

Puberty: A Stressful Phase of Transition for Girls

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Abstract:

Background: Adolescence in girls is a turbulent period, which includes stressful events like menarche, considered as a landmark of female puberty. One might expect young girls to react positively to their menarche; however, negative responses such as shame, fear, anxiety and depression are more common.

Materials and methods: A descriptive, cross sectional study design was used. A sample of 300 female adolescents was conveniently selected to complete self-reported questionnaires.

Results: More than 50 per cent of female adolescents had mild to severe stress due to pubertal changes. Subjects reported higher stress due to menstruation and body image. Most frequently used coping strategies by the adolescent girls in the present study were seeking diversions, avoiding problems, developing social support, ventilating feelings and developing self-reliance and optimism.

Conclusion: Study concluded that out of the total sample of 300 female adolescent 195 were identified as having mild to severe stress due to puberty events, which indicates a need for preparing the girls in pre-adolescent phase about the various changes to be expected in their body and mind in the upcoming years of their life.

Keywords: Adolescent girls, coping strategies, Menarche, Puberty, Stress.

I. Introduction

Adolescence is a period of transition between childhood and adulthood – a time of rapid physical, cognitive, social and emotional maturation as the boy prepares for manhood and the girl prepares for womanhood. The precise boundaries of adolescence are difficult to define, but this period is customarily viewed as beginning with the gradual appearance of secondary sex characteristics at about 11 or 12 years of age and ending with cessation of body growth at 18 to 20 years.¹

About 40-45 percent adolescent girls report menstrual problems, mainly due to psychosocial stress and emotional changes. As the physiological process of maturation is still regarded as an unclean state. Such perceptions segregate girls from the activities of normal life. Several traditional beliefs, misconceptions and practices are linked with the issue of menstruation, which make girls vulnerable to reproductive problems. A large proportion of adolescent girls suffer from various gynaecological problems, particularly menstrual irregularities such as hypermenorrhea, hypomenorrhea, menorrhagia and dysmenorrhea. Reproductive Tract Infections among adolescents are associated with infertility, reproductive tract infections, pelvic tenderness and genital prolapsed. Health behaviours and practice may lead to failure in health care delivery, thereby complicating various reproductive health problems and related mental health problems.²

Adolescence in girls is a turbulent period, which includes stressful events like menarche, considered as a landmark of female puberty. One might expect young girls to react positively to their menarche; however, negative responses such as shame, fear, anxiety and depression are more common. The manner in which a girl learns about menstruation and its associated changes, may have an impact on her response to the event of menarche. In India even mere mention of the topic has been a taboo in the past and even to this date the cultural and social influences appear to be a hurdle for advancement of the knowledge of the subject. The social practices about menstruation make a girl child feel subnormal and may hamper her development. Menarche may remain a traumatic event for her unless she is prepared for it.²

A report from Times of India says: Now, Girls are reaching puberty two years earlier. The age of attaining sexual maturity among a girl, when she changes physically, hormonally and sexually has dipped, especially in urban India, to 10 years from 12-13 earlier. The earlier onset of puberty has increased the window of risk associated with adolescent. Professor Susan Sawyer and George Patton (Murdoch children's Research Institute Melbourne and university of Melbourne) say, "Puberty is increasingly recognized as a significant physiological event that catapults adolescents into higher risk for range of health related behaviours like mental disorders and substance use".³

Psychiatric morbidities afflicting mental health and modifying adolescent behaviour are a significant area of study, as mental health influences the balanced development of the personality and emotional side of the

adolescents. The few studies conducted during last five years have estimated that prevalence of psychiatric disorders among children and adolescents were found to be in the high-risk zone, needing psychiatric help. Studies have established that nearly 30 per cent of adolescents show diagnostic symptoms of anxiety ranging from generalized anxiety to social anxiety as the boys and girls move early to middle and later adolescence.²

II. Materials And Methods

This was a descriptive, exploratory, cross sectional survey conducted to explore the stress regarding pubertal changes among female adolescents and various coping strategies adopted by them.

1.1. Subjects

Three hundred female adolescents in the age group of 10-16 years were included in the study by convenient sampling method. Three schools were selected from the south and central zone of Delhi one private and two government schools. One was Co-education and other two were only girls' school. One hundred girls were included from each school in the study. The demographic variables selected for the study were age of the female adolescents, socioeconomic status, religion, type of family, number of siblings, education status of parents, occupation of parents and type of school.

1.2. Tools

Three tools were used to collect data. First tool is demographic data sheet which has 14 items dealing with subject's demographic profile and selected variables in the study.

Tool to assess the stress due to pubertal changes was developed by the researcher. It is a 5-point likert scale consisting of 32 items which were divided into two domains i.e. physical and psychological. Physical domain includes eight sub-domains and psychological domain includes 5 sub-domain. Content validity was done by three medical and two nursing experts. Reliability was established by test re-test method and cronbach's alpha was found to be 0.92.

Coping strategies were assessed using Adolescent Coping Orientation for Problem Experiences (A-COPE)³⁷ – a 54 item, 5 point scale assessing coping strategies namely, ventilating feelings, seeking diversions, developing self-reliance and optimism, developing social support, solving family problems, avoiding problems, seeking spiritual support, investing in close friends, seeking professional support, engaging in demanding activity, being humorous, relaxing. Reliability and validity of tool has already been established. Cronbach's alpha score. Reliability and validity of the tool was already established. Cronbach's alpha score for A-COPE is 0.72. All the tools were translated to Hindi by language experts and the tools were tried out on six female adolescents prior to use. All the tools were found to be appropriate for population under study.

1.3. Ethical clearance

The study was approved by ethics committee, AIIMS, New Delhi. Written permission was taken from the author to use A-COPE. An informed written consent was taken from the parents of the subjects and subjects were asked to sign an assent form before filling the questionnaire.

1.4. Data Analysis

Data was analysed by using descriptive and inferential statistics. Statistical package STATA 11.1 version was used. Descriptive statistics used include mean, frequency, percentage and standard deviation. Inferential statistics include one way ANOVA and Pearson's coefficient.

III. Findings

1.5. Demographic characteristics of female adolescents

The mean age of the subjects was 13.46 years (SD+1.9). Majority (84.3%) of subjects belonged to Hindu religion and (99%) were from an urban background. Two third (65%) of the subjects were from nuclear families and majority (40.67%) of the subjects had a family income of more than Rs 25,000. Majority of the subjects (66.66%) were from government school and (41.7%) were first child in the family. The average number of siblings were 2.

1.6. Demographic characteristics of the Parents

The mean age of the parents both father and mother were 42.3 years (SD+5.2) and 38.2 years (SD+4.8) respectively. Majority (36%) of fathers and mothers (34%) of the subjects were educated up to graduation and above. Majority of fathers (47.2%) had private job and majority of mothers (69.7%) were housewives.

1.7. Stress during puberty

As the pubertal changes are different during different years of adolescent phase. So, for the convenience total subjects were divided into three groups viz. 10-12 years, 13-14 years and 15-16 years. Puberty event were further grouped under physical and psychological events and their mean stress scores were 31.5 (SD+17.4) and 15.3 (SD+11.0) respectively. Stress related to menstruation is higher in female adolescents between 15-16 years and 13-14 years of age as compared to adolescents between 10-12 years of age. Stress related to body image is higher in adolescents in between 15-16 years and 13-14 years of age as compared to adolescents between 10-12 years of age. Out of total subjects the stress related to physical domain is higher on events related to menstruation and in psychological domain stress related to body image is higher followed by self-esteem [Table 1].

Table 1: Mean stress scores on scale for stress in puberty among girls. N= 300

Puberty events	Age groups (years) Mean±SD			Total 10-16 (N=300)
	10-12 (n=109)	13-14 (n=76)	15-16 (n=115)	
Physical Events	17.6 ±11.7	35.6±35.6	41.8±14.3	31.5±17.4
Height	1.2±1.1	2.2±1.3	2.2±1.3	1.8±1.3
Weight	2.8±2.1	3.4±2.3	4.1±2.1	3.5±2.2
Hair Distribution	1.4±1.4	1.7± 1.3	2.3± 1.3	1.8±1.4
Sweat & Body odour	1.4±1.4	1.2±1.3	1.7±1.4	1.5±1.4
Voice Changes	0.9±0.9	1.3±1.2	1.3±1.2	1.2±1.1
Menstruation	4.9±8.7	19.4±10.0	22.5± 8.9	15.3±12.1
Acne	0.7±1.1	1.8±1.5	2.1±1.5	1.5±1.5
Breast development	4.2±2.7	4.7±2.9	5.6±2.6	4.8±2.8
Psychological Events	7.7 ±7.2	17.5±11.2	21.1±9.8	15.3±11.0
Body image	3.3±2.8	7.6±4.8	8.9±4.4	6.5±4.7
Self esteem	1.7±2.3	3.9±3.2	4.9±3.0	3.5±3.1
Mood swings	0.7±1.1	1.9±1.5	2.6±1.4	1.7±1.5
Relationship with opposite Sex	0.9±1.5	2.5±2.4	2.9±2.3	2.1±2.2
Conflict	1.1±1.5	1.7±1.7	1.8±1.6	1.5±1.6

1.8. Proportion of girls stressed in each age group

Majority (71.56%) of subjects in between 10-12 years of age were not stressed due to pubertal events and 24.77% and 3.67% had mild stress and moderate stress respectively. In age group of 13-14 years, more than 50 per cent of the subjects had mild to severe stress due to puberty events. In age group 15-16 years, more than 50 per cent had mild to severe stress due to puberty events. Out of total 300 subjects more than 50 per cent (195) had mild to severe stress due to puberty events.

1.9. Association of stress with selected variables

A significant positive correlation was found between the age of subjects and the mean stress scores of physical domain of puberty events such as height, Weight, Hair distribution, Voice changes, Menstruation, Acne and physical total as assessed by pearson's correlation coefficient r with the p value <0.05. Also there is a significant positive correlation exists between number of siblings and mean stress scores of physical domain such as Hair distribution, Voice changes, sweat and body odour, Menstruation, Breast development and total mean score of physical domain. A significant association was found between mean stress scores on psychological domain of puberty such as body image, self-esteem, mood swings, relationship with opposite sex, conflict and age of adolescent girls. Also there is significant association exists between number of siblings and mean stress scores on psychological domain such as body image, self-esteem, mood swings, relationship with opposite sex, conflict as assessed by Pearson's correlation coefficient r with the p value <0.05. A significant correlation exists between mean stress scores on psychological domain such as self-esteem, conflict and birth order as assessed by Pearson's correlation coefficient r with the p value <0.05.

1.10. Association of puberty events stress score with categorical variables

A significant association was found between mean stress scores of puberty events and family income (p=<0.0001) as assessed by one way ANOVA test. Those subjects whose family income is more than Rs. 25,000 had significantly lower stress related to puberty events as compared to low income group. Also there is a significant association exist between mean scores of puberty events and education of parent (p=<0.0001) as assessed by one way ANOVA test. Those subjects whose fathers and mothers were highly educated had significantly lower stress as compared to those whose parent were less educated. A significant association between mean stress scores of puberty event and occupation of father (p=0.003) as assessed by one way

ANOVA test. Those subjects whose fathers had a private job reported significantly higher stress as compared to those whose fathers were on government job or self-employed. A significant association exists between stress scores on puberty events and availability of counsellor in school ($p < 0.0001$) as assessed by one way ANOVA test. Those subjects who had counsellor available in school reported significantly lower stress as compared to those without a counsellor in school. Also a significant association exists between mean stress scores on puberty events and type of school ($p < 0.0001$) as assessed by one way ANOVA test. Adolescent girls studying in government school reported significantly higher stress as compared to those studying in private school. Also those studying in Co-education school reported significantly higher stress as compared to those studying in only girls' school.

1.11. Coping strategies adopted by the female adolescents for their stress

Table 2 depicts that the most frequently used coping strategies by the adolescent girls were seeking diversions, avoiding problems, developing self-reliance and optimism, ventilating feelings and developing social support with mean and SD scores of 25.1±6.3, 20.6±2.6, 19.7±5.2, 19.6±2.8 and 19.4±4.5 respectively. And the least used coping strategies were being humorous, Investing in close friends and seeking professional support with a mean score and SD of 6.2±2.4, 5.5±2.2 and 3.9±2.0 respectively. In each age groups also the most frequently used coping strategies are the same as mentioned above.

Table 2: Mean scores on A-COPE scale

N= 300

Coping Strategies	Age groups (yrs) Mean±SD			Total
	10-12 (n=109)	13-14 (n=76)	15-16 (n=115)	10-16 (n=300)
Ventilating Feelings	20.4±2.8	19.2±2.5	19.1±2.9	19.6±2.8
Seeking Diversions	22.6±6.8	26.0±5.9	26.8±5.1	25.1±6.3
Developing Self-Reliance and optimism	16.5±5.1	20.5±4.2	22.3±4.2	19.7±5.2
Developing Social Support	17.3±4.8	20.2±4.1	20.9±3.7	19.4±4.5
Solving Family Problems	16.2±4.9	18.5±4.9	18.1±4.7	17.5±4.9
Avoiding Problems	20.4±2.5	21.2±2.8	20.6±2.6	20.6±2.6
Seeking Spiritual Support	7.9±2.7	8.3±2.8	8.1±2.5	8.1±2.6
Investing in close friends	4.7±1.9	5.5±2.3	6.2±2.0	5.5±2.2
Seeking Professional support	3.9±1.9	4.2±2.3	3.8±1.9	3.9±2.0
Engaging in Demanding Activity	12.6±4.3	14.1±3.2	14.3±3.1	13.6±3.7
Being Humorous	5.4±2.3	6.7±2.4	6.6±2.1	6.2±2.4
Relaxing	11.2±3.2	12.2±2.4	13.3±2.9	12.3±3.0

IV. Discussion

Some 1.2 billion adolescents (10–19 years old) today make up 18 per cent of the world's population. More than half of all adolescents live in Asia. In absolute numbers, India is home to more adolescents – around 243 million – than any other country (UNICEF 2012)⁴. Adolescents are found as frequent victims of stress who often unable to communicate their feelings accurately. Suicidal rates among Indian adolescents were also comparatively high⁵. Literature review had shown that stress during adolescence had caused a significant adverse effect on their school performance⁶. Studies have shown that nearly 50% of adult psychiatric disorders begin before the age of 14 years⁷.

Several mental disorders are associated with maladaptive behaviours originating early in life. Inadequate development of coping repertoire and social skills deficiencies may enhance the vulnerability to stress. Behaviour and skill training at an early age is likely to facilitate adjustment and enhance functioning in various spheres of life⁸.

In present study adolescent girls reported higher stress on physical events of puberty such as menstruation and breast development, also stress was reported higher on psychological domain of puberty such as body image. Some amount of stress was also reported on self-esteem domain. This is in agreement with the study done by Alexandra E.Fehr. (2011)⁹ which reported that among girls in South Gordan, Ethiopia that menstruation is a source of shame, fear and stress to them. This fear and stress was so great, that it made it difficult to concentrate in class and disrupted their learning. In addition to fear, shame and stress, other problems associated with menstruation at home or at school included fatigue with an inability to complete school or home chores, family isolation, irritability and fights and harassment, especially from male peers. Kaur et al (2003)¹⁰ and Christine Knauss et al(2007)¹¹ also reported that females are more conscious about their appearance (body image) than males.

A significant positive correlation was found between the age of adolescent girls, number of siblings and the mean stress scores on the psychological domain such as body image, self-esteem, mood swings, relationship with opposite sex and conflict. A significant positive correlation was found between the age of adolescent girls and the mean stress scores on the physical domain such as height, weight, hair distribution,

voice changes, menstruation and acne. As the age and number of siblings increases stress related to these events also increases. These findings were in line with the study done by Daniel clay et al 2005¹² which reported that among UK girls between 11-16 years of age self-esteem was lower among older than among younger girls. Gardner et al 1999¹³ also reported that adolescents with a larger number of siblings who were one of the first born were more dissatisfied with their body size. YasminParpio et al 2012¹⁴ also reported that stress in adolescent increases with more number of siblings. In present study it was found that stress due to psychological changes increases as the birth order increases, this might be because of financial implications with the large family size. Adolescent girls who had a family income of more than 25,000 had significantly lower stress related to puberty events as compared to low income group. Similar findings were reported by Jane D. Mcleod et al 2004¹⁵ that low socioeconomic status decreases the self-esteem of the adolescents.

Adolescent girls whose parents were highly educated had significantly lower stress related to puberty events as compared to those who were less educated. Davis-Kean et al 2005¹⁶ reported that parent education status was an important socioeconomic factor for the achievement of the children and if the fathers are illiterate it may cause a significant stress in the children. Daniel M. Finkelstein et al 2007¹⁷ also reported that adolescents with lower parent education had higher perceived stress.

There was a significant positive association found between stress due to puberty events among adolescent girls and availability of counsellor in school. Availability of counsellor lowers the stress related to puberty. In a study done by Laura Hensley and Choate 2010¹⁸ it was explained that specific prevention and counselling strategies that school counsellors can use to promote positive image in adolescent girls.

Adolescent girls studying in Government school reported significantly higher stress related to puberty events as compared to those studying in private school. In a study done by Augustine et al 2011¹⁹ on higher secondary students in Hyderabad showed that the students belonging to government schools had statistically similar scores on stress perception as compared to private schools.

Adolescent girls studying in Co-education school reported significantly higher stress related to puberty events as compared to those studying in single gender school. In a study done by Water Aid organization in 2009²⁰ among adolescent girls in Nepal reported that girls are stressed due to menstruation and miss school due to constant worry that boys might figure out about their status by their movements and facial expressions.

The most frequently used coping strategies by the adolescent girls were seeking diversions, avoiding problems, ventilating feelings, developing social support, developing self-reliance and optimism and the least coping strategies were being humorous, investing in close friends and seeking professional support. In a study done by Chapman et al 1999²¹ reported that males utilize avoidance coping strategies more frequently than females; females were found to utilize social support and spiritual supports more frequently than males. Erica Frydenberg et al 1991²² also reported that girls seek more social support and generally are more likely than boys to focus on relationships.

V. Conclusion

The present study has certain limitations that include convenient sampling technique, schools from only south and central zones of Delhi were included, study design was cross-sectional and no intervention was given during the course of study however, the sample size used was large and standardised tool to assess coping strategies was used.

In a nutshell the present study showed that more than 50% of the adolescent girls were stressed because of pubertal changes which call for regular assessment of adolescents for emotional and physical problems in schools and counselling services can be given to adolescents regarding pubertal changes and problems related to it in child guidance clinics. Similar studies can be done in different demographic and geographical area to generate quality evidence for cost-effective, preventive, promotive and curative strategies.

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