



## RESEARCH ARTICLE

### CLINICAL PROFILES OF YOUNG WOMEN SEEKING CARE FOR MENSTRUAL AND REPRODUCTIVE HEALTH ISSUES IN A HOSPITAL SETTING IN BIHAR

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#### ABSTRACT

**Background:** Menstrual health is a critical aspect of women's well-being across the reproductive lifespan. Menstrual disorders not only affect reproductive outcomes but also have long-term implications for physical and mental health. Variations in the timing of menarche are influenced by multiple factors, including lifestyle, environmental exposures, nutritional status, chronic illness, hormonal imbalances, and physical stress. **Objective:** This study aimed to examine the associated factors of menstrual and reproductive health problems among women in Bihar attending outpatient clinics, and to determine the mean age of menarche in this population. **Methods:** Data were collected from women presenting with menstrual health concerns at OPD clinics and hospitals. Clinical profiles were summarized using descriptive statistics, expressed as mean  $\pm$  SD. Associations between age at menarche and blood pressure were assessed using group comparison tests. **Results:** The mean age at menarche among women in Bihar was found to be 12.6 years. A significant association was observed between age at menarche and blood pressure, with unmarried girls showing relatively lower levels, possibly linked to nutritional deficiencies. The study included 101 women aged 10–36 years. Menstrual disorders were the most commonly reported health issues (25.7%), including oligomenorrhea, dysmenorrhea, irregular cycles, and menorrhagia. Primary amenorrhea and sexual developmental concerns were more frequent among unmarried participants, while infertility-related problems were largely observed among married women (8.6%). Additionally, recurrent abortion and fetal loss were reported in 22% of married women. **Conclusion:** This study highlights the need for strengthened nutritional interventions for adolescent girls in Bihar to support physical and psychological development. Menstrual health issues, the primary reason for health center visits, vary by marital status: married women report abortion, fetal loss, and infertility; unmarried girls face menstrual disorders, primary amenorrhea, and poor sexual development. Regular school and college health education is crucial to raise awareness and address these challenges. Targeted policies will improve reproductive outcomes and women's health across Bihar.

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## INTRODUCTION

Menstrual health is crucial for women of reproductive age. The effect of menstrual disorders is not only limited to women's reproductive age but also has health consequences beyond their reproductive age (Rigon, 2012). The mean menarche age has declined from 16.50 years to 12.43 years over the last 40 years. This slow decline in the age of menarche is known to be associated with several types of mental and physical health issues in girls. Studies revealed that these perturbations in the timing of menarche are likely to increase the disease burden for women in four key areas: mental health, fertility-related conditions, cardiovascular disease, and bone health (Silvia P Canelon, 2020). It has been found that irregular menstrual cycles could lead to polycystic ovary syndrome (PCOS).

Long duration of experience of PCOS can result in infertility and has been a significant concern for many women in their reproductive age (Deepa, 2017; Sivagurunathan, 2015; Zamrodah, 2016). Previous studies showed that nearly 90% of women who experienced menstrual disorders were affected in their reproductive life, including fertility, pregnancy, and childbirth. Menstrual disorders have become a common problem among young women in age group (18-25 yrs) (Rafique, 2018). India is home to nearly 200 million adolescent girls, representing one of the largest youth populations (Menstrual Hygiene among Adolescent Girls: Key Insights from the NFHS-5 (2019-21, 2022)). This demographic is critical to the nation's health and development outcomes, yet young women continue to face significant menstrual and reproductive health challenges.

These challenges are particularly pronounced in states such as Bihar, where access to care remains limited, and differences between rural and urban areas are stark. Menstrual abnormalities include one or more unfavourable symptoms related to the menstrual cycle, and a similar occurrence rate of menstrual disorder was found in developed and developing countries (Taheri *et al.*, 2020). Menstrual disorders affect not only a woman's reproductive health and fertility but also her overall health. They are linked to several health problems, such as anaemia and thyroid disorders (Sarkar B, Bhattacharyya, 2021). The Purpose of the study was to understand the associated factors of menstrual and reproductive health problems among women in Bihar attending OPD clinics/hospitals. The study indicates that menstrual problems—especially dysmenorrhea, oligomenorrhea, and menorrhagia—are the most common gynaecological conditions observed in adolescent girls visiting outpatient departments. Additionally, polycystic ovarian syndrome and infections of the reproductive tract emerge as significant issues that call for prompt recognition [Dr. Varudhini L.N. 2025]. The study concludes that a majority of adolescent girls experience diverse menstrual disorders, reproductive health issues, and nutritional challenges. It emphasises the need to raise awareness among adolescents, enabling them to make informed choices regarding medical care and treatment [Dr. J. K. Gedam 2017].

Traditional beliefs regarding menstruation still persist at the community level. Educating mothers, increasing awareness about safe menstrual hygiene, providing adequate water and sanitation facilities and ensuring proper disposal of menstrual products need priority attention [Panda, 2024]. Many research study indicates that the onset of menarche often triggers stress, anxiety, depression, and anger. Another study, the majority of Indian adolescent girls experienced menarche without understanding its cause, and only a small proportion were aware of the origin of menstrual bleeding. Incorporating menstrual hygiene and health education into adolescent learning is crucial for sustaining daily activities and promoting hygienic practices. Greater awareness and safe menstrual management can help prevent reproductive tract infections and their associated complications [Majeed, 2022]. An effective menstrual health education program should encourage students/women to understand the links between knowledge, behaviour, and overall well-being, while also contributing to better maternal health outcomes. Addressing menstrual disorders early in adolescence is essential [Dr. B. Sarkar, 2021].

## Objectives

**The present study was carried out with the following objectives:**

- The purpose of the study was to understand the associated factors of menstrual and reproductive health problems among women in Bihar who attend OPD clinics/hospitals.
- To estimate the mean age of menarche among women attending clinics for menstrual health issues. To assess the association between age at menarche and blood pressure among women of Bihar.

## MATERIALS AND METHODS

A prospective cross-sectional pilot study was conducted over six months at a hospital in Patna. This study is part of a Ph.D. and the findings presented here are based on the pilot data.

The study included 101 women aged 10 and 36 years who attended the gynaecology outpatient (OPD) clinic in an urban area of Patna, Bihar during the study period. Although this is a small study, aim is to publish the findings at an initial stage. Data collection included variables such as age, age at menarche, blood pressure (BP), weight, presenting complaints, physical and gynecological findings, diabetes and other confirmed diagnoses, investigations performed, and referrals made to other specialties. The collected data were compiled and analysed using descriptive statistics to summarise clinical profiles. Descriptive statistics were expressed as mean  $\pm$  SD. The association between age at menarche and blood pressure was assessed using group comparison tests. A p-value of less than 0.05 was considered statistically significant for all tests performed.

## RESULTS

**Table 1. Socio-demographic and Clinical Characteristics of Adolescent Girls (N = 101)**

| Variable                | Mean $\pm$ SD / n (%) |
|-------------------------|-----------------------|
| Age (years)             | 23.86 $\pm$ 6.0       |
| Weight (kg)             | 52.32 $\pm$ 12.8      |
| Age at menarche (years) | 12.6 $\pm$ 3.1        |
| Systolic BP (mmHg)      | 111.39 $\pm$ 12.0     |
| Diastolic BP (mmHg)     | 70.69 $\pm$ 9.9       |
| <b>Diabetes status</b>  | N (%)                 |
| Yes (1)                 | 4(4%)                 |
| No (2)                  | 97(96%)               |

This table shows the clinical characteristics among women. The mean age of the participants is 23 years, indicating that most falls within the young adult category. The mean age at menarche was 12.6 years and the average weight of the women was 52.3 kg. Regarding blood pressure, the mean systolic pressure was 111.3 mmHg, which is well below the threshold for hypertension, while the mean diastolic pressure was 70.6 mmHg. Most of the women were found to be non-diabetic (96%).

**Table 2. Age-wise frequency distribution**

| Age (Years) | Frequency | Percent (%) |
|-------------|-----------|-------------|
| 10-16       | 11        | 10.9        |
| 17-21       | 31        | 30.69       |
| 22-26       | 22        | 21.78       |
| 27-31       | 24        | 23.76       |
| 32-36       | 13        | 12.87       |
| Total       | 101       | 100         |

In this study ages ranging from 10 to 36 years. The present table shows that the highest frequency of the age group is 17-21 years (30.69%), followed by 27-31 years (23.76%). The majority of the participants fall within the reproductive age group. The age distribution indicates that the study predominantly included young adult women, especially those in early and mid-reproductive age. Lower representation of older age groups (>33 years) indicates limited data from late reproductive age women.

**Table 3. Distribution of Blood Pressure Categories among women**

| Blood Pressure Category | n (%)      |
|-------------------------|------------|
| Normal                  | 93 (92%)   |
| Pre-hypertension        | 5 (5%)     |
| Stage 1 Hypertension    | 3 (3%)     |
| Stage 2 Hypertension    | 0          |
| Total                   | 101 (100%) |

Table-3 shows the distribution of blood pressure categories among the participants indicates that the vast majority maintain normal blood pressure levels. Specifically, 92% (93 participants) fall within the Normal blood pressure range. A small minority shows signs of elevated pressure, with 5% classified in the Pre-hypertension category and 3% meeting the criteria for Stage-1 Hypertension. Notably, no participants were identified as having Stage-2 Hypertension. Overall, these results reflect a population with a very low prevalence of hypertensive among women.

**Table 4. Marital status-wise differences of Blood Pressure among women**

| Group     | Mean $\pm$ SD      | Min-Max |
|-----------|--------------------|---------|
| Married   | 113.88 $\pm$ 11.52 | 90-142  |
|           | 73.17 $\pm$ 8.37   | 50-90   |
| Unmarried | 100.63 $\pm$ 7.81  | 90-120  |
|           | 60.00 $\pm$ 9.43   | 40-80   |

The above table shows the marital status-wise blood pressure. Married women have a higher mean of systolic and diastolic blood pressure as compared to unmarried women.

**Table 5. Marital status-wise distribution of Age at menarche**

| Group     | Mean $\pm$ SD    | Min-Max |
|-----------|------------------|---------|
| Married   | 13.45 $\pm$ 1.02 | 11-15   |
| Unmarried | 9.32 $\pm$ 5.84  | 0-15    |

The above table shows the mean age at menarche is approx. ~13 years in married women. The unmarried group shows an unusually some absent menarche due to some health complications.

**Table 6. Overall frequency distribution of health complaints**

| Major Health Issues complaints                                                                              | Frequency (n) | Percent (%) |
|-------------------------------------------------------------------------------------------------------------|---------------|-------------|
| Menstrual Disorders (Amenorrhea, Oligomenorrhea, Irregular cycle, Dysmenorrhea, Menorrhagia, Polymenorrhea) | 26            | 25.7        |
| Recurrent Abortion / Miscarriage / Foetal Loss                                                              | 18            | 17.8        |
| Primary Amenorrhea (separate reporting)                                                                     | 5             | 5.0         |
| Infertility (Primary + Secondary)                                                                           | 7             | 6.9         |
| PCOS                                                                                                        | 2             | 2.0         |
| Ovulation Disorders (Anovulation / No Ovulation)                                                            | 3             | 3.0         |
| Leucorrhea / Vaginal Discharge                                                                              | 6             | 5.9         |
| Abdominal / Pelvic Pain                                                                                     | 12            | 11.9        |
| Breast-related Problems                                                                                     | 2             | 2.0         |
| Hormonal / Tubal Factors                                                                                    | 2             | 2.0         |
| General / Other Complaints                                                                                  | 18            | 17.8        |

The above table shows the reproductive and menstrual problems among women. A total of 101 women were included in the study, and the frequency of overall complaints was recorded. The most commonly reported health issues were menstrual disorders (25.7%), including amenorrhea, oligomenorrhea, dysmenorrhea, irregular cycle and menorrhagia. Recurrent abortion and foetal loss were reported by 17.8% of participants. Infertility-related problems (primary and secondary) accounted for 6.9% of cases. Ovulation disorders were observed in 3.0% of participants, while PCOS was reported in 2.0%. Leucorrhea and vaginal discharge were reported by 5.9% of participants. Abdominal and pelvic pain were present in 11.9% of cases. General and other complaints constituted 17.8% of total cases.

**Table 7. Frequency distribution of health complaints among married women**

| Health Issues                                                                                | Frequency (n) | Percent (%) |
|----------------------------------------------------------------------------------------------|---------------|-------------|
| Recurrent Abortion / Miscarriage / Foetal Loss                                               | 18            | 22.0        |
| Primary Infertility                                                                          | 4             | 4.9         |
| Secondary Infertility                                                                        | 3             | 3.7         |
| Menstrual Disorders (Amenorrhea, Oligomenorrhea, Irregular Cycle, Menorrhagia, Dysmenorrhea) | 20            | 24.4        |
| PCOS                                                                                         | 2             | 2.4         |
| No Ovulation / Anovulation                                                                   | 3             | 3.7         |
| Tubal Blockage                                                                               | 1             | 1.2         |
| Hormonal Imbalance                                                                           | 1             | 1.2         |
| Leucorrhea / Vaginal Discharge                                                               | 3             | 3.7         |
| Abdominal / Pelvic Pain                                                                      | 8             | 9.7         |
| Breast-related Issues                                                                        | 2             | 2.4         |
| General Weakness / Other Complaints                                                          | 17            | 20.7        |
| <b>Total</b>                                                                                 | <b>82</b>     | <b>100</b>  |

Above table display the frequency of health complaints reported by married women in clinics. Most common reported health issue were menstrual disorders (24.4%), followed by recurrent abortion/miscarriage and foetal loss (22.0%).

**Table 8. Frequency Distribution of health complaints among unmarried women**

| Health issues                                                              | Frequency (n) | Percent (%) |
|----------------------------------------------------------------------------|---------------|-------------|
| Primary Amenorrhea                                                         | 5             | 26.3        |
| Menstrual Disorders (Irregular, Oligomenorrhea, Dysmenorrhea, Menorrhagia) | 6             | 31.6        |
| Leucorrhea                                                                 | 3             | 15.8        |
| Abdominal Pain                                                             | 3             | 15.8        |
| Poor Sexual Development                                                    | 2             | 10.5        |
| <b>Total</b>                                                               | <b>19</b>     | <b>100</b>  |

The above table shows the most common issues among unmarried women. The most frequent health issue was menstrual disorders (31.6%), followed by primary amenorrhea (26.3%). Abdominal pain was reported in 15.8% of unmarried women. Poor sexual development was observed in 10.5% of cases.

**Table 9. Mean Blood Pressure and Age at menarche association**

| Age at Menarche (years) | n                 | Mean SBP ( $\pm$ SD) | Mean DBP ( $\pm$ SD) |
|-------------------------|-------------------|----------------------|----------------------|
| $\leq 11$ (Early)       | 9 (8.9%)          | 101.1 $\pm$ 7.8      | 61.1 $\pm$ 11.6      |
| 12-13 (Normal)          | 52 (51.5%)        | 111.8 $\pm$ 11.3     | 72.0 $\pm$ 8.6       |
| $\geq 14$ (Late)        | 40 (39.6%)        | 113.1 $\pm$ 12.7     | 73.1 $\pm$ 10.2      |
| <b>P-value</b>          | <b>101 (100%)</b> | <b>0.023</b>         | <b>0.008</b>         |

\*ANOVA test (If P-value is  $\leq 0.05$  significant)

The above table shows the association between age at menarche and blood pressure. A statistically significant association was observed between age at menarche and both systolic and diastolic blood pressure. The mean blood pressure values differed significantly across the menarche age groups, indicating that age at menarche may influence blood pressure.

## DISCUSSION

Menstruation and menstrual health issues which is one of the major areas of concern in reproductive health affects a large number of women throughout their reproductive life from adolescence (Omidvar *et al.*, 2018). The present study was conducted to explore the menstrual and reproductive health complications and clinical characteristics among the early & late adolescence and adult age group women.

A total of 101 women aged 10–36 years were included in the present study, clinical characteristics shows that the mean age of the participants was 23 years, indicating that most falls within the young adult category. The mean age at menarche was 12.6 years and the average weight of the women was 52.3 kg. Regarding blood pressure, the mean systolic pressure was 111.39 mmHg, which is well below the threshold for hypertension, while the mean diastolic pressure was 70.69 mmHg. Most of the women were found to be non-diabetic (96%). Age group wise frequency distribution shows the highest proportion age group is 17-21 years (30.6%), followed by 27-31 years (23.7%). The majority of the participants fall within the reproductive age group. The age distribution indicates that the study predominantly included young adult women, especially those in early and mid-reproductive age. Finding reflecting a focus on young adult women. Only a small proportion fell into late reproductive age categories (>33 years). The frequency distribution of blood pressure categories among the participants indicates that the vast majority maintain normal blood pressure levels. Specifically, 92% (93 participants) fall within the normal blood pressure range. A small minority shows signs of elevated pressure, with 5% classified in the pre-hypertension category and 3% meeting the criteria for Stage-1 hypertension. Notably, no participants were identified as having Stage-2 hypertension. Overall, these results reflect a population with a very low prevalence of hypertensive conditions among women. The present study included 82 married (81.2%) and 19 unmarried (18.8%) women. Married women showed higher mean systolic blood pressure ( $113.88 \pm 11.52$  mmHg), diastolic blood pressure ( $73.17 \pm 8.37$  mmHg) compared to unmarried women.

In the present study participant mean age at menarche was 12.6 years. The analysis demonstrated that a majority of women (51.5%) attained menarche between the ages of 12–13 years and 8.9 % of women experienced an early age at menarche, whereas 39.6% of women attained a late age at menarche. In patil *et al.*, reported finding in hospital-based study, maximum (37%) of the participants attained their menarche at the age of 12. Durga *et al.*, reported the mean age of menarche was 13.5 years that slightly higher at our findings. In our study, greater variability was observed in unmarried women age at menarche was 9 years, suggesting possible recording inconsistencies. The unmarried group shows an unusually some absent menarche due to some health complications. A study conducted by Sanyal & Ray, 2008 in west Bengal reported that the mean age of menarche is 12.8 years and other study conducted by Omidvar *et al.*, 2018 in urban area of south India and showed that mean age of menarche is 13 years. This declining trend of menarche age is known to cause many health problems in women. Early menarche is known to be at a greater risk of psychosocial as well as physical health problems in women. This includes delinquency, risky sexual behaviour, obesity, diabetes, cardiovascular disease and breast cancer (Yoo, 2016) (Ramraj *et al.*, 2021). Consequently, it is important to study the influencing factors that contribute to the decline in the age at menarche. In our study, menstrual abnormalities and pregnancy-related complications were the predominant concerns. Primary amenorrhea and developmental concerns were more common among unmarried participants (e.g., primary amenorrhea was 5.0% overall, but proportionately higher among unmarried women at 26%). Overall, the most commonly reported health issues were menstrual disorders

(25.7%), including oligomenorrhea, dysmenorrhea, irregular cycle and menorrhagia. Other studies reported higher frequency of menstrual disorders (49.8%), oligomenorrhoea (13%), polymenorrhoea (31%) and menorrhagia (10%) (Patil, 2022). In Goswami *et al.*, study reported 58% menstrual disorders, oligomenorrhoea (40%), menorrhagia (24%), primary and secondary amenorrhoea (29%). Menstrual problems should be handled carefully and treated on time. It is the most common issues in reproductive health areas among women. These problems may be due to a lack of knowledge and awareness about menstruation, along with social embarrassment. These issues should be addressed through proper education and awareness programs.

In our study, recurrent abortion and foetal loss were reported by 17.8% of participants. Infertility-related problems (both primary and secondary) accounted for 6.9% of cases. Ovulation disorders were observed in 3.0% of participants, while PCOS was reported in 2.0%. Leucorrhea and vaginal discharge were reported by 5.9% of participants. Abdominal and pelvic pain were present in 11.9% of cases. Infertility-related issues were largely observed among married women (8.6%). Recurrent abortion and foetal loss were also more common in married women (22%). Overall, young women showed low body development, with average weights below typical standards for the Indian population. Other study mentioned that, the overall 24.4% prevalence of menstrual disorders mirrors rural Indian OPD patterns, though some studies report higher rates. Recurrent miscarriage (22%) exceeds western norms but aligns with Indian epidemiology linked to infections and clotting risks in low-resource settings. Infertility rates (primary 4.9%, secondary 3.7%) match DLHS surveys (5.9% primary, 1.7% secondary) and rural Bihar estimates (~6%) [Das and Jungari, 2024]. Leucorrhea (3.7%) reflects rural Himalayan patterns (10–20%), PCOS (2.4%) is lower than urban figures due to underdiagnosis, and pelvic pain (9.8%) fits 21–40% rural prevalences. In adolescents, primary amenorrhea (26.3%) exceeds community rates (1–5%) but matches tertiary referrals (20–30%) [Varudhini *et al.* 2025]. In our study, a statistically significant association was observed between age at menarche and blood pressure. The mean blood pressure values differed significantly across the menarche age groups, indicating that age at menarche may influence blood pressure. Other study reported that both early and late menarche is associated with an increased risk of high blood pressure (Bubach *et al.*, 2018). Our findings show, the mean systolic blood pressure was higher among women with late age at menarche compared to those with early and normal menarche. A similar pattern was observed for diastolic blood pressure. However, the observed values remained within the normal range of blood pressure (Hypertension). Our study findings highlight a heavy burden of gynaecological morbidities in this hospital-based study, with unmet needs for early screening of menstrual, developmental, and pregnancy issues among young women.

## CONCLUSION

In conclusion, the present study reveals that the mean age at menarche among women in Bihar was 12.6 years. A significant association was observed between age at menarche and blood pressure. Blood pressure levels among unmarried girls were relatively low, which may be attributed to nutrition deficiencies.

Therefore, there is a need to focus on this age group to improve nutritional intake and promote a healthy diet, which would support both physical and mental development. The study further indicates that the majority of women visited health centre due to menstrual disorders. Among married women, issues such as abortion, foetal loss, and infertility were commonly reported. Unmarried girls primarily sought care for menstrual disorders, which were the most frequently reported health issues, followed by primary amenorrhea. Additionally, poor sexual development health issue was also observed among unmarried girls. Regular health education sessions and group discussions in schools and colleges are essential to raise awareness about gynaecological issues among adolescent girls and young women. Menstrual health issues and related health outcomes observed among women are unique to this population and provide important evidence for Bihar specific policy planning. Developing targeted interventions is essential to improve menstrual health, reduce unmet contraceptive needs and address persistent rural-urban differences, thereby contributing to better adolescent reproductive health outcomes.

### Declarations by Authors

**Ethical Approved:** Approved

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