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Knowledge, Attitude and Practice of Menstrual Hygiene in Adolescent Girls of Mangalagiri Mandal

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ABSTRACT

This study was set to assess the knowledge, attitude and practices regarding menstruation in adolescent girls of high schools and junior colleges in Mangalagiri mandal of Andhra Pradesh. The present descriptive study was carried out among 456 randomly selected school or college going adolescent girls (ages 12-16 years who attained menarche) from selected schools and colleges in Mangalagiri Mandal of Guntur district to assess their knowledge, attitude and practices regarding menstruation. After taking informed consent and ensuring confidentiality, the participants were administered a pre-structured questionnaire containing questions about demographic details, knowledge, attitude and practice about menstruation, health status, medication use etc. The mean age of the girls in this study was 14.19±1.33 years. <half of the girls belonged to Hindu religion and nearly three quarter of the girls were from nuclear families. All the girls in our study were from lower socio-economic classes (III to V) as per modified Kuppuswamy scale. >70% of the girls were having normal body mass index. >10% were underweight according to BMI and more than 15% were overweight or obese. The mean age at menarche in this study was 12.44±1.02 years. >95% of girls were using disposable sanitary pads as menstrual material. Only 37% of the girls were ready with pads in their bags, remaining had to rush home or had to buy them each time. >half of the girls complained water shortage in their schools or college as a problem during menstruation and more than one third complained that there was no privacy in the schools or college to change their menstrual material. 7% of the girls were not washing their external genitalia after changing the menstrual material and >50% of the girls were washing their external genitalia only with water. Only a quarter of the study participants were following the correct way of disposing sanitary pads that is by burning. Lower abdominal pain, fatigue and back pain were the major symptoms reported during menstruation. Four fifths of the study population was experiencing dysmenorrhea of varying degrees. There was 2.04% loss of person days to school due to menstrual pain every month and around 6% of the girls said they had to abstain from school due to bleeding. A wide range of restrictions like not allowing to religious places, restriction to certain food items, etc., were imposed on many girls at the time of menstruation. Mother's education was significantly associated with food restrictions to girls at the time of menstruation whereas caste and religion were associated with religious restrictions. Religion was also significantly associated with restriction of movement in the house. >60% of girls had menstruation related knowledge score <or equal to median. But majority knew that poor menstrual hygiene leads to infections and sanitary pads are required right from the first period. >50% of girls had a perception score of >median regarding menstruation. Nearly two thirds of the study population had a practice score of more than median. Religion, caste, type of family, maternal education, maternal occupation, total number of family members, socio-economic status of the family were found to be significantly associated with knowledge score. Poorly managed menstruation impacts a girl's sense of control over her life leading to feelings of shame and how she relates to her own body. It can even hinder the educational ambitions of many girls through early school dropout leading to loss of potential. Studies have shown that Programme regarding menstrual hygiene through educational television Programme, trained school nurses/health personnel, inspired school teachers and knowledgeable parents can play a very vital role in transmitting the message of correct menstrual hygiene to the adolescent girl of today.

OPEN ACCESS

Key Words

Menstrual hygiene, knowledge, attitude and practices, adolescent girls, health status

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INTRODUCTION

Adolescents are young people aged between 10-19 years, constituting >1.2 billion worldwide and about 21% of the Indian population. It is a transitional stage of physical, physiological and, psychological development from puberty to legal adulthood[1]. The reproductive system of an adolescent female shows regular cyclic changes, which are an expression of a periodic preparation for pregnancy and fertilization. The apparent sign of the physiological process of menstruation is the cyclic monthly uterine bleeding due to shedding of the endometrium influenced by hormones[2]. The onset of the first menstruation in life is called menarche and it may occur anywhere between 10 and 16 years, the peak time being 13 years[3]. The sympathetic and careful handling of the young girls experiencing first menstruation is of paramount importance. Even before the onset of menarche, efforts must be made to help young girls to recognize that menstruation is a normal physiological process so that they are prepared psychologically emotionally. The mother plays a very important role in passing this information to her daughter. A well-prepared adolescent will be able to manage her monthly periods sensibly and in a hygienic manner. Many young women face symptoms ranging from mild to severe during their menstrual cycles. Dysmenorrhea means painful menstruation of sufficient magnitude so as to incapacitate day-to-day activities[4]. Dysmenorrhea is still an important public health problem that may have a negative impact on female health, social relationships, School or work activities, and psychological status[5]. Menstruation and menstrual practices face many social, cultural and religious boundaries, which make a woman dis empowered also sets in her a feeling of shame and secrecy. In many parts of the country, especially in rural areas, girls are not prepared and aware of menstruation, leaving them to face many difficulties and challenges at home, schools and workplaces[6]. According to the National Family Health Survey (NFHS) 4 (2015-16), in India, only 57.6% of women in the age group of 15-24 years (Urban 77.5 %, Rural 48.2%) use hygienic methods of protection (sanitary napkins, tampons and locally prepared napkins) during their menstrual period[7]. As adolescence is a school going phase in a girl's life, the school environment and infrastructure plays a crucial role with regard to menstruation and in many instances, it is the single most important reason for discontinuation of formal education[8]. Schools are also in a position to ensure through suitable educational programs that the adolescents in their purview acquire the right knowledge about reproductive health and appropriate behaviors regarding personal hygiene of genitalia and in the prevention of various diseases linked to reproductive health[9]. Schools must partner with the government by taking on the responsibility of providing education about menstrual hygiene, making sanitary products available and accessible, a respite from pain, if any and satisfactory sanitary amenities at School[10]. All mothers should be taught to break their shyness about discussing menstruation with their daughters before and after menarche. Health and other functionaries at the grass-root levels like Village Health Nurses, Anganwadi workers and ASHAs are all potential educators regarding menstrual hygiene to adolescents, and they must be adequately trained[11]. Sustained health education programs with regular reinforcement and active involvement of the mothers regarding menstrual hygiene can lead to the better reproductive health of adolescents[12]. A psycho social and sexual health education program should be developed to educate adolescents at menarche, which should include lifestyle changes to prevent obesity and metabolic syndromes[13]. There must be a combined convergent action by all stakeholders leading to poverty alleviation and behavior change with a focus on the provision of clean water within the household premises, promotion of hand washing and accessibility of sanitary napkins. All efforts must be anchored by health, nutrition and livelihood programs aimed at adolescents and other members of the family and community[14]. Disposal of menstrual waste is often neglected and there is significant doubt whether used sanitary materials come under biomedical or plastic waste, thereby making its safe disposal a problem. Improper disposal leads to negative impacts on the sanitation systems and the environment. More field-based research is needed to improve our understanding of environmentally friendly and safely usable sanitary materials in addition to methods of disposing of menstrual management, keeping in mind the health, safety, mobility and dignity of adolescent girls and women[15]. The Ministry of Health and Family Welfare introduced a scheme for the promotion of menstrual hygiene among adolescent girls in the age group of 10-19 years in rural areas. This was included in the National Health Mission (NHM), the flagship program of the Government of India launched in 2005. The primary focus has been on raising awareness of menstrual hygiene. The scheme has the objectives of increasing menstrual hygiene awareness among adolescent girls, better access to and use of superior sanitary napkins and safe, environmentally friendly disposal of sanitary napkins[16]. With a focus on the adolescent girl, this program calls for a combined effort through convergence with other programs for the promotion of menstrual hygiene involving health education, provision of an uninterrupted supply of sanitary napkins and also access to water and toilets in schools and in the community[17]. This study has been set to identify knowledge attitude and behaviors of adolescent students regarding menstruation and its management in Mangalagiri town of Guntur district in Andhra Pradesh state.

Aims: To assess the knowledge, attitude and practices regarding menstruation in adolescent girls of high schools and junior colleges in Mangalagiri Mandal of Andhra Pradesh.

MATERIALS AND METHODS

Setting: This study was carried out in the Mangalagiri Mandal of Guntur District.

Study Design: This is a cross-sectional study.

Duration of Study: This study was conducted over a period of two years from 2019 January to 2020 December.

Institutional Ethical Committee: The study protocol was presented to the IEC of the NRI Medical College and clearance was obtained before the start of the study.

Pilot Study: A self-designed semi-structured questionnaire was prepared and first administered to 30 adolescent girls who had attained menarche (outside the actual study area) to assess the feasibility and sensitivity of the questionnaire. Based on the findings of the pilot study, necessary modifications were made.

Sample Selection: The necessary permission from the Mandal Education Officer (MEO) of Mangalagiri Mandal was obtained. Out of the 15 government high schools and one junior college in Mangalagiri Mandal, five institutions (4 High schools and 1 Junior college) were selected by simple random sampling. The institutions selected were:

- ZPHS Nidamarru.
- ZPHS Chinakakani.
- ZPHS Atmakur.
- MPL HS (W.C.) MGM.
- CK JRC HS Mangalagiri.

After taking permission from the principals of the institutions, 100 students were selected from each institution from the attendance register (20 students each from classes 7-10). From the junior college, 100 students were selected by simple random sampling (50 each) from the First and Second years of Intermediate.

Methodology: A pre-structured, pre-determined questionnaire containing questions about demographic details, knowledge, attitude and practice about menstruation, health status, medication use, etc., was tested by a pilot study. After taking informed consent and ensuring confidentiality, the participants were administered the suitably modified questionnaire (interviewer-administered).

Sample Size: The sample size was calculated based on the finding in a previous study that 46.7% had good knowledge regarding menstrual hygiene[6]. Based on the above prevalence using the formula-$n=4pq/L^2$, (where p=positive character, q=100-p, L=allowable error 10% of 'p'). The number of adolescent girls to be included in the study was calculated to be 456.

Inclusion Criteria:

- Adolescent girls between ages 12-16 who have attained menarche.

Exclusion Criteria:

- Married, pregnant, or lactating.
- Unwilling to participate in the study.

Scoring of KAP Questions: Scores were assigned to each of the questions on knowledge about menses, presence of symptoms during menses and menstrual hygiene practices. The scoring system of the questions was followed by giving one point (1) for each correct answer and zero (0) for wrong answers or no response (don't know). The median score for each domain was taken as a cut off between a good score and a poor score.

Statistical Analysis: The data collected is entered into M.S. Office Excel workbook and analyzed with Excel and Epi Info version 3.4.3. The data is presented in the form of frequency distribution tables and in percentages. Significant findings are subjected to the Chi-Square test to look for associations between variables at 5% Level of Significance.

RESULTS AND DISCUSSIONS

Of the 456 girls involved in the study, 58.3% are from Hindu families while 33.3% and 8.3% are from Christian and Muslim families. In Andhra Pradesh state according to the NFHS-4, Hindus are 84.8%, Muslims 7.6% and Christians 7.6%. In the current study it is seen that only 3.7% of the girls are from OC background, while 62.3% are from backward class, 30.7 from SC and 3.3% from the ST communities. According to the NFHS-4 there are in AP state, 64.0% from OC, 21.6% from BC, 8.8% from SC and 5.3% from ST communities. A significant number of joint families are seen in this group (18.9%). According to the 2011 census, In Andhra Pradesh 75.6 per cent of the households are nuclear. Extended families with one older person living with the family are only 7.7%. In this study it is seen that 25.2% of the fathers had studied more than 10th class while in mothers it was only 16.2%. 33.3% of the mothers had no schooling at all. The difference is statistically significant. The 2011 census revealed that among males in Guntur district literacy level is 74.8% and in females 60.09%. A large number of the fathers are occupied as farmers (21.5%) while a good number are drivers (11.6%), own businesses (21.5%), carpenters (5.5%) and weavers (5.3%). 18.2% of the fathers are unskilled workers. Employed people like clerks and teachers are <1%. A large number of the

mothers are Home makers (55.9%). 23.2% are engaged in farm work or other trades like tailoring etc. A small number are running petty businesses and 14.3% are unskilled workers. The average household size of India is 4.8 while in AP state it is 3.8 according to the NFHS 4.7 In this study it is seen to be 4.6. There was 69.7% of the families have 4-5 persons living in the family. Large families with 6 or more members are 19.5%. The Socio Economic scale used in this study was the modified Kuppuswamy scale for the year 2020[18]. There were no families in the Upper and upper-middle classes of I and ll. 31.4% were from lower-middle class and the remaining from Upper-lower and Lower classes IV and V. Water availability at home for washing purposes was looked into 34.87% of the girls said that they had continuous running water. 58.11% said that they had adequate stored water. However 7.02% of the girls said that their water supply was poor. A bathroom inside the premises of house ensures privacy for the young girls to properly maintain adequate hygiene. Here 91.01% of the girls said that they had a bathroom inside the house shared by all the family members. However 8.99% said that their bathroom had to be shared by many families. In this study the maximum number girls attained menarche between ages 12-14 years (95.8%). Only 2.41% had menarche after entering 15th year. Similarly a small number (1.75%) said that their menarche was before 11 years of age. About 8.8% of the girls said that they had a family history of menstruation related problems. 5.7% said that their mothers had irregular cycles or heavy bleeding. About 3.1% said that their sisters had irregular cycles or heavy bleeding. It was found in this study that 93.2% of the girls are using sanitary pads. Only 3.1% are using old or new cloths. 3.7% are using both pads and cloths. About 86.8% of the girls are using on an average 3 pads per day and 70.6% said that they use around 10 pads per menstrual cycle. 38.4% said that they could change their soiled pads in school premises. 93.4% said that they had to change their pads at night. 37.9% of the girls complained that they had no privacy to change their pads in the school/ college. Water shortage was felt as a restriction by 58.8%. 28.1% of the girls said that their dresses were stained and caused much embarrassment. Only 37.5% of the girls washed themselves with soap and water after removing their used pads. 55.3% were washing only with water and 7.2% said that they do not wash at all while changing their pads. Only 24.8% of the girls are following the right method of disposal of used pads i.e. burning. 14.7% said that they dispose in the toilet and 17.5% along with household waste. An important aspect was management of periods when they came on abruptly. 36.6% of the girls said that they were prepared with pads in their bags. 11.2 % said that they had to go and buy them. However a majority (52.2%) said that they had to rush home. 36% of the girls said that they had no abdominal pain before onset of periods. The rest 64% said they had varying amounts of pain. About 1% of them said that they had moderate to severe pain. During the periods, 20.6% of the girls said that they had no pain associated. 14.7% said that they had mild pain, while 41% said moderate pain and 23.7% said that they had severe pain.

Table 1: Distribution According to Type of Family, Education, Occupation, Water Availability and Family History

	Frequency	Percentage
Type of family		
Nuclear	335	73.5
Extended	35	7.7
Joint	86	18.9
Father education		
10th pass and above	115	25.2
Secondary and Primary	230	50.4
Nil Schooling	111	24.3
Mother education		
10th pass and above	74	16.2
Secondary and Primary	230	50.4
Nil Schooling	152	33.3
Father's Occupation		
Employed/business	122	26.8
Farmer/Semi skilled worker	251	55.0
Unskilled worker	83	18.2
Mother's Occupation		
Employed/business	30	6.6
Farmer/Semi skilled worker	106	23.2
Housewife	255	55.9
Unskilled worker	65	14.3
Water availability		
Continuous running	159	34.87%
Stored adequate	265	58.11%
poor	32	7.02%
Bathroom at home		
Many families shared	41	8.99%
Own family shared	415	91.01%
Age at menarche		
10-11 years	8	1.75%
12-13 years	246	53.95%
13-14 years	191	41.89%
15-16 years	11	2.41%
Family history of Menstrual complaints		
Mother-Irregular cycles and heavy bleeding	26	5.7
Sister-Irregular cycles and heavy bleeding	14	3.1

Table 2: Distribution According to Napkins Use, Time of Pads Change, Problems Associated with Using Pads, Method of Pad Disposal, Management of Unexpected Periods and Abdominal Pain Before Periods (Degree of Pain)

	Frequency	Percentage
Sanitary Napkins use		
Only Sanitary pads	425	93.2
Only cloth	14	3.1
Sanitary pads and cloth	17	3.7
Number & time of pads change		
Average no. of pads used per day-3	396	86.8
No. of pads >10/cycle	322	70.6
Change pad during school/college hours	175	38.4
Change pad at night	426	93.4
Problems associated with using pads		
No privacy (secluded place)	173	37.9
Water shortage	268	58.8
Dress stained	128	28.1
washing after pad removal		
Soap and water	171	37.5
Only water	252	55.3
No washing	33	7.2
Method of pad disposal		
Disposal of pads in toilet	67	14.7
Disposal of pads in household wastes	80	17.5
Disposal of pads by burying	8	1.8
Disposal of pads by burning	113	24.8
Management of unexpected periods		
Ready with pads in bag	167	36.6
Has to buy each time	51	11.2
Has to rush home	238	52.2
abdominal pain before periods (Degree of Pain)		
No pain	164	36.0
Mild pain	288	63.2
Moderate pain	1	0.2
Severe to very severe pain	3	0.7

Table 3: Distribution According to Consulted Doctor, Medication and Symptoms

	Frequency	Percentage
Consulted doctor for pain		
DGO	8	1.8
MBBS	9	2.0
Unqualified practitioner	2	0.4
Medication for pain		
Medicines used for pain	37	8.0
Put on OCPs (? PCOD)	21	4.5
school absence due to pain		
Pain moderate to severe	295	63.4
Absent from school due to pain	167	35.9
1 day	111	23.9
2 days	46	9.9
3 days	10	2.2
Bleeding parametersand school absence		
Spotting before periods	62	13.3
Passing clots	149	32.0
Absent from school due to bleeding	29	6.2
Symptoms		
Lower abdominal pain	356	78.07
Fatigue	337	73.90
Back pain	289	63.38
Leg pain	260	57.02
Excess bleeding	190	41.67
Urge to urinate	181	39.69
Headache	84	18.42

3.8% of the girls had consulted a doctor for their dysmenorrhea. Of them 1.8% had seen a Gynecology specialist. 8.0 % of the girls said that they were using some medication for pain during periods. About 4.5% had been put on Oral Contraceptive pills with a probable diagnosis of PCOD. Though 63.4% of the girls complained of moderate to severe pain during menstruation, 35.9% had missed school for the same. 23.9% stayed away from school for 1 day, while 46 for 2 days and 10 for 3 days. Total days of school loss in this group =456x25 days (average working days in a month). A total of 233 days are lost out of a total person days of 11400 i.e. 2.04% loss of person days to school due to menstrual pain every month. 13.3% of the girls said they had spotting before the onset of menses. 32% said that they passed clots of blood during their periods. About 6.2% said they had to abstain from school because of the bleeding. The 7 symptoms that the girls complained of during their periods are as in the above table. The most common ones were Lower abdominal pain (78.07%), fatigue (73.9%) and back pain (63.38%).

Symptom Score: By assigning a score to the presence of each physical symptom, a symptom score was developed for comparison with demographic and other variables. A score of 1 was given if the symptom was present. Symptom score ranged from 0-8, median 3, mean 3.2 and SD 1.76. Median scores were used as a cutoff for comparison.

Table 4: Distribution According to Symptom Score and Family History of Menstrual Symptoms

Symptoms in family members (mother, sister)	<median score	%	>median score	%	Total
Yes	16	43.2	21	56.8	37
No	258	61.6	161	38.4	419
Total	**274**	**60.1**	**182**	**39.9**	**456**

Chi Square 4.76, p value 0.03, Odds Ratio 2.1 (95% CI 1.02-4.4)

It is seen that the burden of symptoms due to menstruation as indicated by the higher Symptom score is more when close relatives also have problems during menses. The risk of having increased symptoms is 2 times more when close family members also suffer with symptoms during menses as shown by the risk ratio (RR) of 2.1.

Table 5: Distribution According to Symptom Score and Family SES

SES	Less symptoms	%	More symptoms	%	Total
Lower-Middle	98	68.5	45	31.5	143
Upper-Lower and Lower	176	56.2	137	43.8	313
Total	**274**	**60.1**	**182**	**39.9**	**456**

Chi Square 6.19, p value 0.01, Odds Ratio 1.7 (95% CI 1.09-2.63)

The symptom score is more in girls from upper-lower and lower SES than the lower-middle SES. This difference is statistically significant.

Table 6: Distribution According to Restrictions Imposed During Menstruation

Restriction	No.	%
Not allowed in a religious place	352	77.2
Certain food restrictions	309	67.8
Restrictions in sports and exercise	209	45.8
Restricted movement in the house	108	23.7
Not allowed in kitchen to cook	41	9.0

77.2% of the girls said that they were not allowed into religious places during menstruation. 67.8% said that they were subjected to restrictions in food items. There were also restrictions regarding sports and exercise, movement in the house and 9% of them were not allowed into the kitchen or to cook food. Curds is restricted for about 38.6% of the girls. Other items are sweets, spicy foods, papaya, potato and milk products.

Table 7: Distribution According to Food Restrictions and Mother's Education

Mother's education	Restrictions Yes	%	Restrictions No	%	Total
>10th certificate	41	55.4	33	44.6	74
Secondary School	81	77.1	24	22.9	105
Primary School	89	71.2	36	28.8	125
Nil Schooling	98	64.5	54	35.5	152
Total	**309**	**67.8**	**147**	**32.2**	**456**

Chi Square 10.3, p value 0.01

When the mother has a higher education level, food restrictions during menses are less. This difference is statistically significant.

Restrictions in entering religious places or doing Pooja is lesser among the SC communities when compared to the others. The highest restrictions are seen in the BC and OC communities. This difference is statistically significant. Restriction of movement within their houses for girls who are having their periods is also seen to be present in the households of all religions though to a lesser extent in the Muslim and Christian families.

Table 8: Distribution According to Perceptions About Menstruation

Positive perceptions about menstruation	No	%
She talks to family members about periods	424	92.98
She is not nervous during periods	362	79.39
She has regular periods	345	75.66
She talks to friends about periods	339	74.34

92.9% of the girls said that they could talk freely with their family members about menstruation. 79.4% said that they were not nervous about menses. A good number felt that their periods were regular. 74.3% of them said that they talk openly with their friends about periods.

Table 9: Distribution of Symptoms According to Feeling of Nervousness During Periods

Nervous feeling	Less symptoms	%	More symptoms	%	Total
Yes	49	52.1	45	47.9	94
No	225	62.2	137	37.8	362
Total	**274**	**60.1**	**182**	**39.9**	**456**

Chi Square 3.13, p value 0.07

When comparing the presence of menses related symptoms with a positive perception towards periods, it is seen that 62.2% of the girls who were not apprehensive about their periods had fewer symptoms.

Table 10: Distribution According to Correct Knowledge About Menstruation

S.No	Knowledge item	No.	%
1	Sanitary pads are required right from the first period	432	94.7
2	Poor menstrual hygiene leads to infections	427	93.6
3	No. of days of blood flow each cycle (3-5 days)	413	90.6
4	Menstruation makes it possible for a woman to bear children	400	87.7
5	Usual age of Menarche (12-15 years)	304	66.7
6	Initial menstrual cycles at menarche are usually longer	299	65.6
7	Duration of a menstrual cycle in days (28 days)	255	55.9
8	Has knowledge about menstruation before menarche	236	51.8
9	No changes in menstruation during work	186	40.8
10	Main source of knowledge about menstruation (mother)	158	34.6
11	Cause of menstruation (physiological)	89	19.5
12	Menstruation does not clear dirty blood from the body	86	18.9
13	Body organ from where blood comes (uterus)	6	1.3
.14	During menstruation it is not normal to be irritable	0	0.0

When girls were enquired about knowledge related questions, majority have knowledge regarding the following issues like sanitary pads are required right from the first period (94.7%), poor menstrual hygiene leads to infections (93.6%), Number of days of blood flow per each cycle is 3-5 days (90.6%) and menstruation makes it possible for a woman to bear children (87.7%).

Table 11: Distribution According to Family Type and Knowledge Score

Type of family	Score <median	%	Score >median	%	Total
Nuclear	195	58.2	140	41.8	335
Extended	17	48.6	18	51.4	35
Joint	34	39.5	52	60.5	86
Total	**280**	**61.4**	**176**	**38.6**	**456**

Chi Square 10.05, p value 0.007

According to family type distribution, joint family girls have higher median knowledge score (60.5%) than extended family (51.4%) and nuclear family (41.8). statistically significant association was found between type of family and knowledge score. This might be due to girls get knowledge from elderly in family.

Table 12: Distribution According to Mother's Education and Knowledge Score

Mother's education	Score <median	%	Score >median	%	Total
10th pass and above	32	43.2	42	56.8	74
Secondary and Primary	141	61.3	89	38.7	230
Nil Schooling	107	70.4	45	29.6	152
Total	**280**	**61.4**	**176**	**38.6**	**456**

Chi Square 15.48, p value 0.0004.

Maternal education showed statistically significant association with knowledge score of girls. Girls with mothers who are employed or outgoing have greater than median knowledge score (56.7%). Statistically significant (p=0.05) association was found between mother's occupation and knowledge score. Girls with more family size have greater than median knowledge score (60.7%). The association was statistically significant (p=0.002) between family size and knowledge score.

Table 13: Distribution According to Family Socioeconomic Status (SES) and Knowledge Score

SES	Score <median	%	Score >median	%	Total
Lower-Middle	57	39.9	76	53.1	143
Upper-Lower and lower	193	61.7	120	38.3	313
Total	**280**	**61.4**	**176**	**38.6**	**456**

Chi Square 13.4, p value 0.0003

According to family SES, Lower-Middle SES girls have greater than median knowledge score. The association was found statistically significant (p=0.0003) between family SES and knowledge score.

Table 14: Distribution According to Various Scores in this Study

Score	<median score	%	>median score	%
Knowledge score	280	61.4	176	38.6
Symptom score	153	33.6	303	66.4
Practices score	164	36.0	292	64.0
Perception score	194	42.5	262	57.5

In the present study, score greater than median, for knowledge is 38.6%, symptom is 66.4%, practices is 64.0%, perception is 57.5%. One fourth of the study participants were observed to be having underweight. The percentage of underweight girls was more from late adolescence group i.e 15 and 16 years. Only one girl in the study was overweight. <one-third (37.3%) girls in the study were stunted for age. Here also more percentage of girls found to be stunted were from late adolescence group i.e. 15 and 16 years.

Table 15: Distribution According to Age and Body Mass Index (BMI)

Age in years	Underweight (<5th percentile for BMI) (%)	Normal (5th to 85th percentile for BMI (%)	Over weight (>85th percentile for BMI) (%)	Obese (>95th percentile for BMI) (%)	Total
12	1 (1.8)	44 (78.6)	10 (17.6)	1 (1.8)	56
13	13 (13.0)	66 (66.0)	16 (16.0)	5 (5.0)	100
14	12 (12.0)	76 (76.0)	8 (8.0)	4 (4.0)	100
15	14 (14.0)	74 (74.0)	7 (7.0)	5 (5.0)	100
16	13 (13.0)	71 (71.0)	12 (12.0)	4 (4.0)	100
Total	53 (11.6)	331 (72.6)	53 (11.6)	19(4.2)	456

Table 16: Distribution of Symptoms According to BMI

Symptom	Underweight (n=53)		Normal (n=331)		Overweight / Obese (n=72)	
	No.	%	No.	%	No.	%
Back pain	33	62.3	215	65.0	41	56.9
Excess Bleeding	23	43.4	131	39.6	36	**50.0**
Leg pain	20	37.7	215	65.0	41	**56.9**
Fatigue	42	**79.2**	239	72.2	56	77.8
Lower abdominal pain	35	66.0	261	78.9	60	**83.3**
Urge to urinate	22	41.5	127	38.4	32	**44.4**
Headache	6	11.3	66	19.9	12	16.7
Appetite changes	28	52.8	191	57.7	37	51.4

Out of 456 girls, 331 (72.6%) were having normal BMI. 11.6% of girls were overweight based on BMI, 4.2% were obese and 11.6% were underweight. Lower abdominal pain was reported in 83.3 % of overweight /obese girls and fatigue was reported in 79.2% of underweight girls.

This cross sectional study was done on adolescent girls of Mangalagiri mandal to know knowledge, attitude and practices of menstrual hygiene. Among the 456 girls involved in the study, 58.3% are from Hindu families while 33.3% and 8.3% are from Christian and Muslim families. In the current study it is seen that only 3.7% of the girls are from OC background, while 62.3% are from backward class, 30.7 from SC and 3.3% from the ST communities. According to the NFHS-4, there are in AP state, 64.0% from OC, 21.6% from BC, 8.8% from SC and 5.3% from ST communities[18]. A significant number of joint families are seen in this group (18.9%). According to the 2011 census, in Andhra Pradesh 75.6 per cent of the households are nuclear. Extended families with one older person living with the family are only 7.7%. In this study it is seen that 25.2% of the fathers had studied more than 10th class while in mothers it was only 16.2%. 33.3% of the mothers had no schooling at all. The difference is statistically significant. The 2011 census revealed that among males in Guntur district literacy level is 74.8% and in females 60.09%. A large number of the fathers are occupied as farmers (21.5%) while a good number are drivers (11.6%), own businesses (21.5%), carpenters (5.5%) and weavers (5.3%). 18.2% of the fathers are unskilled workers. Employed people like clerks and teachers are <1%. A large number of the mothers are home makers (55.9%). 23.25% are engaged in farm work or other trades like tailoring etc. A small number are running petty businesses and 14.3% are unskilled workers. In India the average household size is 4.8 while in AP state it is 3.8 according to the NFHS 4. In this study 69.7% of the families have 4 to 5 persons living in the family. Large families with 6 or more members are 19.5%. The Socio Economic scale used in this study was the modified Kuppuswamy scale for the year 2020. There were no families in the Upper and upper-middle classes of I and ll. 31.4% were from lower-middle class and the remaining from Upper-lower and Lower classes IV and V. Water availability at home for washing purposes was looked into.34.87% of the girls said that they had continuous running water. 58.11% said that they had adequate stored water. However 7.02% of the girls said that their water supply was poor. A bathroom inside the premises of house ensures privacy for the young girls to properly maintain adequate hygiene. Here 91.01% of the girls said that they had a bathroom inside the house shared by all the family members. However 8.99% said that their bathroom had to be shared by many families.

Mean Age of Menarche: In this study the maximum number girls attained menarche between ages 12-14 years (95.8%). Only 2.41% had menarche after entering 15th year. Similarly a small number (1.75%) said that their menarche was before 11 years of age. Suhasini K *et al* in their study conducted in the urban area of Belgaum found that the mean age at time of menarche was 12.8+1.73. In a study conducted by Savanthe A *et al.* on adolescent girls of junior colleges, Kuppam, Andhra Pradesh, the mean age at menarche was 13.83 years[19,20].

Family History of Menstrual Complaints: About 8.8% of the girls said that they had a family history of menstruation related problems. 5.7% said that their mothers had irregular cycles or heavy bleeding. About 3.1% said that their sisters had irregular cycles or heavy bleeding.

Hygienic Practices: Disposable pads are often preferred by girls as they are reliable, hygienic, comfortable, easy to use and require no access to

water for cleaning. It was found in this study that 93.2% of the girls are using sanitary pads. Only 3.1% are using old or new cloths. 3.7% are using both pads and cloths. Belayneh[21,22] in their study done at southern Ethiopia found that 33.9% of adolescent school girls didn't use sanitary pads during menstruation period. About 42.4% were using commercially prepared sanitary pads and 23.7% used household absorbents (dry clothes, double pants, sponges etc).

Number of Pads Usage: About 86.8% of the girls are using, on an average, 3 pads per day. 70.6% said that they use around 10 pads per menstrual cycle. Ideally pads are to be disposed off after a maximum of 8 hours. In a study done by Agarwal V *et al,* at rural Sabarkantha district, found that 83.8% changed sanitary napkin 1-2 times a day[23].

School Environment: Education about menstrual hygiene, accessible sanitary products, pain relief and adequate sanitary facilities at school would develop the schooling-experience of adolescent girls in India. Only 38.4% said that they could change their soiled pads in school premises.37.9% of the girls said that they had no privacy to change their pads in the school /college. Water shortage was felt as a restriction by 58.8%. 28.1% of the girls said that their dresses were stained and caused much embarrassment. Fehintola et al in their study on Nigerian high school girls, found that a few girls were absent from school during their menstruation. The reasons for absence from school were mainly lack of water (56.2%) in school and lack of disposal facilities (42.5%)[8]. In the present study93.4% said that they had to change their pads at night.

Washing Practices: Only 37.5% of the girls washed themselves with soap and water after removing their used pads. 55.3% were washing only with water and 7.2% said that they do not wash at all while changing their pads. Belayneh Z *et al* found in their study done at southern Ethiopia, that about 69.5% of girls clean their genitalia with water and soap. 28 96.1%cleaned perineal area during menstruation in a study done by Karki S *et al.* in slums in Kathmandu valley[24].

Disposal Practices: Only 24.8% of the girls are following the right method of disposal of used pads i.e. burning. 14.7% said that they dispose in the toilet and 17.5% along with their household wastes. 60.8% of the girls disposed their used absorbent by burying or burning. In a study done by Hemapriya *et al.* in rural Puducherry, 67.74% burnt, 16.12% threw along with domestic waste, 6.45% threw in open places and 9.67% buried the pads[25].

Management of Unexpected Menses: An important aspect was management of periods when they came on abruptly. In the present study, 36.6% of the girls said that they were prepared with pads in their bags, 11.2 % said that they had to go and buy them, however a majority (52.2%) said that they had to rush home.

Dysmenorrhea: In the present study, 36% of the girls said that they had no abdominal pain before onset of periods., the rest 64% said they had varying amounts of pain. About 1% of them said that they had moderate to severe pain. Of the symptoms that the girls complained of during their periods, the most common ones were Lower abdominal pain (78.07%), fatigue (73.9%) and back pain (63.38%).In a study done by Belayneh[22] 77.7% of the adolescent school girls had experienced dysmenorrhea. In the present study 20.6% of the girls said that they had no pain associated with periods. 14.7% said that they had mild pain, while 41% said moderate pain and 23.7% said that they had severe pain. About 3.8% of the girls had consulted a doctor for their dysmenorrhea. Of them 1.8% had seen a Gynaecology specialist. 8.0% of the girls said that they were using some medication for pain during periods. About 4.5% had been put on Oral Contraceptive pills with a probable diagnosis of PCOD. Geethu C. *et al*, found in a rural setting study that only 8.06% used OTC to manage menstrual pain[26].

School Absenteeism: In the present study, though 63.4% of the girls complained of moderate to severe pain during menstruation, 35.9% had missed school for pain. 23.9% stayed away from school for 1 day, while 46 for 2 days and 10 for 3 days. A total of 233 days are lost out of a total person days of 11400 i.e. 2.04% loss of person days to school due to menstrual pain every month. 13.3% of the girls said they had spotting before the onset of menses. 32% said that they passed clots of blood during their periods. About 6.2 % said they had to abstain from school because of the bleeding.

Restrictions: In the present study, 77.2% of the girls said that they were not allowed into religious places during menstruation. 67.8% said that they were subjected to restrictions in food items. There were also restrictions regarding sports and exercise, movement in the house and 9% of them were not allowed into the kitchen or to cook food. Curds is restricted for about 38.6% of the girls. Other items are sweets, spicy foods, papaya, potato and milk products. When the mother has a higher education level, food restrictions during menses are less. This difference is statistically significant. Restrictions in entering religious places or doing pooja are lesser among the SC communities when compared to the others. The highest restrictions

are seen in the BC and OC communities. This difference is statistically significant. It is seen that restrictions in religious places is more in the Hindu and Muslim religions that the Christian religion. This difference is highly significant statistically. Restriction of movement within their houses for girls who are having their periods is also seen to be present in the households of all religions though to a lesser extent in the Muslim and Christian families. Udayar SE, *et al,* in their study in a hostel in Andhra Pradesh, found restrictions in attending school (20.5%), touching sacred books (11.6%), playing or outing (9.6%) and keeping them separated (4.4%)[27].

Perceptions: 92.9% of the girls said that they could talk freely with their family members about menstruation. 79.4% said that they were not nervous about menses. A good number felt that their periods were regular. 74.3% of them said that they talk openly with their friends about periods. When comparing the presence of menses related symptoms with a positive perception towards periods, it is seen that 62.2% of the girls who were not apprehensive about their periods had fewer symptoms.

Knowledge About Menstruation: In the present study 94.7% said that sanitary pads are required right from the first period. 93.6%knew that poor menstrual hygiene leads to infections. 90.6% said that no. of days of blood flow per each cycle is 3 to 5 days. 87.7% knew that menstruation makes it possible for a woman to bear children. 66.7% said, the usual age of menarche as 12-15 years.65.6% said that initial menstrual cycles at menarche are usually longer. 55.9% said that duration of a menstrual cycle in days is 28. 51.8% had knowledge about menstruation before menarche. In a study by Taklikar C *et al.* in an urban slum of Kolkata, 42% girls had no knowledge about menstruation before menarche[28]. In present study, 34.6% said their main source of knowledge about menstruation is mother. In the present study, 40.8% said there will be no changes in menstruation during work.19.5% said the cause of menstruation is physiological. In the present study, girls from Hindu families had greater than median knowledge score (42.5%), compared to those from Christians families (36.8%) and Muslim families (18.4%) and this is statistically significant. In a study done by Ameade E PK *et al.* in their study at Ghana, found, that Muslim rather than Christian female students practiced better menstrual hygiene[29]. The association between knowledge score and caste was also statistically significant. Girls having more than median knowledge score from OC, BC and SC/ST castes were 58.8%, 43.3% and 33.5% respectively. According to family type distribution, girls from joint families have a higher median knowledge score (60.5%) than those from extended families (51.4%) and nuclear families (41.8%). Statistically significant association was found between type of family and knowledge score. This might be due to girls getting information from the elderly in larger families. In the present study, girls whose mothers had a higher educational level had a better knowledge (56.8%) on menstruation. In the present study, girls with mothers who have employment outside the house have a greater than median knowledge score (56.7%). Statistically significant association was found between mother's occupation and knowledge score. This study showed that girls from a better socio economic background had more knowledge. In the present study, score greater than median for knowledge is 38.6%, symptoms is 66.4%, practices is 64.0%, perception is 57.5%.

Anthropometry: In the present study, one-fourth of the study participants were found to be underweight. The underweight status was seen more in the girls from the late adolescence group i.e. 15 and 16 years. Only one girl in the study was overweight. More than one-third (37.3%) of the girls in the study were stunted for age. Here also more girls from late adolescence group i.e. 15 and 16 years were found to be stunted. 72.6% of the girls in this study were having normal BMI while 11.6% of girls were overweight, 4.2% were obese and 11.6% were underweight. In NFHS 4 7 the overall stunting in adolescent girls was 34.4% and overweight /obesity was 4.3%.

CONCLUSION

Poorly managed menstruation impacts a girl's sense of control over her life leading to feelings of shame and how she relates to her own body. It can even hinder the educational ambitions of many girls through early school dropout leading to loss of potential. Studies have shown that programmes regarding menstrual hygiene through educational television programmes, trained school nurses/health personnel, inspired school teachers and knowledgeable parents can play a very vital role in transmitting the message of correct menstrual hygiene to the adolescent girl of today.

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