Prevalence of Dysmenorrhea and its Associated Factors among Adolescent Girls Studying in Technical Schools of Dang, Nepal

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ABSTRACT

Introduction: Dysmenorrhea is a gynecological disorder and more often a cause of shame, anxiety and embarrassment among female adolescents. The prevalence of dysmenorrhea worldwide ranges 15.8-89.5%, with higher prevalence rates reported among adolescent female. This study aimed to assess the prevalence of dysmenorrhea and its associated factors among adolescent girls studying in Council for Technical Education and Vocational Training (CTEVT) at Ghorahi Sub-metro Politian Dang, Nepal.

Methods: Institutional based cross-sectional analytical study was carried out from February, 2019 to August, 2019 among adolescent girls in technical schools of Dang, Nepal. Self-administered questionnaire was used to collect data from 452 adolescent girls and only 375 adolescent girls were included in the study. Census method was adopted. Data were checked, coded and entered into Epi-data (version 3.1) and transferred to SPSS (version 20) for analysis. Univariate, bivariate and multi variable analyses were carried out. Binary logistic regression model were computed and P value < 0.05 was considered as significant. All ethical procedures were considered.

Results: The prevalence of dysmenorrhea was 75.2%, among them half of the respondents experienced moderate pain (50.7%), followed by mild (26.6%) and severe (22.7%). Family history of dysmenorrhea, AOR (95% CI) = 7.657 (4.036, 14.528), early menarche AOR (95% CI) = 15.662 (7.583, 32.351), underweight AOR (95% CI) = 0.361 (0.149, 0.874) had statistically significant association with the dysmenorrhea.

Conclusion: Three-quarters of the adolescent girls experienced dysmenorrhea. Dysmenorrhea among adolescent girls is associated with family history, early menarche, whereas underweight was found to be protective factors for the occurrence of dysmenorrhea. All girls entering into menarche should be oriented with dysmenorrhea management practices to maintain physical, physiological and psycho-social health.

Keywords: Adolescent girls, dysmenorrhea, severity

INTRODUCTION

Menstruation is a unique phase of life of a girl. It is a significant stage of puberty. It involves discharging blood and other materials at a regular interval from the inner lining of the uterus and it occurs because of the hormones produced by hypothalamus and pituitary gland located in the brain.¹ The age of first menstruation varies but most of the studies showed that it occurs generally between the ages of 13 and 15 years.² Menstruation lasts for 3-7 days.³ According to World Health Organization (WHO) ‘adolescence’ is a period between 10 and 19 years.⁴ Dysmenorrhea is a menstrual pain, which is characterized by abdominal pain, backache, stomach cramps, waist pain and thigh pain.⁵

Primary dysmenorrhea is a painful menstruation in women with normal pelvic anatomy, usually beginning during adolescence, whereas painful menstruation with pelvic pathology is defined as secondary dysmenorrhea.⁶ Menstrual pain is common in young age and it affects school attendance and performance along with their social activities and quality of life. Dysmenorrhea affects the daily routine activities of adolescent girls due to prolonged bed rest, missed social activities/commitments, disturbed sleep and decreased appetite.⁷ The study conducted at Chandigarh, India among adolescent girls found that most common symptom experienced by the girls was stomach ache followed by backache and general body pain.⁸

Painful menstruation or dysmenorrhea is a common gynecologic disorder among young females.⁹ The prevalence of dysmenorrhea worldwide ranges 15.8-89.5%, with higher prevalence rates reported in the adolescent girls.¹⁰ Several studies show that the prevalence of dysmenorrhea was 34% in Egypt, 64% in Nigeria and Mexico, 84% in Thailand 88% in Turkey and 93% in Taiwan, 74.5% in Malaysia, 70% in Italy, 80% in Australia, 85% among Hispanic, and lowest prevalence has been reported in Japan (16%).¹¹ The prevalence of dysmenorrhea is high, ranging approximately between 45% to 93% of women of reproductive age,¹² among them the adolescent girls account

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the highest. Some women (3 to 33%) have experiences very severe pain, severe enough that they feel they were deprived of strength or power to carry out routine activities for 1 to 3 days in each menstrual cycle. Indeed, dysmenorrhea has a high impact on women’s lives as restriction in daily activities, low academic performance among adolescents, sleeplessness, mental problems as shame, negative mood, anxiety and depression.

Studies conducted among medical students in Nepal showed that the dysmenorrhea and stress was 67%. Similarly, prevalence of dysmenorrhea was 53.8% among female students of Kathmandu Medical College. Prevalence of dysmenorrhea among college students was found to be 72.7%. The study was carried out to identify the prevalence of dysmenorrhea and its associated factors among adolescent girls in technical schools of Dang, Nepal.

METHODS

Institutional based cross-sectional analytical study was employed from February, 2019 to August, 2019 among adolescent girls in technical schools of Dang, Nepal. Only adolescent girls between 15 to 19 years, who were unmarried and had menstruation, were included in the study. Self-administered questionnaire contained socio-demographic characteristics, menstrual characteristics were used to collect data from 452 adolescent girls from 11 schools and only 375 adolescent girls participated in the study. Census method was adopted.

Ethical approval was obtained from Institutional Review Committee of Pokhara University. Approval was taken from Ghorahi submetropolitant, education office and technical schools for the study. Written consent was taken from participants as well as from parents for those participants aged below 18 years. Female teacher of respective school was mobilized after orientation for data collection. Questionnaire was distributed by female teacher in the class on the envelop and all the participants was allowed to take home in order to maintain privacy and confidentiality. Questionnaire was pretested among 5% of adolescent girls of Rapti life care and nursing hospital Tulsipur, Dang and necessary amendment was done. Data collection tool was prepared in English and then translated into Nepali language.

Students self reported the severity of pain on a 0-10 points numerical pain rating scale and was classified as (0 = no pain, 1-3 = mild pain, 4-6 = moderate pain, and 7-10 = severe pain). Data were checked, coded and entered into Epi-data (version 3.1) and transferred to SPSS (version 20) for analysis. Univariate, bivariate and multivariable analyses were carried out. Binary logistic regression model were computed and P value < 0.05 was considered as significant.

RESULTS

Prevalence of dysmenorrhea

Majority of the adolescent girls under study had experienced dysmenorrhea, that is, 282 out of 375 (75.2%). It was seen that maximum number of adolescent girls 161 out of 375 (42.9%) experienced dysmenorrhea every months for the last six months, whereas 121 out of 375 (32.3%) experienced dysmenorrhea irregularly for the last six months as shown in Table 1.

Table 1: Prevalence of dysmenorrhea among technical schools adolescent girls in Dang, Nepal

| Characteristics                      | Frequency | Percentage |
|--------------------------------------|-----------|------------|
| Every months for the last six months | 161       | 42.9       |
| Irregularly for the last six months  | 121       | 32.3       |
| Didn’t experienced                   | 93        | 24.8       |

Socio-demographic characteristics of participants

Out of 375 participants, majority of participants were below 18 years (54.9%) whereas more than half (56.5%) were Brahmin/Chhetri, followed Janajati (23.2%) and Dalit (13.3%). The mean age of participants was (18±1.187) years with minimum age of 15 years and maximum age 19 years. Similarly median monthly income of the participants family was NPR 50,000 with highest monthly income of NPR 1,00,000 and lowest NPR 25,000. Majority of participant’s mothers can only read and write, which accounts slightly higher than the quarter (28.5%), followed by those, who cannot read and write (22.1%) as shown in Table 2.

Table 2: Socio-demographic characteristics of technical schools adolescent girls in Dang, Nepal

| Characteristics                      | Frequency | Percentage |
|--------------------------------------|-----------|------------|
| Age                                  |           |            |
| < 18 years                           | 206       | 54.9       |
| ≥ 18 years                           | 169       | 45.1       |
| Mean S.D = 18±1.187, Minimum: 15 years, Maximum: 19 years |
| Caste                                |           |            |
| Dalit                                | 50        | 13.3       |
| Janajati                             | 87        | 23.2       |
| Madeshi                              | 4         | 1.1        |
| Muslim                               | 22        | 5.9        |
| Brahmin/Chhetri                      | 212       | 56.5       |
| Family income                        |           |            |
| < NPR 50,000                         | 262       | 69.9       |
| ≥ NPR 50,000                         | 113       | 30.1       |
| Median: NPR 50,000, Minimum: NPR25,000, Maximum: NPR1,00,000 |
| Mothers highest education level      |           |            |
| Cannot read and write                | 83        | 22.1       |
| Can read and write                   | 107       | 28.5       |
| Primary education                    | 59        | 15.7       |
| Secondary education                  | 66        | 17.6       |
| Higher secondary or above            | 60        | 16.0       |
BMI distribution among adolescent girls
Among all the participants, more than half were normal (55.5%), followed by overweight (32.3%), underweight (10.9%) and obese (1.3%) as shown in Table 3.

Table 3: BMI distribution among adolescent girls of technical schools adolescent girls in Dang, Nepal

| BMI          | Frequency | Percentage |
|--------------|-----------|------------|
| Underweight  | 41        | 10.9       |
| Normal       | 208       | 55.5       |
| Overweight   | 121       | 32.3       |
| Obese        | 5         | 1.3        |

Menstrual characteristics of participants
Majority of the participants (79.5%) experienced their first menstruation before reaching 10 years of life whereas, more than half of the respondents (63.2%) had their regular menstrual cycle. Majority of participants (86.6%) had their normal bleeding during menstruation. Family history of dysmenorrhea was evident among 61.3% of participants. Prevalence of dysmenorrhea was 75.2% among participants. Majority of adolescent girls replied lower abdominal pain (87.9%), followed by back pain (63.5%) and headache (46.8%) while, than half (67.4%) of the adolescent girls replied they felt menstrual pain during menstrual flow, followed by before blood begins to flow (32.3%) and less than ten in one (0.4%) said after blood has stopped.

Among those, who had dysmenorrhea half of the respondents experienced moderate pain (50.7%), followed by mild (26.6%) and severe (22.7%) and approximately the three quarter (74.5%) of respondents had normal menstrual pain i.e. 1-3 days as shown in Table 4.

Table 4: Menstrual characteristics of participants of technical schools adolescent girls in Dang, Nepal

| Characteristics                          | Frequency | Percentage |
|-----------------------------------------|-----------|------------|
| Age at menarche (n=375)                 |           |            |
| < 10 years                              | 298       | 79.5       |
| ≥ 10 years                              | 77        | 20.5       |
| Mean S.D = 9.7520±0.94492, Minimum: 8 years, Maximum: 12 years |

Factors associated with dysmenorrhea
Table 5 shows the association between socio-demographic factors and dysmenorrhea. There is significant association between age and dysmenorrhea ($\chi^2 = 7.101$, $p = 0.008$), Body Mass Index and dysmenorrhea ($\chi^2 = 6.861$, $p = 0.032$).

Table 5: Association between socio-demographic factors and dysmenorrhea

| Characteristics          | Dysmenorrhea | $\chi^2$ | P-value |
|--------------------------|--------------|----------|---------|
|                          | Yes          | No       |         |
| Age                      |              |          |         |
| < 18 years               | 166 (80.6%)  | 40 (19.4%) | 7.101   | 0.008*   |
| ≥ 18 years               | 116 (68.6%)  | 53 (31.4%) |        |          |
| Caste                    |              |          |         |
| Privileged               | 163 (76.9%)  | 49 (23.1%) | 0.744   | 0.388    |
| Unprivileged             | 119 (73%)    | 44 (27%)  |        |          |
| Mothers education        |              |          |         |
| Literate                 | 224 (76.7%)  | 68 (23.3%) | 1.618   | 0.203    |
| Illiterate               | 58 (69.9%)   | 25 (30.1%) |        |          |
| Body Mass Index          |              |          |         |
| Underweight              | 24 (58.5%)   | 17 (41.5%) | 6.861   | 0.032*   |
| Normal                   | 161 (77.4%)  | 47 (22.6%) |        |          |
| Overweight/obese         | 97 (77%)     | 29 (23%)  |        |          |

* Statistically significant at 95% level of confidence, p-value <0.05
Table 6 shows the association between menstrual characteristics and dysmenorrhea. There is significant association between menarche and dysmenorrhea ($\chi^2$=89.196, $p=0.000$), pattern of menstrual cycle and dysmenorrhea ($\chi^2$=4.158, $p=0.041$), family history of dysmenorrhea and dysmenorrhea among adolescent girls ($\chi^2$=50.846, $p=0.000$).

Table 6: Association between menstrual characteristics and dysmenorrhea

| Characteristics                      | Dysmenorrhea | $\chi^2$ | P-value |
|--------------------------------------|--------------|---------|--------|
|                                      | Yes          | No      |        |
| Menarche                             |              |         |        |
| <10 years                            | 256 (85.9%)  | 42(14.1%)| 89.196 | <0.001*|
| $\geq$ 10 years                      | 26 (33.8%)   | 51(66.2%)|        |        |
| Pattern of menstrual cycle           |              |         |        |
| Regular                              | 170 (71.7%)  | 67(28.3%)| 4.158  | 0.041* |
| Irregular                            | 112 (81.2%)  | 26(18.8%)|        |        |
| Duration of bleeding                 |              |         |        |
| Normal                               | 241 (74.2%)  | 84(25.8%)| 1.430  | 0.232  |
| Not normal                           | 41 (82%)     | 9 (18%)  |        |        |
| Family history of dysmenorrhea       |              |         |        |
| Yes                                  | 202 (87.8%)  | 28(12.2%)| 50.846 | <0.001*|
| No                                   | 80 (55.2%)   | 65 (44.8%)|       |        |

* Statistically significant at 95% level of confidence, p-value <0.05

On multivariable analysis, Family history of dysmenorrhea, AOR (95% CI) = 7.657 (4.036, 14.528), early menarche AOR (95% CI) = 15.662 (7.583, 32.351), underweight AOR (95% CI) = 0.361 (0.149, 0.874) had statistically significant association with the occurrence of dysmenorrhea as shown in Table 7.

Table 7: Bivariate and multivariate analysis for the factors associated with dysmenorrhea

| Characteristics                      | Unadjusted odds ratio (95% Confidence Interval) | Adjusted odds ratio (95% Confidence Interval) |
|--------------------------------------|------------------------------------------------|--------------------------------------------|
|                                      | < 18 years                                      | $\geq$ 18 years                            |
| Age                                  | 1.896 (1.180, 3.046)                            | Ref.                                       |
| BMI                                  | 0.976(0.577, 1.654)                             | 0.967 (0.502, 1.865)                       |
| Overweight/obese                     | Ref.                                           | Ref.                                       |
| Underweight                          | 0.412 (0.204, 0.831)                            | 0.361 (0.149, 0.874)*                      |
| Normal                               | Ref.                                           | Ref.                                       |
| Pattern of menstrual cycle           |                                                |                                            |
| Regular                              | 1.698 (1.018, 2.832)                            | 1.689 (0.899, 3.173)                       |
| Irregular                            | Ref.                                           | Ref.                                       |
| Family history of dysmenorrhea       |                                                |                                            |
| Yes                                  | 5.862 (3.509, 9.792)                            | 7.657 (4.036, 14.528)*                     |
| No                                   | Ref.                                           | Ref.                                       |
| Menarche                             |                                                |                                            |
| <10 years                            | 11.956 (6.734, 21.227)                          | 15.662(7.583,32.351)*                      |
| $\geq$ 10 years                      | Ref.                                           | Ref.                                       |

* Statistically significant at 95% level of confidence, p-value <0.05

DISCUSSION

The prevalence of dysmenorrhea in this study was found to be 75.2%. This was in line with 74.4% in cross-sectional descriptive study conducted in four secondary schools for girls in Arar city on 344 secondary school students during the academic year 2015-2016,19 79.67% in higher secondary schools (Pre-University Colleges) of Gwalior,20 16% to 91% from fifteen primary studies, published between 2002 and 2011,21 79.2% among high-school female adolescent students in Eastern-Hungary,22 76.0% among higher secondary school girls of Imphal West district, Manipur23 and 74.5% among adolescents of the Federal Territory of Kuala Lumpur, Malaysia.24

Family history of dysmenorrhea in this was found significantly associated with dysmenorrhea AOR (95% CI) 7.657 (4.036, 14.528). This was in line with the findings of similar study of secondary and preparatory female students in Debremarkos town, North West Ethiopia where, Dysmenorrhea was approximately 10 times higher among those who had family history of dysmenorrhea25 and among adolescent population of Tbilisi, Georgia, the risk of dysmenorrhea in students who had a family history of dysmenorrhea was approximately 6 times higher than in students with no prior history.26

However, a cross-sectional survey on Turkish University students showed that those who had family history of dysmenorrhea were less likely to have dysmenorrhea compared to this finding. Dysmenorrhea was approximately 3.5-times higher in women with a family history of dysmenorrhea.27
inconsistency may be because of the socio-cultural differences of the study groups in pain perception and threshold, life style and age.

Early menarche in this study was found significantly associated with dysmenorrhea AOR (95% CI) 15.662 (7.583, 32.351). Dysmenorrhea was approximately 16 times higher among those who had their first menstruation at the age before reaching 10 years of life, which was similar with the findings among Nigerian college women.28

In this study, a statistically significant association between the presence of dysmenorrhea and underweight was observed AOR (95% CI) 0.361 (0.149, 0.874). Dysmenorrhea was less likely to have among those who were underweight, which was similar with the findings of systematic review article on prevalence and risk factors of dysmenorrhea21. In contrast, dysmenorrhea was found 1.5 times higher in women who were underweight compared with overweight/obese among students at a university in Turkey.27

However, no significant difference was observed between dysmenorrhea and pattern of menstrual cycle, AOR (95% CI) 1.689 (0.899, 3.173), which was consistent with cross sectional study conducted in seven schools of Pokhara Valley.29 However, the systematic review on prevalence and risk factors of dysmenorrhea showed the significant association between presence of dysmenorrhea and irregular cycles.21

However, no significant difference was observed between dysmenorrhea and age of participants, AOR (95% CI) 0.814 (0.437, 1.516), but prospective cohort study among Japanese women showed that dysmenorrhea was significantly associated with younger age30 and systematic review on prevalence and risk factors of dysmenorrhea confirmed that dysmenorrhea is inversely related to age.21 This inconsistency might be because in our study only adolescent girls approximately 15-19 age groups were included and is one time study, less effective results compared to systematic review and prospective study.

CONCLUSION

The prevalence of dysmenorrhea among adolescent girls in technical schools of Dang, Nepal was high. Dysmenorrhea was more common among adolescent girls with family history of dysmenorrhea, early menarche, whereas underweight was found to be protective factors for the occurrence of dysmenorrhea. All girls entering into menarche should be oriented with dysmenorrhea management practices to maintain physical, physiological and psycho-social health.

ACKNOWLEDGMENT

We want to forward our special thanks to Institutional Review Committee of Pokhara University Research Centre for providing ethical clearance for the research. Similarly, we are grateful to Prof. Dr. Shyam Thapa and all the participants of the survey taken technical schools who voluntarily provided their valuable information.

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