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**ORIGINAL ARTICLE****Common Menstrual Problems among Slum Adolescent Girls of Western Maharashtra, India**

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**Abstract:**

*Background:* Menstruation, an important part of female reproductive cycle but menstrual dysfunction in adolescent girls may affect normal life of adolescent and young adult women.

*Objectives:* To assess the percentage of common menstrual problems among adolescent girls from urban slums and to determine the correlation between common menstrual problems with nutritional status of these girls. *Methodology:* A cross sectional study was conducted among adolescent girls residing in urban slum area under the field practice area of Krishna Institute of Medical Sciences Karad of western Maharashtra, India during the month of November - December 2011. 237 adolescent girls, age between 12-19 years were interviewed and examined using pretested semi-structured questionnaire. Data was collected by researchers with the help of Medical Officer and Medical Social Worker of Urban Health Training Center by personal interview and clinical examination method. Data was compiled and presented into frequency percentage distribution. Chi-square test was applied to determine the association between common menstrual problems with body mass index and anemia. *Results:* Out of total 237 adolescent girls, 230 (97.04%) had attained menarche of which, 147 girls

(63.91%) had regular and 83(36.08%) had irregular menstrual cycle with mean age at menarche by recall method was 12.8 yrs. The percentage of common menstrual problems such as oligomenorrhea, menorrhagia, metrorrhagia, hypomenorrhea, dysmenorrhea, and premenstrual syndrome were 16.08%, 17.82%, 27.39%, 59.56%, 49.13% and 46.52% respectively, however amenorrhea (primary) was seen in 3 (0.01%) girls. Prevalence of undernutrition and anemia was 40.86% and 60.43%. Health seeking behavior for common menstrual problem was seen in only 25.75% girls. Oligomenorrhea, menorrhagia, hypomenorrhea, dysmenorrhea, and premenstrual syndrome were significantly associated with anemia; however BMI was significantly associated with dysmenorrhea, hypomenorrhea and premenstrual syndrome. *Conclusion:* Menstrual health is fundamental to women's sexual and reproductive health. The present study has observed mean age at menarche of 12.8year and prevalence of undernutrition and anemia as 40.86% & 60.43% respectively. Poor nutritional status and anemia were associated with common menstrual problems among adolescent girls from slum area.

**Key words:** Menstrual problems, BMI, Anemia, Adolescent girls

**Introduction:**

Menstrual problems are generally perceived as only minor health concern and thus irrelevant to the public health agenda particularly for women in developing countries who may face life threatening conditions. Menstrual cycle is normal physiological process that is characterized by periodic and cyclic shedding of endometrium accompanied by loss of blood which is a vital sign for assessment of normal development in adolescent and young girls. World Health Organization has defined 'adolescence' as a period between 10-19 years. In Indian context, adolescents constitute over 21.4% of the total population and this age group needs special attention because this period is very crucial since these are the formative years in the life of an individual when major physical, psychological and behavioral changes take place and additional roles and responsibilities are expected from them [1, 2]. A vast majority of adolescent girls in India are suffering from reproductive health morbidities which may affect normal life of adolescent and young adult women. Physical, mental, social, psychological and reproductive problems are often associated with menstrual irregularities and menstrual problems. The literature available in India and abroad mainly highlights the reproductive problems among adolescent girls residing in rural and urban establishments, however literature for slum dweller adolescent girls was very scanty. Due to lack of health care facilities in slum area, poverty, ignorance, malnutrition, poor knowledge of health and diseases, low level education, cultural taboos and belief, poor standard of living, male dominance and

poor access of health care services lead to a high morbidity and mortality among the women in reproductive age group (15-45 yrs.) residing in slum area [3,4]. Various factors such as heredity, environmental conditions, body stature, socioeconomic status, nutritional and health status, family size, level of education, and psychological well being are known to influence the age of menarche and common menstrual problems, which are diagnosable and mostly treatable even at peripheral level in early stage, but this part of women's health is often ignored by primary health care in India.

In view of this, a study to estimate the frequency percentage of common menstrual problems faced by urban slum dwelling adolescent girls and to assess the influences of anemia and nutritional status on common menstrual problems was undertaken. The health information obtained from the present study will be useful in organizing and modifying health programme activities for young females with a view to improve reproductive health of women.

**Methodology:**

A cross sectional study was undertaken in urban slum area under field practice area of Krishna Institute of Medical Sciences (KIMS) Karad, Maharashtra, India during the month of November-December 2011. Urban Health Training Centre (UHTC) under Dept. of Community Medicine, KIMS provides health care services to urban slum dwellers. At the time of study total 237 unmarried adolescent girls were found in the study area, of which 230 had attained menarche, however 7 had not. Study tool included pretested semi-structured question-

naire, weighing machine, height measuring scale, hemoglobin assessment kit used to collect data. Prior to data collection, aim of the present study was explained and verbal consent was obtained from parents as well as the adolescent girls.

Data was collected by investigator with the help of UHTC team which included medical officer (female), gynecologist (female), medical social worker, Lab technician and helper. The pretested semi-structured questionnaire which included questions related to menstruation, and other study parameters related to health seeking behavior. Study subjects were referred to the UHTC with their family members on scheduled date and time and information was collected by face to face interview and clinical examination by experts. Information about the menstrual history and date of menarche was collected by recall method.

### Measurements:

Weight was measured in kilogram, without foot wear using a regularly standardized beam balance during study period having a precision of 0.1kg. Checks on the scale were made routinely before recording the weight of each girl.

Height was also taken barefooted in centimeter using standard measuring tape fixed vertically and care was taken to see that there was no fold or tilting to any side. Height was recorded to the nearest 1 cm to avoid possible error.

Body Mass Index (BMI) was calculated as weight in kg/height in m<sup>2</sup>. According to BMI, nutritional status was classified as overweight (over nourished), normal and undernourished as BMI more > 25, 18.5-24.99 and < 18.5 kg/

height in m<sup>2</sup> respectively [5, 6].

**Haemoglobin:** was estimated by Sahli's method using a haemoglobinometer.

It is simple, reliable, inexpensive and effective medical device recommended by World Health Organization (WHO) for accurate estimation of haemoglobin levels in blood [5]. The blood samples were collected by trained UHTC laboratory technician by a finger prick method and haemoglobin concentration was estimated. According to WHO, anemia was classified as mild, moderate and severe as hemoglobin concentration range between 10 -12, 7 -10 and less than 7gm% respectively [7].

Cases were treated adequately at UHTC and Krishna Hospital Karad.

### Analysis:

The data so collected were compiled in MS Excel and analyzed into tabular and graphical form. Chi-square test was used to assess the statistical association between common menstrual problems and nutritional status.

**Common menstrual problems definitions used to collect data** [8, 9, 10, 11]:

**Regular menstrual cycle:** Cycle that occurs every  $28 \pm 2-3$  days in which the menstrual flow lasts for 3-5 days with an average flow of 50-200 ml.

**Irregular menstrual cycle:** any deviation from cyclic occurrence of menstrual cycle i.e.  $28 \pm 2-3$  days.

**Amenorrhea (primary):** total absence of menstruation in girls upto the age of completed 16 years.

**Oligomenorrhea:** very light menstruations, usually 4-9 periods per year.

**Menorrhagia:** denotes bleeding, which is excessive in amount i. e. >500ml ( soaked pads > 5/day) or periods that last longer than 7 days.

**Metrorrhagia:** breakthrough bleeding or spotting in-between periods.

**Hypomenorrhoea (scanty):** denotes regularly timed bleeding but scanty (<50 ml) in amount.

**Dysmenorrhoea:** refers to the lower abdominal pain accompanying the menstrual cycle.

**Premenstrual syndrome:** symptoms like abdominal pain, leg cramps, headache, low backache, breast tenderness, irritability etc. before onset of menstruation.

**Results:**

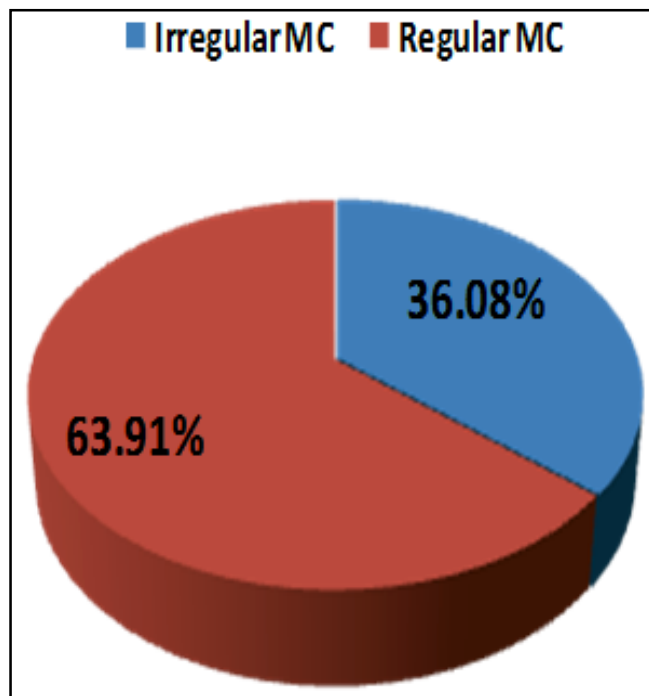
A total of 237 adolescent girls were interviewed and clinically examined for common menstrual problems. Seven adolescents of these were excluded from the study as they did not have the menarche. 230 adolescents studied were in the age group of 12-19 yrs with the mean age of 15.8 yrs. Lowest and highest age at menarche was 11 and 16 yrs respectively with the mean age at menarche of 12.8 yrs with a SD of 1.06 years. Maximum 101 (44%) girls were with the mean age at menarche 12 & above but >13 yrs. (Table 1)

**Table 1 - Frequency (%) distribution of girls according to age at menarche (N-230)\***

Age at menarche (in years)	Frequency (%)
11	11 (4.8)
12	101 (44)
13	61 (26.5)
14	37 (16)
15	19 (8.25)
16 & above	1 (0.5)

\*7 Adolescents did not have menarche hence excluded from this table.

**Fig 1: Pattern of Menstrual cycle**



Out of 230 adolescents 147 girls (63.91%) had regular and 83(36.08%) girls had irregular menstrual cycles. (Fig. 1) Common menstrual problems faced by these adolescents are given in Table 2.

Out of 230 girls with attainment of menstruation, frequency and percentages of common menstrual problems like oligomenorrhea, menorrhagia (profuse bleeding), metrorrhagia (break through bleeding), hypomenorrhea (scanty bleeding), dysmenorrhea and premenstrual syndrome were 37(16.08%), 41(17.82%), 63(27.39%), 137(59.56%), 113(49.13%) and 107(46.52%) respectively. Girls who had not yet started menses were 7(2.95%) of which 3 had primary amenorrhea and remaining were above age of 16 years hence were not interviewed and examined. They were in need of ex-

**Table 2 - Common Menstrual Problems (N=237)\***

Menstrual Problems	Frequency (%)
Amenorrhea (primary)	3 /237(0.01%)**
Oligomenorrhea	37 /230(16.08%)
Menorrhagia (profuse bleeding)	41 /230(17.82%)
Metrorrhagia (breakthrough bleeding)	63 /230(27.39%)
Hypomenorrhea (scanty bleeding)	137/230(59.56%)
Dysmenorrhea	113/230(49.13%)
Premenstrual syndrome	107/230(46.52%)

\* 52 girls did not have age menstrual problem.

\*\* 4 girls who did not attend menarche were older than 16 years hence not counted as primary amenorrhea.

nutritional status (BMI) and anemia among the adolescents, and significant linear trend was also observed between nutritional status (BMI) and anemia among adolescent girls (Table 3). Of the adolescent girls with common menstrual problems such as dysmenorrhea, oligomenorrhea, hypomenorrhea, metrorrhagia, menorrhagia and premenstrual syndrome, 51.32%, 40.54%, 40.54%, 42.85%, 31.70% and 53.27% were undernourished respectively whereas 60.17%, 81.08%, 68.61%, 66.66%, 73.17% and 68.22% were anemic. Statistical

**Table 3 - Nutritional status (BMI) and Anemia among adolescent girls (N=230)**

Nutritional status : Frequency (%)		Anaemia (Gm. %)				
		<7	7-10	10-12	>12	
<b>Body Mass Index (Kg /m<sup>2</sup>)</b>	<b>Underweight (&lt;18.5)</b>	<b>94 (40.86%)</b>	<b>18 (19.1%)</b>	<b>27 (28%)</b>	<b>29 (30.8%)</b>	<b>20 (21.2%)</b>
	Severe (< 16)	5(5.31%)	3(13%)	2(4.2%)	0(0.0%)	0(0.0%)
	Moderate (16-16.99)	26(27.65%)	7(30.4%)	11(23.4%)	6(8.6%)	2(2.1%)
	Mild( 17-18.49)	63(67%)	8(34.7%)	14(29.7%)	23(33.3%)	18(19.7%)
	<b>Normal weight (18.5 – 24.99)</b>	<b>117(50.86%)</b>	<b>4(17.3%)</b>	<b>9(19.1%)</b>	<b>36(52.1%)</b>	<b>68(74.7%)</b>
	<b>Overweight ( ≥ 25)</b>	<b>19 (8.26%)</b>	<b>01(5.2%)</b>	<b>11 (57.8%)</b>	<b>04 (21%)</b>	<b>03 (15.7%)</b>
	25-29.99	15(79%)	1(4.3%)	8(17%)	3(4.3%)	3(3.2%)
	≥30	4(21%)	0 (0.0 %)	3(6.3%)	1(1.4%)	0(0.0%)
	<b>Total</b>	<b>230 (100%)</b>	<b>23(10%)</b>	<b>47(20.43%)</b>	<b>69(30%)</b>	<b>91(39.56%)</b>

$\chi^2 = 34.48, P = 0.0001^*$ ,  $\chi^2$  trend = 7.587,  $p = 0.0059^*$ . \* =  $p$  significant at 95% CI.

pert advice and investigations (Table 2). Out of 230 girls, 40.86% were under nourished of which 5.31% and 27.65% were severally and moderately undernourished, and anemia of mild, moderate and severe grade was observed in 30%, 20.43% and 10% girls respectively. Significant association was observed between

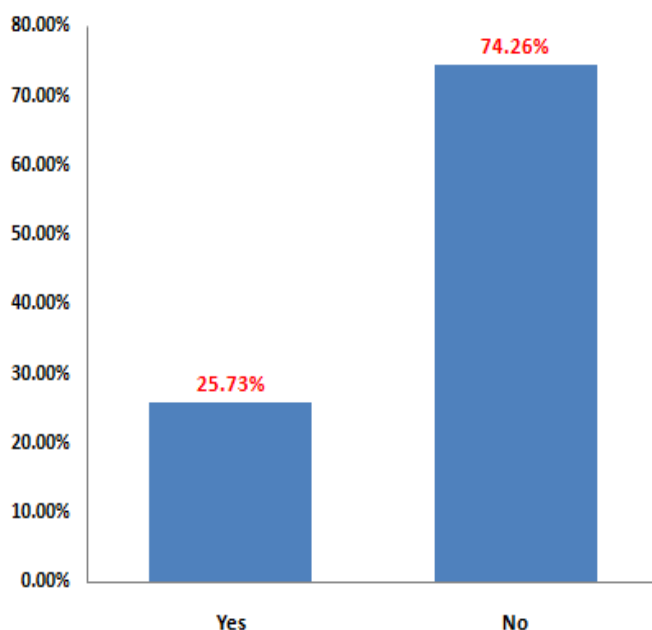
association existed between nutritional status of adolescent girls according to BMI and dysmenorrhea, hypomenorrhea and premenstrual syndrome ( $p < 0.05^*$ ) where as significant association was observed between anemia and dysmenorrhea, oligomenorrhea, hypomenorrhea, menorrhagia and premenstrual syndrome

**Table 4 - Association between common menstrual problems with BMI and Anemia (N=230)**

Menstrual problems	BMI (Kg/m <sup>2</sup> )			P	Anaemia (Gm%)				P
	<18.5	18.5-24.99	>25		<7	7-10	10-12	>12	
Dysmenorrhea	58	47	8	<0.05*	7	17	44	45	<0.05*
Oligomenorrhea	15	17	5	>0.05	4	12	14	7	<0.05*
Hypomenorrhea	76	54	7	<0.05	10	35	49	43	<0.05*
Metrorrhagia	27	31	5	>0.05	8	18	16	21	>0.05
Menorrhagia	13	23	5	>0.05	9	11	10	11	<0.05*
Premenstrual syndrome	57	44	6	<0.05*	8	29	36	34	<0.05*

( $p < 0.05^*$ ) (Table 4).

Out of 237 adolescent girls, only 25.73% were seeking the treatment where as max. 74.26% not made any attempt to take the treatment for menstrual problems (Fig. 2).

**Fig. 2: Health Seeking Behavior (N=237):****Table 5 - Consultation By (N=61)**

Consultation by	Frequency (%)
Doctor	36 (59.01)
Pharmacist	15(24.59%)
Mother	7(11.47%)
Friends	2(3.27%)
Others	1(1.63%)

Out of 61 adolescent girls who consulted for their menstrual problems, a majority (59.01%) girls took the treatment from doctors/physicians, and remaining took treatment from pharmacist and other sources (Table 5).

### Discussion:

Menstruation, is an inevitable part of a girl's life and more so an important indicator of normal physical, physiological and functional well being. In the present study 97.04% girls attained menstruation, however studies from Guntur, Andhra Pradesh [12] and Nagpur, Maharashtra [13] slum area have observed 71.39% and 78.67% girls attaining menstruation at the time of study. This difference has been mainly due to age of study subjects (10-19 yrs). In the

present study primary amenorrhea has been seen in 0.01%. A similar finding is also observed in United States by Master Hunter T [14] as less than 1% of primary amonorrhoea. This study has revealed the mean age at menarche by recall method of 12.8 yrs, however study from Nagpur slum area [13] and Meerut, Utter Pradesh [15] have observed mean age at menarche of 13.15 and 13.16 years respectively. These differences could be due to differences in geographical, environmental, nutritional, socio-economic factors and general health status of the study subjects. The age of menarche is determined by general health, genetic factors, socioeconomic and nutritional status but with improvement in the nutritional status and general health, it has declined in many populations. Our study has revealed 63.91% girls have regular menstruation cycles whereas 36.08% have irregular cycles. Similar finding is also observed from Guntur, Andhra Pradesh [12] and Meerut, Utter Pradesh [15] as 66.54% and 66.9% girls with regular menstruation cycles, however study conducted by M. Kulkarni in Maharashtra [13] has observed 11.16% girls with irregular menstrual cycles and difference may be due to nutritional, general health and age difference of study subjects. The present study has revealed, 49.13% girls have a complaint of dysmenorrhoea. A similar finding is also reported by M. Kulkarni [13] and K. Jain [15] as 53.60% and 40.3% girls with complaints of dysmenorrhoea. The difference in the results might be due to either more tolerance in rural girls or neglect of their complaints or better acceptance of symptoms.

The present study has found 59.56% girls have had hypomenorrhea, however M. Kulkarni [13]

and K. Jogdand [12] have observed it as 5.35% and 6.23% and difference in results might be due poor nutritional status, anemia and higher age of our study subjects. This study has revealed that 46.52% girls complain of premenstrual syndrome. Similar observations are also reported by M. Kulkarni [13] as 41.52% girls in their study have presented with premenstrual syndrome. In the present study, menorrhagia was found in 17.82% girls. M. Kulkarni [13] and K. Jogdand [12] have also observed similar findings as 16.07% and 15.96% girls with menorrhagia.

The present study has revealed oligomenorrhea and metrorrhagia among adolescent girls from urban slums area as 16.08% and 27.39% respectively. Low level of blood hemoglobin concentration and nutritional status is often associated with irregularities of menstrual and reproductive problems among the women in reproductive age groups. Literature about oligomenorrhea and metrorrhagia among adolescent Indian girls from slum area is not found anywhere, however, 4.8% girls are found with oligomenorrhea in USA by Glueck CJ [10] and this lower rate could be mainly due to age (14 yrs) and geographical differences.

This study has revealed prevalence of anemia and under nutrition as 60.43% and 40.86% respectively, however data from Mumbai [17] indicates 88% and 61% girls to be anemic and under nourished. 90.65% girls are observed to be anemic from Jaitala, Nagpur slum area [16]. This high proportion could be mainly due to geographical distribution, poor environmental sanitation, poor diet and psychosocial factors. Treatment seeking behaviour about common

menstrual problems has been 25.73% of which 59.01% have sought the treatment from physician. Similar findings are also observed from Nagpur [13] that 37.67% girls seek the treatment for their menstrual problems. However, only 6% girls from Dhaka, Bangladesh [18] seek the treatment from physician for common menstrual problems. Poor treatment seeking behaviour may be due to lack of awareness, habit of tolerance of problems, ignorance, or due to wrong advice by mother as well as family members, low level of education and lack of adequate health care services in slum area.

Majority of factors are preventable. There is a need of positive attitude towards the health of adolescents in slum areas of India through primary health care approach and establishment and proper functioning of adolescent health clinics in slum areas.

### Conclusion:

Menstrual health is fundamental to women's sexual and reproductive health. Changes in the normal menstrual patterns of women in reproductive age group may affect the physical and psychological well being. The present study has established poor nutritional status and anemia to be often associated with common menstrual problems among adolescent girls from slum establishment.

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