces a state of insulin resistance, which can be further exacerbated by obesity during this period, leading to increased hyperandrogenism.

3. Neuroendocrine Alterations in PCOS

PCOS is marked by dysregulation of follicle-stimulating hormone (FSH) and luteinizing hormone (LH), leading to an increased LH ratio and elevated LH pulse frequency. Androgens disrupt the regulation of gonadotropin-releasing hormone (GnRH) and LH, reducing negative feedback, especially from progesterone, and increasing GnRH pulse frequency. Recent studies also highlighted altered kisspeptin signal's impact on the GnRH pulse generator in PCOS. Additionally, neuroendocrine factors like GABA, anti-Müllerian hormone (AMH), and adiponectin may further affect GnRH signaling in PCOS.[7]

4. Genetic Factors in PCOS

Notably, the DENND1A and FSHB genes have been linked to abnormalities in PCOS. Additionally, genome-wide methylation studies reveal alterations in DNA methylation of genes related to steroidogenesis, metabolic pathways, and immune responses.[8]

5. Altered Sympathetic Tone in PCOS

Altered sympathetic nervous system activity is believed to play a role in the development of PCOS.[9]

Implications of PCOS in adolescents:

Significant health risks are linked to PCOS in women, such as obesity, metabolic syndrome, cardiovascular disease, diabetes, hyperlipidemia, and endometrial cancer. Additionally, conditions like hypertension, impaired glucose metabolism, and obstructive sleep apnea (OSA) not only contribute to the risk of type 2 diabetes (T2DM) but are often present at diagnosis as associated comorbidities. These factors underscore the importance of early detection and comprehensive management for women with PCOS to mitigate these risks.

1. Insulin resistance and type 2 diabetes:

The most significant risk factor linked to PCOS is type 2 diabetes mellitus (T2DM), with prediabetes also recognized as an independent cardiovascular risk factor. In adolescents, indicators such as obesity, a family history of T2DM, and acanthosis nigricans prompt further testing for glucose metabolism. The prevalence of impaired glucose metabolism in adolescents with PCOS ranges from 6% to 33%, often complicated by obesity. Daughters of women with PCOS display elevated insulin levels during glucose tolerance tests, indicating a heightened risk for glucose metabolism disturbances.[10]

2. Metabolic syndrome and cardiovascular risks:

Metabolic syndrome, a cluster of cardiovascular risk factors including elevated triglycerides, reduced HDL cholesterol, increased waist circumference, fasting glucose, and high blood pressure, is notably more prevalent in women with PCOS. While adolescents with PCOS are 4.5 times more likely to develop metabolic syndrome than their age-matched peers, studies indicate that its prevalence may be linked to both androgen excess and increased BMI. Dyslipidemia, characterized by high triglycerides and low HDL levels, is common in PCOS, particularly among those with insulin resistance. In obese adolescents, regular monitoring of serum lipids, blood pressure, and cardiovascular risk factors is essential at diagnosis and throughout adulthood to manage these associated health risks effectively.[11]

3. Mood disorders:

Emotional wellbeing is a critical issue for individuals with PCOS, with high rates of anxiety and depression observed in both adults and adolescents. Eating disorders, psycho-sexual dysfunction, negative body image, and reduced Quality of Life are also frequently present. Cognitive behavioral therapy and lifestyle changes may benefit mental health and overall wellbeing in those with PCOS.

Obstructive sleep apnoea:

Obstructive Sleep Apnea (OSA) is a significant cardio-metabolic condition that worsens insulin resistance and adiposity, and it is notably more prevalent in women with PCOS compared to age- and BMI-matched controls. Factors such as insulin resistance, central adiposity, and elevated testosterone levels may contribute to this association. Recent studies show that OSA is four times more prevalent in obese adolescents with PCOS compared to their BMI-matched peers, emphasizing the need for better screening practices in this population.[1]

The metabolic evaluation after diagnosis of PCOS in Adolescents are emphasized in table 4:

Table 4: Metabolic evaluation After Diagnosis of PCOS in Adolescents

Metabolic Considerations	Implications
Laboratory Tests	
Fasting glucose, insulin, and 2-h oral glucose tolerance test (75 g)	Assess for prediabetes, diabetes, and insulin resistance to guide management and interventions.
Fasting lipid profile	Evaluate for dyslipidemia, which may influence treatment choices; caution is advised when using oral contraceptives in cases of moderate to severe triglyceridemia.
Sleep study	Screen for obstructive sleep apnea, as this condition can significantly impact overall health and management strategies.

Treatment of PCOS in Adolescence:

Managing PCOS in adolescents is challenging due to its complex pathophysiology, ongoing debates about diagnosis, and a limited number of focused studies. Treatment options need to be tailored to the individual's presenting needs, with the primary goals being to regulate menstrual cycles, address androgenic concerns, assess and improve metabolic health, and manage lifestyle issues. Overall, the aim is to enhance hormonal and metabolic status, prevent future comorbidities, and improve the quality of life for young women with PCOS.

Lifestyle modifications:

Lifestyle interventions, ideally multi-component (including diet, exercise, reduced sedentary behavior, and behavioral strategies), are recommended for all individuals with PCOS and excess weight to help reduce weight, central adiposity, and insulin resistance.

Obesity can worsen PCOS symptoms, and early intervention is crucial to prevent excess weight gain in adolescents, as waiting until obesity develops makes reversal less likely. Regular monitoring of weight is also advised, with sensitivity to individual needs. A multidisciplinary approach involving a dietitian, health psychologist, and endocrinologist has shown enhanced weight loss when combined with behavioral and dietary interventions. [1]

Pharmacologic Principles for management of PCOS:

The following practice points should guide the pharmacological treatment of adolescents with PCOS:

1. **Personal Considerations**:

Take into account the individual's personal characteristics, preferences, and values when recommending medications.

2. Evaluation of Treatments:

Assess the benefits, adverse effects, and contraindications of treatments in both PCOS and general populations.

3. Off-Label Use:

Combined oral contraceptive pill (COCPs), metformin, and other treatments are often prescribed off-label for PCOS. Adolescents and their families should be informed about their potential side effects.

Medications:

Combined oral contraceptive pill:

1. The combined oral contraceptive pill (COCP) should be considered for adolescents with a clear PCOS diagnosis and may also be appropriate for those deemed "at risk" but not yet diagnosed. It can help manage clinical hyperandrogenism and irregular menstrual cycles in both groups.
2. Specific types or doses of progestins, estrogens, or combinations of combined oral contraceptive pills (COCP) cannot be recommended due to insufficient data on their efficacy and safety in women and adolescents with PCOS.
3. Lower-risk COCP preparations should be recommended as first-line therapy.d be recommended as first-line therapy.

Combined oral contraceptive pill and metformin:

The combination of the COCP and metformin may be considered for adolescents with PCOS who have a BMI over 25 kg/m², if the COCP and lifestyle changes do not achieve the desired

outcomes. While this combination provides additional benefits, it does not surpass the effectiveness of the COCP combined with lifestyle interventions. Therefore, it should be used when initial treatments fail to meet goals. Though they have mild gastrointestinal side effects they protect the endometrium from risk of hyperplasia.

Insulin sensitizers:

Metformin, in conjunction with lifestyle interventions, may be considered for adolescents with a clear PCOS diagnosis or symptoms suggestive of PCOS prior to diagnosis. Evidence suggests it can improve BMI, waist-to-hip ratio, and triglycerides, with typical doses of 1500–1700 mg daily. Side effects are usually mild like nausea, vomiting, and abdominal pain, and self-limiting. Pioglitazone has been used in small series to improve insulin resistance but is associated with liver dysfunction and bladder cancer.

Antiandrogens

Recommendations suggest the use of the COCP alone with cosmetic therapy for at least 6 months prior to considering antiandrogens. Where COCPs are contraindicated or poorly tolerated, and in the presence of effective forms of contraception, antiandrogens could be considered to treat hirsutism or androgen-related alopecia.

Symptoms of androgen excess, such as acne and hirsutism, can significantly impact an adolescent's self-image, making androgen suppression regimens important. Spironolactone is effective for managing these symptoms, particularly when combined with an oral contraceptive. While flutamide and finasteride can also be used as antiandrogens in adolescents, they carry risks of liver toxicity and are not recommended for routine use. Cyproterone acetate, a progestational agent, may be considered in combination with oral contraceptives for its antiandrogenic effects.

Key messages for Adolescent PCOS:

1. **Diagnostic dilemma**: Diagnosing polycystic ovary syndrome (PCOS) during adolescence is challenging because features of normal pubertal development overlap with adult diagnostic criteria.
2. **Specific criteria** to improve diagnostic accuracy and avoid over diagnosis include: (1) irregular menstrual cycles defined according to year post-menarche; > 90 days for any one cycle (> 1 year post-menarche), cycles< 21 or > 45 days (> 1 to < 3 years post-menarche); cycles < 21 or > 35 days (> 3 years post-menarche) and primary amenorrhea by age 15 or > 3 years post-thelarche. Irregular menstrual cycles (< 1year post-menarche) represent normal pubertal transition. (2) Hyperandrogenism defined as hirsutism, severe acne and/or biochemical hyperandrogenemia confirmed using validated high-quality assays. (3) Pelvic ultrasound not recommended for diagnosis of PCOS within 8 years post menarche. (4) Anti-Müllerian hormone levels not recommended for PCOS diagnosis; and (5) exclusion of other disorders that mimic PCOS.
3. **"At Risk" Label**: Adolescents showing PCOS features but not meeting full diagnostic criteria should be monitored with an "at risk" designation. Menstrual cycles should be reassessed.
4. **Mental Health Screening**: Routine assessments for anxiety, depression, and potential eating disorders are essential.
5. **Tailored Management**: Treatment should be individualized, focusing on regulating menstrual cycles, addressing hyperandrogenism, and improving metabolic health.
6. **Lifestyle Modifications**: Emphasize the importance of diet, exercise, and behavioral strategies to manage weight and insulin resistance.
7. **Multidisciplinary Approach**: Collaboration with dietitians, psychologists, and endocrinologists, enhances overall management.
8. **Informed Decision-Making**: Educate adolescents and their families about treatment options, including off-label uses of medications, to ensure informed choices.
9. **Long-Term Health Considerations**: Address potential comorbidities early, including cardiovascular risks, to improve long-term outcomes.

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"Youth is not about age, but about the courage to chase dreams relentlessly."

"Every great accomplishment starts with a youthful dream."

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Adolescent Endometriosis

Introduction

Endometriosis is a gynecological condition marked by the presence of endometrial glands and stroma outside of the uterine lining. It is the leading cause of dysmenorrhea and chronic pelvic pain in adolescents. Endometriosis has a varied presentation in adolescents and can cause a delay in diagnosis. It can lead to absence from school and a poor quality of life. [1]

Epidemiology

Endometriosis is a progressive disease that can manifest years after the onset of menstruation. It can appear soon after menarche and, in some cases, even before menarche.

It is present in 25% to 38% of adolescents with chronic pelvic pain and in 49% to 75% of adolescents who do not respond to medical therapy for abdominal pain and dysmenorrhoea.[1] The true prevalence of endometriosis in adolescents is unclear because many of them have atypical presentation or are asymptomatic.

Risk Factors[2]

- Genetic predisposition
- Caucasian and Asian ethnicity.
- Early menarche and nulliparity
- Short menstrual cycles and heavy menstrual bleeding
- Obstructive mullerian anomalies such as transverse vaginal septum and imperforate hymen
- Childhood sexual and physical abuse.[1]

Clinical Presentation

The pattern of clinical presentation in adolescents is more varied than in adults.

Adolescents are most often diagnosed with endometriosis based on pain symptoms only, unlike in adults where the diagnosis is made based on pain and infertility. Pelvic pain maybe chronic acyclical or cyclical and associated with nausea. A pain diary is helpful to note the frequency and character of pain, and to identify the association with provoking factors such as menses or bladder/bowel function.[5] Menstrual history of early menarche, severe dysmenorrhoea, premenstrual spotting, and heavy menstrual bleeding is present which is unresponsive to empiric medical treatment (painkillers and hormonal therapy).[3]

Dysmenorrhea, and dyschezia, may occur along with urinary symptoms such as dysuria and urgency. Nonspecific gastrointestinal symptoms such as nausea, diarrhoea or constipation may be present. Headaches, Migraines and dizziness among adolescents is higher in those with endometriosis compared to those without endometriosis.[1]

One should consider endometriosis in young women presenting with cyclical absenteeism from school and extracurricular activities due to pain symptoms.[3]

Clinical Approach to the Adolescent Patient

Diagnostic delay affects adolescent patients and initial evaluation is important.[1] The first assessment should be a detailed gynaecological, menstrual, family, and psychosocial history. It is important to determine whether the patient has primary dysmenorrhea or additional symptoms of secondary dysmenorrhea, given that endometriosis represents the main cause of secondary dysmenorrhea in adolescents.

Physical Examination should include rectal examination in sexually inactive patients. Clinical examination, including vaginal examination after consent where appropriate (when sexually active) should be considered to identify deep nodules or endometriomas although the diagnostic accuracy is low.[3]

Even if the clinical examination is normal, further diagnostic tests such as imaging should be considered when endometriosis is suspected.

Imaging

Transabdominal Ultrasound (TAS) should be done as the first imaging technique in non-sexually active adolescents. The abdominal ultrasound can diagnose ovarian endometriotic cysts or endometriomas but is not useful for nonovarian endometriotic lesions. It is difficult to diagnose superficial endometriosis by TAS, which is one of the most common localizations in the adolescent patient. Hence, one should remember that a normal pelvic ultrasound does not exclude a diagnosis of endometriosis.[3]

Three-dimensional ultrasound can be considered the gold standard for detecting obstructive mullerian anomalies which are associated with endometriosis.

Transvaginal and Transrectal Ultrasound

Transvaginal Ultrasound can often be impossible in adolescent girls for their virginity or due to presence of vaginal pathology such as hypoplasia or agenesis, but transrectal sonography can be considered an optimal alternative. The transrectal approach may be considered in adolescents with an intact hymen, as it is atraumatic and safe if performed carefully.

Magnetic Resonance Imaging is useful for detecting obstructive reproductive tract anomalies and to identify and characterize endometriotic lesions that are difficult to locate by ultrasound.MRI is a second-level examination, and cannot be indicated as the first-choice imaging technique to evaluate the disease. MRI, imaging features of endometriomas are high signal intensity at T1-weighted and T2-weighted sequences, which persists in fat-suppressed T1-weighted images. Endometriomas can be associated with the presence of hematosalpinx, that appears in MRI as a hyper intensive image on T1weighted sequences.

Deep endometriosis located in the intestinal and urinary tracts show a marked hypointense signal in T2-weighted images, owing to the presence of the fibrotic tissue.

Computed Tomography is rarely done due to the risk of radiation exposure.

Laboratory tests

Laboratory evaluation where appropriate includes a complete blood count, C reactive protein, urinalysis with urine culture, urine or blood test for human chorionic gonadotropin, and testing for sexually transmitted infections.

Serum biomarkers (e.g., CA-125) are not recommended for diagnosing or ruling out endometriosis in adolescents due to low diagnostic performance. Assessment of biomarkers in endometrial tissue, blood, menstrual, or uterine fluids to diagnose endometriosis is not recommended. [3]

Diagnostic laparoscopy

Endometriosis in adolescents can be present as peritoneal, ovarian, and deep endometriosis, although the presence of deep endometriosis may be less frequent in adolescents. Laparoscopy to confirm a diagnosis of endometriosis can be considered but should be weighed against the risks of surgery and postoperative complications. It is done when other diagnostic options cannot be used or have failed, or if medical treatments have not been successful.

Diagnostic laparoscopy features for endometriosis in adolescents may appear different from adult endometriosis. In adolescents, there may be a predominance of atypical red or clear lesions. Differences between adults and adolescents are the presence of red, vesicular implants and the rarity of deep (>5 mm) or adenomyotic type of endometriosis in adolescents.[1] The rASRM system is used to stage the disease but does not correlate with the severity

of pain or responsiveness to treatment.[4]

Diagnosis can also be confirmed through history and ultrasound, and treatment should not be withheld for adolescents in which laparoscopic diagnosis has not been performed.[1]

Histology

If a laparoscopy is performed, one must consider taking biopsies to confirm the diagnosis histologically, although negative histology does not entirely rule out the disease.[3]

Differential Diagnosis

One must consider the following diseases before making a diagnosis of endometriosis

- Gastrointestinal Pathologies
- Mullerian Anomalies
- Adenomyosis
- Recurrent Infections

Treatment

Medical Treatment

Medical therapy for adolescents aims to alleviate symptoms, reduce disease progression, and protect future fertility. The patient and her family should be involved and adequately counselled in the choice of therapy based on the necessity for contraception, hormonal contraindications, and probable side effects of various medications.

Dysmenorrhea in adolescents is typically treated empirically with nonsteroidal anti-inflammatory medications and/or combined oral contraceptive pills or progestins, and this therapy may be effective for both primary and secondary dysmenorrhea. Continuous therapy is favoured over cyclical therapy to obtain appropriate shrinkage and decidualization of endometriotic lesions. If symptoms persist after 3-4 months of continuous empiric medication, surgery may be recommended.[3] Progestins suppress the pituitary-ovarian axis, resulting in anovulation, pseudo-decidualization, and endometrial atrophy in both eutopic and ectopic cases. They also influence the immune system by lowering inflammation.

Progestin-only therapy includes different formulations. Dienogest 2 mg/day and norethindrone acetate 15 mg/day are both effective and well tolerated in adolescents. Dienogest is an effective treatment for endometriosis because it reduces the size of endometriotic foci and the vascularization. It combines several beneficial effects of the 19-norprogestin and progesterone derivative classes, has high specificity for the progesterone receptor and negligible binding affinities for estrogen, androgen, glucocorticoid, and mineralocorticoid receptors.[1] Also, it exhibits progestogenic and antiestrogenic properties in eutopic and ectopic endometrium. Oral administration is preferred and can be stopped if side effects occur such as weight gain, bloating, depression, and irregular bleeding. The limitation of progestin use in adolescents is related to the reduction of bone mineral density which is partially reversible after suspension and may interfere with the peak bone mineralization.[3]

In adolescents, gonadotropin hormone-releasing hormone agonists are used seldom, only if endometriosis has not responded to conventional medicinal or surgical treatments. The efficacy of GnRh agonists is due to the suppression of the hypothalamic-pituitary axis, which leads to a hypoestrogenic environment. Hot flashes, headaches, sleep disturbances, mood swings, depression, and vaginal dryness are the adverse effects of GnRH agonists. An add-back therapy, such as norethisterone acetate (5mg/d) or tibolone (2.5mg/d), vitamin D, calcium, as well as proper bone mineral density monitoring, is required. The use of gonadotropin-releasing hormone agonists for girls under the age of 16 is generally discouraged due to the long-term impact on bone density.[4]

There is no single optimum treatment for endometriosis in adolescents. Treatment must be individualized to attain a satisfactory quality of life.[1]

Intrauterine device: Levonorgestrel-Releasing Intrauterine System is a viable alternative in older and sexually active adolescents, especially if it is implanted during a laparoscopy for long-term treatment.[3]

Surgical Treatment

Surgical excision of an endometrioma in an adolescent girl should be considered in the case of a progressive increase in the size of the ovarian cyst or persistence of pain sensations after hormonal treatment, or if ovarian cancer cannot be ruled out at ultrasonographic assessment or MRI.[3] The purpose of surgery should be to eliminate all apparent disease and restore normal anatomy. If surgical therapy is recommended for

adolescents with endometriosis, it should be performed laparoscopically by a skilled surgeon, with laparoscopic removal of existing endometriosis.

The hazards of surgery, postoperative problems, and high recurrence rates should be weighed against the relative benefit of surgical treatment. It is critical to implement all surgical methods for preserving ovarian reserve. The cleavage plane between the cyst and the ovary must be appropriately recognized to reduce bleeding and preserve as much ovarian tissue as possible. For hemostasis, highly selective pinpoint cauterization of bleeding vessels or re-approximation of ovarian margins with atraumatic sutures that do not include the ovarian hilus should be done.[3] Vaporizing the cyst capsule with a carbon dioxide laser has been proposed to reduce ovarian damage. It is important to note that endometriotic implants in adolescent girls typically show as shining peritoneal vesicles or clear lesions. Inadequate surgical identification of these lesions in young women can lead to delayed diagnosis and treatment. Radical excisional surgery for superficial endometriosis may cause substantial adhesion development and should not be done in adolescents.

Adolescents have a higher rate of recurrent disease five years following surgery than the general population. The greater likelihood of recurrence for early-onset endometriosis may be due to higher estrogen levels or because of the aggressive nature of the disease.[3]

If surgery is not followed by hormone treatment, recurrence rates are high. Postoperative recurrence of ovarian cysts and pain symptoms in young women without hormone therapy has been reported to be as high as 40% to 50% at 5-year follow-up.[3] Because repeated ovarian surgery can be harmful to ovarian reserve and hormonal therapy can prevent endometrioma recurrence, all adolescents should undergo medical treatment after surgery until they have completed childbearing.[4] Surgery should only be performed in clinically necessary cases, such as in those adolescents who are not responding to medical treatment.

Fertility preservation

Women with endometriosis may benefit from fertility preservation since they have a greater risk of premature ovarian depletion, and about half of them encounter subfertility.

Adolescents with endometriosis are counseled about the possible negative effects of ovarian endometriosis and surgery on ovarian reserve and future fertility. They should also be counseled regarding fertility preservation but the true usefulness, safety, and indications in adolescents with endometriosis are unknown. [3]

Individual counseling is done taking into consideration age, the risk of premature ovarian insufficiency as a result of endometriomas or surgery, and the success rates and hazards of fertility preservation.

Conclusion

Endometriosis in adolescent patients is a challenging problem presenting clinical and pathologic differences compared with premenopausal women. The delay in diagnosis should cause a worsening of the disease. Awareness among adolescents, parents, and their healthcare providers about endometriosis represents a crucial point facilitating a proper treatment and appropriate clinical follow-up.[1] Medical therapy is the first choice for symptomatic endometriosis in the adolescent population, considering the surgical approach only for selected cases or for patients unresponsive to medical treatment. Early diagnosis and use of adequate medical therapies should result in less extensive surgery in adult life.[2]

Key Messages

1. Endometriosis is the most common cause of secondary dysmenorrhea in adolescents.
2. Transvaginal ultrasound is effective in diagnosing ovarian endometriomas, though recommended to be used in sexually active adolescents. Transabdominal, transperineal, or transrectal scan or MRI may be considered in sexually inactive adolescents.
3. In adolescents with suspected endometriosis where imaging is negative and medical treatments (with NSAIDs and/or hormonal contraceptives) have not been successful, a diagnostic laparoscopy may be considered.
4. At least two-thirds of adolescent females with chronic pelvic pain or dysmenorrhea who are refractory to hormonal treatments and NSAIDs will be diagnosed with

endometriosis during diagnostic laparoscopy.

5. Endometriotic lesions in adolescents are typically clear or red and can be difficult to identify.
6. Nonsteroidal anti-inflammatory drugs or hormonal therapy and progestins should be the mainstay of pain relief for adolescents with endometriosis.
7. Adolescents with endometriosis who have pain despite hormonal therapy and or conservative surgical treatment can be offered 6 months of gonadotropin-releasing hormone (GnRH) agonist therapy with add-back medicine.
8. Treatment of endometriosis in adolescents not responding to medical therapy or with large ovarian endometriomas is conservative surgical therapy for diagnosis and treatment combined with ongoing suppressive medical therapies to prevent recurrence.
9. While treating adolescents with endometriosis using surgical means one should take appropriate care and precautions to prevent ovarian destruction which will lead to decreased ovarian reserve.
10. Awareness among adolescents, parents, and healthcare providers is crucial to facilitate proper treatment and appropriate clinical follow-up.

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"Youth is the canvas upon which the masterpiece of tomorrow is painted."

"With determination and passion, youth can move mountains."

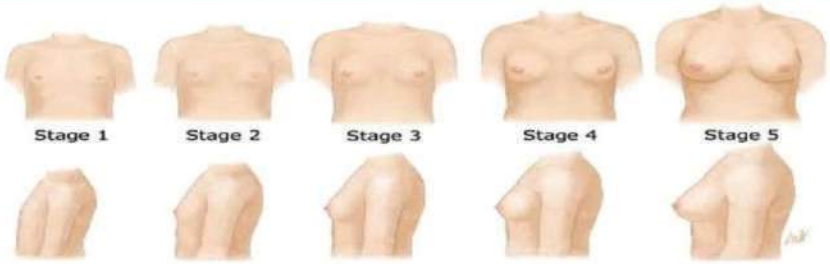
Dr Divya Singhal
Imm Past President
DGF - North
National Coordinator, Breast Committee
FOGSI

The Saga of Adolescent Breast

Adolescence is a pivotal phase marked by numerous physical, emotional & social changes. For young females, breast development is one of the most visible and significant markers of this transformative period. It brings excitement and curiosity but can also be accompanied by concerns, misconceptions, and vulnerabilities. Understanding the stages of breast development, common breast-related issues, & the importance of breast awareness is vital for adolescents, their families & healthcare providers.

This guide delves into the stages of breast development, common conditions, and effective management strategies. It aims to empower adolescents and their caregivers with knowledge about breast health, helping them navigate this period with confidence and care.

Tanner staging of breast development in girls



Stage 1: Prepubertal.
Stage 2: Breast bud stage with elevation of breast and papilla; enlargement of areola.
Stage 3: Further enlargement of breast and areola; no separation of their contour.
Stage 4: Areola and papilla form a secondary mound above level of breast.
Stage 5: Mature stage with projection of papilla only, related to recession of areola.

Common Breast Concerns in Adolescent Females

Breast development is not always a smooth journey. Adolescents can experience various breast-related conditions, some of which require medical evaluation.

Congenital and Developmental Conditions

Several congenital and developmental anomalies can affect breast health during adolescence:

- **Athelia**: The absence of nipples.
- **Amastia**: A complete lack of breast tissue, often associated with conditions such as Poland syndrome. Breast augmentation may be considered in such cases for physical and psychological relief.
- **Polymastia:** The presence of extra breast tissue, usually found in the armpit area. This tissue is susceptible to the same issues as regular breast tissue, including benign and malignant conditions. Surgical removal is often recommended for aesthetic and health reasons.
- **Polythelia**: The presence of additional nipples along the "milk lines." This condition can sometimes be linked to congenital urinary tract abnormalities, and the extra nipples may be surgically removed.

Breast Asymmetry

It is common for breasts to grow at different rates, leading to noticeable asymmetry. Reassurance and the use of a padded bra for the smaller breast are often sufficient. In extreme cases, surgical intervention may be considered.

Breast Hypoplasia and Atrophy

Breast hypoplasia refers to underdeveloped breasts, often due to insufficient estrogen. This condition can result from hormonal imbalances, such as those seen in Turner syndrome or pre-adolescent hypothyroidism.

Breast atrophy is the shrinking or wasting of breast tissue, usually resulting from significant weight loss, chronic illness, or conditions such as anorexia nervosa.

Juvenile Breast Hypertrophy

In some cases, the breasts may grow excessively during adolescence due to heightened sensitivity to estrogen. This condition, known as **juvenile breast hypertrophy**, can lead to physical discomfort and emotional distress. Although breast reduction surgery is an option, the condition can recur due to hormonal influences.

Tuberous Breast Deformity

This condition is characterized by underdeveloped breast tissue at the base and overdeveloped areolas. It can significantly impact self-esteem and body image. Surgical correction is often performed to improve the breast's shape and restore confidence.

Infections and Mastitis in Adolescents

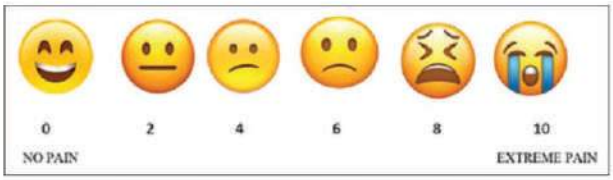
Though rare, adolescents can experience infections in the breast, most commonly **mastitis**. The causes include:

- **Obesity**: Increases the risk of breast infections.
- **Mammary duct ectasia**: A condition in which milk ducts become clogged or infected.
- **Epidermoid cysts and hidradenitis**: Skin conditions that can cause breast infections.
- Mastitis presents with symptoms such as erythema (redness), swelling, warmth, and tenderness. In some cases, an abscess may form, requiring **ultrasound-guided aspiration**. Antibiotic treatment is often necessary, particularly when **Methicillin-resistant Staphylococcus aureus (MRSA)** is the causative organism.

Breast Pain: Mastalgia

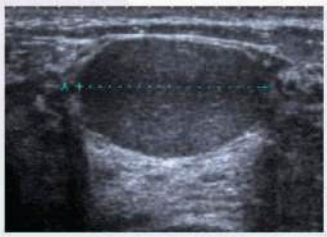
Breast pain, or **mastalgia**, is a common complaint among adolescents. There are three main types:

- **Cyclic Mastalgia**: Pain associated with the menstrual cycle, often caused by hormonal fluctuations.
- **Non-cyclic Mastalgia**: Pain unrelated to menstruation, usually due to injury, infection, or ill-fitting bras.
- **Extramammary Mastalgia**: Pain that originates outside the breast, such as from the chest wall or gastrointestinal issues like GERD.
- Managing mastalgia involves reassurance, mechanical support (well-fitted bras), and lifestyle changes such as reducing caffeine and alcohol intake. For severe pain, **Ibuprofen** is the preferred medication in adolescents.



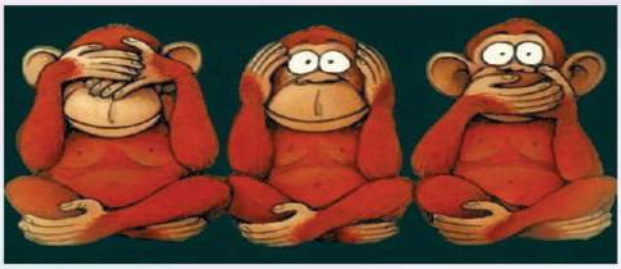
Benign Breast Masses: Fibroadenomas

- One of the most common breast masses in adolescents is **fibroadenoma**, a benign tumor composed of both glandular and stromal tissue. These tumors are typically painless, well-rounded, and hormone-dependent. While most do not require treatment, surgical removal is considered in cases where the mass is larger than 2 cm or causes significant distress.
- Minimally invasive techniques such as **Vacuum-Assisted Breast Biopsy (VABB)** and **Radio-frequency Ablation (RFA)** are emerging as alternatives to traditional surgery.



These techniques reduce recovery time and scarring while effectively removing the mass.

Three Fundamental Rules of Diagnosing Breast Pathologies



- **Clinical assessment**
- **Imaging**
- **Tissue diagnosis/ biopsy**

has protocolized the management of any Breast problem

Can I have BREAST CANCER ?

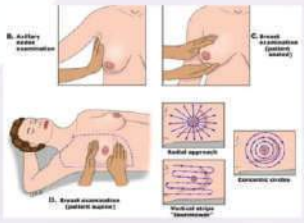
A 45yr old lady comes to you with her 18 yr old daughter. She has suffered from Ca breast at the age of 42yrs, her aunt also had Ca Breast at the age of 50yrs. She wishes to know how her daughter should take care of herself. How will you guide her?

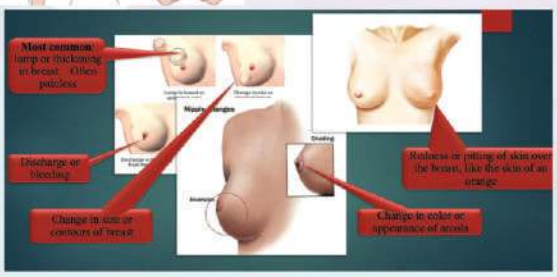
What can I offer?

- Make her Breast Aware!!
- Self breast Examination
- Clinical Breast Examination
- Imaging Modalities
- Genetic Testing
- Lifestyle changes

Self Breast Examination

- Radial approach
- Concentric circles
- Vertical strips





When do we offer Genetic screening?

- First degree relative with Breast, Colorectal or Endometrial cancer diagnosed before age 50
- Bilateral breast cancer
- Multiple cancers at a younger age
- Rare cancers presenting at any age
- Family history of Male breast cancer

USPSTF guidelines state that 'high risk individuals who have a personal or family history of Breast or Ovarian cancers at a young age <50yrs that suggests inherited cancer susceptibility' should be offered genetic screening

Breast Cancer in Adolescents

Primary breast cancer is extremely rare in childhood and adolescence. Incidence 0.1/ 100,000 in children and young women aged 15–19 years

HPE - Juvenile secretory carcinoma (>80%) followed by ductal carcinoma

Breast ultrasound is the examination of choice for the evaluation of breast masses in adolescence.

Mammography & MRI will be needed if in doubt.

Core Needle Biopsy under USG guidance to clinch the diagnosis, decide ER/PR status and refer to oncology team as soon as possible.

Tissue diagnosis

- **FNAC** (Fine Needle Aspiration Cytology). The advantages are-its easily performed, no special equipment needed, less pain/ ecchymosis/ hematoma.
- Disadvantages of FNAC – low accuracy, insufficient material, cannot comment on invasive character, cannot subtype, cannot comment on receptor status
- **CORE BIOPSY/ GUN BIOPSY/ TRU-CUT –** better accuracy hence preferred method. More tissue so obviates the drawbacks of FNAC. Current standard of care
- Vacuum assisted breast biopsy(VABB).

Size Matters!!

A young 22 yr old girl walks into your clinic. She is embarrassed, shy &

slouching all the while. She soon discloses that she is ashamed of her 38C sized breasts & has started having backache due to the same. She wants to know if you can help her.

Diet, Exercise & surgery are corner stones of treatment for such girls.

My breast size is too small.

Now this young girl is accompanied by her 25-year-old friend who has very low self esteem since she has small breasts. She has a number of questions for you – READY?

What can I eat to increase their size? I see a lot of ads on the Internet advertising creams & lotions for breast massage to increase breast size – which one should I use?

Does small breasts mean a low fertility potential? Can I take hormones to make them bigger?

What can I do to increase their size??

- **Rule out congenital causes of Micromastia –** Ulnar mammary syndrome, Poland Syndrome, Turner Syndrome, Cong adrenal Hyperplasia
- **Good diet & Exercise**
- **Self confidence & increased self esteem**
- Breast Augmentation –
- Non-Surgical –

  Wear a padded, gel filled or plunge bra
- **Contouring make up**
- **Surgical options**

Breast Cancer: Rare but Possible

Primary breast cancer in adolescents is exceedingly rare, with an incidence of just 0.1 per 100,000. The most common form is **juvenile secretory carcinoma**, followed by ductal carcinoma. Though rare, breast cancer should be considered in any adolescent presenting with a breast mass, especially if there is a family history of the disease.

Breast ultrasound is the preferred diagnostic tool for evaluating breast masses in adolescents. In cases where malignancy is suspected, further imaging, such as mammography or MRI, and a **core needle biopsy** under ultrasound guidance may be necessary.

Breast cancer screening recommendations in young women

Population	BSA	BSE	CBE	Mammography	MRI
Healthy young women	Recommended from age 20[abc]	Optional[abc]	Every 1–3 y from age 20[abc]	—	—
BRCA family or lifetime risk of BC > 20%	BSA including training for BSE from age 18[b]	Training from age 18[b] Monthly BSE from age 25 or earlier depending on earliest age of BC in family[abc]	Every 6–12 mo from age 25[b]	Annually from age 25 or individualize based on earliest age of BC in family[ab], Annually from age 30[c]	Annually from age 25 or individualize based on earliest age of BC onset in family[ab], Annually from age 30[c]
Past thoracic radiation between 10–30 years of age	Recommended even prior to age 25[b]	Monthly from age 25 or 8–10 y after treatment, whichever is later[ac]	Every 6–12 mo from age 25 or 8–10 y after treatment, whichever is later[ab], If age < 25, annual CBE starting 8–10 y after treatment[b]	Annually from age 25 years or 8–10 y after treatment, whichever is later[ab], Annually from age 30[c]	Annually from age 25 or 8–10 y after treatment, whichever is later[a] Consider as

The Importance of Breast Self-Awareness

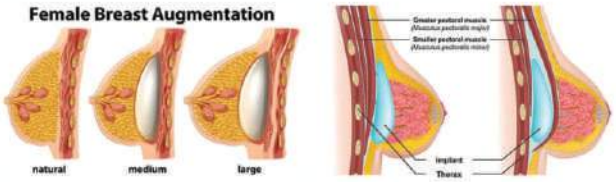
Encouraging adolescents to be aware of their breast health is critical. **Self- Breast Examination (SBE)** should be introduced as a routine practice starting from age 20, or earlier if there is a family history of breast cancer. SBE involves palpating

the breast tissue for any lumps, changes in texture, or nipple discharge, and should be done once a month, ideally after menstruation.

In high-risk individuals, such as those with a family history of **BRCA gene mutations**, more frequent screenings, including mammograms and breast MRIs, are recommended starting as early as age 25.

Surgical Breast Augmentation

- Types of Implants
- Complications of Surgery
- How long do they stay
- Can I breast feed
- What about mammographic screening for CA Breast
- My sex life



Psychosocial Impact of Breast Development

The psychosocial impact of breast development cannot be overlooked. Adolescents with concerns about breast size, asymmetry, or deformities often experience:

- **Low self-esteem**
- **Social withdrawal**
- **Body image dissatisfaction**
- **Depression**

These feelings can be exacerbated by societal pressures and the emphasis on physical appearance. Counseling and support from healthcare providers, parents, and mental health professionals play a critical role in helping adolescents navigate these challenges.

Breast Augmentation and Reduction: Legal and Ethical Considerations

For some adolescents, breast augmentation or reduction may be considered to address issues of asymmetry, hypertrophy, or micromastia (underdeveloped breasts). However, performing breast surgery in adolescents comes with unique legal and ethical challenges. Adolescents are still developing physically and psychologically, and they may not fully understand the risks and benefits of surgery.

Informed consent from a parent or legal guardian is required for any cosmetic procedure in individuals under 18. Surgeons must also assess the adolescent's motivations and psychological readiness before proceeding with surgery.

Conclusion: Fostering Breast Health Awareness

Breast health during adolescence is a multifaceted issue involving physical, emotional, and psychological well-being. Early diagnosis and intervention for breast-related conditions, along with education on self-awareness and breast examination, are essential for fostering a culture of breast health.

Healthcare providers, parents, and educators must work together to dispel myths, provide accurate information, and offer supportive care to adolescents. By doing so, we can help young individuals feel confident and empowered during this critical phase of life.

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Understanding Adolescent Pregnancies: A Global and Regional Perspective

Introduction

This issue focuses on adolescent pregnancies, a public health challenge affecting millions of young people worldwide. While the problem is global, its impact varies significantly across regions and countries. This newsletter explores the causes and consequences of adolescent pregnancies globally, with a closer look at India and the northern regions of the country.

Adolescent pregnancies, defined as pregnancies occurring in individuals aged 10-19, remain a significant public health issue worldwide. Despite global efforts to reduce their incidence, adolescent pregnancies continue to contribute to maternal and neonatal mortality, poverty, and social inequalities. This review paper examines the causes, consequences, and existing interventions surrounding adolescent pregnancies, emphasizing their impact on health, socioeconomics, and the broader community. It also explores gaps in current research and highlights opportunities for future interventions.

Adolescent Pregnancies: A Global Overview

Globally, around 21 million girls aged 15-19 years and 2 million girls under 15 years become pregnant every year. Adolescent pregnancies are most prevalent in low- and middle-income countries (LMICs), where cultural, economic, and social factors play a significant role.

- **Sub-Saharan Africa**: This region has the highest rate of adolescent pregnancies, with countries like Niger, Chad, and Mali reporting some of the highest rates globally. Limited access to education, contraception, and healthcare services, coupled with high rates of child marriage, are significant contributors[1].
- **Latin America and the Caribbean**: Countries such as Nicaragua, Honduras, and Guatemala have high adolescent pregnancy rates. In these regions, cultural norms, lack of comprehensive sex education, and socio-economic inequalities significantly influence early pregnancies.
- **South Asia**: India, Bangladesh, and Nepal report high rates of adolescent pregnancies. Factors include child marriage, gender inequality, poverty, and lack of access to reproductive health services.
- **High-Income Countries**: Adolescent pregnancies are also a concern in high-income countries like the United States, where socio-economic disparities, lack of access to healthcare, and inadequate sex education contribute to the problem.

Focus on India: A National Challenge

India is among the countries with the highest number of adolescent pregnancies. According to the National Family Health Survey (NFHS-5), around 7% of women aged 15-19 years in India are either pregnant or have begun childbearing. The reasons behind adolescent pregnancies in India are complex and multifaceted:

- **Child Marriage**: Despite legal provisions, child marriage remains prevalent in many parts of India. According to UNICEF, India accounts for one-third of all child brides globally. Early marriage often leads to early pregnancies.
- **Lack of Education and Awareness**: Inadequate access to comprehensive sexuality education leaves many adolescents uninformed about contraception and reproductive health.
- **Gender Inequality**: Social norms that prioritize early marriage and motherhood for girls contribute significantly to adolescent pregnancies.
- **Socio-Economic Factors**: Poverty, limited access to healthcare, and lack of employment opportunities are critical factors driving early pregnancies[2].

Adolescent Pregnancies in North India

In Northern India, states like Uttar Pradesh, Bihar, Rajasthan, and Madhya Pradesh report some of the highest rates of adolescent pregnancies in the country. These states are characterized by socio-cultural practices that perpetuate early marriage and childbearing:

- **Uttar Pradesh and Bihar**: Both states have high rates of adolescent pregnancies, driven by poverty, child marriage, and limited access to education. In Uttar Pradesh, 8.2% of women aged 15-19 are either pregnant or have begun childbearing, while in Bihar, this figure is even higher at 12.2%.
- **Rajasthan**: In Rajasthan, around 6.3% of women aged 15-19 have begun childbearing. The state has a high prevalence of child marriage, particularly in rural areas, contributing to early pregnancies.
- **Madhya Pradesh**: In Madhya Pradesh, 7.3% of women aged 15-19 are pregnant or already mothers. This is attributed to socio-cultural norms, inadequate access to health services, and limited educational opportunities for girls[3].

Causes of Adolescent Pregnancies

Socioeconomic Factors:

- **Poverty:** Higher rates of adolescent pregnancies are observed in low-income settings where access to education and healthcare is limited.
- **Education:** Limited access to education, particularly sex education, increases the likelihood of adolescent pregnancies.
- **Family Dynamics:** Adolescents from broken families, or those with a history of family violence or neglect, may be more susceptible to early pregnancies.

Cultural and Social Norms:

- **Early Marriage:** In many cultures, early marriage is still practiced, which often leads to adolescent pregnancies.
- **Gender Inequality:** Societal expectations and norms that devalue the autonomy of young girls contribute to early pregnancies.

Biological Factors:

- Adolescents have a higher risk of unintended pregnancies due to physiological immaturity and inconsistent or incorrect contraceptive use.
- Lack of Knowledge: Adolescents often lack accurate information about sexual and reproductive health.

Lack of Access to Contraceptives:

- Limited access to contraception and reproductive health services plays a significant role in adolescent pregnancies.

Interventions to Prevent and Address Adolescent Pregnancies

- **Education and Awareness**:
  - Comprehensive sex education programs in schools are effective in reducing adolescent pregnancies.
  - Community-based education campaigns can help change social norms and promote healthy behaviours.
- **Access to Contraceptives and Healthcare Services**:
  - Improving access to contraceptives, including emergency contraception, is critical in preventing adolescent pregnancies.
  - Adolescent-friendly healthcare services that provide confidential and non-judgmental care are essential.
- **Policy and Legal Frameworks**:
  - Policies that promote gender equality, prevent child marriages, and ensure access to education can help reduce

adolescent pregnancies.

- Enforcement of laws protecting adolescents from exploitation and abuse is necessary.

- **Social and Community Support**:
  - Programs that provide social support, mentoring, and counselling can empower adolescents and reduce their vulnerability to early pregnancies.
  - Community-based interventions that engage parents, guardians, and local leaders are crucial in creating an enabling environment[4]

Spotlight on Northern India: A Case Study of Progress

A notable example of progress in North India is the "Kishori Shakti Yojana" initiative in Rajasthan, which focuses on empowering adolescent girls through education and skills training. The program has helped reduce teenage pregnancy rates by providing girls with knowledge, life skills, and the support needed to delay marriage and childbirth.

"By investing in education and creating opportunities for adolescent girls, we are breaking the cycle of poverty and improving health outcomes," says Dr. Madhumita Das, a project director in Rajasthan.

A Promising Initiative: Community Health Program in J&K

One promising initiative in J&K is the "Adolescent Girls Empowerment Program," which provides adolescent girls with life skills training, health education, and mentorship. This program, operating in several districts, has successfully created safe spaces for young girls to discuss their concerns, learn about their rights, and access reproductive health services[5].

How Can You Help?

- **Stay Informed and Share Knowledge**: Spread awareness about the causes and consequences of adolescent pregnancies. Share this newsletter with your friends, family, and community.
- **Support Local Initiatives**: Consider volunteering or donating to local organizations that work to empower young people and reduce adolescent pregnancies.
- **Advocate for Change**: Join advocacy efforts to promote policies that support adolescent health, education, and gender equality.

Final Thoughts

Adolescent pregnancies are a complex challenge that requires a collective response. By understanding the root causes, supporting effective interventions, and advocating for policy change, we can help create a healthier, more equitable future for adolescents in India and beyond.

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"With passion as their guide, youth can conquer any obstacle."

Adolescents infection in India: miles to go before sleep

Dr Saurabh Pandey
Sushma Medicare & infection clinic

Dr Mayank Mishra
King Georges's Medical University

Real Life Situations

Sitting in a usual OPD day and catering to the needs of the patients for which they have marked their presence, I encountered a case which happens to find its very relevance here-

1. That the patient is 18 years old male; now a hotel management aspirant, flied out with flying colours from his school with the distinction of getting selected in one of the esteemed and top notch government College of hotel management, so far it's so good, but before joining he was required to go through a mandatory health status check-up wherein he was tested positive for HbsAg with a further report of a high Viral load.
2. Now my other eye opener in the series of setting the ball role towards if not neglected then of course appalling a state with respect to infections in adolescents in India is a news article published in times of India newspaper with headline going "city reports first dengue death of season as 18-yr old succumbs".

Only these two real life case scenarios in no way prove the point of debating over the infections in adolescents with India perspective, however they indeed give a bird's eye view of the grave impending impact of the issue if not addressed timely and needless to say judiciously.

Adolescent- A vulnerable Age Group *WHO defines* adolescents as individuals in the 10-19 years of age group. It is divided into two groups of age - 10-14 years and 15-19 years. It is based on the disease category and priority prevention (2).

Why it matters- India has an estimated 370 million young people – its largest number ever[1]. What is consistent with whole of the life period of a human life is the process of aging, physical transition from baby to kid to teenage to adult going through mature. The age group of adolescents is given a blow in terms of infections—acute life threatening (as dengue) or may be debilitating chronic ones (Hepatitis B or HIV) owing to peculiarity of this age group in terms of immunity, common thinking goes with the notion that they are somewhat safe population. Although there is decrease in infectious disease burden among adolescents in India like small pox and recently eradicated polio, but there are the infections like sexually transmitted, food borne, recreational activity related which makes the situation all the more worrisome.

The Common infectious diseases prevalent during adolescent

Naturally children are exposed to many pathogens as well as get vaccinated in early childhood and therefore the immune response to it is expected to be better than adults. Thus the severity of illness is also least among children & adolescent. Similar finding was observed by J R Glynn et al. who found that except for dengue fever and tuberculosis children between 5 to 15 years were having least severity of infections. The severity seems to be increase from late adolescent. Most of the infections have exposure during childhood except for STD's including HIV & Hepatitis B,

C. WHO report mentions tuberculosis, pneumonia, diarrheal diseases, STI including HIV and viral infections like measles to be top infectious causes of death. Vector borne diseases and vaccine preventable diseases have gone down in the list in recent trend. Adolescent from rural region has higher burden of infections than urban one.

The data in adolescent age group in India is very slim and a robust adolescent infectious diseases data is required to improve the outcome of health as well as the concerned programs.

The prevention of infections during childhood

It is of utmost priority to prevent diseases as this population will move into country's productivity and the healthy young population will prevent the changes brought by a large ageing population.

The unvaccinated children should be vaccinated for vaccine preventable diseases during adolescent including HPV (Human papilloma virus) in order to prevent HPV infection. Vector control to prevent dengue and other VBD's. Early education and good social values should be incorporated in early adolescent hood such that risky sexual behaviour, perversion and teen pregnancies can be avoided. Hepatitis B vaccination to everyone should be encouraged. Last and the not the least good nutrition should be offered than processed and high calorie-sugar content should be avoided. Early morbidity management will help restore good immune response of body against all infections including tuberculosis. Girls education regarding menstruation and prevention of urinary tract infection as well as prevention of risky sexual behaviour has to be addressed.

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"The potential of youth knows no bounds; it's limitless and boundless."

Highlights and Glimpses of 2nd Annual Conference of North India Gynaec Forum Conference

Dr Sadhana Gupta
Organizing Chairperson

Dr Amrita S Jaipuriar
Organizing Secretary

Highlights and Glimpses of 2nd Annual Conference of North India Gynaec Forum Conference

2nd Annual Conference of NIGF was accomplished with great success at Hotel Radisson Blu, Gorakhpur hosted by UP State Chapter of NIGF in collaboration with Gorakhpur Chapter of ISOPARB & GOGS on 27, 28 July with Dr Sadhana Gupta as Org Chair, Dr Amrita S Jaipuriar as Org Sec, Dr Shikha Seth as SC Chair, Dr Babita Shukla as SC Sec & Dr Reena Srivastava and Dr Radha Jeena as Patron. A dedicated org team with jt org sec Dr Aruna Chhaparia, Dr Alpana Agrawal, Dr Meenakshi Gupta as jt org sec, Dr Anubha Gupta as treasurer & Dr Geeta Gupta, Dr Ankita as free paper coordinator and Dr Rita Singh as Quiz coordinator showcased great team work. Dr Madhubala & Dr Babita Shukla coordinated for great cultural evening; our hall coordinators showed a way to timely scientific sessions with no hazzles.

Conference was attended by 350 plus participants from every state & UT of NIGF. We thank every faculty for their time and traveling to Gorakhpur for sharing their knowledge and expertise.

Preconference Workshops –

Three Preconference workshops were organized on **A.** Obstetric Emergencies **B.** Uro Gynaecology **C.** Infertility. Sessions included lectures, video, panel as well work stations on Maternal Resuscitation, Surgical method in PPH and urogynecology procedures including cosmetic gynecology. Workshops formally inaugurated with gracious presence of Patron Dr Sharda Jain, President Dr Sadhana Gupta, Patrons Dr Radha Jina, Dr Reena Srivastava with org committee members.

Orations – Notable orations were delivered by Patron NIGF Dr Sharda Jain on Cervical Cancer Free India, NIGF President Dr Sadhana Gupta on updates on Myoma Management, UP Chapter President Dr Manju Varma on Challenges of PAS.

Keynotes –

Keynotes were delivered by great experts of Ob Gyn – Dr Lakhbir Dhaliwal, Dr Ragini Agrawal, Dr Manju Puri, Dr Deepika Dekka, Dr Mandakini Pradhan, Dr Nutan Jain in great depth of vision with diverse range from Genetic to Cosmetic Gynae, Endoscopy to Maternal health challenges.

Symposium, panel discussions and debated on updated and relevant topics were high in academics as well giving practical messages to audience.

Quiz on Imaging in Ob Gyn was coordinated by Dr Taru Chhaya and Dr Rita Singh. We had 14 team out of which 4 team got in final quiz. Winners

Media Coverage


यूपी में साउथ जैसी स्वास्थ्य सेवा चाहिए तो डॉक्टर स्वास्थ्य मंत्री बनें: डॉ. शारदा जैन - Gorakhpur News


देश की 300 डॉक्टर गोरखपुर में महिलाओं की समस्याओं के समाधान को लेकर करेंगी चर्चा


गोरखपुर : नार्थ इंडिया गाइनी फोरम (NIGF) के दूसरा वार्षिक अधिवेशन 27-28 जुलाई 2024 को गोरखपुर में आयोजित होगा || EN Daily ||

were – 1st Prayagraj, 2nd Chandigarh, 3rd Gorakhpur

Hearty congratulations to all participants and winners.

Research papers – 70 plus research papers were presented in form of oral and poster presentation in Junior & Senior category. All winners in both categories were awarded trophy and certification. Hearty congratulations to all winners. Dr Geeta Gupta, Dr Ankita and Dr Shweta did commendable job in organizing all sessions and thank judges for their valuable time.

Special Yuva Session - Innovative session were behavior change communication with role plays on communication skill - how to counsel for borderline genetic screen test, HPV positivity and soft marker for ultrasound with interesting role plays. Besides debates were pertinent on challenges of modern Ob Gyn like NIPT should or not replace biochemical genetic screening, for or against universal screening for ovarian and Endometrial cancer, Adolescent right of contraception and safe abortion and replacement of HPV screening for cytology. Besides debates on role of midwifery care in Indian obstetric care and mode of delivery in IVF pregnancies dwelt in depth of real time issues. Debates were brain storming, invited a l lot of discussions and judges gave deep insights.

Inauguration Function was held on 27 July evening with chief guest Dr Poonam Tandon Vice Chanceller of Deen Dayal Upadhyay Gorakhpur University, with guest of honor Dr Sharda Jain & special guest Dr Ragini Agrawal.

A souvenir was released on this occasion which was edited by Dr Amrita S Jaipuriar and editorial team. Souvenir entails abstract of all research papers, scientific as well articles pertaining to diverse subjects.

Cultural evening was coordinated by Dr Madhubala & Dr Babita Shukla. Highlights of cultural program was participants of faculties and delegates representing folk and cultural dances of different states, classical performances and great joy in dancing and singing together. It was great fellowship which we need to nurture in NIGF.

Felicitations - it was our pride and honor to felicitate our orators, patrons, senior teachers, Keynote speakers and office bearers of NIGF. Presence of very senior teachers like Dr Sahrda Jain, Dr Sushma Chawla. Dr Lakhbir Dhaliwal, Dr Anuradha Khanna, Dr Manju Varma, Dr Radha Jeena, Dr Sulekha Pandey was inspiring.

Valedictory Function – It was a great joy to award trophies and certificates to winners of paper, poster, quiz winners. It was occasion to say thanks to every hardworking member of our org team with live plants and mementoes. Special mention to Dr Madhu Gulati for making all decorations with plants and terracotta lamps.

Credit hours – UO MCI awarded 6 Credit hours and ICOG awarded 9 credit points to the conference.

Executive Committee meeting was held on 28 July with great inputs from all office bearers for planning programs and organized efforts.

Media Coverage - Conference proceeding had good coverage in all print and electronic media with bytes and special interview with many faculties.

Org committee thank once again to your gracious presence and participation to make 2nd Annual Conference a great success and memorable event.


North India Gynaecologist Forum All Chapters
Chandigarh, Delhi, Haryana, Himachal Pradesh, Jammu, Punjab, Rajasthan, Uttar Pradesh, Uttarakhand
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Women at Work
August 29th 2024, Thursday
04:00 PM to 06:00 PM
Dr. Sadhana Gupta
Dr. Shanta Jain
Dr. Rajni Agrawal
Dr. Mala Gupta
Dr. Tara Chhaya
Dr. Arun Arora
Dr. Achla Batra
Dr. Mala Srivastava
Dr. Veena Acharya
Dr. Raj Bansal
Dr. Jaya Chaturvedi
Dr. Reena Srivastava
Dr. Manju Verma
Dr. Neelam Jain
Dr. Vandana Rani
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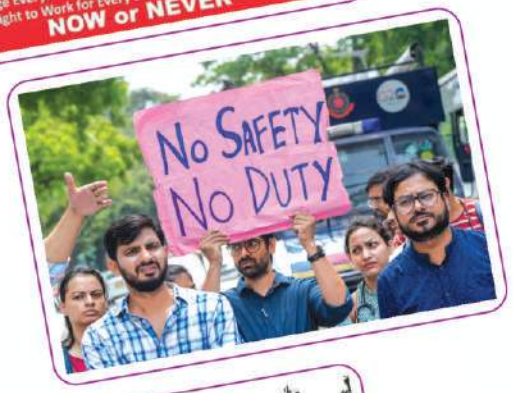

No SAFETY
No DUTY


MEDICAL COLLEGE AND HOS

NIGF stands for Dignity & Safety of Doctors - Key Points by NIGF for Implementation

Brainstorming Session & Key Points by NIGF Stalwarts, Seniors, Office Bearers & Members

1. Compulsorily, there should be Internal Complaint committee in the hospital.
2. Confidentiality should be maintained in such committees.
3. There should be time limit of the judgement by these committees.
4. Environment in the hospital should be healthy and friendly.
5. Students should be allowed to speak their heart to the seniors without any fear and also to their teachers and management.
6. CCTV cameras and security should be enough.
7. There should be regular inspection by the authorities.
8. Women at work should maintain the discipline in terms of clothing and behaviour.
9. Violence can be vocal comments, mental harassment, or sexual harassment?
10. Women should report any type of violence as early as possible.
11. Participation of men is very important and maintaining respect towards female colleague and immediately immediately, objecting the violence by any other man.
12. Women should be self sufficient and well trained. Since very beginning means teaching should start from Garbh Sanskar then at home and then at school.
13. Self defence should be well taught to all the females.
14. Females are not the objects. They are also the living beings like any other male, so their respect is equally important in life.
15. Female should be economically stable and confident enough to object the violence.
16. There should be good security in all the places of work.
17. Emergency helpline should be everywhere at work.
18. In case of hospitals, females or males whosoever is working, the working hours should be decent so that there is no exhaustion and no irritability.
19. Another emergency helpline should be among students so that they can be called at the place of violence immediately.
20. Female cells of helpline in the police departments and emergency helpline by government should work honestly Police should cooperate the female complainant with support and soft language.
21. Cultural stigma should be removed, and the only answer is education and awareness.
22. Gender equality should be learnt by the parents and teachers, and also they have to follow. Boys from the beginning should be taught about the respect of the females.
23. All the females should be taught about the helpline, ICC LCC and should be given self protection kit if needed.
24. Female should also learn the behaviour and how to respect others, and they should be taught the skill to avoid controversy.
25. All the females should learn how to convey their problem via Media via image via Facebook. They should not keep the evidences at one place. Parents and friends should be well. Informed about the violence took for the first time.
26. Parents should support the females rather than stopping them and keeping quiet.
27. Plugging the gaps in the implementation of existing laws.
28. Monitoring and controlling the media and movies because media has lot of influence on psyche of general public.
29. There should be time bound justice system.
30. Harshest of the punishment for such heinous crimes.
31. Cultural corrections in terms of live-in relationships etc.

Dr Sadhana Gupta
Convenor

Dr Arun Arora
Moderator

Dr Taru Chhaya
Moderator

Expert Speaks Series

North has great experts in different sub and super specialties in all age groups. NIGF 5 expert series accomplished with

Dr Smita Ramchandran
Topic - Breaking nexus of Precocious puberty & height

Dr Mala Arora
Topic - Recurrent Pregnancy Loss

Dr Geeta Jain
Topic - Non Descent Vaginal Hysterectomy

Dr Poonam Gambhir
Topic - Genetics in Clinical Practice

Dr Venus Bansal
Topic - Endoscopic surgery in Pregnancy

Expert speaks with key note address and case based reverse panel

If you have great expertise and experience in subject, surgeries, imaging, endocrinology etc please write on drguptasadhana@gmail.com

Kanoon ki Pathshala

NIGF Vision & Mission - Litigation free Ob Gyn practice

NIGF Successfully completed 12 episodes of Kanoon Ki Pathshala from April To Sept -

- **Cesarean Section**
- **Sudden maternal collapse**
- **Female sterilization**
- **Hysterectomy**
- **Intrapartum fetal monitoring**

Recording available at **NIGF Facebook page**

Great effort by org team – Lead Dr Sharda Jain, Dr Sadhana Gupta & Dr Sangeeta Gupta

Thanks to our key faculties and experts for their great sharing of knowledge and experience notably Dr Menakchi Chauhan, Dr Preeti Priyadarshini, Dr Anupama Bahdur, Dr Reta Singh, Dr Geetu Mahajan & experts Dr Raj Bokaria, Dr Gaurav Agrawal, Dr Geetendra Sharma and all guidance by Dr Sadhana Gupta.

Dr Sharda Jain
Convenor

Dr Sadhana Gupta
Convenor

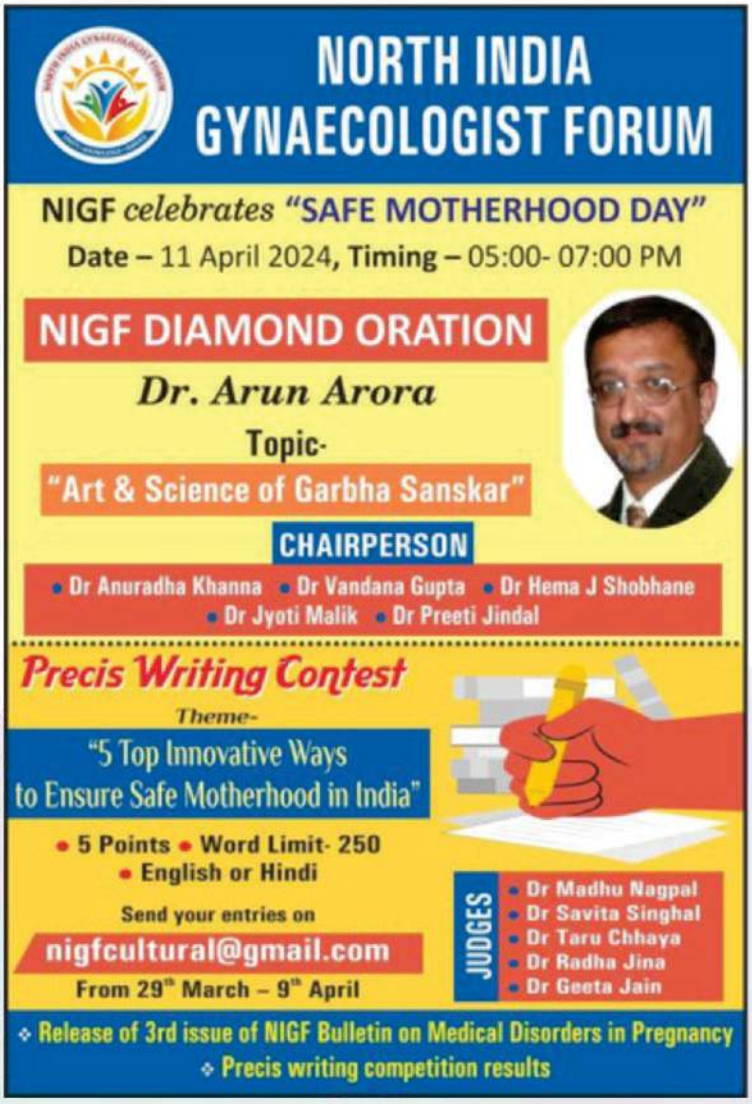
Dr Sangeeta Gupta
Convenor

Diamond Oration 11th April 2024

NIGF Celebrated Indian Safe Motherhood Day on 11th April

Dr Arun Arora gave Diamond Oration on topic of Garbha Sanskar

Thanks & Gratitude



Precis Writing Competition 11th April 2024

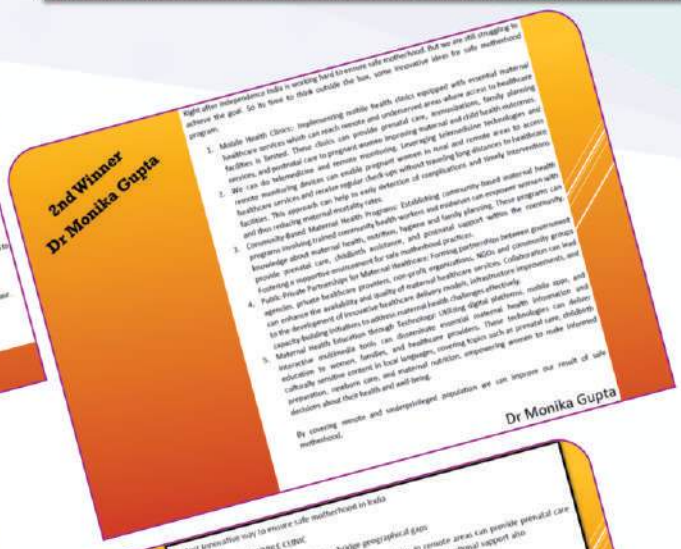
NIGF celebrated Safe Motherhood Day with Precis writing competition on 5 top innovative ways to ensure Safe Motherhood.

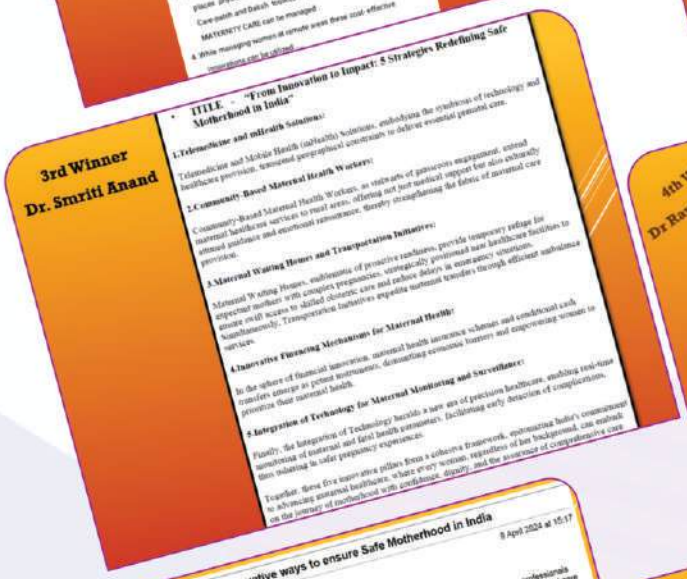
Overwhelming Response with Creative innovative thought and unique presentations.

Congratulations to all winner & participant.

Thanks to our Judges for their valuable time.

NIGF Precis Writing Contest 11 April 2024			
Rank No	Name	Place	Final scoring Sheet
1	Rita Malik	Delhi	188
2	Monika Gupta	Rajasthan	181
3	Smriti Anand	Rohtak	179
4	Ravinderjit Kaur Khurana	Haldwani	177
5	Preeti Sharma	Rajasthan	170
5	Anita Gautam	Kanpur	170





Quiz

NIGF Quiz is exciting way to test & update your knowledge

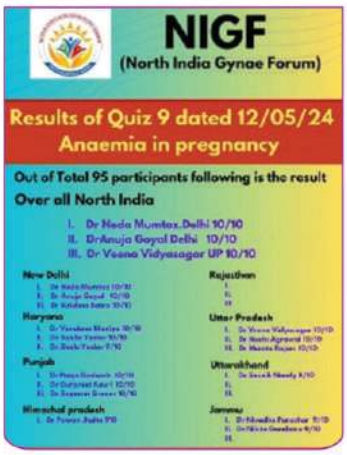
Dr Taru Chaya
Quiz Coordinator

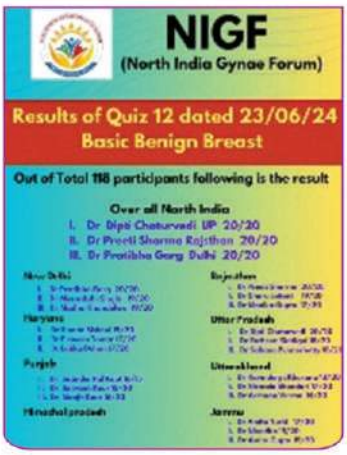
Dr Sadhana Gupta
Convenor

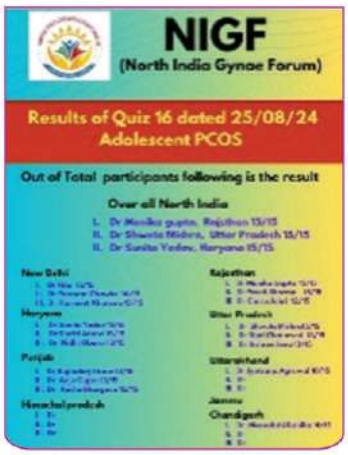
Dr Taru Chaya and Quiz team is there for enjoyable learning on diverse subjects on every 2nd and 4th Sunday. Central and state fastest and highest scorers get certification

Topic covered from April to September :

- **Endometriosis**
- **Anemia in Pregnancy**
- **Vaccination in Pregnancy**
- **Breast Lumps**
- **Adolescent PCOS**
- **Heart Disease in Pregnancy**
- **Preeclampsia**
- **Calcium & Vitamin D in pregnancy**
- **Benign Breast Disease**
- **Ectopic Pregnancy**
- **Adolescent AUB**







Social Activities

Anemia Dr Taru Chhaya organized anaemia & BMD camps

In camp hb and BMD was assessed, documented and counselled accordingly

Highlight that majority of women have hb around 10 but osteopenia is found in around 80% of women

Rajasthan NIGF Secretary Dr Monika Gupta organized plantations and BMD Camp under aegis of NIGF & Inner Wheel Club

Dr Monika Gupta organized Cervical cancer awareness campaign at Alwar

Dr Deepti Chaturvedi is regularly doing work in preventive oncology

Gynae cancer awareness done on 3rd Oct 2024, with PAP smear & sonomamography screening for breast masses at Chaturvedi Cancer Hospital, Gorakhpur under aegis of North India Gynae Forum.

State Chapter Academic Activities

Academic CME organized by Dr Savita Lalgariya from Ganganagar under aegis of NIGF & Ganganagar Ob Gyn Society

Punjab Chapter

Free Paps smear and free DEXA scan camps were held under the aegis of North India Gynae Forum (NIGF) on the 10th of each month by CMC and Hospital Ludhiana

Three physical programmes organized by Haryana NIGF President Dr Ruby Bhatia
4th April, 6th June & 24th July at MMISER Ambala & PGIMER Rohtak July 24th

Hearty congratulations to Rajasthan Chapter of NIGF for regularly organizing academic program along with other state chapters

All program had excellent academic & clinical content with good attendance

We look forward to many such programs with all state chapters

Highlights and Glimpses of 2nd Annual Conference of North India Gynaec Forum Conference

Highlights and Glimpses of 2nd Annual Conference of North India Gynaec Forum Conference

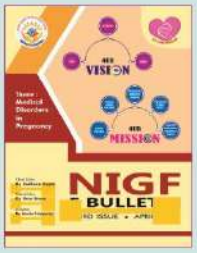
Click on the below Links to read and download previous NIGF Bulletin & NIGF Conference Souvenir

1st Issue of NIGF Bulletin- Maternal Care Bundle

https://drive.google.com/file/d/1FMXQosjREARhA8_AJ3-93oDwC5dg4MiW/view?usp=drive_link

2nd Issue of NIGF Bulletin- Anemia Free India

https://drive.google.com/file/d/1qp3kbPDIkhoW3EjUNqFAABt-heYfLfm3/view?usp=drive_link



3rd Issue of NIGF Bulletin- Medical Disorders in Pregnancy

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NIGF 2nd Annual Conference Souvenir 2024

https://drive.google.com/file/d/1QA33FkuYBmAFLyNeTzAG3rObXNLcmFyF/view?usp=drive_link

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