

Prevalence of primary dysmenorrhea and associated factors in adult women

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SUMMARY

OBJECTIVE: This study aimed to assess the prevalence and factors associated with primary dysmenorrhea in a sample of adult women.

METHODS: A cross-sectional study was carried out with women aged between 19 and 49 years from a city of northeastern Brazil. Sociodemographic, gynecological, and obstetric variables were assessed by questionnaires and interviews. Dysmenorrhea was measured by self-report, and the Numerical Pain Rating Scale measured the intensity of pain. Statistical analyses included χ^2 test, ANOVA, and logistic regression.

RESULTS: The average age was 33.2 ± 9.1 years and the prevalence of primary dysmenorrhea was 56% for the whole sample. The average duration of symptoms was 2.7 ± 1.8 days and the mean intensity was 6.1 ± 2.6 . The previous cesarean section was associated with a higher rate of primary dysmenorrhea (PR=2.33; 95%CI 1.11–4.90) when considering the whole sample. Women who aged 25–39 years and are insufficiently active had higher rates of primary dysmenorrhea (PR=5.24; 95%CI 1.08–27.31).

CONCLUSION: Primary dysmenorrhea has a high prevalence in young adults, adults, and middle-aged women. Cesarean section and being physically inactive was associated with increased rates of dysmenorrhea among adult women.

KEYWORDS: Cross-sectional studies. Dysmenorrhea. Epidemiology. Prevalence. Women's health.

INTRODUCTION

Dysmenorrhea is defined as colic pain in the hypogastrium that occurs during menstruation and other symptoms like sweating, headaches, nausea, vomit, diarrhea, and tremors may occur associated¹. Dysmenorrhea is classified into primary (menstrual pain without organic disease) or secondary (menstrual pain associated with another preexistent disease, e.g., endometriosis)^{1,2}.

The prevalence of primary dysmenorrhea (PD) is well studied among teenagers and youngers in different countries and it ranges from 16 to 91%^{3,4}. Several risk factors are established in the literature and the casuistic of PD may involve social, demographic, behavioral, gynecological, and reproductive issues^{1,4,5}.

As the majority of studies about PD were conducted with students and teenagers, the generalization of these evidence for women of all adult age, including middle-aged women, are limited and needs more clarification⁴. Besides that, it is estimated that the prevalence of PD is even higher since many women associate dysmenorrhea as a normal menstrual cycle pain and do not seek medical assistance for this condition¹.

The perception and coping of pain related to PD vary from the women's context. Then, issues related to work, social roles, and women's empowerment can modify these perception among different age groups⁶. This fact reinforces the relevance to know the prevalence of PD and associated factors in the different stages of a woman's adult life and not just in adolescence.

Moreover, PD represents relevant cause of school and work absence, negatively affects academic performance, productivity, daily life activities, and quality of life of these women^{4,7}. Then, knowing the prevalence and associated factors in the different ages of woman's life may allow to intervene and minimize the impacts of dysmenorrhea on the lives of these women⁸. Therefore, this study aimed to assess the prevalence and associated factors to PD in adult women (19–49 years of age).

METHODS

A cross-sectional, community-based study was conducted from December 2015 to November 2016, in the municipality

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Conflicts of interest: the authors declare there is no conflicts of interest. Funding: none.

Received on September 11, 2021. Accepted on November 01, 2021.

of Santa Cruz, Rio Grande do Norte, Brazil. The Ethical and Research Committee of Federal University of Rio Grande do Norte approved the research protocol under number CAAE 49237315.9.0000.5568. The study followed the Declaration of Helsinki and all the participants signed the informed consent form.

The sample size was determined using the prevalence of 67.5% of dysmenorrhea, power of 90%, and a nonresponse rate of 5%, resulting in a sample of 195 women. This prevalence was obtained in a previous pilot study with 30 women following the same inclusion criteria (data not shown).

Women were proportionally recruited from among the six services of primary healthcare services of the city. Women were approached for convenience while accompanying a relative or waiting for an appointment for themselves. Previously trained interviewers conducted the interviews in a silent, private place of the health care services.

Women, who aged 19–49 years, with the regular menstrual flow in the last 3 months, and who accepted to participate in the study, were included. Exclusion criteria included women who reported a medical diagnosis of endometriosis, adenomyosis, uterine myoma, or pelvic inflammatory disease; in hormone replacement therapy; or had a history of hysterectomy.

Primary dysmenorrhea was assessed by self-reporting of colic-type pain in the lower abdomen associated with menstruation in the last 3 months⁴. The Numeric Pain Rating Scale (NPRS) assesses the intensity of pain (0–10)⁹. The duration of pain was expressed in days.

Independent variables were obtained by conducting interview and include age (grouped into young adults: 19–24 years, adults: 25–39 years, and middle-aged women: 40–49 years); family income (≤ 1 minimum wage or more); religion; age of menarche (≤ 11 years old or ≥ 12); use of any contraceptive method; menstrual cycle length dichotomized into 28–35 days and (< 28 or > 35 days); and number of children, cesarean section, and vaginal delivery.

Constipation was determined according to ROMA III criteria¹⁰ and the sexual dysfunction was defined as a score < 60 points in the Female Sexual Quotient Questionnaire¹¹. The presence and type of urinary incontinence was determined by conducting interview following the recommendations of International Continence Society¹². The short-form of International Physical Activity Questionnaire (IPAQ) evaluated the level of physical activity, and < 600 METs-minute/week indicated insufficiently active women¹³.

Data analyzes were conducted by the software SPSS, version 22. The Kolmogorov–Smirnov test confirms the normal

distribution of continuous data. We expressed categorical data by absolute and relative frequencies, and continuous data through mean and standard deviations.

Prevalence of dysmenorrhea was calculated for overall and for age groups. ANOVA compared the variance among groups to intensity and duration of pain. Binary logistic regression was performed and the variables with $p < 0.20$ were included in the multivariate logistic regression. Statistical significance was defined as $p < 0.05$.

RESULTS

Initially, we invited 211 women to participate. Of those, 16 were excluded for having a history of hysterectomy ($n=7$) or being pregnant ($n=9$), resulting in 195 women included in the study with a mean age of 33.16 ± 9.06 years old. Sociodemographic and clinical profile is shown in Table 1.

The prevalence of PD was 55.9% in all samples, and 50% in young adults, 55% in adults, and 61% in middle-aged women. Pain intensity and duration of complaints did not differ among groups (Table 2).

The results of univariate and multivariate logistic regression are shown in Table 3. Having at least one cesarean section was associated with 2.33 times risk of having PD among women aged 19–49 years. Among the adult women, who were insufficiently physically active, it was associated with 5.42 times risk of having PD.

DISCUSSION

Primary dysmenorrhea is characterized by uterine hypercontractility provoked by the overproduction of prostaglandins in the endometrium, leading to uterine muscle ischemia, hypoxia, and, subsequently, pain¹⁴. Although PD is often a gynecological complaint, it is underdiagnosed, undertreated, and even undervalued by women themselves¹⁴. Our findings show that PS has a high prevalence throughout a woman's adulthood, contradicting evidence that suggests a decrease in pain after pregnancies³. However, it was observed that risk factors may differ according to the progression of the life cycle and classical factors involved in physiology of PD were not associated with contraceptive methods, menarche age, and having children^{4,14}.

In our study, cesarean section was associated with more cases of PD. It is a warning sign because the cesarean is the most common type of operation performed on women, and women who had undergone multiple cesarean sections can progress with cesarean scar defects¹⁵. The cesarean scar defect

Table 1. Social demographic and clinical profile of sample grouped by age (n=195).

Variables	Women		
	Young adults (n=40)	Adults (n=96)	Middle-aged women (n=59)
	%		
Family income*			
≤1 minimum wage	80.0	79.2	79.7
>1 minimum wage	20.0	20.8	20.3
Profess some religion	77.5	85.4	88.1
Insufficiently physically active	17.5	21.9	13.6
Age of menarche			
≤11 years old	17.5	17.7	22.0
≥12 years old	82.5	82.3	78.0
Use any contraceptive method	60.0	49.5	55.2
Menstrual cycle length (n=172)			
28–35 days	68.6	76.2	71.7
<28 days or >35days	31.4	23.8	28.3
Constipation	37.5	29.2	44.1
Urinary incontinence	15	16.7	30.5
Stress urinary incontinence	7.5	6.3	16.9
Urgency urinary incontinence	2.5	4.2	6.8
Mixed urinary incontinence	5.0	6.3	6.8
Sexual dysfunction	27.5	36.7	40.0
Have children	75.0	82.3	81.4
≥1 Cesarean section (n=146)	70.0	66.7	61.0
≥1 Vaginal delivery (n=146)	67.5	76.0	69.5

*In 2016, the value of a minimum wage in Brazil was R\$ 880.00.

Table 2. Comparative analyses of mean intensity and duration of pain during the menstrual cycle among young adult, adult, and middle-aged women (n=109).

	Intensity of pain (NPRS) Mean±SD	Duration of pain (days) Mean±SD
Total sample	6.14±2.55	2.68±1.83
Young adults	6.70±2.58	2.80±1.61
Adults	5.87±2.55	2.40±1.57
Middle-aged womens	6.22±2.56	3.03±2.22
ANOVA (p-value)	0.454	0.265
Young adults×adults (p-value)*	0.433	0.477
Young adults×middle-aged women (p-value)*	0.782	0.895
Adult×middle-aged women (p-value)*	0.798	0.247

*p-value was calculated by the *post hoc* Tukey test. NPRS: Numeric Pain Rating Scale.

Table 3. Association of independent variables with dysmenorrhea by age groups.

Variables	All sample (n=195)			Young adults (n=40)		Adults (n=96)		Middle-aged women (n=59)	
	Crude PR (95%CI)	p	Adjusted PR (95%CI)	Adjusted PR (95%CI)	p	Adjusted PR (95%CI)	p	Adjusted PR (95%CI)	p
Profess some religion									
Yes	0.59 (0.26-0.33) ref.	0.200	0.46 (0.17-1.21) ref.	-	-	-	-	-	-
No	-	-	-	-	-	-	-	-	-
Family income (R\$ 880.00)									
≤1 minimum wage	-	-	-	-	-	-	-	0.13 (0.14-1.31) ref.	0.084
>1 minimum wage	-	-	-	-	-	-	-	-	-
Age at menarche									
≤11 years old	-	-	-	-	-	1.18 (0.32-4.35) ref.	0.802	-	-
≥12 years old	-	-	-	-	-	-	-	-	-
Menstrual cycle length									
menstrual cycle >35 or <28 days	1.66 (0.81-3.41) ref.	0.168	2.05 (0.90-4.64) ref.	-	-	3.11 (0.87-10.91) ref.	0.076	-	-
28-35 days	-	-	-	-	-	-	-	-	-
Use of the contraceptive method									
Yes	-	-	-	2.68 (0.58-12.31) ref.	0.206	-	-	-	-
No	-	-	-	-	-	-	-	-	-
Urinary incontinence									
Yes	0.51 (0.25-1.02) ref.	0.058	0.84 (0.33-2.13) ref.	-	-	0.52 (0.11-2.54) ref.	0.418	-	-
No	-	-	-	-	-	-	-	-	-
Mixed urinary incontinence									
Yes	0.24 (0.06-0.92) ref.	0.038	0.33 (0.46-2.35) ref.	-	-	0.15 (0.01-3.97) ref.	0.256	-	-
No	-	-	-	-	-	-	-	-	-
Insufficiently physically active									
Yes	-	-	-	-	-	5.42 (1.08-27.31) ref.	0.040	-	-
No	-	-	-	-	-	-	-	-	-
Sexual dysfunction									
Yes	0.57 (0.30-1.06) ref.	0.077	0.61 (0.29-1.24) ref.	-	-	-	-	0.38 (0.09-1.59) ref.	0.185
No	-	-	-	-	-	-	-	-	-
Have children									
Yes	0.60 (0.29-1.25) ref.	0.174	1.00 (0.38-2.66) ref.	0.22 (0.04-1.35) ref.	0.102	-	-	-	-
No	-	-	-	-	-	-	-	-	-
Cesarean section									
One or more	1.99 (1.09-3.62) ref.	0.025	2.33 (1.11-4.90) ref.	2.94 (0.60-14.64) ref.	0.185	-	-	1.55 (0.32-7.51) ref.	0.587
None	-	-	-	-	-	-	-	-	-
Vaginal delivery									
One or more	-	-	-	-	-	1.28 (0.39-4.23) ref.	0.683	0.15 (0.02-1.14) ref.	0.066
None	-	-	-	-	-	-	-	-	-

when symptomatic is often related to dysmenorrhea and chronic pelvic pain^{16,17}. In this context, the nerve section, inadvertent nerve ligation of fibrous scarring, and myofascial syndrome result in menstrual and chronic pelvic pain^{17,18}.

Physical inactivity was associated with a higher frequency of PD. The physical activity has positive effects on stress, prostaglandin levels, and blood circulation, resulting in decreased pain and the prevalence of dysmenorrhea¹⁹. Then, women who do not perform exercise do not receive this benefit of endogenous opioids²⁰. Therefore, it is one more motif to encourage women to remain physically active.

Our data are innovative by assessing PD in a sample containing older adults than other studies available in the Brazilian population. Despite this, the generalization of data should be made with caution because our data were collected in a small town, and the prevalence and associated factors to dysmenorrhea in women who live in large cities can be different.

As a limitation of the study, we can mention the use of a convenience sample, the cross-sectional design that prevents the establishment of cause-and-effect relationships, and the collection of data through interviews. For future studies, more robust methodological designs that include clinical assessment

are recommended to better establish the relationships found in this study.

CONCLUSION

There was a high prevalence of PD with rates above 50% in adult women of all ages. In this study, only cesarean section and being physically inactive was associated with increased rates of dysmenorrhea among adult women.

AUTHORS' CONTRIBUTIONS

LBS: Conceptualization, Methodology, Formal Analysis, Investigation, Data curation, Writing – original draft, Writing – review & editing. **IRB, THMD, CMA, JHD:** Conceptualization, Methodology, Formal Analysis, Data curation, Writing – original draft, Writing – review & editing. **CWSF:** Formal Analysis, Data curation, Writing – original draft, Writing – review & editing. **SMAC:** Formal Analysis, Data curation, Writing – original draft, Writing – review & editing, Funding acquisition. **DD:** Conceptualization, Methodology, Formal Analysis, Data curation, Writing – original draft, Writing – review & editing, Project administration, Funding acquisition.

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