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Original Research Article

An observational study on different gynaecological problems in adolescents in a tertiary care centre

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ABSTRACT

Background: Adolescence (10–19 years) is a transformative period marked by significant biological and physiological changes. In India, adolescents constitute over 21.4% of the population. Gynaecological concerns, particularly menstrual irregularities, are prevalent during this phase due to the immaturity of the hypothalamic-pituitary-ovarian axis. This study aims to identify and analyse the wide spectrum of gynaecological disorders among adolescent females to improve reproductive health outcomes for future.
Methods: A hospital-based, single-centre cross-sectional observational study was conducted at LLRM Medical College and hospital in Meerut, Uttar Pradesh, India, from September 2025 to February 2026. The study included 500 adolescent females (10-19 years) attending the outpatient department. Data were collected through detailed clinical histories, physical examinations, and necessary investigations (blood tests and imaging). Statistical analysis was performed using frequencies and percentages.
Results: The majority of participants belonged to the mid-adolescent group (14-16 years; 53.8%) and resided in urban areas (63%). A significant "dual burden" of nutrition was observed, with 18.6% underweight and 38.4% overweight/obese. Educational levels were notably low with 43.4% being school dropouts. Menstrual problems were the leading complaint (69.6%). Oligomenorrhoea being the most common specific disorder (54.31%) among menstrual disorder. The most common clinical diagnosis was Polycystic Ovary Syndrome (17.8%), followed by Abnormal Uterine Bleeding (11.4%) and simple ovarian cysts (9.6%). Other findings included vaginal discharge (13.8%) and pelvic inflammatory disease (6.8%).
Conclusions: Menstrual disturbances and PCOS constitute the primary gynaecological burden among adolescents in this region. The high prevalence of these conditions along with nutritional imbalances and low educational status highlights a critical need for targeted health education and adolescent-friendly reproductive health services. Early intervention and lifestyle modifications are essential to mitigate long-term reproductive morbidity.

Keywords: Adolescent gynaecology, PCOS, Vaginal infections, Menstrual problems, Adolescent girls

INTRODUCTION

Adolescence is narrated as that transitional period of life when the carefree child becomes the responsible adult. Adolescents constitute over 21.4% of the population in India. According to WHO, Adolescent age group is 10 to 19 years.[1] 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.[2] Menarche is considered as the central event of female puberty.[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 well-being of these adolescent girls not only impacts their health but also has a profound influence on the health of future generations. With this in mind, my research aims to address their various gynaecological concerns.

METHODS

Study design

The study design for this research involved a hospital based single-center cross-sectional observational approach, which was carried out after obtaining approval from the Clinical Research and Ethics Committee at the Lala Lajpat Rai Memorial Medical College, a tertiary care institution located in Meerut, a state in northern India from September 2025 to February 2026.

Participants

Inclusion criteria

All girls aged 10-19 years attending the outpatient department were included.

Exclusion criteria

Exclusion criterion for current study was girls less than 10 years and more than 19 years and girls not willing to participate.

The study included 500 adolescent females. Informed written consent was obtained from each participant before their inclusion in the study.

Study procedure

The study procedure involved collecting detailed information from the participants regarding their specific concerns, such as pubertal changes, menstrual issues, vaginal discharge, pelvic discomfort, abdominal mass, obstetrical history (if married), and any other gynecological problems. Each participant underwent a clinical examination while ensuring privacy and confidentiality. Measurements such as height, weight, BMI, and secondary sexual characteristics were recorded. Additionally, blood tests and imaging studies were recommended as necessary. This study aimed to identify the different gynecological disorders among them.

Statistical methods

The data was analysed and expressed in tables and graphs using frequency and percentages.

RESULTS

A total of 500 adolescents were included in our study and they were divided into 3 groups according to their age-early (10-13 years), mid (14-16 years) and late (17-19 years) adolescent age group.

Table 1: Distribution of patient according to age (n=500).

Age group (years)	N	%
10-13	59	11.8
14-16	289	53.8
17-19	198	34.4

Table 2: Distribution of patient according to residence (n=500).

Residence	N	%
Rural	185	37
Urban	315	63

Table 1 shows the distribution of the patients according to adolescent age group. Out of 500 patients, 53.8% were aged 14-16 years, followed by 34.4% in 17-19 years and 11.8% in 10-13 years. Mean age was approximately 15.8 years indicating predominance of mid-adolescents. Table 2 shows the distribution of patients according to residence area. This shows 63% of patients were from urban areas and 37% from rural areas. This may indicate better healthcare access, awareness or reporting in urban populations compared to rural settings.

Table 3: Distribution of patients according to BMI (n=500).

BMI (kg/m^2)	N	%
<18.5	93	18.6
18.5-24.9	215	43
25-29.9	140	28
>30	52	10.4

Table 4: Distribution of patients according to education (n=500).

Education	N	%
No school	66	13.2
School drop out	217	43.4
Primary	89	17.8
Secondary and higher	128	25.6

Table 3 categorizes patients based on Body Mass Index (BMI). Most patients (43%) have a normal BMI (18.5-24.9 kg/m^2). However, a significant proportion is either overweight (28%) or underweight (18.6%) and 10.4% are obese. This distribution highlights that both undernutrition and overnutrition are prevalent and may contribute to gynaecological issues. Table 4 shows the educational status of patients. The largest group (43.4%) consists of school

dropouts followed by those with secondary or higher education (25.6%). Patients with only primary education account for 17.8% while 13.2% have no schooling. This reflects a relatively low educational level among patients which may need health awareness and healthcare-seeking behaviour.

Table 5: Distribution of patients according to marital status (n=500).

Marital status	N	%
Married	21	4.2
Unmarried	479	95.8

Table 6: Distribution of patients according to primary presenting problems (n=500).

Presenting problems	N	%
Menstrual problems without acne/hirsutism	306	61.2
Menstrual problems with acne/hirsutism	42	8.4
Vaginal discharge with /without itching	69	13.8
Pain abdomen	31	6.2
Incidental USG finding	34	6.8
Urinary	16	3.2
Swelling in perineal area	2	0.4

Table 7: Distribution of patients according to menstrual problems (n=348).

Menstrual problems	N	%
Oligomenorrhoea	189	54.31
Polymenorrhoea	102	29.31
Dysmenorrhoea	42	12.06
Primary amenorrhoea	12	3.45
Secondary amenorrhoea	3	0.86

Table 5 indicates that the vast majority of patients (95.8%) are unmarried, while only 4.2% are married. This is expected as the study population mainly consists of adolescents. Table 6 outlines the primary complaints of patients. The most common issue is menstrual problems without acne or hirsutism (61.2%) followed by vaginal discharge (13.8%). Menstrual problems with acne/hirsutism account for 8.4%, suggesting possible androgenic hormonal disorders. Other complaints include abdominal pain (6.2%), incidental ultrasound findings (6.8%), urinary issues (3.2%) and rare cases of perineal swelling (0.4%).

This highlights that menstrual disturbances are the predominant concern. Table 7 shows details of menstrual issues. Among the 348 patients with menstrual issues, oligomenorrhoea is the most common condition (54.31%) indicating infrequent menstruation. Polymenorrhoea (29.31%) is the next most common followed by dysmenorrhoea (12.06%). Primary amenorrhoea (3.45%) and secondary amenorrhoea (0.86%) are relatively rare. This suggests that irregular menstrual cycles are a major issue in adolescents.

Table 8: Distribution of patients according to causes of gynaecological problems.

Cause	Frequency	Percentage (%)
PCOS	89	17.8
AUB	57	11.4
Fibroid uterus	18	3.6
Simple cyst	48	9.6
Haemorrhagic cyst	39	7.8
Endometriotic cyst	18	3.6
Dermoid cyst	2	0.4
Ovarian torsion	1	0.2
Leucorrhoea	28	5.6
Genital infections excluding TB	24	4.8
Genital TB	4	0.8
PID	34	6.8
Primary dysmenorrhoea	24	4.8
Thyroid disorder	17	3.4
Hyperprolactinemia	8	1.6
MRKH	4	0.8
Imperforate hymen	3	0.6
Gonadal dysgenesis	2	0.4
Transverse vaginal septum	1	0.2
Turner syndrome	2	0.4
Uterine anomaly	3	0.6
UTI	25	5
Others / miscellaneous	49	9.8

Table 8 lists various diagnosed causes. The most common condition is Polycystic Ovary Syndrome (PCOS) with 89 cases (17.8%) followed by 57 cases (11.4%) of Abnormal Uterine Bleeding (AUB) and 48 cases (9.6%) of simple ovarian cysts. Other notable conditions include 39 cases (7.8%) haemorrhagic cysts, 34 cases (6.8) of pelvic inflammatory disease, 28 cases (5.6%) of leucorrhoea, and 25 cases (5%) of urinary tract infections. Less frequent causes include congenital anomalies (e.g., MRKH, Turner syndrome), endocrine disorders (thyroid disorders, hyperprolactinemia) and rare structural abnormalities. The wide range of causes indicates that adolescent gynaecological problems are multifactorial, with hormonal and infectious causes being predominant.

DISCUSSION

The objectives of the study were to explore the current gynaecological problems in adolescent age group. Our study shed light on the signification problems in young girls that not only align with the existing literature but also

provide novel insights of causes of the problems. Adolescent stage is particularly important in females, as it marks the onset of reproductive capability and lays the foundation for future maternal health. Addressing health concerns during this period is essential not only for the well-being of adolescents but also for improving the health outcomes of future generations.[5]

Adolescent gynaecological problems represent a unique spectrum of disorders that differ significantly from adult women. These include menstrual disorders, infections, hormonal imbalances such as polycystic ovarian syndrome (PCOS), nutritional disorders like anaemia, and less commonly structural anomalies. In our study, findings consistently shown that menstrual disorders are the most common complaint among adolescent girls representing 69.6% among which oligomenorrhoea (54.31%) was most prevalent one. Among the causes of all adolescent problems, PCOS (17.8%) was the most common.

Bafna et al reported that menstrual disorders accounted for 64.5% of gynaecological problems attending their rural clinic.[6] Similarly, Samarth et al observed that dysmenorrhoea (63.48%) and oligomenorrhoea (12.82%) were among the most frequent issues in adolescents.[7] In the present study, menstrual problems constituted the majority of complaints (61.2%), which is consistent with the findings of previous studies. Notably, oligomenorrhoea was the most common menstrual disorder in our cohort (54.31%), aligning with observations by Samarth et al, where oligomenorrhoea was a leading abnormality.[7] This similarity suggests that hormonal immaturity and PCOS remain major contributors to menstrual irregularities across different populations. Our findings on AUB (11.4%) also fall within the range of other regional studies, such as the 12.5% reported by Kalyankar et al.[8]

Polycystic Ovarian Syndrome emerged as the most common diagnosed condition (17.8%) in our study. Comparable trends have been reported by Bafna et al, where PCOS was identified in a significant proportion (30.9%) of adolescents.[6] The increasing prevalence of PCOS in this demographic may be attributed to changing lifestyle patterns, sedentary habits, and nutritional imbalances. Additionally, our study highlights the dual burden of malnutrition, with both underweight (18.6%) and overweight/obese (38.4%) adolescents, which is consistent with previous literature emphasizing the role of nutrition in adolescent gynaecological health. Vaginal discharge (13.8%) and Pelvic Inflammatory Disease (6.8%) were also notable findings in our study, reflecting the importance of genital hygiene and awareness. Mahalekshmi et al highlighted that a lack of awareness regarding reproductive health and hygiene can predispose adolescents to infections and related complications.[9] Their study also emphasized a significant gap in knowledge, particularly among socioeconomically disadvantaged groups, underscoring the need for targeted health education. Another important observation in our study is the relatively low educational status among participants, with a high proportion of school dropouts (43.4%). This finding correlates with studies indicating that lower educational levels are associated with poor awareness of reproductive health, delayed healthcare-seeking behaviour, and increased risk of gynaecological morbidity.[8] Mukta et al reported gynaecological problems among their patients as menstrual issues (63.45%) as the most common followed by abdominal pain (15.6%), vaginal discharge (7.2%), adolescent pregnancy (6.15%), and infertility (1.15%).[10]

In a cross-sectional study conducted by Geeta et al in the Lucknow district of India, 600 adolescents were interviewed, revealing a mean age of menarche at 13.1 years, with 35.3% experiencing menstrual problems, 86.5% reporting dysmenorrhea, and 31% having a vaginal discharge.[11] Hickey et al reported a prevalence of PCOS in 6 to 13% of teenage girls.[12] Our study revealed that 17.8 % of the girls with PCOS. In a study conducted by Mathew et al, out of 400 adolescents, menstrual disorders were seen in 68.8%, ovarian tumours in 20.8% of girls, leucorrhoea in 6.0%. Among menstrual problems, 81.8% of the cases were abnormal uterine bleeding (AUB), 12.0% of dysmenorrhea cases, 1.5% of primary amenorrhea cases and 4.7% of secondary amenorrhea cases were also noted.[13]

Overall, the findings of the present study are in concordance with existing literature, demonstrating that menstrual disorders, PCOS, infections, and nutritional deficiencies constitute the major burden of adolescent gynaecological problems. Despite variations in geographical and socio-economic settings, the pattern of disorders remains largely similar, highlighting the universal need for adolescent-friendly health services, early diagnosis, and preventive strategies. Adolescence represents a crucial window of opportunity for intervention; improving awareness and providing comprehensive reproductive health education can significantly reduce the long-term burden of gynaecological morbidity.

CONCLUSION

This study highlighted that menstrual irregularities and Polycystic Ovary Syndrome (PCOS) are the primary gynaecological concerns among adolescents and affecting the majority of the study population. This point toward a growing trend of hormonal imbalances likely influenced by the dual burden of nutritional health, as evidenced by the high rates of both underweight and overweight participants. Furthermore, the high rate of school dropouts (43.4%) among the participants suggests a critical link between low educational attainment and delayed healthcare-seeking behaviour. The presence of infections like leucorrhoea and PID highlights a persistent need for improved reproductive hygiene awareness.

To safeguard the future reproductive health of these young women, it is crucial to implement adolescent-friendly

health services that prioritize early screening for hormonal and metabolic disorders such as polycystic ovary syndrome (PCOS), provide nutritional counselling and health education to address body mass index (BMI) imbalances, and deliver community-based health education to adolescent girls aimed at improving hygiene practices and reducing the stigma associated with menstrual health. Addressing these issues during the "adolescent window" is vital not only for the well-being of the individuals but also for the health outcomes of future generations.

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