# Risk assessment of menstrual problems among rural adolescent girls in Tamil Nadu, India

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## Abstract

**Introduction:** Adolescence is a transition phase characterized by physical, physiological and psycho-social changes. The adolescents are a powerful human resource and they must be provided with the opportunity for holistic development in order to achieve their ambitions. In most rural areas, in India, the menstrual health of adolescent girls is often neglected. It is important to invest in the menstrual health of the adolescent girls, so as to ensure a healthy family in their adulthood. Most rural adolescent girls are silent sufferers of menstrual problems, owing to various socio-cultural taboos. This study was done to assess the risk factors of menstrual problems among rural school going adolescents in Tamil Nadu, India.

**Materials and Methods:** A cross sectional study was done among 350 school going rural adolescent girls in Tamil Nadu. The participants were selected by simple random sampling and data regarding their menstrual history and nutritional status was assessed by BMI for age graphs for adolescents. Pallor was examined to assess the presence of anaemia.

**Results:** The mean age of the participants was 14.7 years. Menstrual problems were present in 87.7% of the participants. Participants who attained menarche before 12 years of age were significantly at risk for dysmenorrhea and menorrhagia (p<0.01). Family history of menstrual problems and pallor were also significant risk factors for the menstrual problems.

**Conclusion:** It is evident that early menarche is a significant risk factor for menstrual problems. This calls for several longitudinal studies to explore the genetic, socioeconomic and nutritional factors that may influence the menarche.

**Keywords:** Adolescent girls, Menstrual problems, Reproductive health.

## Introduction

The period of adolescence is a transition between childhood and adulthood and is characterized by physiological psychological and psychosocial changes. It has been estimated that 18% of the world's population fall in the age group of adolescence and most of them live in developing countries.[1] In India about one-fifth of the population is comprised of adolescents.[2] This transition is characterized by several important behavioural changes which expose them and increase their risk for many conditions, especially those that affect their reproductive health.

The health problems of adolescent generally relate to sexual and reproductive health ranging from menstrual problems, gynaecological disorders like polycystic ovarian diseases, unsafe pregnancies, and unwanted abortions and sexually transmitted diseases and infections. Apart from these problems nutrition plays a major role in determining the health status is the adolescents. Among the several reproductive health and nutritional problems the most common problem faced during adolescence is the menstrual problems. Menstruation is a phenomenon which is initiated during the adolescent phase and menstrual health is influenced by several other factors including nutrition and psychological problems. It is a well known fact healthy menstrual cycle forms the foundation of reproductive health in their adulthood.

There are several factors which influence a healthy menstrual cycle amongst which nutritional status, age at marriage and family history of menstrual problems are of significant importance. The common menstrual problems faced by the adolescents include dysmenorrhea, menorrhagia and irregular menstrual cycles. Dysmenorrhea is one of the most commonly occurring problems. A study done by Veena H et al in Karnataka observed that 30.2 % of the adolescent girls were under weight and among them 54.5% had late onset menarche.[3] There is a need to assess the risk factors associated with the menstrual problems in order to the address them to an early stage and prevent reproductive morbidities in the future.

## Objectives

This study was carried out to assess the risk factors of menstrual problems among adolescent going school girls in rural Tamil Nadu.

## Materials and Methods

### Study Setting

This study was carried out a cross sectional study among rural adolescent girls studying in rural district of Tamil Nadu. This study was carried out for a period of 3 months.

### Study Participants

All the school going adolescent girls in the rural area of Thiruvallur district constituted the study population. All the high and high secondary schools situated in the study area were approached seeking permission to conduct the study. One school provided permission to conduct the study and all the study participants were selected from this single school. Based on the available literature the prevalence of menstrual problems was found to be 55%. [4] and accordingly the sample size was calculated as 350 at 95% level of significance and 10% limit of accuracy accounting 10% was

not response. The required sample was selected by simple random sampling.

**Inclusion Criteria**
1. Adolescents between 10 to 19 years of age.
2. Attained menarche > 1 year prior to data collection.

**Exclusion Criteria**
1. Adolescent girls not attained menarche
2. Parents not willing for participation in the study.

**Ethical approval and Informed Consent**
Approval was obtained from institutional ethics committee priors to the commencement of the study. Each participant and their parents were explained in detail about the study and informed consent was obtained from both participants and parents priors to data collection.

**Data Collection Tools**
A structured interview schedule was used to collect data regarding the background characteristics and prevalence of menstrual problems. History pertaining to probable risk factors namely age at menarche, family history, nutritional status, and other demographic factors were also ascertained. Clinical examination was carried out to evaluate the presence of anemia.

**Data Analysis**
Data was entered and analyse using as spaces version 15 software. Percentage was used compute the prevalence of risk factors for menstrual problems. Chi square test was used to evaluate the association between the risk factors and menstrual problems. A p value less than 95% was considered statistically significant.

## Results
The mean age of the study participants was 14.7 years. Majority of the participants belonged to 13-15 years (55%), followed by 16-18 years(37%). Participants beyond 18 years of age were 1% (Fig. 1).

The mean age at menarche in our study was12.3 years. Majority of the participants belonged to nuclear family (90.9%) and about 50% of them had family history of menstrual problems. Anemia by clinical examination was prevalent in 38.9% (Table 1).

Our study documented a very high prevalence of dysmenorrhea (72.6%) followed by menorrhagia (45.7%). Irregular menstrual cycles were prevalent in 31.7% of the participants. Overall, 87.7% of the participants had any one of the above menstrual problems (Fig. 2).

The association between risk factors and menstrual problems is given in tables 2,3 and 4. Family history and anemia were significant risk factors for dysmenorrhea, with and odds ratio of 2.2 and 1.8 respectively. The observed difference was statistically significant (p<0.01) (Table 2). Our study also demonstrated a statistically significant association between menorrhagia and risk factors namely family history, age at menarche <12 years and clinical anemia. The association was statistically significant (Table 3). Family history of menstrual problems was strong predictor for irregular menstrual cycles. However, the association was not statistically significant (Table 4).
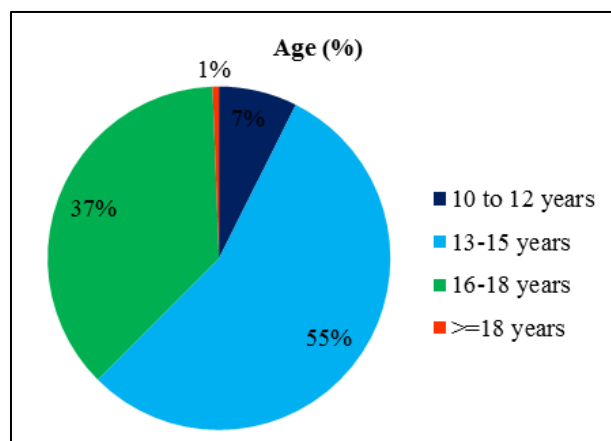


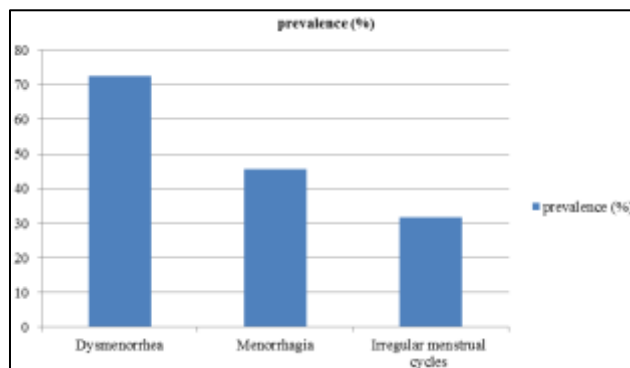**Fig.1:** Age distribution of the study participants



**Fig. 2:** Prevalence of menstrual problems among the study participants:

**Table 1:** Prevalence of risk factors for menstrual problems:

| S. No | Background characteristics | No. of girls (n= 350) | Percentage |
|-------|-----------------------------|-----------------------|------------|
| **1.** | **Type of family** | | |
| | Nuclear | 318 | 90.9 |
| | Joint | 6 | 1.7 |
| | Others | 26 | 7.4 |
| **2.** | **Family history of menstrual problems** | | |
| | Present | 175 | 50.0 |
| | Absent | 106 | 30.3 |

|   |                   |     |      |
|---|-------------------|-----|------|
|   | Do not know       | 69  | 19.7 |
| 3 | **Age at menarche** |     |      |
|   | 9-12 years        | 206 | 58.9 |
|   | 13 years and more | 144 | 41.1 |
| 4 | **Anemia**        |     |      |
|   | Present           | 136 | 38.9 |
|   | Absent            | 214 | 61.1 |

**Table 2:** Risk factors for dysmenorrhea among the study participants

| S. No | Risk factor | N | Dysmenorrhea n(%) | Odds ratio | 95% CI for OR | Chi sq | p value |
|-------|-------------|---|-------------------|------------|---------------|--------|---------|
| 1. | Age at menarche <12 years | 206 | 149 (72.3%) | 0.4 | 0.1-1.1 | 2.8 | 0.09 |
| 2. | Family history | 175 | 140(80%) | 2.2 | 1.3-3.8 | 8.6 | 0.003* |
| 3. | Anaemia | 136 | 108(79.4%) | 1.8 | 1.1-2.9 | 5.2 | 0.002* |

*statistically significant

**Table 3:** Risk factors for menorrhagia among the

| S. No | Risk factor | N | Dysmenorrhea n(%) | Odds ratio | 95% CI for OR | Chi sq | p value |
|-------|-------------|---|-------------------|------------|---------------|--------|---------|
| 1. | Age at menarche <12 years | 206 | 107 (51.9%) | 1.8 | 1.2-2.9 | 7.8 | 0.005* |
| 2. | Family history | 175 | 94 (53.7%) | 2.2 | 1.3-3.6 | 9.4 | 0.002* |
| 3. | Anaemia | 136 | 79 (58.1%) | 2.3 | 1.5-3.5 | 13.7 | 0.001* |

study participants *statistically significant

**Table 4:** Risk factors for irregular menstrual cycles among the study participants

| S. No | Risk factor | N | Dysmenorrhea n(%) | Odds ratio | 95% CI for OR | Chi sq | p value |
|-------|-------------|---|-------------------|------------|---------------|--------|---------|
| 1. | Age at menarche <12 years | 206 | 62 (30.1%) | 0.8 | 0.5-1.3 | 0.6 | 0.437 |
| 2. | Family history | 175 | 53 (30.3%) | 1.1 | 0.6-1.2 | 3.2 | 0.198 |
| 3. | Anaemia | 136 | 41 (30.1%) | 0.9 | 0.6-1.4 | 0.2 | 0.615 |

## Discussion

Adolescent girls in the rural areas are often considered more vulnerable compared to their urban counterpart because of their lack of accessibility to health care services and also their preformed notions and misconceptions. Menstrual problems of these adolescent girls are often varying based on their socioeconomic factors. The current study focused on the menstrual problems and the risk associated with these menstrual problems among the adolescent girls. In the study the mean age of adolescent was 14.74 years and this was similar to study done by Subash Thakre et al and Patil SN et al.[5,6]

In this study 50% of the adolescent girls had a positive family history of menstrual problems which was prevalent among their mothers among their mother and are sisters. However 90.7% of these girls were unaware of the family history. A study done by Lee et al show the 51.6% of the girls had positive family history which is comparable to our study.[7] A study done by Begam et al in Bangladesh also showed similar findings.[8] Study done by Kumbhar S K et al in Kadapa town also showed the family history of 44.3% which is also similar to our study.[9] In a study done by Avasarala et al in Andrapradesh positive family history was present in 58.7% of the girls.[4]

In our study the mean age of menarche was 12.3 years. There were 58.9% of the girls to attend menarche before 12 years of age. Early menarche has been associated with regular and effective reproductive cycles among women. Women who attain menarche earlier are less prone for menstrual problems and other cancers for the reproductive system. A study done by Ghilany et al in Egypt observed that age at menarche among his study population ranged from 10 to 16 years the mean age of 12.9 years which was comparable to our study.[10] Several Indian studies done by Thakre et al and Prajapathi et al showed the similar mean age of menarche.[5,11]

In the study there was a significant association between family history and dysmenorrhea with the positive family history being an increase risk factor for dysmenorrhea with the odds ratio of 2.2 and observed difference was statistically significant (P < 0.05). A study done by Kumbhar et al and Avasarala et al showed similar findings. The present study also found that anaemia was a significant risk factor for dysmenorrhea with an odds ratio of 1.8. This was substantiated by study done by Kaur IP et al.[12] Moreover, girls who attained menarche before 12 years were found to be 1.8 times at risk for menorrhagia and the association was statistical significant. A study done by Lee LK et al showed that abnormal menstrual flow was higher among girls who again menarche earlier and was statistically significant.[7] There was positive associated

between family history and menorrhagia with the odds ratio of 2.2 and the association of found to be statistically significant (P < 0.005). Also our study highlighted that adolescent girls with anaemia were at 2.3 times of risk of have menorrhagia compared to girls were not anaemic.

## Conclusion

In our study we found a significant association between age at menarche and family history of menstrual problems. They were significant predictors of several menstrual problems among these adolescent girls. Our study has emphasized the need for addressing the risk factors of menstrual problems early during the adolescent or pre adolescent stages. It is important to note that family history and age at menarche significantly influence the risk of developing the other menstrual problems. There is a need for creating awareness among the adolescent girls regarding the menstrual problems. It is also important to taken to account the awareness regarding the menstrual health among the mothers of these adolescent girls as they are the primary care provider and confidante for these girls till their marriage. It is also essential to develop adolescent friendly primary health care services which includes counselling services in order to address these issues by none therapeutic measures.

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