



## Adolescent girls' health profile in sub-Himalayan region of West Bengal

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**OBJECTIVE(S):** To compare the health profile of the adolescent urban schoolgirls and the underprivileged tea garden girls residing in the sub-Himalayan region.

**METHOD(S) :** Seven hundred tea garden girls and 650 urban schoolgirls aged 12-20 years in the Siliguri area were surveyed by means of a preset questionnaire. Comparative analysis of the basic health profiles of these two different groups of girls living in the same ecozone was done.

**RESULTS :**Forty-three percent of the tea garden girls attained their menarche at 12 years while 38.5% schoolgirls did so at 13 years. Nutritional deficiencies were widely prevalent among the tea garden girls and so were school drop-outs. Mild to moderate anemia was especially rampant. However most school girls were overweight or obese and 14.6% had their BMI >29. Awareness regarding sexually transmitted diseases, unwanted pregnancies, and contraception was also substantially poor among the tea garden girls.

**CONCLUSION(S) :** Poor adolescent girls' health needs to be improved with a goal to promote the future reproductive health of the society.

**Key words :** poor adolescent girls, reproductive health, sub-Himalayan region

### Introduction

Adolescence (WHO: 10-20 years) registers marked anatomical, physiological, and psychological changes in a girl. The RCH program puts tremendous emphasis on the health of adolescent girls in the form of life cycle approach. They comprise 10-15% of our population. It is only recently that we have acknowledged the need for a separate speciality to handle adolescent problems and ailments. By rectifying the adolescent ill health, we will be able to strengthen the future reproductive health of our population. With education, enlightenment and empowerment of a girl, gender bias can be removed from society.

### Methods

A cross sectional study was conducted from 1<sup>st</sup> May, 2000 to 30<sup>th</sup> April, 2001 between two sets of adolescent girls aged 12-20 years. We paid visits to various tea gardens and some schools in urban areas of Siliguri, a city in the sub-Himalayan region of Darjeeling district. A total of 700 adolescent tea garden girls and 650 adolescent urban schoolgirls were interviewed with a preset questionnaire maintaining confidentiality. They were clinically examined and their hemoglobin estimated. The findings were analyzed.

### Results

The study results are given in Tables 1 to 6.

Table 1 shows the age at menarche; 43% of the tea garden girls attained their menarche at the age of 12 years and 38.5% of the schoolgirls at 13 years.

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Table 1. Age at menarche.

Age at menarche (years)	Tea garden girls (n=700)		Urban School girls (n=650)		Z test	P value
	Number	Percent	Number	Percent		
10	30	4.2	5	0.8	3.78	0.0001
11	90	12.6	120	18.5	2.92	0.0034
12	300	43	150	23	7.73	<0.0001
13	140	20	250	38.5	7.43	<0.0001
14	130	18.6	120	18.5	0.00	1.00
15	10	1.4	5	0.8	0.79	0.429

Table 2. Psychosocial problems and school drop-outs.

Problem	Tea garden girls (n=700)		Urban school girls (n=650)		Z test	P value
	Number	Percent	Number	Percent		
Addiction	12	1.6	0	0	-	-
Psychiatric problem	2	0.29	1	0.15	0.00	1.00
School drop-outs	280	40	8	1.2	17.33	<0.0001

Table 3. Body mass index (BMI).

BMI	Tea garden girls (n=700)		Urban School girls (n=650)		Z test	P value
	Number	Percent	Number	Percent		
< 20	40	5.7	15	2.3	3.02	0.0025
20-25	600	85.7	210	32.3	19.95	<0.0001
26-29	60	8.6	330	50.7	17.00	<0.0001
>29	None	0	95	14.6	-	-

Table 4. Health problems due to nutritional deficiencies.

Health problem	Tea garden girls (n=700)		Urban School girls (n=650)		Z test	P value
	Number	Percent	Number	Percent		
Night blindness	25	3.5	0	0	-	-
Angular stomatitis	85	12	0	0	-	-
Dental caries	260	37	240	36.9	0.00	1.00
Hemoglobin deficiency						
(< 8g/dL)	80	11.4	0	0	-	-
(8-10g/dL)	555	79.3	10	1.5	28.90	<0.0001
Iodine deficiency goitre	9	1.3	2	0.30	2.57	0.0100

**Table 5. Menstrual abnormalities.**

Menstrual abnormality	Tea garden girls (n=700)		Urban School girls (n=650)		Z test	P value
	Number	Percent	Number	Percent		
Menorrhagia	15	2.1	20	3	0.88	0.3800
Oligomenorrhea	9	1.2	35	5.31	4.15	<0.0001
Amenorrhea						
Primary	None	0	1	0.001	-	-
Secondary	2	0.28	2	0.30	-	-

**Table 6. Sexual awareness and contraceptive knowledge.**

	Tea garden girls (n=700)		Urban school girls (n=650)		Z test	P
	Number	Percent	Number	Percent		
Sexual awareness	635	90.7	621	95	2.94	0.0032
Sexual abuse	30	4.2	0	0	-	-
Sexually active	55	7.85	0	0	-	-
Knowledge of contraception	445	63.5	405	62.3	0.40	0.6890
Marriage	35	5	0	0	-	-
Voluntary termination of pregnancies	28	4	0	0	-	-
Sexually transmitted diseases	45	6.4	0	0	-	-

Table 2 depicts the psychosocial problems and school drop-outs. These mainly affected the teagarden girls.

Table 3 shows the body mass index (BMI). In the tea garden areas 85.7% girls had their BMI between 20-25, in contrast to 14.6% of urban schoolgirls having their BMI >29.

Table 4 depicts health problems related to nutritional deficiencies. There is a striking difference in hemoglobin level between the two groups of girls. In the tea garden area, hemoglobin level of 8-10 dL was found in 79.3% and < 8dL in 11.4% whereas in the urban area, 98.5% girls had Hb level > 10 dL. 3.5% tea garden girls complained of night blindness, 12.1% of angular stomatitis, 1.3% of goiter, and 37% of dental caries. 36.9% schoolgirls had dental caries and 0.3% goiter but none had avitaminosis.

Table 5 denotes the various menstrual abnormalities. In tea garden area 2.1% had menorrhagia and 1.2% oligomenorrhea. In urban school girls 3% had menorrhagia and 5.3% had oligomenorrhea. One schoolgirl had primary and two had secondary amenorrhea.

Table 6 shows the sexual awareness and contraceptive knowledge of the two groups of girls. 7.85% girls of the tea garden area were sexually active, 4.2% had history of sexual abuse, 6.4% had suffered from sexually transmitted diseases (STDs), 4% had abortions, and 63.5% had contraceptive knowledge, which they obtained from older peers. Ninety-five percent of schoolgirls were sexually aware. 62.3% of them knew about contraception from peers and other public media. Five percent of tea garden girls were married and 20 of them had experienced pregnancy.

## Discussion

The age of menarche was comparable in the two groups, being 12-13 years in 63% of tea garden girls and 61.5% of urban schoolgirls. This is similar to other Indian studies conducted previously<sup>1,2</sup>. An alarmingly high school drop-out rate among the adolescent tea garden girls compared to urban school girls (40% vs 1.2%; P<0.0001) speaks for their poor socioeconomic condition and this problem requires urgent intervention. This outweighs other social evils like addiction and psychiatric disorders. Nutritional deficiency related health problems were strikingly high in the tea garden area. Most of

the tea garden girls (79.3%) were suffering from mild anemia (Hb<10g/dL) whereas only 1.5% urban school girls were so affected ( $P<0.0001$ ). This incidence is higher than the overall incidence in rural India<sup>3</sup>. Avitaminosis manifested by night blindness and angular stomatitis was also marked in the tea garden girls but notably absent in the urban girls. However the orodental problems and iodine deficiency goiter were seen in both the groups. These problems can be solved by community based programs, health education, and food fortification. The problem of anemia needs to be tackled with education, food fortification, routine antihelminthic and iron therapy, and treatment of other chronic infections<sup>4</sup>. Otherwise these problems would have long-term ill effects on the reproductive health of the tea garden girls.

Most of the tea garden girls were within normal weight range (BMI 20 to 25) and none was obese (BMI > 29) but only 32.3% urban schoolgirls were in the normal range while 65.3% were overweight or obese. The higher incidence of obesity in the urban girls ( $P<0.0001$ ) can be explained on the basis of their faulty diet and sedentary life style and will undoubtedly have some negative impact on their future reproductive health. This can also be related to a higher incidence of oligomenorrhea in the urban girls (5.3% vs 1.2%;  $P<0.0001$ ). Other menstrual problems were less frequent and comparable in the two groups. Singh et al<sup>5</sup> report similar findings. Problems related to STDs, early marriage, teenage pregnancy, and voluntary termination of pregnancy (MTP) are direct consequences of adolescent sexual activity and lack of awareness regarding reproductive physiology. These were particularly noted among the tea garden girls. This tallies with the rural Indian picture outlined in earlier studies<sup>6,7</sup>. There is an urgent need for imparting sex education and proper family planning advice to the adolescents through mass communication.

## Conclusion

The problems of adolescent girls are multifaceted with genetic, environmental, nutritional, and neuroendocrine aspects, especially in the underprivileged sector. Illiteracy along with poverty is the root cause of ill health in the tea garden region. This has profound impact upon school drop-outs, anemia nutritional deficiency, and lack of awareness regarding contraception, unwanted pregnancy, and STDs among these adolescent girls.

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