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THE DOUBLE-EDGED SWORD OF MODERNIZATION: GYNECOLOGICAL HEALTH ISSUES IN INDIAN ADOLESCENT GIRLS.

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ABSTRACT Adolescence is described as the transitional period of life when the carefree child becomes the responsible adult. As per WHO, the age group of 11- 19 years is adolescents. In India, 22% of the population is adolescent, of these, females comprise 47%. With modernization adolescent girls have grown up with access to the internet and portable digital technology from an young age The negative effects of screen time, sedentary lifestyle, eating habits have profounds effects on health, Globally, there is evidence that girls in modern India are experiencing puberty at very young ages compared to previous generations. Gynecological problems of adolescents occupy a special space in the spectrum of gynecological disorders of all ages. Serious gynecological pathology is rare in this age group, but menstrual problems, ovarian masses, and teen pregnancies are not uncommon and may add further disruption to these difficult adolescents. They do not present themselves early to the health care delivery system, which doesn't give them open and dignified access to it. With this background, it becomes necessary and worthwhile to conduct this study to evaluate reproductive health awareness among girls and find problems of adolescents attending OPD and emergency services.

KEYWORDS : Generation Z, Menstrual Disorders, Adolescent Gynecological Health, Polycystic Ovarian Disorder (PCOD), Dysfunctional Uterine bleeding (DUB) Abnormal Uterine Bleeding (AUB)

INTRODUCTION

The age range for adolescents, according to the World Health Organization (WHO), is between 10 and 19 years old (1)

India, with a teenage population of 253 million, has the highest number of teenagers in the world, with one in every five Indians falling into this age group (2)

Adolescence is a crucial stage of life that bridges the gap between childhood and adulthood, bringing about significant biological, physical, psychological, and social changes.

Understanding and acknowledging these changes can help address the unique challenges faced by adolescents (3).

Among the various issues faced by this age group, menstrual irregularities are the most common complaint, often attributed to immaturity in the hypothalamic-pituitary-ovarian axis, leading to anovulation. Within 24 months after the onset of menstruation, 55% to 82% of teenagers establish a regular ovulatory cycle. However, even after this period, 22% of females continue to experience anovulation or irregular ovulation. In some cases, it may take up to five years after menarche for teenagers to achieve regular ovulatory cycles (4)

The primary cause of prolonged irregular menstruation is polycystic ovarian disorder (PCOD), which is the most prevalent endocrine disorder with long-term health implications (5).

Both PCOD and endometriosis can impact future fertility, emphasizing the need for prompt treatment (6).

Among adolescent girls, menstrual irregularities are prevalent and can stem from a variety of factors. Research indicates that irregular menstrual cycles are more common in younger teens than older ones, with a higher proportion of younger teens reporting extended menstrual flow (7)

While irregular periods are often a normal aspect of teenage development, certain medications, excessive exercise, extreme fluctuations in body weight, or inadequate caloric intake can contribute to irregularities. Additionally, hormonal imbalances may also disrupt menstrual patterns (8)

Dysfunctional uterine bleeding (DUB) Abnormal uterine bleeding (AUB) stands out as one of the primary concerns among adolescent girls, characterized by irregular and heavy menstruation (9)

Healthcare providers must discern abnormal menstrual patterns during adolescence to facilitate early detection of underlying conditions and administer appropriate treatment (10,11)

Dysmenorrhea: Dysmenorrhea, a term denoting painful menstrual periods, affects a significant portion of women, with over half experiencing discomfort lasting one to two days monthly (12)

Primary dysmenorrhea involves cramping pain preceding or coinciding with menstruation, attributed to natural chemicals known as prostaglandins produced in the uterine lining. Prostaglandins induce contractions in the uterus muscles and blood vessels, peaking during the initial day of menstruation and subsiding as the uterine lining sheds (13)

Secondary dysmenorrhea arises from conditions such as endometriosis, uterine fibroids, or pelvic inflammatory disease (14)

Adolescents are now attaining biological maturity earlier than their predecessors, as evidenced by a gradual decline in the average age of puberty and menarche.(15)

The sexual and reproductive health needs of adolescents remain poorly understood and largely unmet. The health problems faced by adolescents are numerous due to early and unprotected sexual intercourse.(16)

Research indicates that irregular menstrual cycles are more common in younger teens than older ones, with a higher proportion of younger teens reporting Heavy menstrual flow (17)

While irregular periods are often a normal aspect of teenage development, certain medications, excessive exercise, extreme fluctuations in body weight, or inadequate caloric intake can contribute to irregularities. Additionally, hormonal imbalances may also disrupt menstrual patterns (18)

Abnormal uterine bleeding (AUB) stands out as one of the primary concerns among adolescent girls, characterized by irregular and heavy menstruation. Further menstrual disorders encompass dysmenorrhea, amenorrhea, polycystic ovary syndrome (PCOS), and hyperandrogenism (19,20)

Aim and Objectives

To study various gynecological problems and their clinical profile, and different modalities of management

Background

Adolescence is described as that transitional period of life when the carefree child becomes the responsible adult. As per the WHO, the age group of 11- 19 years is adolescents. In India,22% of the population is adolescent, of this, female comprises 47%.

The present generation of girls has grown up with access to the internet and portable digital technology from a young age.

The negative effects of screen time, sedentary lifestyle, and eating habits have profound effects on health. Globally, there is evidence that girls in the present generation are experiencing puberty at a much younger age compared to previous generations. Adolescent-friendly reproductive and sexual health services are an initiative taken up by the Government of India. It implies the need for iron-folic acid supplementation, especially from the onset of menstruation. Additionally, it includes counseling on common concerns and problems related to menstruation, as well as guidance on a balanced, nutritious diet.

Health education classes to spread awareness regarding adolescent gynecological problems, when conducted regularly, will give the adolescents a smoother transition into adulthood and give them more confidence to come forward with their problems, thereby letting go of the stigma often related to these problems.

Adolescent gynecological clinics play a vital role in supporting these girls and help in the growth and psychological remodeling during this uncertain, turbulent, and extremely stressful period in their lives.

Objectives

1. To study gynecological problems and their clinical profile in adolescent girls.
2. To evaluate treatment modalities of gynecological problems in adolescent girls.
3. To evaluate reproductive health awareness among adolescent girls

MATERIALS AND METHODS

A Prospective Study from January 2023–August 2024 at Mahavir institute of medical sciences, Vikarabad, Telangana.

After approval from the institutional ethical committee and after obtaining informed consent from participants, 200 girls in the age group of11-19 years. For 18 months were included in the study.

A detailed history was taken, which emphasized pubertal events such as thelarche, pubarche, menarche, and pregnancy. First, the girl was interviewed regarding her problems keeping her privacy and dignity, and then a general examination of height and weight was recorded. Depending upon the requirement, necessary investigations were done.

Inclusion Criteria

Girls in the age group 11-19 years attending the outpatient department and emergency department of Mahavir Medical College, Vikarabad. Girls who were willing to undergo examination and follow-up were included in the study.

Exclusion Criteria

Those girls who were not willing to undergo examination were excluded from the study. Age< 10 years and age> 19 years were not included.

RESULTS

- We analyzed the clinical profile of 200 adolescent girls. Table 1 shows Gynaecological Disorders. Table 2 shows other Menstrual Disorders
- Out of 127 girls, 58 had oligomenorrhoea due to underlying PCOS, thyroid disorders, and weight gain.
- Secondary Amenorrhea is associated with PCOS, hypothyroidism, and Obesity are 15 girls presented with oligomenorrhoea.
- Thyroid disorders were treated with antithyroid drugs (hyperthyroidism treated with carbimazole , hypothyroidism treated with thyroxine.)
- PCOS, weight gain treated by lifestyle modifications, Metformin for insulin resistance, and regular exercise.
- Girls with dysmenorrhea are mostly spasmodic and are managed by simple reassurance and NSAIDS.
- Puberty menorrhagia: after ruling out coagulation disorders, out of 8 girls, 4 had severe anemia, and blood transfusion was done remaining 4 had mild to moderate anemia, iron deficit formula was calculated, and treated with injectable iron and folic acid.
- Ovarian tumors: Out of 8 girls, 1 came to the emergency department with torsion of the left ovarian cyst [7*6*5cm], emergency cystectomy was done, 3 girls had dermoid cyst and oophorectomy was done remaining 4 had the simple ovarian cyst for which assurance was given and followed up.
- Out of 4 teen pregnancies, 1 was anencephaly and was terminated 1 had spontaneous abortion 1 was sexual assault,1 had normal vaginal delivery.
- Primary amenorrhoea 4 girls out of 4 Girls,3 girls had mullerian agenesis.

One case of imperforate hymen clinically presented with cyclical abdominal pain, were managed surgically with a cruciate inicision.

The Mayer-Rokitansky-Küster-Hauser (MRKH) syndrome is characterized by congenital aplasia of the uterus and the upper part (2/3) of the vagina in women showing normal development of secondary sexual characteristics and a normal 46, XX karyotype. It affects at least 1 out of 4500 women. (21)

- 16 cases were of UTI -They were managed after urine culture and sensitivity were done, and antibiotics were given specific to the organism.

Table 1: Gynaecological Problems

TYPES	TOTAL NUMBER OF PATIENTS	Percentage %
MENSTRUAL DISORDERS	127	68%
LEUCOHORRHEA	48	24%
OVARIAN CYST	18	9%
UTI	8	4%
TEEN PREGNANCY	4	2%

Table 2: Menstrual Disorders

Types	Total number of patients	%
Oligomenorrhea	58	29%
Dysmenorrhea	52	26%
PCOS	48	24%
Thyroid disorders	21	11%
Obesity	20	10%
Puberty menorrhea	8	4%
Primary amenorrhea	4	1.1%

DISCUSSION

This study was conducted to analyse the various gynaecological problems prevalent among adolescent girls and to know the various causes and factors associated with them in the present generation with modernisation.

Menstrual disorders were the most common presenting complaint in the adolescent gynaecological clinic. The present study shows that menstrual disorders are the most common gynaecological dysfunction among adolescent girls (63%), which is comparable to the study by Goswami et al. (22)

Menstrual disorders account for 60% of gynaecological dysfunction among adolescents.

Marin Mariyam Mathew et al. also found that menstrual disorder (53.33%) was the commonest gynaecological problem in adolescent girls(23)

While another study by Kumari also found the same result, with menstrual disorders being the most common cause for gynaecological disorders (24).

Hence, the incidence of menstrual disorders in the present study correlated well with other studies.

Among 127 cases with menstrual problems, oligomenorrhoea was the most common menstrual disorder.

Polycystic ovary syndrome accounted for 24% of adolescent gynaecological problems and all cases of secondary amenorrhea.

The prevalence of PCOS was 11.96% in the study conducted by Singh et al.(25)

Polycystic ovary syndrome was managed with weight reduction, metformin, and combined oral contraceptive pills for the regularization of menstrual cycles.

Lifestyle modifications through reduced calorie intake and regular physical activity can improve clinical, metabolic, and hormonal parameters in adolescent girls with PCOS.

In the present study, the incidence of amenorrhea among adolescent girls is 24%, with secondary amenorrhea being most common and primary amenorrhea about 1%.

Of the total of 4 cases of primary amenorrhea in this study, three cases were of Mullerian agenesis. One case of imperforate hymen clinically presented with cyclical abdominal pain, and was managed surgically with a cruciate incision.

The cases of Mayer-Rokitansky-Küster-Hauser (MRKH) were provided psychosocial counselling and were advised regarding various methods of vaginal reconstruction in the future.

Shearman and Roberts et al. and Rathod et al. showed that the commonest cause for primary amenorrhea was Mullerian agenesis (MRKH syndrome).(26,27)

Most cases of puberty menorrhagia had anemia ranging from mild to severe; the majority of the cases had mild anemia and moderate anemia and were managed with hematinics and hormones. Around 4 cases with Severe anaemia was also noted and required blood transfusion and was followed up with hormones and hematinics.

Primary dysmenorrhea was the presenting complaint in 26% of cases in the present study group. These girls were counselled and managed with antispasmodics.

In a study by Klein and Litt," the incidence of dysmenorrhea was 59.7% while in a study by Shabnam et al., the prevalence of dysmenorrhea was found to be as high as 70.2%. (28,29)

Anita and Dibya* found that dysmenorrhea was a fairly common problem in 25.7% of adolescents, while a study by Kakkar et al. found that 14.5% of adolescents presented with dysmenorrhea.(30,31)

In the present study, among 8 cases of ovarian cysts and tumours, almost 4 of the cases were follicular cysts, and 3 of the cases were dermoid cysts.

Around one torsion ovary was also noted. Functional cyst/simple ovarian cyst of the ovary was the common finding of ovarian enlargement seen in the adolescent age group.

Management of functional/simple cysts included conservative management, reassurance, and follow-up.

About 4 cases of ovarian tumours underwent oophorectomy, and following histopathological examination of the specimen, the majority were found to be dermoid cysts of the ovary.

One case of ovarian torsion was surgically managed with ovarian cystectomy.

In the present study, leukorrhea was found in 45 girls. Leukorrhea is a frequent and embarrassing problem. They were reassured and taught to maintain proper hygiene.

Leukorrhea can be physiological or pathological. Increased levels of endogenous estrogen lead to overgrowth of the endocervical epithelium, which may produce ectocervical erosion, leading to excessive discharge.

In a study by Goswami et al.," leukorrhea was found in 8 of 75 girls, that is, 10.66%.(32)

In the present study of the were 16 cases of UTI. They are managed after investigation with urine culture and sensitivity, and proper antibiotics specific to the organism were given.

UTI is a common yet preventable condition in adolescent girls. Early recognition, proper treatment, and education on hygiene can reduce recurrence and long-term complications.

Prevention Strategies for UTI:

- Good personal hygiene (front-to-back wiping)
- Cotton underwear and avoiding tight clothes
- Drinking plenty of water
- Avoiding unnecessary delay in voiding
- Proper toilet habits, especially during menstruation
- Educating adolescent girls about safe sexual practices

Out of 4 Teen Pregnancies-

- 1 cases was Anencephaly and medical termination of pregnancy was done.
- One case had a spontaneous abortion.
- One was Sexual assault case.
- one case had normal vaginal delivery.

Teenage pregnancy refers to pregnancy occurring in a young woman between the ages of 13 and 19 years. It is considered a public health concern due to its social, medical, and psychological implications.

Causes and Contributing Factors:

Lack of Sex Education:
Inadequate or incorrect knowledge about reproductive health.
Early Onset of Puberty:
The Increasing trend of early puberty leads to early sexual activity.
Peer Pressure & Media Influence:
The desire to fit in or imitate what is seen in the media.
Poor Parental Supervision:
Limited guidance, communication gaps with caregivers.
Socioeconomic Factors:
Poverty, low education levels, and gender inequality.
Sexual Abuse or Coercion:
Many teen pregnancies result from non-consensual encounters.

Health Risks:

Maternal Complications:
Higher risk of anemia, preeclampsia, and preterm labor.
Neonatal Complications:
Increased risk of low birth weight, prematurity, and neonatal mortality.
Mental Health:
Greater chances of depression, anxiety, and low self-esteem.
Unsafe Abortions: In areas where abortion access is restricted or stigmatized.

Social & Educational Impact:

Dropout from School:
Many teenage mothers discontinue their education.
Economic Hardship:
Early motherhood often leads to financial dependency.
Social Stigma:
Discrimination and isolation within communities.

Prevention Strategies:

Comprehensive Sexual Education:
Age-appropriate, culturally sensitive curriculum.
Access to Contraceptives:
Condoms, oral pills, and long-acting reversible contraception.
Supportive Family Environment:

- Open communication and emotional support.
- Youth Empowerment Programs: Focus on self-esteem, goal setting, and future planning.

Public Health Policies:
Community outreach, teen health clinics, and media campaigns.
Management & Support:

Prenatal Care:
Early and regular check-ups to reduce risks.
Psychosocial Support:
Counseling and peer group support.
Continuation of Education:
Programs to help teen mothers return to school.
Parenting Guidance:
Help them develop responsible parenting skills.

Importance of HPV Vaccination in Adolescent Girls:
Prevention of Cervical Cancer:
Nearly 70% of cervical cancers are caused by HPV types 16 and 18.
Maximum Benefit Before Exposure:
The vaccine is most effective when given before the onset of sexual activity, typically between the ages 9–14.
Long-Term Protection:
Offers long-term immunity against several cancer-causing HPV types.

3. Vaccination Schedule:
- Age 9–14 years: 2 doses, 6–12 months apart.
- Age 15 years and above or immunocompromised: 3-dose schedule (at 0, 1–2, and 6 months).

4. Types of Vaccines:
- Cervarix (Bivalent – HPV 16 & 18)
- Gardasil (Quadrivalent – HPV 6, 11, 16, 18)
- Gardasil-9 (Nonavalent – covers 9 HPV types, including high-risk ones)

5. Safety and Side Effects:
- Safe and well-tolerated.
- Minor side effects include pain at the injection site, mild fever, or headache.
- Serious side effects are rare.

6. Public Health Recommendations:
- Recommended by WHO, IAP (Indian Academy of Pediatrics), and the Ministry of Health, India as part of national immunization programs in some regions.
- School-based vaccination programs are effective in increasing coverage.
- Double-edged sword

Advantages of Modernisation:
Improved Healthcare Access:
- Better availability of hospitals, adolescent-friendly clinics, and gynaecologists.
- Early diagnosis and treatment of conditions like PCOS, menstrual disorders, and infections.

Increased Awareness and Education:
- Access to sexual and reproductive health education through schools, media, and the internet.
- Improved menstrual hygiene practices and reduced stigma.

Vaccination and Preventive Care:
- Availability of HPV vaccination to prevent cervical cancer.
- Increased use of screening tools like pelvic ultrasound and hormonal tests.

Technological Advancements:
- Use of laparoscopy, hormonal therapies, and advanced diagnostics.
- Better management of infertility and other reproductive issues.

Empowerment and Autonomy:
- Greater focus on adolescent girls' rights and choices regarding reproductive health.
- Platforms for adolescent health awareness and mental health support.

Disadvantages of Modernisation:
Sedentary Lifestyle and Diet Changes:
Increased incidence of obesity, leading to PCOS, insulin resistance, and menstrual irregularities.
Stress and Mental Health Strain:
Academic pressure, social media influence, and body image issues contribute to stress-induced amenorrhea or PMS.
Early Puberty:
Exposure to processed foods and endocrine-disrupting chemicals causes early menarche and associated complications.
Risky Behaviour and Peer Influence:
Increased exposure to unprotected sex, leading to STIs, teenage pregnancies, and unsafe abortions.

Overmedicalisation and Self-Medication:
- Easy access to hormonal pills or emergency contraception without proper guidance can lead to hormonal imbalance and irregular cycles.
- Increased awareness and education- access to sexual and reproductive health education through schools, media, and the internet.
- Improved menstrual hygiene practices and reduced stigma.

CONCLUSION
- Adolescent gynecology is an important subspecialized part of gynecology.
- Increases in BMI, PCOS, anemia, reproductive and urinary tract infections, teenage pregnancy, and victims of sexual assault are causes of concern in present adolescents.

Knowledge about menstruation and menstrual hygiene, reproduction, contraception, and the availability of a nutritious diet needs to be addressed. Malignancy needs to be ruled out in ovarian tumors during adolescence. Setting up specialized "Adolescent gynecological clinics "is the need of the hour, considering that adolescents are the citizens and parents of tomorrow.
- Programs like school health and ARSH need quality implementation.
- School health programs for adolescent girls focus on promoting physical, emotional, and social well-being.
- The incidence of PCOS is on the rise because of a paradigm shift in a lifestyle where teenagers spend most of their time on screen time on mobile phones, TV, computers, without physical exercise, and eating junk food.
- Pregnancy rates as well as MTP rates were rising alarmingly among adolescents. Social problems than physical or medical problems, which can lead to severe emotional and mental trauma to both the woman and her family.
- Adolescent health programs, including sex education and increasing social awareness through entertainment media, and lastly, effective contraceptive education should be carried out.
- A careful and sensitive approach is needed when evaluating adolescents with gynecological symptoms. It should always be borne in mind that treatment options may have a significant impact on future general health as well as sexual function and infertility.
- Challenges faced by adolescent girls should be managed earlier because they are the future pillars of the country.
- Adolescent girls' health has a significant impact on their future fertility.
- Adolescent girls should be educated on reproductive health, menstrual hygiene, nutrition counselling,and physical activity.
- Immunization against HPV can prevent cervical cancer in future generations.
- Modernisation has significantly improved the standard of gynaecological care and awareness among adolescent girls, but it has also introduced new lifestyle-related and psychosocial challenges.
- A balanced approach that combines the benefits of modern medicine with healthy lifestyle practices and education is key to promoting adolescent gynaecological health.

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