ABSTRACT

Background: Adolescent is age between 11-19 years, where there are enormous physical, psychological, sexual, emotional and behavioural changes. They constitute 22 % of population in India. Hence, their unique problems need to be addressed. Objectives: 1) To study gynaecological problems and their clinical profile in adolescent girls. 2) To evaluate treatment modalities of gynaecological problems in adolescent girls. 3) To evaluate reproductive health awareness among adolescent girls. Methods: Girls in the age group of 11 to 19 years attending gynaecology OPD or emergency were included in the study. First, the girl was interviewed keeping her privacy and dignity. A detailed history and examination were done emphasizing on pubertal events such as thelarche, pubarche, pregnancy and menarche. Investigations like hemogram, coagulograms, hormonal assays, and sonography were done wherever applicable. Results: 71.67% achieved menarche at 14-16 years of age. Most common gynaecological problems among the adolescent girls were menstrual disorders 156 (52%), followed by vaginal discharge i.e. 35(11.6%), 24(8.0%) gave history of sexual assault, 24 (8%) had excessive weight gain and 20(6.6%) reported urinary tract infection. The most common type of menstrual disorder was that of oligomenorrhea 86 (55.2%). Out of 38 PCOS cases, 31(81.6%) cases presented with oligomenorrhea. Out of 300 cases, 200(66.7%) cases were aware of physical signs of puberty, 245(81.7%) cases were aware of STD, HIV and its mode of transmission, 200(66.7%) cases were aware about contraceptive methods, 150(50.0%) cases were aware about physiology of menstruation and 198(66.0%) cases were aware of menstrual hygiene. Out of 19 teenage pregnancies, in 8(42.1%) cases LSCS was done, 4(21.3%) cases had vaginal delivery and 4(21.0%) cases had MTP. Conclusions: Menstrual abnormalities are the most common gynaecological problems of adolescents. Adolescents should be addressed with dignity. It is need of the time to set up specialized adolescent gynaecological clinics.

Keywords: Adolescence, gynaecological problems.
Objectives -
• To study gynaecological problems and their clinical profile in adolescent girls.
• To evaluate treatment modalities of gynaecological problems in adolescent girls.
• To evaluate reproductive health awareness among adolescent girls.

Materials and methods
A prospective observational study was done from October 2018 to September 2020 at Govt. medical college, Aurangabad, Maharashtra, India. Data was collected using case proforma. After approval from institutional ethical committee and after taking written valid informed consent, participants were included in the study.

Girls in the age group of 11 to 19 years attending gynaecology OPD or emergency, was included in the study. A detailed history was taken which emphasized on pubertal events such as thelarche, pubarche, pregnancy and menarche. First, the girl was interviewed regarding her problems keeping her privacy and dignity and if girl was feeling shy or was unable to speak out her problems then only her mother was asked for history. Assurance was given.

BMI was calculated. A thorough clinical examination including height, weight, secondary sexual character (by tanner staging), general examination of breast, thyroid was done. Hirsutism was assessed by the Ferriman Gallwey Scale. Cardiovascular system, respiratory, and central nervous system were also assessed.

Presence of nutritional anaemia was determined by Sahli’s method. Formula used for calculation of iron deficit was Ganzoni formula; Total iron dose requirement = [actual body weight X (15-actual HB) X 2.4 + 500]. Anaemia treated with oral and/or injectable iron therapy with folic acid and packed cell blood transfusions in severe anaemia.

Different menstrual disorders were studied with the underlying cause. Primary and secondary amenorrhea was ruled out. Hormonal evaluation: (when feasible) - TSH, T3 and T4, FSH/LH, plasma testosterone, serum progesterone (day 21 of cycle). The hormonal tests were done at day 3 of menstrual cycle. Glucose tolerance test was also done. PCOS was ruled out by Rotterdam criteria and treated with lifestyle modification (diet modification with carbohydrate reduced and aerobic exercise) with OCPs [Combination used was 0.03 mg ethinyl estradiol + (4th generation progesterone i.e. drosperone 3 mg > 3rd generation progesterone i.e. desogestrol 0.15 mg), metformin 500 mg OD and anti-androgenic drugs (spironolactone 50 mg OD). Thyroid disorders were treated with lifestyle modification and anti-thyroid drugs (hypothyroidism was treated with thyroxine 75 - 100 ug OD, while hyperthyroidism by carbimazole 0.2-1 mg/kg/day).

Pregnancy was ruled out by urine pregnancy test, USG as and when required. Pregnant teenagers were offered MTP/ANC services/delivery services as necessary.

For vaginal infections discharge was collected and wet smear examined under microscope by microbiologist. STI were treated with coloured coded kits (used under treatment by syndromic approach) of STI depending upon the organism detected. Ovarian tumours were detected and treated medically and surgically as per need.

Reproductive health awareness was evaluated using questionnaire. All the information collected was stored in prescribed case proforma. The data was compiled in master chart i.e. in MS-EXCEL sheet and data was analysed.

Results
In present study a total of 300 adolescent girls were enrolled who were having gynaecological problems.

According to Kuppuswamy classification, 53.3% of adolescent girls came from class IV background, 14% and 32.7% cases belonged to class III and V respectively. In this study, 215 cases (71.67%) achieved menarche at 14-16 years of age, 28% in 11-13 years and 0.3% in 17-19 years of age. 150(50.0%) cases in study were at tanner stage 5 of breast development. 3.3% were at tanner stage 1, 7.3% at tanner stage 2, 22% at tanner stage 3 and 17.3% were at tanner stage 4 of breast development. Most common gynaecological problem among the cases was menstrual disorders 156 cases (52%), followed by vaginal discharge in 35 cases (11.6%),

Table 1: Demographic factors of study group

<table>
<thead>
<tr>
<th>Age in years (% of population)</th>
<th>11-13 (13.3%)</th>
<th>14-16 (30.7%)</th>
<th>17-19 (56%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education (% of population)</td>
<td>Primary (12.3%)</td>
<td>Secondary (53.3%)</td>
<td>Higher secondary (34%)</td>
</tr>
<tr>
<td>BMI (% of population)</td>
<td>Underweight (&lt;19 kg/m²) 26%</td>
<td>Normal (19-25 kg/m²) 56%</td>
<td>Overweight (25-30 kg/m²) 14.6%</td>
</tr>
</tbody>
</table>

24 cases (8.0%) each came with history of sexual assault and excessive weight gain, 20 cases (6.6%) presented with urinary tract infection, 8 cases (2.6%) and 14 cases (4.7%) presented with ovarian torsion and ovarian tumours respectively and 19(6.3%) cases were of teenage pregnancy.

In present study menstrual disorders were ranged from amenorrhea to menorrhagia in cases. The most common type of disorder was oligomenorrhea with 86 cases
(55.2%), followed by menorrhagia with 27 cases (17.3%) and 24 cases (15.4%) of amenorrhoea. Major cause of oligomenorrhea in study group was PCOS 31(36%), followed by excessive weight gain i.e 24(27.9%), 15(17.4%) and 10(11.6%) of cases had thyroid disorder and stress respectively. And 6 (7.1%) cases did not have any associative factors. Hypothyroidism was major cause (78% cases) in thyroid disorder in present study.

<p>| Table 2: Management of PCOS in study group |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|</p>
<table>
<thead>
<tr>
<th>Age No. of cases</th>
<th>Management done</th>
<th>Follow up after 3 months</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-13 years</td>
<td>6</td>
<td>Lifestyle modification only</td>
<td>6 cases - weight reduced by 5-7% cycles regularized</td>
</tr>
<tr>
<td>14-16 years</td>
<td>12</td>
<td>Lifestyle modification ± OCPs ± metformin ± spironolactone</td>
<td>9 cases - lifestyle modification only</td>
</tr>
<tr>
<td>17-19 years</td>
<td>20</td>
<td>Lifestyle modification ± OCPs ± metformin ± spironolactone</td>
<td>10 cases - lifestyle modification only; 7 cases - LM+OCPs; 2 cases - LM+OCPs+metformin; 1 case - LM+OCPs+metformin + spironolactone</td>
</tr>
</tbody>
</table>

In 27 cases of menorrhagia, in 21(77.7%) cases puberty menorrhagia was the major associative factor, 03(9.1%) cases had hypothyroidism and PCOS, each. Majority of cases of puberty menorrhagia, 10(47.61%) were moderately anaemic and required anaemia correction in the form of injectable iron therapy while 8 cases (38.9%) required blood transfusion followed by injectable iron therapy. Injectable iron therapy was given after calculating iron deficit using the formula mentioned in methodology. In remaining 6 cases (22.23%) after treating underlying cause (PCOS and hypothyroidism) menorrhagia resolved.

Out of 23 cases of secondary amenorrhoea, 19 (79.2%) cases reported with teenage pregnancy, 4 (16.7%) cases had PCOS and 1(4.2%) case had primary amenorrhoea due to imperforate hymen. 76 (25.3%) cases had mild anaemia, 160(53.3%) cases had moderate anaemia and 08(2.6%) cases had severe anaemia.

Out of 38 PCOS cases, 31(81.6%) cases presented with oligomenorrhea, 3(7.9%) cases with menorrhagia and 4(10.5%) cases with secondary amenorrhoea. Cases followed typical clinical pattern of oligomenorrhea mainly. As the age of participants increased, requirement of medical method for PCOS treatment increased (table 2).

Hypothyroidism was treated with thyroxine 75-100 microgram OD, while hyperthyroidism by carbimazole 0.2-1 mg/kg/day. All patients responded to the treatment given. The follow up was kept for 6 months.

20 (39.2%) adolescent girls presented with urinary tract infection and 31(60.7%) cases had reproductive tract infections (RTI). Out of 31 cases of RTI, 10 (32.2%) cases were having Gardenella Vaginalis as major cause of RTI followed by 9 (29.0%) cases of Neisseria Gonorrhoea. Out of 19 teenage pregnancies, in 8(42.1%) cases LSCS was done, 3(15.8%) cases had full term normal delivery (FTND) and instrumental delivery each, 4(21.0%) cases had MTP.

In this study, 22 adolescent girls on USG were diagnosed with ovarian mass (benign/ torsion/ malignant). Most common type of ovarian tumour found in the present study was dermoid cyst (7/22), both cases of malignant ovarian tumours had immature teratoma. Both malignant tumours required definitive management in the form of unilateral salpingo-oophorectomy. Out of 8 cases of ovarian torsion mainly 6 cases (75.0%) required definitive management in the form of oopherectomy (as ovaries were gangrenous and non-conservable) and 2 cases of ovarian torsion were managed with laparoscopic detorsion. 7 (58.3%) cases of benign tumours required definitive management with oopherectomy.

Out of 300 cases, 200(66.7%) cases were having awareness of physical signs of puberty. 245(81.7%) cases had knowledge of STD, HIV and its mode of transmission. 200(66.7%) cases were aware about different contraceptive methods. 150(50.0%) cases were aware of physiology of menstruation, and 198(66.0%) cases were having awareness about menstrual hygiene.

**Discussion**

In present study group, 56% adolescent girls had normal BMI. Thaker RV et al, 4 G Chandrakala et al5 and Nulakathati Vani et al6 reported 49.3%, 74% and 48.45% girls having normal BMI respectively. Whereas Lalitha S, et al7 found that 69.33% were underweight. Although most of the girls in various studies mentioned above had normal BMI but it is seen that overweight (3.4%) and obesity (14.6%) is an emerging problem in many adolescent girls.

In present study 2.6 % of adolescent girls were severely anaemic and were managed with blood transfusions, 53.3% were moderately anaemic and received injectable iron sucrose therapy and 25.3% were mildly anaemic and were given oral and nutritional iron therapy. Whereas in study Lalitha S et al1 and Anuradha C et al8 8% and 1.60% were
severely anaemic respectively and required blood transfusions, 25.33% and 2.88% were moderately anaemic in respective studies and were given oral and nutritional iron therapy. It is pathetic that blood transfusion was needed to treat severe anaemia in all studies mentioned above. School age girls need to be checked and evaluated for anaemia.

In the present study most common gynaecological problem among the adolescent girls was menstrual disorders (52%). Menstrual disorder as most common gynaecological disorder was also found in studies of Nulakathati Vani et al (59.63%), Hirani G et al (67.5%), Anuradha C et al (73.07%) and Lalitha S et al (60%).

Vaginal discharge (11.6%) was second most common gynaecological problem among the adolescent girls which is similar to studies of Nulakathati Vani et al (9.94%), Hirani G et al (12.2%) and Anuradha C et al (11.2%).

In present study, teenage pregnancy was reported in 6.3% of adolescent girls whereas Lakshmi et al reported 2.52% and Lalitha S et al reported high teenage pregnancy prevalence i.e.10.66%. The range of teenage pregnancy was from 2-10% with our study having 6.3%.

Present study observed 8% adolescent girls having excessive weight gain, whereas 5.76% and 4.0% adolescent girls were noted by Hirani G et al and Anuradha C et al respectively.

In present study, the most common type of menstrual disorder was oligomenorrhea (55.2%). Studies by A. Sri Lakshmi et al, Lalitha S et al and Nulakathati Vani et al reveals that menorrhagia was present in 55.55%, 33.33% and 16.6% adolescent girls respectively. Anuradha C et al, Hirani G et al and Thaker RV et al reported the most common type of disorder was that of dysmenorrhea i.e 42.0%, 42.5% and 52.9% respectively. Different studies reveal different types of menstrual disorders in adolescents.

Out 24 cases of amenorrhea in present study, 79.2% cases were having teenage pregnancy. Whereas Lalitha S, et al and Rithvika Walad et al observed 80% and 74% cases of teenage pregnancy respectively. The high rate of teenage pregnancy needs to be addressed by awareness, counselling, contraception and promoting delayed age of marriage.

In present study PCOS was present in 16.7% cases of secondary amenorrhea, whereas Rithvika Walad et al, Hirani G et al, Anuradha C et al and Lalitha S et al found 3%, 4.7%, 4.16 and 8% cases respectively of secondary amenorrhea due to polycystic ovarian syndrome.

In the present study 39.2% adolescent girls presented with urinary tract infection. Whereas in study by Lalitha S et al, Sabita Rezwana R et al, Shubha 12, 6.6%, and 5.5% girls had UTI respectively. The high incidence of UTI in present study could be due to the fact that UTI was suspected on symptoms and clinical features (was not always objectively proved on urine examination). The other studies had confirmed UTI by doing urine examination studies.

In the present study 60.7% adolescent girls had reproductive tract infection, whereas in study by R Ram et al, Lalitha S et al and Emily K had RTI respectively. RTI is an emerging cause of infection in adolescent due to lack of reproductive health awareness in this age group. In present study out of 31 cases of RTI, 10 (32.2%) cases were having Gardnerella Vaginalis as major cause of RTI which is also seen in study by Emily Kerubo et al (18%). Whereas in study done by Rabiu KA et al, Gonorrhoea was found the commonest cause of RTI (23.4%). In study by Anuradha C et al Candidiasis was the most common cause of pathological vaginal discharge among married and Trichomonas vaginitis among unmarried adolescents. Mixed vaginal infections were common in all studies.

In present study, 22 adolescent girls on ultrasonography were diagnosed with ovarian mass (benign/torsion/malignant). 91.4% were reported benign ovarian tumour which is similarly seen in Radhe Akang study (94.5%). In study by Liu H et al, Sridevi T et al, Lalitha S et al and Ruchi Rathore et al reported the most common cause of pathological vaginal discharge among married and Trichomonas vaginitis among unmarried adolescents. Mixed vaginal infections were common in all studies.

In present study by S Seethalakshmi et al awareness regarding physical signs of puberty was only 39% but in our study it was 66.7%. In study by Seema G et al STD awareness was 65.75% which was 81.7% in our study, also awareness regarding contraceptive increased from 62.25% to 66.7% in our study. The better awareness was seen in adolescent about physiology of menstruation, hygiene and STDs and contraceptive in our study. We had put a specific questionnaire before adolescents to know awareness on it. This shows importance of need of sexual health education during school age to improve reproductive and sexual health.

Conclusion
Adolescent gynaecology is an important subspecialized part of gynaecology. Increase in BMI, PCOS, anaemia, reproductive and urinary tract infections, teenage pregnancy, victims of sexual assault are cause of concern in present adolescents. Knowledge about menstruation and menstrual hygiene, reproduction, contraception and availability of...
nutritious diet needs to be addressed. Programmes like school health and ARSH need quality implementation. Malignancy needs to be ruled out in ovarian tumours during adolescents. Setting up specialized “Adolescents gynaecological clinics” is the need of the hour considering that adolescents are the citizens and parents of tomorrow.

**Conflict of interest:** None. **Disclaimer:** Nil.

**References**


Bhakti V Kalyankar ¹, Vijay Y Kalyankar ², Shrinivas Gadappa ³, Megha Chauhan ⁴
¹ Professor, Department of Obstetrics and Gynecology, Government medical college, Aurangabad, Maharashtra, India; ² Associate Professor, Department of Obstetrics and Gynecology, Government medical college, Aurangabad, Maharashtra, India; ³ HOD and Professor, Department of Obstetrics and Gynecology, Government medical college, Aurangabad, Maharashtra, India; ⁴ Senior Resident, Department of Obstetrics and Gynecology, Government medical college, Aurangabad, Maharashtra, India.