



## ASSESSING THE SOURCE OF KNOWLEDGE, ATTITUDE AND PRACTICE ON PUBERTAL AWARENESS AMONG PRE-PUBERTAL GIRLS

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### ABSTRACT

A descriptive cross sectional study was conducted to evaluate the source knowledge, attitude and practice on pubertal awareness among pre-pubertal girls. A pre designed questionnaire which consists of questions to evaluate the knowledge, attitude and practice of pubertal awareness on pre-pubertal girls were used for data collection. Information on demographic variables which include age, class, type of family, education of parents, sources of information was collected from the participants. Total 450 prepubertal girls, 150 each from state board school, matriculation board school and central board school were included in the study. The study resulted that 52.6% of state board school participants major source of information were siblings, 64.6% of matriculation board and 68% of central board participants major source of information were mothers. The mean average level of knowledge was found to be (10%), attitude (23.5%) and practice (16.2%) for state board participants, for matriculation board participants the mean average level of knowledge (32.7%), attitude (58.3%) and practice (42.6%) and for central board participants the mean average level of knowledge (47.4%), attitude (59.6%) and practice (53.8%). Study concluded that most of the participants from central board school have good knowledge, attitude and practice regarding pubertal changes when compared with the state board and matriculation board, and the major source of information was mother for majority of study participants. The result demonstrated that based on parent's literacy, the knowledge of girls on puberty increases. Creating awareness regarding puberty through health education is very essential to help the adolescent girls to handle sexuality related issues confidently.

**KEYWORDS:** *Pre-pubertal girls, Knowledge, Attitude, Practice, Pubertal awareness.*



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## INTRODUCTION

Approximately 1/5th of the world's population is constituted by adolescents of 10-19 years and out of which more than 4/5<sup>th</sup> reside in developing countries. According to the United Nations Children's Fund (UNICEF), there are 243 million adolescents comprising 21% of the total population of India which clearly shows that India is truly "young".<sup>1,2</sup> The word adolescence was derived from a Latin word "adolescere" virtually suggests that "to grow into maturity". The World Health Organization (WHO) defines an adolescent as any person between ages 10 and 19. This age range falls within WHO's definition of young people, which refers to individuals between ages 10 and 24.<sup>3</sup> The precise boundaries of adolescence are difficult to define, but this period is customarily viewed as beginning with the gradual appearance of secondary sexual characteristics at about 11 or 12 years of age and ending at 18 to 20 years.<sup>4</sup> The foremost vital changes that ensue in adolescents may be physical changes that ensue at a time of puberty.<sup>5</sup> Puberty may be a time of fast biological process where sexual and physical maturation occurs.<sup>6,7</sup> Puberty includes biological process, secretion and growth method that happens once organ begins to perform and therefore the secondary sexual characters start to develop.<sup>8</sup> The onset of menstruation and appearance of secondary sexual characters are the important changes that occur in adolescent girls.<sup>5</sup> In today's world, the lifestyle changes, particularly consumption of more junk foods, lack of physical activity and the amount of stress experienced by the students in the school life were considered to be some of the major factors for menstrual disturbances among the adolescent girls. The health status of adolescents reflect the health and well-being of the next generation.<sup>9</sup> When early adolescents experience these physical, psychological and emotional changes, they require the information regarding the bodily changes in order to prevent the problems like guilt and confusion.<sup>4</sup> During the adolescence phase, girls require emotional support from their mothers and need to be educated regarding sexual development and hygienic practices.<sup>10</sup> Due to restrictions imposed during menstruation along with the negative attitude of parents in discussing menstruation related issues with girls has led to poor awareness regarding menstruation and menstrual hygiene among adolescent girls. Hence, girls grow up with limited knowledge of menstruation.<sup>11</sup> The awareness level about menstruation prior to menarche was found to be

very much lower among the rural adolescents in the developing countries like India. Lack of menstrual hygiene is one of the major risk factors for the development of reproductive tract infections in the adolescent females.<sup>12</sup> It is unfortunate that women do not have correct and adequate data regarding the puberty and the healthy behaviours towards puberty.<sup>13</sup> The higher outcome of adolescent health will be achieved by increasing their awareness on puberty related issues. So the girls need to be properly guided regarding these changes, in order to have a transition to adolescence and their distress in handling with these changes is reduced.<sup>14</sup> So an educational intervention in order to provide accurate and authentic knowledge about pubertal changes and related crucial issues is needed to enable them to make the right decision in life.<sup>15</sup> Other studies showed that a lot of health issues will be prevented by healthy behaviours in adolescents.<sup>16,17</sup> Better knowledge and practices on menstrual hygiene reduce the risk of acquiring reproductive tract infections. Thus, healthy observation during this time of life is very important.<sup>18</sup> Numerous studies concluded that the generative health is unnoticed and queries go unrequited.<sup>19</sup> Adolescents possess some knowledge about reproductive health, but still effective educational intervention is required to encourage more sensible and healthy behaviour and results of a study shows health education sessions are very effective in increasing knowledge.<sup>20</sup> Thus, this study was conducted with an aim to assess the adolescent girls' knowledge, attitude and practice regarding puberty and its relationship with socio-demographic characteristics and to provide awareness on pubertal process and self-hygienic practices.

## MATERIALS AND METHODS

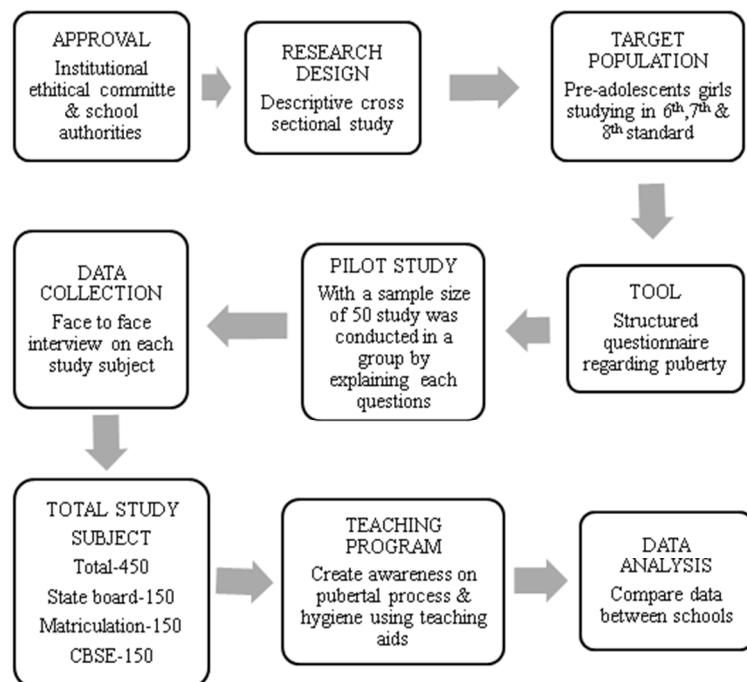
This was a descriptive cross sectional study conducted in 3 different curriculum board schools in and around Kumarapalyam, Namakkal district, Tamilnadu, India. The study was conducted for a period of six months from January 2018 to June 2018. Total study subjects were 450 prepubertal girls. Inclusion criteria for our study were, pre pubertal girls from VI to VIII standard (age group 11-14 years). We excluded those girls who came of age attained menarche. Ethical consideration was obtained from the Institutional Ethical Committee.018PDS18 We collected 150 samples from each school. Before handover the questionnaire to the study subjects the purpose of the study was clearly explained. Face to face

interview was conducted in each study participants and their doubts were cleared along with the assurance of confidentiality in all schools. This session was followed by a health education session through seminars regarding pubertal awareness (introduction to puberty, stages of pubertal period, physical changes- secondary sexual characteristics and emotional changes that occur during puberty) and self-hygienic practices. (Figure 1)

### Tools used

A separate questionnaire was designed in Tamil and English language to incorporate the participant's details. The questionnaire form included the items which included socio demographic characteristics such as parent's education, types of families, main source of information about puberty. Questions

based on Knowledge, attitude and practice were close-ended with yes or no responses. There were 12 questions on knowledge on puberty which included the sign and precocious age of puberty, order of pubertal development, the hormones responsible for puberty, role of pituitary gland in secondary sexual characters. Attitude towards puberty consists of 15 questions regarding the need of awareness camp on puberty, satisfied with their decisions, irritations, anxiety, mood changes, and beauty preoccupation about the body. Hygienic practice towards puberty consists of 5 questions regarding the cleaning of the genital area, drying their underwear in sunlight, advantages in using the private toilet, bathing twice daily, comfortable clothes.



**Figure 1**  
**Methodology**

## STATISTICAL ANALYSIS

The collected data were entered into the excel sheet. The data were analysed by using graph pad prism. For assessing the level of awareness among schools, we used One-way ANOVA according to the nature of data. P value was set at  $<0.01$ . For inter-comparison of knowledge, attitude and practice between schools tukey's multiple comparisons was used. P-value was set at  $<0.01$ .

## RESULTS

By getting prior permission, from concerned school

a pilot study was conducted in one school with a sample size of 50. The data collection was done by explaining each question with a total study subjects, and doubts were clearly explained. The result of this study showed various biases. Thus we made some corrections in the questionnaire and planned to conduct a face to face interview.

### **Socio-demographic characteristics (Table 1)**

In our study, the majority of the study participants were aged 12 years on matriculation board 59 (39.3%) and central board 61 (40.6%) followed by 11 years in state board 53 (35.3%). Majority of study subjects in state board were 88 (58.6%),

matriculation board 78 (52%) and central board 106 (70.6%) belong to Hindu religion, 107(71.3%) state board, 90(60%) matriculation board and 93(62%) central board study subjects belong to nuclear family and majority of study subjects from state board 83 (55.3%), matriculation board 44(29.3%) and central board 23(15.3%) were 6th standard. Maximum state board participant's father 81(54%) and mother 74(49.3%) have primary education, matriculation board participant's father 62(41.3%) and mother 63(42%) have a high school education and central board participant's father 89(59.3%) and mother 42(28%) were degree holders. Mother was the major source of information for most of the study subjects in matriculation board 97(64.6%) and central board 103(68.6%), but siblings were the major source for state board 79(52.6%) participants. Because the mother is being close to children, she is the prime source of information regarding the menstruation among adolescent girls. The majority of state board 76(50.6%) and central board 96(64%) study subjects was the second child and matriculation board 65(43.3%) were first child. Based on their birth order, the source of information may vary. Thus the main source of information for the first child was the mother and for second child was mother followed by sisters or friends.

### **Knowledge level on puberty**

The knowledge of puberty for the entire study population in each curriculum board school showed that 181(10%) for state board, 589(32.7%) for matriculation board and 854(47.4%) for central board school (Table 2) which was statistically significant  $\{F(2,447) = 195.3\}$  (p-value <0.0001). The intercomparison of knowledge between schools based on tukey's multiple comparison (Table 5) results that state board versus

matriculation board, state board versus central board and matriculation board versus central board are highly significant with p value <0.0001.

### **Attitude level towards puberty**

The attitude towards puberty for the entire study population was 493(23.5%) in state board, 1225(58.3%) for matriculation board and 1253(59.6%) for central board school, (Table 3) which was statistically significant  $\{F(2,447)=204.1\}$  (p-value <0.0001). The intercomparison of attitudes between schools based on tukey's multiple comparison (Table 5) results that state board versus matriculation board, state board versus central board is highly significant with p value <0.0001 and matriculation board versus central board is non-significant with p value 0.7889.

### **Practice on puberty**

The practice on puberty for the entire study population was 122(16.2%) in state board, 320(42.6%) for matriculation board and 404(53.8%) for central board school, (Table 4) which was statistically significant  $\{F(2,447)=114.8\}$  (p-value <0.0001). This is because of the lack of knowledge of respondents on the importance of hygiene of their reproductive organs. The inter comparison of practice between schools based on tukey's multiple comparison (Table 5) results that state board versus matriculation board, state board versus central board and matriculation board versus central board are highly significant with p value <0.0001. The comparison of pre-pubertal girl's negative responses for knowledge questions with maternal education of state board, matriculation board and central board participants represent that based on mother's education the knowledge level of girls may differ.

**Table 1**  
*Socio- demographic details*

S.no	Categorization	SB n=150 (%)	MB n=150 (%)	CB n=150 (%)
1. Age	11	53 (35.3)	48 (32)	58 (38.6)
	12	47 (31.3)	59 (39)	61 (40.6)
	13	29 (19.3)	23 (15)	18 (12)
	14	21 (14)	20 (13)	13 (8.6)
2. Class	6 <sup>th</sup>	83 (55.3)	58 (38.6)	57 (38)
	7 <sup>th</sup>	44 (29.3)	56 (37.3)	54 (36)
	8 <sup>th</sup>	23 (15.3)	36 (24)	39 (26)
3. Family	Joint	88 (58.6)	78 (52)	106 (70.6)
	Nuclear	25 (16.6)	28 (18.6)	25 (16)
4. Religion	Hindu	37 (24.6)	44 (29.3)	19 (12)

	Christian	43 (28.6)	60 (40)	57 (38)
	Muslim	107 (71.3)	90 (60)	93 (62)
5. Educational status of father	Primary	4 (2.6)	49(32.6)	4 (2.6)
	Secondary	114 (76)	15(10)	3 (2)
	High school	25(16.6)	52 (34)	51 (34)
	Degree	7 (4.6)	34 (22.6)	92 (61.3)
6. Educational status of mother	Primary	20 (13.3)	21 (14)	93 (62)
	Secondary	97 (64.6)	32 (21.3)	10 (6.6)
	High school	26 (17.3)	63 (42)	30 (20)
	Degree	7 (4)	34 (22.6)	17 (11.3)
7. Birth order	1	67 (44.6)	65 (43.3)	51 (34)
	2	76 (50.6)	60 (40)	96 (64)
	3	6 (4)	21 (14)	3 (2)
	4	1 (0.6)	4 (2.6)	0
8. Source of information	Mother	59 (39.3)	97 (64.6)	103 (68)
	Siblings	79 (52.6)	23 (15.3)	18 (12)
	Media	0	14 (9.3)	29 (19.3)
	Others	12 (8)	16 (10.6)	0

**Table 2**  
*Frequency of various responses to knowledge questions on pubertal changes between school students*

S.no	Knowledge questions	State Board n=150	Matric Board n=150	Central Board n=150
1.	The first sign of puberty for girls is usually breast budding and growth of pubic hair	43(28.6%)	78(52%)	99(66%)
2.	Precocious puberty for girls is 8-13 years	16(10.6%)	55 (36.6%)	38(25.3%)
3.	The order of pubertal development in girls is Thelarche-Pubarche-Adrenarche-Menarche	8(5.3%)	22 (14.6%)	41(27.3%)
4.	Being aware of changes in their bodies	46(30.6%)	92 (61.3%)	116 (7.3%)
5.	The primary function of estrogen is development of female secondary sexual characteristics	2(1.3%)	19 (12.6%)	60(40%)
6.	A late development in the pubertal sequence of female is menarche	2(1.3%)	38 (25.3%)	76(50%)
7.	Puberty lasts for a set period of time	16(10.6%)	66(44%)	68(45.3%)
8.	Pituitary gland is responsible for releasing the hormone that begins puberty	4(2.6%)	20(13.3%)	75(50%)
9	In puberty one side of our body can develop faster than the other	8(5.3%)	34(22.6%)	74(49.3%)
10.	Menarche signals a dramatic transition from girlhood to womanhood	27(18%)	81(54%)	68(45.3%)
11	Are you aware about menstruation	7(4.6%)	44(29.3%)	74(49.3%)
12.	Napkins should be changed in a time interval of 4-5 hours	2(1.3%)	40(26.6%)	65(43.3%)

**Table 3**  
*Frequency of various responses to attitude questions on pubertal changes between school students*

S.no	Attitude questions	State Board n=150	Matric Board n=150	Central Board n=150
1.	Awareness camps should be organized regarding pubertal changes	36(24%)	127(84.6%)	115(76.6%)
2.	Pubertal changes are must to attain maturity	20(13.3%)	137(91.3%)	116(77.3%)
3.	Prior knowledge about pubertal changes is necessary before their onset	40(26.6%)	114(76%)	117(78%)
4.	Peer understands my feelings better as compared to parents	33(22%)	33(22%)	87(58%)
5.	Menstruation is shameful and embarrassing situation for girls	34(22.6%)	122(81.3%)	73(48.6%)
6.	Mood changes are not a normal part of pubertal process	41(27.3%)	121(80.6%)	77(49.3%)
7.	Menstruation makes me unclean to perform religious activities	45(30%)	117(78%)	94(62.6%)
8.	Growth of hair on body area will spoil my beauty	40(26.6%)	49(32.6%)	79(52.6%)
9.	Friends and internet alone not provide complete information	43(28.6%)	42(28%)	103(68.6%)
10.	Everyone has focus to attention and concern on my changes	45(30%)	116(77.3%)	69(48%)
11.	You may get irritable often	43(28.6%)	93(62%)	64(42.6%)
12.	You may worried/anxious most if time	44(29.3%)	82(54.6%)	92(61.3%)
13.	Are you comfortable with your own decision	8(5.3%)	63(42%)	60(40%)
14.	If any unpleasure sense I feel, I consult with my family or educator	21(14%)	8(5.3%)	107(71.3%)

**Table 4**  
*Frequency of various responses to attitude questions on pubertal changes between school students*

S.no	Practice questions	State Board n=150	Matric Board n=150	Central Board n=150
1.	In toilet, I first wash perineum then anal, i.e. wash front part then back	16(10.6%)	9(6%)	63(42%)
2.	I dry underwear in sunlight	5(3.3%)	9(6%)	39(26%)
3.	Using private toilets is good	47(31.3%)	112(74.6%)	110(73.3%)
4.	I wear comfortable and cotton clothes	16(10.6%)	103(68.6%)	93(82%)
5.	During menstruation should take bath twice daily	38(25.3%)	87(58%)	99(74%)

**Table 5**  
*Comparison of knowledge, attitude and practice regarding puberty between schools*

Tukey's multiple comparison test	Mean difference	95% of CI of difference	Significant level	Adjusted p value
			Knowledge	
SB vs MB	-2.74	-3.278 to -2.202	Significant	<0.0001
SB vs CB	-4.487	-5.025 to -3.948	Significant	<0.0001
MB vs CB	-1.747	-2.285 to 1.208	Significant	<0.0001

Attitude				
<b>SB vs MB</b>	-4.88	-5.549 to -4.211	Significant	<0.0001
<b>SB vs CB</b>	-5.067	-5.735 to -4.398	Significant	<0.0001
<b>MB vs CB</b>	-0.1867	-0.8555 to 0.4821	Non significant	0.7889
Practice				
<b>SB vs MB</b>	-1.32	-1.62 to -1.02	Significant	<0.0001
<b>SB vs CB</b>	-1.88	-2.18 to -1.58	Significant	<0.0001
<b>MB vs CB</b>	-0.56	-0.8595 to 0.2605	Significant	<0.0001

*P-value: <0.01, SB-State Board, MB-Matriculation Board, CB- Central Board*

## DISCUSSION

The result of this study shows that knowledge, attitude and practice regarding pubertal changes may vary between prepubertal girls. Variables in parent's education, source of information and birth order has a beneficial effect on better knowledge, attitude and practice among pre-pubertal girls. The age of study subjects in the current study ranged from 10-14 years. The majority of study subjects who were in the age group of 12 years follow Hindu religion and belong to nuclear families. A similar result obtained from the study conducted by Chetana *et al.*, (2015)<sup>21</sup> showed that maximum percentage (49%) of the participants who were in the age group of 12 years follow the Hindu religion and belong to nuclear families. In our study more number of study subjects from central board participants was degree graduates. Similarly International study of practice regarding menstrual hygiene found that maximum respondent's father (35%) and mother (32%) has completed high school or diploma degree. We found that educational status plays an important role in adolescent girl's knowledge, attitude and practice regarding puberty. Thus the educational status of the parents has also been suggested as one of the effective factors for practice and health behaviour.<sup>22</sup> we determined that in terms of sharing between mother and child about the changes in puberty, in this study, girls prefer mother or sister as a major source of information. Our results were consistent with the study done by Agarwal *et al.*, (2007)<sup>23</sup> which showed that the main source of information was the mother, and then followed by sisters. Hockenberry *et al.*, (2013)<sup>3</sup> concluded that the main source of information was from the mother, and then followed by friends. Maternal education played an important role in awareness about puberty reproductive health. This signifies the importance of the mother, as an important imparter of health education regarding pubertal changes and she openly discusses this topic with the daughter as a well-informed adolescent can further transfer her

knowledge to her children when she becomes a mother. Some other study showed that the main source of information regarding reproductive health was peer,<sup>24</sup> and fewer earlier studies resulted media was the main source.<sup>25, 26</sup>

### Knowledge level on puberty

When the level of puberty knowledge of the study subjects were considered, it was established that the majority of the central board participants were aware of the changes when compared to state and matriculation board study participants. Similar findings showed that majority of pre-pubertal girls (75%) have below average knowledge regarding pubertal changes followed by 25% girls had an average level of knowledge. None of the girls had good and very good knowledge regarding pubertal changes.<sup>27</sup> Rakhi *et al.*, (2016)<sup>28</sup> concluded that 50% urban and 25% tribal adolescents girls were aware about secondary sexual changes during puberty. The difference in the knowledge level of the students about changes during puberty is associated with their source of information.

### Attitude level towards puberty

Attitude regarding puberty changes on study subjects were established. The majority of central board school participants has good attitude towards puberty changes when compared to state and matriculation board study participants. Our study has compared with the study conducted by Manisha *et al.*, (2016)<sup>27</sup> revealed that nearly 41% girls reported feeling anxious, other behavioural aspects such as feeling emotionally labile and crying easily 47%, irritable 47%, getting angry often 52% and 80% felt their parents were supportive and most relied on their family members for discussing problems.

### Practice on puberty

Practice towards puberty changes on study subjects found that the majority of the central board participant's school has good practice towards puberty changes when compared to state and

matriculation board study participants. Self hygiene is very important for adolescent girls and it can prevent them from various reproductive tract infections. Our study, consistent with Sakineh *et al.*, (2014)<sup>22</sup> found that the student self-hygiene practice was moderate. Variables of age at menarche, education grade, father's education, family economic status, the main source of information about puberty were found to be predictors of practice in adolescents. Alavi *et al.*, (2009)<sup>29</sup> in their research reported that most of the participants do not have proper practice regarding puberty. Limitations of our study were the participants in the study might have answered some questions differently in order to satisfy the enquirer. There might have been some over reporting as these observations are based on self-reported outcomes.

## CONCLUSION

Overall, most of the participants from central board schools have good knowledge, attitude and practice regarding pubertal changes when compared to matriculation board and state board. Our study resulted that based on parent's literacy, the knowledge, attitude and practice of the adolescent's girls increases. Although the mother may be a prime source of information, probably because social inhibitions and lack of awareness among mothers, only a few girls were attentive to these changes. Early awareness of puberty will prevent

adolescent girl's suffering from the infection to reproductive organ. Creating awareness concerning puberty through health education is incredibly essential to assist the adolescent girls to handle sexuality related problems with confidence. By providing correct information in school throughout their formal education period will be a valuable resource for adolescents and for their future kids.

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## AUTHORS CONTRIBUTION STATEMENT

Krishnaveni Kandasamy, Shanmugasundaram Rajagopal and Sambathkumarramanathan conceived the ideas and guided us in conducting this research study. Jishala MI & Pavithra K carried out the research study, evaluated the results and drafted the manuscript.

## CONFLICT OF INTEREST

Conflict of interest declared none.

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