

# An epidemiological study of period poverty among females of reproductive age group in Lucknow (U.P.)

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## ABSTRACT

**Background:** Females in developing countries face brunt of lack of access to affordable menstrual supplies and inequitable distribution of menstrual health education and are victims of period poverty. The objective of the present study was to estimate prevalence of period poverty and to determine association of period poverty with socio-demographic determinants, menstrual knowledge, menstrual hygiene management practices, and reproductive health. **Materials and Methods:** This was an analytical cross-sectional study, conducted at an urban primary health care centre. Reproductive age group (20–49 years) females attending the primary health care centre from December 2022 to May 2023 were selected for study. Data were collected on semi-structured, pre-tested questionnaires. The collected data were entered in M.S Excel and analysed in STATA version 17.0. Chi-square test was used for comparison of qualitative data, and for quantitative data, unpaired *t*-test was used. **Results:** The prevalence of period poverty in the present study was 92 (29.7%). The mean age of females with period poverty was  $29.72 \pm 7.13$  years, and it was  $26.45 \pm 6.62$  years with no period poverty ( $P < 0.001$ ). Period poverty was significantly associated with socio-demographic variables. Period poverty had significant association with menstrual knowledge, menstrual hygiene management practices, and reproductive health. **Conclusion:** Many females cannot afford menstrual health products to meet their monthly needs, and this may affect their education and socio-economic status. Improved access to affordable sanitary products is requisite of females.

**Keywords:** Menstrual hygiene management, period poverty, reproductive health, socio-demographic

## Introduction

Period poverty, that is, lack of access to menstrual products and adequate facilities for menstrual hygiene management (MHM), affects far too many girls and women across the globe. It has a negative impact on a woman's physical and mental health and emotional well-being.<sup>[1]</sup> According to an estimate, worldwide, approximately 500 million girls and women suffer from period poverty.<sup>[2]</sup> The problem is not specific to any region but is widespread.

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In India, of the 355 million menstruators, 12% cannot afford menstrual products,<sup>[3]</sup> 23 million girls drop out of school annually due to a lack of proper MHM facilities, and more than 30% of women between the ages of 15 and 24 do not use hygienic methods of protection during their menstrual period. Further, there is a stark disparity between rural and urban regions. For example, the percentage of women using hygienic MHM methods in Gujarat varied from 77.6% in urban areas to 58.6% in rural areas, from 82.9% in urban areas to 63.8% in rural areas in Assam, and from 85% in urban areas to 59% in rural areas in Meghalaya.<sup>[4]</sup>

However, there is a lack of information on how period poverty challenges everyday life of menstruating women. The present study, therefore, was conducted to estimate prevalence of

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period poverty and to determine association of period poverty with socio-demographic determinants, knowledge about menstruation, MHM practices, and reproductive health of females.

## Materials and Methods

### Study setting

The present cross-sectional analytical study was conducted at an urban primary health care centre affiliated with the department of Community medicine of a medical college in district Lucknow of Uttar Pradesh in India.

### Study population

The study population included all females who reported to the health centre as attendants or as patients not suffering from gynaecological ailments and were in the reproductive age group, that is, between 20 and 49 years. Females suffering from gynaecological ailments or those who did not give consent for the study or were beyond the reproductive age group were excluded. The study was conducted during December 2022 to May 2023.

### Data collection

Study participants were interviewed with a semi-structured, pre-tested questionnaire. The questionnaire included information on socio-demographic characteristics, period poverty, menstrual knowledge, MHM practices, and reproductive health.

Data considered for study included the following:

1. Socio-demographic characteristics: age, religion, place of residence, education status of participants, education status of mother, occupation of participants, and family income.
2. Period poverty, which was estimated by inability to afford menstrual products, that is, disposable sanitary pads and reusable sanitary pads in the past 1 year.
3. Knowledge about menstruation: heard about menstruation before menarche, average age of menarche, cause of menstruation, source of menstrual blood, menstrual blood is unhygienic, menstrual bleeding duration, duration of the menstrual cycle, and foods to avoid during menstruation.<sup>[5]</sup>
4. MHM practices: Regular washing of genitals after changing pads, genital cleaning material used during menstruation, bathing during menses, type of material used during menstruation, frequency of changing sanitary material during menses per day, proper disposal of used menstrual hygiene materials, and hand washing during changing pads every time.<sup>[6]</sup>
5. Physical health risk: dysmenorrhoea, any complaint of reproductive tract infection (RTI) in the past 1 year, and any complaint of urinary tract infection (UTI) in the past 1 year.

For scoring about menstrual knowledge and MHM practices, one 01 mark was assigned to each point under them. Accordingly, the menstrual knowledge score ranged from 0 to 8, and those having

a score less than 4 were described as having poor menstrual knowledge. The MHM practice score ranged from 0 to 7, and those having a score less than 4 were described as having poor MHM practices.

### Sampling procedure

The urban health care centres affiliated to the institution for internship training programme and having a daily footfall of 60 to 80 patients were chosen for the study. The study population was chosen by the census method, that is, complete enumeration, till the desired sample size was reached.

### Sample size

According to NFHS-5, women who use hygienic methods of protection during their menstrual periods were 72.6%; that is, women not using any hygienic method of protection were 27.4%.<sup>[7]</sup> Considering this as a measure of period poverty, sample size was calculated using the formula  $n = 4pq/L^2$ ,<sup>[8]</sup> where

$n$  = sample size,

$p$  = proportion in the population possessing the characteristic of interest,

$L$  = absolute error, and

$q = (1-p)$

Considering 95% confidence interval and prevalence 27.4% and taking “ $L$ ”, absolute error in the estimate of “ $p$ ”, as 5%, the sample size was calculated as 306. Thus, a total of 310 females in the reproductive age group were included in the study.

### Statistical analysis

The collected data were entered in Microsoft Excel 2013 and analysed using STATA version 18.0. Categorical variables were presented as frequency and percentage. Chi-square test was used for comparison. Quantitative data such as knowledge and MHM practice score were described as mean and standard deviation, and unpaired  $t$ -test was used. A  $P$  value less than 0.05 was taken as statistically significant. Trend (linear) regression analysis was used to find the relation between menstrual knowledge and MHM score.

### Ethics

The study was approved by the Institute ethical committee (Letter no. TSMCMC and H/IEC/NOV22/61). Informed consent was obtained from participants.

## Results

A total of 310 females in the reproductive age group participated in the present study. Of the total, 66.8% of the females in the study were 20–29 years old, 59.03% of all study participants

belonged to a nuclear family, and 54.5% of all study participants belonged to general caste. Period poverty was present in 92 (29.67%) of the study participants.

**Association of Socio-demographic factors with period poverty:** As is seen in Table 1, the mean age of females with period poverty was  $29.72 \pm 7.13$  years as compared to  $26.45 \pm 6.62$  years of females with no period poverty ( $P 0.001$ ). Period poverty among females of Muslim or other religions was significantly more than that among Hindu females ( $P 0.003$ ). However, no association was observed between period poverty and caste of the participants ( $P 0.266$ ). Period poverty was significantly higher in females of rural residence ( $P 0.039$ ) and among females living in the joint family ( $P 0.001$ ).

Period poverty was more common in females who were homemakers or were not working ( $P 0.018$ ). Education status of

participants significantly affected period poverty. Period poverty was more common in participants with a lower education status. It decreased from 23.9% among illiterates to 8.7% among females with education level graduation and above ( $P 0.000$ ). Period poverty was also found to have significant association with education status of father and mother. Most of study participants' mothers were homemakers (81.3%). It was observed that period poverty was significantly common in participants of homemaker mothers ( $P 0.022$ ). Most of the study participants belonged to lower-middle and upper-lower socio-economic statuses. Period poverty was more common in lower socio-economic status ( $P 0.047$ ). Marital status was significantly associated with period poverty. Period poverty was significantly more common in married females ( $P 0.000$ ) [Tables 1 and 2].

**Association of period poverty with knowledge on menstruation:** Knowledge on menstruation was assessed using

**Table 1: Association of period poverty with socio-demographic variables**

| Socio-demographic factor   | Past year period poverty (n=92) | No period poverty (n=218) | Chi-square | P     | df |
|----------------------------|---------------------------------|---------------------------|------------|-------|----|
| Age                        |                                 |                           |            |       |    |
| 20-29 years                | 47 (22.7)                       | 160 (77.3)                | 15.231     | 0.001 | 2  |
| 30-39 years                | 37 (45.7)                       | 44 (54.3)                 |            |       |    |
| 40-49 years                | 8 (36.4)                        | 14 (63.6)                 |            |       |    |
| Religion                   |                                 |                           |            |       |    |
| Hindu                      | 67 (26.2)                       | 189 (73.8)                | 8.654      | 0.003 | 1  |
| Muslim and others          | 25 (46.3)                       | 29 (53.7)                 |            |       |    |
| Caste                      |                                 |                           |            |       |    |
| General                    | 55 (32.5)                       | 114 (67.5)                | 2.648      | 0.266 | 2  |
| OBC                        | 17 (22.4)                       | 59 (77.6)                 |            |       |    |
| SC/ST                      | 20 (30.8)                       | 45 (69.2)                 |            |       |    |
| Place of residence         |                                 |                           |            |       |    |
| Rural                      | 59 (34.5)                       | 112 (65.5)                | 4.255      | 0.039 | 1  |
| Urban                      | 33 (23.7)                       | 106 (76.3)                |            |       |    |
| Type of family             |                                 |                           |            |       |    |
| Nuclear                    | 41 (22.4)                       | 142 (77.6)                | 11.322     | 0.001 | 1  |
| Joint                      | 51 (40.2)                       | 76 (59.8)                 |            |       |    |
| Occupation of participants |                                 |                           |            |       |    |
| Working                    | 41 (24.1)                       | 129 (75.9)                | 5.575      | 0.018 | 1  |
| Not working/homemaker      | 51 (36.4)                       | 89 (63.6)                 |            |       |    |
| Occupation of father       |                                 |                           |            |       |    |
| Clerical and above         | 18 (18.0)                       | 82 (82.0)                 | 18.454     | 0.000 | 3  |
| Skilled                    | 16 (22.9)                       | 54 (77.1)                 |            |       |    |
| Semi-skilled               | 23 (46.9)                       | 26 (53.1)                 |            |       |    |
| Unskilled                  | 35 (38.5)                       | 56 (61.5)                 |            |       |    |
| Occupation of mother       |                                 |                           |            |       |    |
| Working                    | 10 (17.2)                       | 48 (82.8)                 | 5.287      | 0.022 | 1  |
| Homemaker                  | 82 (32.5)                       | 170 (67.5)                |            |       |    |
| Socio-economic status      |                                 |                           |            |       |    |
| Upper                      | 2 (6.7)                         | 28 (93.3)                 | 9.641      | 0.047 | 4  |
| Upper-middle               | 12 (30.0)                       | 28 (70.0)                 |            |       |    |
| Lower-middle               | 27 (31.4)                       | 59 (68.6)                 |            |       |    |
| Upper-lower                | 29 (30.2)                       | 67 (69.8)                 |            |       |    |
| Lower                      | 22 (37.9)                       | 36 (62.1)                 |            |       |    |
| Marital status             |                                 |                           |            |       |    |
| Married                    | 72 (41.6)                       | 101 (58.4)                | 26.746     | 0.000 | 1  |
| Unmarried                  | 20 (14.6)                       | 117 (85.4)                |            |       |    |

**Table 2: Association of education with period poverty**

| Socio-demographic factor   | Past year period poverty (n=92) | No period poverty (n=218) | Chi-square | P     | df |
|----------------------------|---------------------------------|---------------------------|------------|-------|----|
| Education of participants  |                                 |                           |            |       |    |
| Graduate and above         | 8 (9.2)                         | 79 (90.8)                 | 52.657     | 0.000 | 5  |
| Intermediate               | 21 (22.6)                       | 72 (77.4)                 |            |       |    |
| High school                | 13 (30.2)                       | 30 (69.8)                 |            |       |    |
| Middle school              | 15 (51.7)                       | 14 (48.3)                 |            |       |    |
| Primary school             | 13 (59.1)                       | 9 (40.9)                  |            |       |    |
| Illiterate                 | 22 (61.1)                       | 14 (38.9)                 |            |       |    |
| Education status of father |                                 |                           |            |       |    |
| Intermediate and above     | 28 (15.7)                       | 150 (84.3)                | 50.822     | 0.000 | 3  |
| High school                | 14 (34.1)                       | 27 (65.9)                 |            |       |    |
| Middle school              | 13 (39.4)                       | 20 (60.6)                 |            |       |    |
| Primary school and below   | 37 (63.8)                       | 21 (36.2)                 |            |       |    |
| Education status of mother |                                 |                           |            |       |    |
| Intermediate and above     | 11 (10.9)                       | 90 (89.1)                 | 27.952     | 0.000 | 3  |
| High school                | 13 (29.5)                       | 31 (70.5)                 |            |       |    |
| Middle school              | 13 (37.1)                       | 22 (62.9)                 |            |       |    |
| Primary school and below   | 55 (42.3)                       | 75 (57.7)                 |            |       |    |

**Table 3: Association of period poverty with knowledge about menstruation and MHM practice**

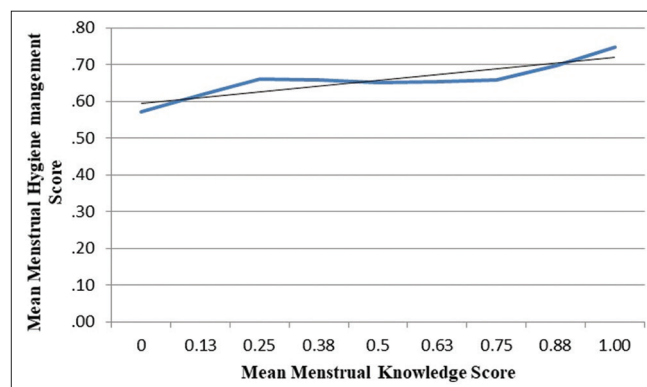
| Past year period poverty (n=92) Mean Score±Standard Deviation | No period poverty (n=218) Mean Score±Standard Deviation | t-test                       |
|---|---|------------------------------|
| Knowledge about menstruation score                            |   |                              |
| 0.621±0.223   | 0.726±0.275   | t=3.236<br>df=308<br>P 0.001 |
| Menstrual hygiene management practice score                   |   |                              |
| 0.562±0.238   | 0.729±0.203   | t=6.294<br>df=308<br>P 0.000 |

a combined score. The mean score of females on knowledge on menstruation with period poverty was  $0.621 \pm 0.223$ , and that with no period poverty was  $0.726 \pm 0.275$ . The association between period poverty and knowledge on menstruation was found statistically significant ( $P 0.001$ ) [Table 3].

The trend analysis plotting between knowledge score and MHM score is shown in Figure 1. It shows an  $R^2$  value (coefficient of determination) of 0.771, which indicates that variation of menstrual score is explained by knowledge score.

**Association of period poverty with MHM practices:** MHM practices were assessed using a combined score. The mean MHM practice score of females with period poverty was  $0.562 \pm 0.238$  and that with no period poverty was  $0.729 \pm 0.203$  ( $P 0.000$ ) [Table 3].

**Association of period poverty with gynaecological ailments:** All the study participants were also asked for gynaecological

**Figure 1: Trend analysis of menstrual knowledge score and menstrual hygiene score**

ailments, if any. Dysmenorrhoea was found present in 73.6% of females, though it had no association with period poverty. Urinary tract infection in the past 1 year reported in 20.9% of females was found significantly associated with period poverty ( $P 0.04$ ). Similarly, RTI in the past 1 year reported in 9.7% of females was found significantly associated with period poverty ( $P 0.024$ ) [Table 4].

## Discussion

Every month, nearly 1.9 billion individuals menstruate, that is, half of world female population.<sup>[9]</sup> Period poverty had always been an issue of concern in our society. Socio-cultural, economic, and political barriers exist to prevent accessibility of menstrual products.<sup>[10]</sup> Even middle class and affluent face the problem of short-term unavailability or unaffordability of menstrual products. In the United States, around 500 million women did not have adequate access to menstrual products and hygiene facilities.<sup>[11]</sup> In a study by Cardoso LF *et al.*, the past 1 year period poverty was seen in 14.2% females of the United States.<sup>[1]</sup> This was less than what was observed in our study, that is, 29.7%. The

**Table 4: Association of period poverty with gynaecological ailments**

| Gynaecological ailments | Past year period poverty (n=92) | No period poverty (n=218) | Chi-square | P     | df |
|-------------------------|---------------------------------|---------------------------|------------|-------|----|
| Dysmenorrhea            |                                 |                           |            |       |    |
| Present                 | 69 (30.3)                       | 159 (69.7)                | 0.142      | 0.707 | 1  |
| Absent                  | 23 (28.0)                       | 59 (72.0)                 |            |       |    |
| UTI                     |                                 |                           |            |       |    |
| Present                 | 26 (40.0)                       | 39 (60.0)                 | 4.199      | 0.040 | 1  |
| Absent                  | 66 (26.9)                       | 179 (73.1)                |            |       |    |
| RTI                     |                                 |                           |            |       |    |
| Present                 | 14 (46.7)                       | 16 (53.3)                 | 5.066      | 0.024 | 1  |
| Absent                  | 69 (27.0)                       | 187 (73.0)                |            |       |    |

difference could be because USA is a highly developed country with a higher level of education and income at the individual level also.

Mean age and socio-economic disparities were significantly associated with period poverty in present study. Religion, rural residence, living in a joint family, education, occupation, and socio-economic status had significant association with period parity. To understand this, one needs to understand the socio-cultural milieu of our society. Females living in rural areas have inadequate accessibility and availability of sanitary products, menstrual prohibition practices still followed in many joint families, and no usage of sanitary products was still practised. Young girls and women with a lower education status do not have adequate menstrual-related information. Parents, especially men, hesitate to talk about these issues with their daughters and even with their wives. Unobtainability of sanitary products contributes to menstrual leaves, leading to a poor education status and unemployment in females, thus leading to economic loss.<sup>[12,13]</sup> In a study by Rossouw L *et al.*, it was seen that women and girls with a lower socio-economic status and less education, living in rural areas, and females with an age more than 35 were persistently less likely to have access to sanitary pads.<sup>[14]</sup>

In the present study, period poverty was significantly associated with low knowledge score on menstruation and MHM practice. Lack of knowledge about one's own menstruation contributes to poor menstrual hygiene, hence leading to period poverty. Unaffordability of safe menstrual products can pose serious health risks, such as reproductive and urinary tract infections, thrush, and others, as was observed in the present study.<sup>[15]</sup>

The importance of period poverty can be gauged by the fact that on the International Menstrual Hygiene Day of this year, the nations of the world advocated for "Making menstruation a normal fact of life by 2030" and resolved to create a world where the girls and women undergo this normal physiological process in a safe, hygienic, and dignified manner.<sup>[16]</sup>

## Conclusion

The present study clearly brought out that socio-demographic factors play a crucial role in the causation of period poverty.

Period poverty itself can cause females to stay at home, which can affect their education and hence limit their economic opportunities. Sanitary products, therefore, should be more readily available to females and their cost should also be minimal so that females from any socio-economic strata can easily afford them, without causing any economic strain on them and their family and help the society achieve the goal of "Making menstruation a normal fact of life by 2030".

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## Conflicts of interest

There are no conflicts of interest.

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