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Menstrual Migraine Among Spanish University Students

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ABSTRACT

Purpose: This study sought to determine the prevalence of menstrual migraine among female university students at the Nursing Faculty of Ciudad Real and to determine possible risk factors.
Design and methods: A cross-sectional observational study was performed using a self-report questionnaire. Two hundred and ninety-nine female university students participated in the study; all were enrolled in the 2017/2018 academic year at the Faculty of Nursing. Participants were over the age of 18 years and without any diagnosed gynecological pathology. The main measurement tools were menstrual migraine between days −2 and +3 of the menstrual cycle, over the previous six cycles.
Results: The prevalence of menstrual migraine was 45.15%, identifying the following possible risk factors: dysmenorrhea (OR 9.19; 1.62–6.28% CI), use of hormonal contraceptive methods (OR 2.60; 95% CI 1.30–5.20), menstrual irritability (OR 2.34; 95% CI 1.25–4.40), menstrual dizziness (OR 2.05; 95% CI % 1.12–3.75) and daily consumption of cola beverages (OR 1.85; 95% CI % 1.04–3.32).
Conclusions: The prevalence of this problem is high among our population and the approach is complex.
Practice implications: It is necessary to continue to research the pharmacological measures and methods of pharmacological pain relief as well as interventions directed at lifestyle modifications considering the potential risk factors involved in menstrual migraine.

Background

Migraine is one of the most common neurological disorders which is more prevalent in women, compared to men, after puberty (Broner, Bobker, & Klebanoff, 2017; Lay & Broner, 2008). Throughout this period, the hypothalamus-hypophysis-gonadal axis is activated during the initial menstrual cycles. The hormonal deprivation which is triggered by each menstruation, together with the decrease of estrogens and increase of prostaglandins, are all factors considered to be responsible for menstrual migraine (Silberstein & Patel, 2014).

Menstrual migraine can be categorized into migraines related with menstruation and pure menstrual migraines. Pure menstrual migraines are classified as "A1.1.1 Pure menstrual migraine without aura", according to the 3rd Edition of the International Classification of Headache Disorders published in 2018 by the International Headache Society. Furthermore, these are more clearly identified when they occur without aura between days −2 and +3 of the menstrual cycle, often accompanied by nausea and vomiting ("Headache Classification Committee of the International Headache Society (IHS) The International Classification of Headache Disorders, 3rd Edition", 2018). In addition, these migraines are characterized by triggering a greater functional decline compared to non-menstrual migraines (MacGregor et al., 2010). Menstrual migraine is considered to affect a large percentage of young women worldwide, however, few previous studies have estimated these rates, and the reported rates are highly variable, ranging from 1% to 28% (Bianchin et al., 2019; Maasumi, Tepper, & Kriegler, 2017; Vetvik, MacGregor, Lundqvist, & Russell, 2014). More concretely, in Spain, there is a lack of specific studies on this subject. Headaches can affect quality of life, academic and work performance and even limit activities of daily living; thus they have a significant social and economic impact (Lay & Broner, 2008; Mannix, 2008).

In relation to this problem, a specific and early approach is essential to avoid chronification in adulthood, and headaches becoming a

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limiting pathology (Lay & Broner, 2008). In relation to pharmacological treatment, current approaches are mainly centered on triptans, anti-inflammatories and hormonal treatments. Nonetheless, these treatments are not without risks, therefore, research on risk factors and non-pharmacological measures are increasingly in demand (Allais, Chiarle, Sinigaglia, & Benedetto, 2018; Mannix, 2008). Pediatric nurses should be updated on the prevalence of this problem in young people and the possible associated risk factors as they can act as facilitators of new health behaviours.

The main aim of this study was to determine the prevalence of menstrual migraine (pure menstrual migraine) among female university students and to identify possible risk factors.

Methods

Design

This was a descriptive, quantitative observational study conducted at the Nursing Faculty of Ciudad Real, belonging to the University of Castilla-La-Mancha, between May and June of 2017.

Participants and sample

The eligibility criteria for this study included students enrolled in the Nursing Degree taught at the University of Castilla-La Mancha (Ciudad Real Campus) and who were present in the classroom when the researcher visited the university to invite them to participate and collect data. The following inclusion criteria were established: being a woman, over the age of 18 years, not diagnosed with a gynecological pathology (except for dysmenorrhea) and of Spanish nationality. We excluded foreign university students who suffered with others chronic pathologies, those who were participated on a faculty exchange program, and women who did not accept to voluntarily participate in the study or who did not fully complete the study survey.

The sample size was not previously calculated, rather, the entire study population were invited to participate (340 university students) provided they fulfilled the previously described criteria. Of these, 299 students (87.94%) accepted to participate in this study and returned the fully completed questionnaires. See study diagram (Fig. 1).

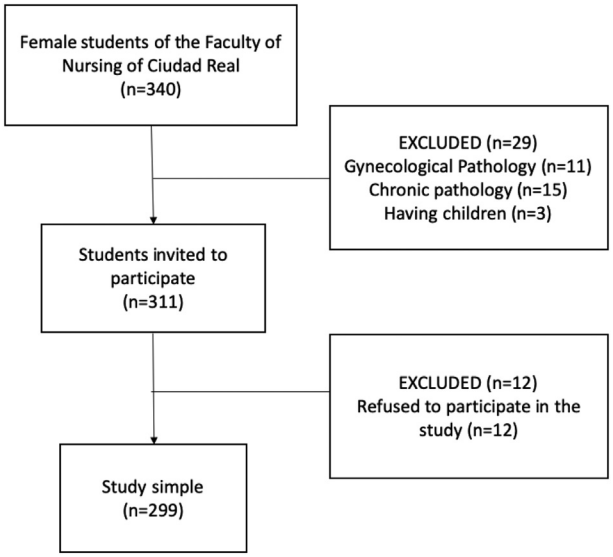

Fig. 1. Study diagram.

Study variables and data collection

The data were collected in the faculty classrooms via an ad-hoc self-report questionnaire based on previous reports, which included sociodemographic information, questions on menstruation, menstrual migraine, menstrual symptoms and lifestyles (Ansong, Arhin, Cai, Xu, & Wu, 2019; Fernández-Martínez, Onieva-Zafra, & Parra-Fernández, 2018; Vetvik et al., 2014). The main study variable, menstrual migraine, was defined as a headache occurring between days −2 and +3 of the menstrual cycle for at least two out of every three cycles, according to the criteria of the International Headache Society (IHS), and over the last six months ("Headache Classification Committee of the International Headache Society (IHS) The International Classification of Headache Disorders, 3rd Edition", 2018). Other menstrual symptoms were considered if they were experienced in the six months prior to responding to the questionnaire. To measure the intensity of pain, a 10 cm horizontal visual analog scale (VAS) was included (Collins, Moore, & McQuay, 1997; Hawker, Mian, Kendzerska, & French, 2011). The anthropometric measures, such as weight and height, were also gathered via self-report and the Body Mass Index (BMI) was then calculated and categorized according to the indications by the World Health Organization (WHO), thus, a BMI of less than 18.5 was classified as low weight, 18.5 to 24.99 was classified as normal weight, 25.0 to 29.99 was classified as overweight (pre-obesity), and 30 or more was classified as obesity (WHO, 2014). In addition, as in previous studies, the measurement of the global health status on perceived quality of life was included based on a visual analog scale (VAS) from 0 to 100, in which 0 indicated the worse possible health state and 100 was the best health state (Hernandez et al., 2018).

Ethics

Ethical approval for this study was granted by the Clinical Research Ethics Committee of the General Hospital of Ciudad Real. The study procedures complied with the principles of the Helsinki Declaration.

Statistical analysis

The data were transcribed into a Microsoft Office Excel spreadsheet, and subsequently analyzed using the Statistical Package for the Social Sciences (SPSS), version 23. The qualitative variables were described using frequencies and percentages. In addition, for the quantitative variables, the mean and standard deviation were calculated. For the bivariate analysis, the Pearson's chi-squared test was used, together with the Student's *t*-test, and the study was concluded using backward selection for binary logistic regression. The level of significance was set at $p < .05$ with a 95% confidence interval.

Findings

Sociodemographic and gynecological characteristics

Up to 45.15% (135) of study participants reported suffering from menstrual migraine. No differences were found when comparing the proportion of students with migraine of different ages ($p = .398$). The mean age of the women with menstrual migraine was 20.43 ± 2.77 compared to 19.86 ± 2.02 among those who did not report this symptom ($p = .041$). No differences were found regarding height, weight, nor BMI, as this was analyzed as a quantitative variable. However, when analyzing the BMI categorized according to the WHO, statistically significant differences were found in relation to menstrual headaches ($p = .033$) as women with normal weight were less affected by this symptom (90 participants, 40.91%), compared to those with low weight (27 participants, 61.36%) or those who were overweight (18 participants, 51.43%). The regularity of the cycle, the duration of the same and volume of the bleeding were similar both in women with migraines

and those without. Also, the age of menarche was similar, thus, the mean age among women without migraines was 12.33 ± 1.38 compared to 12.51 ± 1.52 among women with migraines ($p = .300$).

Concerning the use of hormonal contraceptives, a higher proportion of women with menstrual migraine was identified among women using contraceptives (29 participants, 58%) compared to those not using oral contraceptives (106 participants, 42.6%) ($p = .045$). All the women who reported menstrual migraine also experienced one or more symptoms associated to menstruation, with over half of women (120 participants, 52.6%) suffering from both dysmenorrhea and menstrual migraine. However, among the women who did not suffer dysmenorrhea, only 21.1%(15) (experienced headaches) ($p = .000$). When analyzing the intensity of dysmenorrhea using the VAS scale, higher scores were identified in participants with menstrual headache (6.80 ± 2.05 vs 5.67 ± 2.30, $p < .001$).

Digestive symptoms, such as nausea, vomiting and diarrhea, were reported in similar rates in women with and without migraine. In women with migraine there was a greater proportion of women experiencing sleep disorders (43 participants, 31.85% vs 33 participants, 20.12%, $p = .20$). Fatigue and tiredness during menstruation affected 70.6%(211) of all women. Tiredness was the most prevalent symptom among those with migraine during their period (109 participants, 80.74% vs 102 participants, 62.20%). Regarding dizziness, 64.7% (44) of women who reported dizziness also experienced headaches during their menstruation ($p < .001$). Up to 92.59%(125) of women whit menstrual headache, also had bloating. However, bloating was only experienced by 82.93%(136) of those not manifested pain ($p = .013$). Up to 85.93%(116) of women who experienced menstrual migraine also experienced irritability during their period, compared to 68.29%(112) who did not suffer from migraine ($p < .001$). Up to 70.37%(95)of the women who had menstrual migraine also felt depressed, however, among those who did not report this symptom, only 51.83% (85)felt depressed during the days of menstruation ($p = 001$). Of the women whit menstrual migraine, 70.37%(95) had to miss university classes or activities, compared to 52.44%(86) who experienced other menstrual symptoms ($p = .002$). (Table 1).

Lifestyle and menstrual migraine

In total, 84.3% of participants (252) lived in an urban environment. Up to 35.12% (105) acknowledged practicing at least 3 h of exercise per week and the mean number of hours of physical exercise was slightly less among women who did not suffer from menstrual migraine (2.42 ± 2.47 vs 2.95 ± 2.86, $p = .092$).

Regarding consumption of drugs, 15.7% (47) of women smoked and 27.1% (81) drank alcohol every week. This proportion was similar among those with menstrual migraine and those who did not. Concerning water intake, this was similar in both groups ($p = .631$). Likewise, the daily servings of dairy products were also similar: 2.40 ± 1.57 in women with headaches compared to 2.21 ± 1.36 in those who did not experience headaches ($p = .253$). The number of cups of coffee per day consumed among women with, and without, headaches was also similar (0.64 ± 0.78 compared to 0.68 ± 0.96) ($p = 7.03$). The mean number of daily servings of fruit was slightly higher among women who did not experienced the problem (2.02 ± 1.09 vs1.84 ± 1.08, $p = .170$). Up to 59.2% (42) of women who drank cola beverages suffered menstrual migraine compared to 40.8% (93) of those who did not drink cola beverages, this finding was statistically significant ($p = .007$) (Table 2).

Concerning the perceived quality of life rated from 0 to 100, although the mean scores of women with menstrual migraine were slightly lower, this was not statistically significant (78.38 ± 15.27 vs 79.72 ± 13.66).

Table 1
Gynecological characteristics and menstrual migraine.

Gynecological characteristics		Menstrual migraine			*p*-value
		No	Yes	Total	
Regular cycle	No	111(55.5%)	89(44.5%)	200(66.9%)	.748
	Yes	53(53.5%)	46(46.5%)	99(33.1%)	
Cycle duration	≤ 21 days	4(80%)	1(20%)	5(1.7%)	.506
	22–28 days	74(55.2%)	60(44.8%)	134(44.8%)	
	≥ 29	86(53.8%)	74(46.3%)	160(53.5%)	
Duration of bleeding	3 to 5 days	113(57.7%)	83(42.3%)	196(65.8%)	.155
	6 to 11 days	50(49%)	52(51%)	102(34.2%)	
Hormonal method	No	143(57.4%)	106(42.6%)	249(83.3%)	.045*
	Yes	21(42%)	29(58%)	50(16.7%)	
Dysmenorrhea	No	56(78.9%)	15(21.1%)	71(23.7%)	.000*
	Yes	108(47.4%)	120(52.6%)	228(76.3%)	
Dizziness	No	140(60.6%)	91(39.4%)	231(77.3%)	.000*
	Yes	24(35.3%)	44(64.7%)	68(22.7%)	
Nausea and vomiting	No	128(57.7%)	94(42.3%)	222(74.2%)	.098
	Yes	36(46.8%)	41(53.2%)	77(25.8%)	
Diarrhea	No	94(55.3%)	76(44.7%)	170(56.9%)	.859
	Yes	70(54.3%)	59(45.7%)	129(43.1%)	
Sleep disorder	No	131(58.7%)	92(41.3%)	223(74.6%)	.020*
	Yes	33(43.4%)	43(56.6%)	76(25.4%)	
Fatigue or tiredness	No	62(70.5%)	26(29.5%)	88(29.4%)	.000*
	Yes	102(62.2%)	109(51.7%)	211(70.6%)	
Bloating	No	28(73.7%)	10(26.3%)	38(12.7%)	.013*
	Yes	136(52.1%)	125(47.9%)	261(87.3%)	
Irritability	No	52(73.2%)	19(26.8%)	71(23.7%)	.000*
	Yes	112(49.1%)	116(50.9%)	228(76.3%)	
Feeling depressed	No	79(66.4%)	40(33.6%)	119(39.8%)	.001*
	Yes	85(47.2%)	95(52.8%)	180(60.2%)	
Absenteeism during menstruation	No	78(66.1%)	40(33.9%)	118(39.5%)	.002*
	Yes	86(47.5%)	95(52.5%)	181(60.5%)	

* <0.05.

Table 2
Lifestyle and menstrual migraine.

		Menstrual migraine			*p*-Value
		No	Yes	Total	
Environment	Rural	22(46.8%)	25(53.2%)	47(15.7%)	.228
	Urban	142(56.3%)	110(43.7%)	252(84.3%)	
Smoking	No	140(55.6%)	112(44.4%)	252(84.3%)	.570
	Yes	24(51.1%)	23(48.9%)	47(15.7%)	
Alcohol	No	114(52.3%)	104(47.7%)	218(72.9%)	.145
	Yes	50(61.7%)	31(38.3%)	81(27.1%)	
Fast food	No	128(55.2%)	104(44.8%)	232(77.6%)	.835
	Yes	36(53.7%)	31(46.3%)	67(22.4%)	
Energy drinks	No	154(55.2%)	125(44.8%)	279(93.3%)	.652
	Yes	10(50%)	10(50%)	20(6.7%)	
Chocolate	No	99(58.6%)	70(41.4%)	169(56.5%)	.139
	Yes	65(50%)	65(50%)	130(43.5%)	
Cola beverages	No	135(59.2%)	93(40.8%)	228(76.3%)	.007*
	Yes	29(40.8%)	42(59.2%)	71(23.7%)	
Tea	No	133(55.6%)	106(44.4%)	239(79.9%)	.579
	Yes	31(51.7%)	29(48.3%)	60(20.1%)	
Coffee	No	87(54.7%)	72(45.3%)	159(53.2%)	.961
	Yes	77(55%)	63(45%)	140(46.8%)	
Sweets	No	70(55.1%)	57(44.9%)	127(42.5%)	.936
	Yes	94(54.7%)	78(45.3%)	172(57.5)	
Always uses olive oil	No	37(53.6%)	32(46.4%)	69(23.1%)	.815
	Yes	127(55.2%)	103(44.8%)	230(76.9%)	
Daily fruit	No	57(50%)	57(50%)	114(38.1%)	.186
	Yes	107(57.8%)	78(42.2%)	185(61.9%)	
Vegetarian	No	160(54.6%)	133(45.4%)	293(98%)	.557
	Yes	4(66.7%)	2(33.3%)	6(2%)	
Fish	No	9(5.5%)	5(3.7%)	14(4.7%)	.467
	Yes	155(54.4%)	130(45.6%)	285(95.3%)	
Water	0	40(59.7%)	27(40.3%)	67(22.4%)	.631
	1	103(53.9%)	88(46.1%)	191(63.9%)	
	2	21(51.2%)	20(48.8%)	41(13.7%)	

* <0.05.

Logistic regression on menstrual migraine

The results of the logistic regression analysis using the significant bivariate variables is displayed in Table 3. The odds of menstrual migraine in participants with dysmenorrhea was 3.19 higher (OR 9.19; 95% CI 1.62–6.28), while among those who used hormonal contraceptives this was 2.60 times higher (OR 2.60; 95% CI 1.30–5.20). In students who manifested irritability this was 2.34 times higher (OR 2.34; 95% CI 1.25–4.40); in those who presented dizziness this was 2.05 times higher (OR 2.05; 95% CI 1.12–3.75) and for those who drank cola beverages on a daily basis, the probability was 1.85 times higher (OR 1.85; 95% CI 1.04–3.32). Based on this model, we removed the variables that were not statistically significant predictors in the multivariate model (Table 3).

Discussion

In this study, we identified that 45.15% of women surveyed experienced menstrual migraine. This rate is higher than a previous study by Carman et al. (2018) among adolescents in Turkey (25.9%), and 28.2% among young people in Croatia (Cvetković et al., 2014) and also higher than a report by Vetvik et al. (2014) among adult Norwegian women, estimating a rate of 7.6%. This difference may be explained by the fact that our study population are female university students, many of whom live together in university residences or share flats with other girls considering that women who live with other women are more likely to suffer from menstrual migraine (Ferreira, Guilherme, Faria, Borges, & Uchiyama, 2017).

Previous studies have identified moderate and high levels of stress among nursing students, mainly associated to the performance of clinical placements (Labrague et al., 2017). In turn, other studies relate stress as a factor that triggers migraines (Parashar, Bhalla, Rai, Pakhare, & Babbar, 2014). However, it is unlikely that the high prevalence of migraine in our sample is justified exclusively by the fact that they are nursing students and by their stress levels, since in our study we found no differences in the prevalence of migraine among first year students who did not undertake clinical placements and those who were enrolled in other courses and attended clinical placements. Another aspect which may contribute to the high prevalence of menstrual migraine is that all the participants were from the same geographic region, considering that a recent study identified geographic risk factors for migraines, such as climate and sunlight (Tai, Yet, Lim, Pow, & Goh, 2019).

Our study also identified that the presence of dysmenorrhea was associated with a 3.19 times (1.62–6.28) greater odds of suffering from headache. This finding is in line with previous studies (Bianchin et al., 2019; Carman et al., 2018; Evans, Brooks, Esterman, Hull, & Rolan, 2018). The prevalence of dysmenorrhea in our population was high (76.3%) therefore this factor can contribute to the high prevalence of menstrual migraine detected.

Although significant differences were not found for perceived quality of life among women according to whether or not they suffered from menstrual migraine, the quality of life scores of women whit migraine were slightly lower, which is in line with previous research. This appears to be related with the limitation of recreational activities, a greater absenteeism and a perceived reduction in quality of life, as shown in previous studies among young people with migraine (Buse, Rupnow, & Lipton, 2009; Mannix et al., 2016). Possibly, the lack of significance found in our study may be related to the fact that we only used a scale of 0 to 100 on self-perceived quality of life, therefore, future studies should include a complete validated questionnaire on quality of life, such as the EUROQOL-5D (Hernandez et al., 2018). According to the literature, menstrual migraines produce incapacity that impact on family, academic and work responsibilities, at a great socioeconomic cost (Bigal & Lipton, 2009; Pavlović et al., 2015; Stang, Crown, Bizier, Chatterton, & White, 2004). In the United States alone, the economic loss due to the direct and indirect costs attributed to migraines, including absenteeism and decreased performance, is estimated at thousands of dollars per year (Bigal & Lipton, 2009).

Regarding lifestyle, over half of the women studied who were taking oral contraceptives reported experiencing menstrual migraine, representing a 2.60 (1.30–5.20) increased odds of suffering migraine. These findings are in line with previous studies, such as the study by Bianchin et al. (2019).

Nonetheless, a recent study showed that hormonal preparations of less than 20 μg of ethinyl estradiol, can help prevent menstrual migraine (Calhoun & Batur, 2017). In our study, the exact dose of ethinyl estradiol which the participants were taking was not recorded, therefore it would be interesting to include this in future studies.

In terms of dietary factors Carman et al. (2018), had already identified the consumption of cola beverages as a risk factor for menstrual migraine among young women in Turkey. In addition Lee, Choi, Choi, and Chung (2016), demonstrated an improvement of acute migraine after abstinence from coffee. In our study, the consumption of daily cola beverages was associated with a 1.85 times (1.03–3.32) increased probability of suffering menstrual migraine. Nonetheless, it is striking that a study by Derry, Derry, and Moore (2014)states that caffeine

Table 3
Regression on menstrual migraine and possible risk factors.

	B	EE	gl	*p*-value	OR	95%CI	
Oral contraceptives	0.957	0.353	1	.007*	2.60	1.30	5.20
Dysmenorrhea	1.159	0.346	1	.001*	3.19	1.62	6.28
Dizziness	0.716	0.309	1	.021*	2.05	1.12	3.75
Irritability	0.852	0.321	1	.008*	2.34	1.25	4.40
Cola beverages	0.617	0.297	1	.038*	1.85	1.04	3.32
Constant	−2.247	0.402	1	.000	0.106		

* <0.05.

consumption contributes towards relieving headache when used in association with analgesics. Therefore, future research should explore the consumption of caffeine. Likewise, although coffee drinking and smoking have been related with menstrual migraine in previous studies, in our study, no relationship was found with migraine (Carman et al., 2018). Regarding smoking, this data should be interpreted with caution, as in our sample only 15.7% of university students smoked cigarettes, which may have influenced the lack of significant findings.

The main implication for clinical practice is that this study has identified several factors related with menstrual migraine. Drinking cola beverages is the main potential modifiable risk factor related with lifestyle. An important obstacle for approaching this problem is that most young people normalize menstrual migraine and seldom do they consult professionals, therefore the techniques of health education for modifying lifestyle should perhaps be developed using community interventions. In addition, other potential risk factors were identified, such as dysmenorrhea, dizziness and irritability. Further study of these risk factors is necessary. It is important to consider that menstrual migraine has certain unique characteristics compared to other types of migraine, such as the perception of greater pain, a longer duration, greater resistance to pharmacological therapy and association with other symptoms warranting consideration (Pavlović et al., 2015). The management and research of this topic is complex and, therefore, a multidisciplinary approach is advised, involving primary care, neurology and gynecology (Witteveen, van den Berg, & Vermeulen, 2017).

Among the various strategies that can be employed by the pediatric nurse, community intervention strategies based on health education are highlighted. Of these, those aimed at the entire educational community and implemented in the school context could be very efficient. Including families and girls and adolescents of various ages in these activities could benefit a large number of women at a very low cost. It would be interesting if nursing students themselves during their pediatric clinical practices could participate in such activities as professionals and with their own testimonies. Furthermore, in the different regions of Spain there are currently many inequalities with regard to the presence and absence of pediatric nurses in schools, their presence favors and contributes to implementing more activities in this line. Policies should consider the benefits of implementing this figure at an international level.

Application to practice

This study identified high rates of menstrual migraine among the study sample, which was more prevalent in women who consumed cola or used hormonal contraceptives. These findings highlight the possibility of adopting new strategies based on lifestyle modification in community interventions during childhood and adolescence. A fundamental role of pediatric nursing is to facilitate the empowerment of women towards the self-management of their health. It also possesses a relevant role in providing society with clear and concise information on normal aspects of menstruation. Moreover, nurses should explore other symptoms such as dysmenorrhea, irritability and menstrual dizziness in young people with menstrual migraine for a comprehensive approach. In this sense, the pediatric nurse is placed in the strategic position of promoting mother-daughter communication in aspects related to women's health and of favoring the ability of continued research in this line, which, in turn, may deepen knowledge in other potential risk factors and facilitate the design of new non pharmacological strategies as for example yoga, that has demonstrate benefits in the treatment of dysmenorrhea on an international basis(McGovern & Cheung, 2018). In addition, pediatric nurses are charged with the role of educating, training and mentoring nursing students, a role which should seed the idea in our students of the importance of pediatric nursing as a reference point in child and adolescent health.

Limitations

One of the principal limitations of the present study relates to its cross-sectional design conducted at a single faculty of nursing at a Spanish university, with a limited sample size. Furthermore, the information was gathered using retrospective self-report. Another limitation was that no information was collected regarding any mental health problems experienced by participants, nor did we record other stressors present in the context of undergraduate nursing training that could potentially influence migraine. Nonetheless, this study provides exploratory information regarding a problem which has been poorly studied among Spanish women. In order to continue with this line of research, we recommend that a multi-center study should be performed in the future supported by data collection using a symptoms diary, comparing the prevalence of menstrual migraine among young university women with different degrees. In addition, it would also be interesting to conduct similar research among secondary education students across different regions of Spain.

Conclusions

In conclusion, many young nursing students suffer from menstrual migraine. We identified a greater proportion of women with menstrual migraine among those with dysmenorrhea, irritability and dizziness and who used oral contraceptives and drank cola beverages on a daily basis. Most of the students normalized menstrual migraine and few consulted professionals, therefore health education techniques for lifestyle modification should be developed based on community interventions during childhood and adolescence. In this context, pediatric nursing professionals fulfill an essential role by providing education in women's health.

Availability of data and materials

The datasets used and analyzed during the current study are available from the corresponding author on reasonable request.

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Declaration of competing interest

The authors declare no conflicts of interests.

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