Predictors of Health-Promoting Lifestyle among Students with Primary Dysmenorrhea: A Cross-Sectional Study

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ARTICLE INFO	ABSTRACT
Article type: Original article *Article History:* Received: 27-Jun-2020 Accepted: 04-Oct-2020 *Key words:* Predictor Health-promoting lifestyle Self-efficacy Student Primary dysmenorrhea	***Background & aim:*** The problem of dysmenorrhea has not yet been controlled despite the various managements available for it. Among those, a health-promoting lifestyle is recognized as a key factor to prevent the progression of many diseases since health promotion are directly related to lifestyle-related behaviors. This study assessed predictors of health-promoting lifestyle among university students with primary dysmenorrhea. ***Methods:*** This cross-sectional study was conducted on 370 students with primary dysmenorrhea from October to February 2018. The subjects were selected from the students of the Islamic Azad University, Tabriz, Iran, using a proportionate stratified sampling method. The instruments used to collect data consisted of a demographic questionnaire, Beck Depression Inventory-II, General Self-efficacy Scale, and the Health-Promoting Lifestyle Profile II. The general linear model was used to estimate the impact of each independent variable on the dependent variables using SPSS software (version 21). ***Results:*** The mean scores of health-promoting lifestyle, general self-efficacy, and depression were obtained as 141.16±18.41, 57.81±8.1, and 11.8±10.5, respectively. There was a significant relationship between health-promoting lifestyle with self-efficacy and depression (P<0.001). Based on the general linear model, the relationship of the total score of a health-promoting lifestyle was significant with the general self-efficacy, depression, and regular physical activity (P<0.05). Students with high self-efficacy, low depression, and regular physical activity achieved higher health-promoting lifestyle scores. ***Conclusion:*** It is recommended that schools' health policymakers should consider physical activities and psychological factors through offering educational and cultural programs, as well as paying greater attention than before to these dimensions.

Introduction

Dysmenorrhea, defined as painful cramps of uterine origin, is one of the most common problems for women of childbearing age (1). The incidence rate of this disease during menstruation is often reported to range from 45-90% (2, 3). Primary dysmenorrhea is considered one of the major factors impairing women's quality of life and social activity (4), and one of the important causes of adolescent girls' short-term and frequent absenteeism, physical activities reduction, and social activities limitations (5).

It has been found out that there is a close relationship between pain and depression (6). The results of various studies have shown that depression increases the impact of pain on individuals' social and occupational performance and reduces their potential for

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treatment response (7). It is assumed that anxiety and depression, which have been demonstrated to be associated with many types of pain, also accompany dysmenorrhea. In addition, emotional and behavioral problems and smoking increase the menstrual cycle and dysmenorrhea problems (8). However, the findings of a study performed by Sahin et al. are not consistent with these results (7).

Self-efficacy, as one of the psychological factors related to pain predicting 20% of the variance in pain level (9), is an individual's belief about his/her ability to adopt a behavior necessary to achieve the desired result and increases one's capacity to cope with pain (10). Bandura has stated that self-efficacy reflects an individual's confidence in his/ her ability to obtain desired results, and that self-efficacy determines the degree of people's resistance against impediments and undesirable experiences (11).

Lifestyle is described as the usual daily activities that people have typically adopted as acceptable in their lives (12). Lifestyle has gained substantial importance due to its role in people's mental health (13), as well as maintaining and promoting health (14). A health-promoting lifestyle is one of the major determinants of communities' health and development (15), which is known as an underlying factor responsible for the absence of many diseases (16). Therefore, paying attention to females' health, who constitute half of the society, and upgrading their lifestyle are not only recognized as a human right but also their effects on the health of the society and the family are gaining increasing importance (17). The results of a few studies being performed to investigate the health-promoting lifestyle of students in Iran are indicative of the poor conditions of the aforementioned factor (18).

Despite recent advances in dysmenorrhea, the relationship of dysmenorrhea with psychological and genetic factors has not been fully elucidated yet. Consequently, it is important to find effective treatments by identifying and studying the relationships among the factors affecting dysmenorrhea (7). Those studies focusing on young people are highly important since youth is considered one of the factors causing changes in a healthy lifestyle (19, 20). In this regard, students are considered a channel for expanding affairs related to upgrading their health since they have an on society, and consequently their lifestyle affects that of other members of the society (21). Considering the importance of health-promoting lifestyle and the role of factors affecting it, as well as the studies related to the factors affecting, which are limited, this question rises that 'What factors do affect the health-promoting lifestyle?' Therefore, this study aimed to evaluate the predictors of health-promoting lifestyle among students with primary dysmenorrhea.

Materials and Methods

This cross-sectional study was conducted on 370 female students of the Faculty of Medical Sciences of the Islamic Azad University, Tabriz Branch, Tabriz, Iran, within October-February 2018. The inclusion criteria were determined as: 1) having dysmenorrhea with the visual analog scale scores of ≥ 5, 2) suffering from regular and painful menstrual cycles for 6 months, 3) being 18-35 years old, 4) lacking history of underlying physical diseases (e.g., epilepsy, cardiac, renal, or blood diseases), and 5) lacking (self-reported) mental disorders, pelvic pathology, or severe psychological stress, such as parents or first-degree relatives death in the past 6 months and parental separation. On the other hand, the subjects unwilling to continue their participation were excluded from the study. Based on the literature (22), the sample size was calculated at approximately 169 cases with 90% power, 0.05 error, and 95% confidence interval (59.1±9.99). The participants were selected using the cluster sampling method. To enhance the power test, the researchers increased the sample size to 338 considering the design effect of 2. Therefore, about 370 students were studied because of possible attrition.

Among the medical school students (i.e., midwifery, nursing, and operating room), a proportional number of participants from each field of study was selected according to the sample size. The researcher visited the students' classes to give them information on the research and suggest them to participate in the study. To collect the necessary information, the purpose of the study was explained to the subjects of the research and they were informed about the

possibility of volunteer participation in the research. Subsequently, the questionnaires were distributed among the cases after obtaining their consent to participate in the study through a consent form. The data were collected using questionnaires, including the demographic form, midwifery questionnaire, the Health-Promoting Lifestyle Profile II (HPLP-II) questionnaire, the General Self-Efficacy Scale, and the Beck Depression Inventory-II.

The HPLP-II questionnaire consists of 52 items and 6 subscales. The total score of less than 50 indicates undesirable lifestyles, 50-75 usual lifestyles, and 75-100 desirable lifestyles. The overall reliability of the questionnaire was confirmed in Iran using Cronbach's alpha coefficient (α=0.94) (23). In this study, the internal reliability of this tool using Cronbach's alpha coefficient was obtained as 0.87.

The General Self-Efficacy Scale (GSES), developed by Sherer, consists of 17 items. Higher scores reflect stronger self-efficacy and lower scores indicate poorer self-efficacy (24). The scores are divided into the three groups according to the obtained scores, including low self-efficacy (17-40), moderate self-efficacy (40-65), and high self-efficacy (>65) (22). The reliability of this instrument was estimated at 0.85 for the total scale, which is satisfactory (25). In our study, Cronbach's alpha coefficient, used to test the reliability of the GSES, was calculated at 0.83.

Beck Depression Inventory-II, consisting of 21 items, assesses all dimensions of depression based on Beck's cognitive theory of depression. The results of this instrument suggest slight, mild, moderate, and severe depression with the range scores of 0-13, 14-19, 20-28, 29-63, rspectively. The validity and reliability of this questionnaire were confirmed. Accordingly, its total validity coefficient for all 21 items was estimated at 0.86 (26). In this study, Cronbach's alpha coefficient was used to evaluate the reliability of the Beck Depression Inventory II (α=0.86).

The collected data were analyzed in IBM SPSS software (version 21) using descriptive statistics to describe socio-demographic characteristics, menstrual characteristics, health-promoting lifestyle, general self-efficacy, and depression. Furthermore, the normality of the quantitative data was evaluated using skewness and kurtosis. Pearson's and Spearman's rank correlation coefficients were utilized to determine the relationship of a health-promoting lifestyle with depression and self-efficacy. To estimate the effect of each independent variable (i.e., general self-efficacy, depression, demographic, and menstrual characteristics) on the dependent variable (i.e., health-promoting lifestyle), the general linear model was used. A p-value of less than 0.05 was considered significant.

Results

The response rate in this study was 100% and none of the participants left the study. The mean age score of the participants was 22.6±2.5 years and their body mass index was obtained at 21.02±3.5 kg/m² (Table 1).

The mean score of menstrual age and menstrual pain were calculated at 13.32±1.37 and 5.48±2.4 years, respectively. It was found out abdominal pain (73.7%) and back pain (64.9%) were the subjects' most important experiences during the menstrual cycles. In addition, 72.5% of cases reported that their menstrual pain began before bleeding (Table 2).

The mean scores for health-promoting lifestyle, general self-efficacy, and depression were calculated at 141.16±18.41, 81.57±8.10, and 11.8±10.5, respectively. The obtained scores for the aforementioned variables ranged from 93-190, 29-77, and 0-53, respectively. Moreover, according to Pearson's correlation coefficient, there was a significant difference between self-efficacy and health-promoting lifestyle (P<0.001) and there was also a significant relationship between depression and health-promoting lifestyle (P<0.001; Table 3).

All the variables of social-demographic and menstrual characteristics, self-efficacy, and depression were entered into the general linear model. According to the results, a health-promoting lifestyle had a significant relationship with general self-efficacy, depression, and regular exercise (P<0.05).

Individuals with high self-efficacy, low-level depression, and regular physical activity achieved higher scores for health-promoting lifestyle. These variables could predict 20.2% of the variance in the health-promoting lifestyle of

the primary dysmenorrhea in students (Table 4).

Table 1. Social-demographic characteristics of students with primary dysmenorrhea (n=370)

Number (%)	Characteristics*	Number (%)	Characteristics*
	Body mass index		**Age (year)**
Mean (SD)**	22.57 (2.4)	Mean (SD)**	21.02 (3.5)
Education		< 18.5	29 (8.0)
Bachelor	305 (93.0)	18.6-24.9	245 (67.9)
Graduate	23 (7.0)	25-30	72 (19.9)
Paternal education		> 30	15 (4.2)
High school	67 (18.3)	**Ethnicity**	
Diploma	104 (28.5)	Turk	305 (83.8)
Academic	194 (53.2)	Kurd	46 (12.6)
Maternal education		Fars	13 (3.6)
High school	112 (30.8)	**Financial status**	
Diploma	116 (32.0)	Desirable	223 (60.8)
Academic	135 (37.2)	Relatively desirable	140 (38.1)
Marital status		Undesirable	4 (1.1)
Married	55 (16.4)	**Resident**	
Single	280 (83.6)	Urban	356 (97.0)
Regular exercise		Rural	10 (2.7)
Yes	155 (42.2)		

*Valid percent has been reported in all the variables because of missed data.
** All data indicate the number (percent) unless specified.

Table 2. Menstrual characteristics of students with primary dysmenorrhea (n=370)

Number (%) *	Characteristics	Number (%)	Characteristics
Menstrual age (year) Mean (SD) **	13.32 (1.37)**	**Menstrual pain relief with medication**	
Experiences during menstrual cycles		Always	115 (32.6)
Abdominal pain	272 (73.7)	Mostly	169 (47.9)
Back pain	240 (64.9)	Seldom	45 (12.7)
Hip pain	142 (38.4)	Never	24 (6.8)
Nausea	127 (34.3)	**Used medications**	
Vomit	69 (18.7)	Ibuprofen	78 (20.8)
Diarrhea	69 (18.7)	Mefenamic acid	43 (11.6)
Onset of dysmenorrhea		Herbal Medicines	29 (7.8)
1 or 2 days before bleeding	152 (41.4)	Others (such as diclofenac and hyoscine)	49 (13.2)
A few hours before bleeding	114 (31.3)	**History of smoking**	4 (1.1)
After the bleeding started	101 (27.5)	**Pain relief with massage**	206 (59.9)
Time of severity of dysmenorrhea		**Menstrual pain during the last three cycles** Mean (SD)**	5.48 (2.4)**
First and second days	249 (77.3)		
Third and fourth days	121 (32.7)		

*Valid percent has been reported in all the variables because of missed data. Because participants were allowed to mark more than one option for some variables, the sum of some variables is more than 100%.
** All data indicate the number (percent) unless specified.

Table 3. Status of general self-efficacy and depression, and their relationship with health-promoting lifestyle in students with primary dysmenorrhea (n=370)

Variables	Mean (SD)*	Md (P25%-P75%)**	Obtained score	r	Correlation with Health-Promoting Lifestyle P-value
General self-efficacy (17-85)	57.8 (8.10)	58 (51.75-64.00)	(29-77)	0.341	<0.001***
Depression (0-63)	11.77 (10.49)	10.00 (3.00-18.75)	(0-53)	-0.334	<0.001****
Health-Promoting Lifestyle (52-208)	141.16 (18.41)	140.50 (128.00-155.00)	(93-190)	---	---

* Mean (standard deviation)
** Median (25 and 75 percentile)
*** Pearson correlation coefficient
**** Spearman's rank correlation coefficient

Table 4. Predictors of health-promoting lifestyle in students with primary dysmenorrhea based on General Linear Model (n=370)

Variables	Unadjusted		Adjusted	
	β (CI95%)	P-value	β (CI95%)	P-value
General self-efficacy	0.8 (0.6 to 1.0)	<0.001	0.5 (0.3 to 0.8)	<0.001
Depression	-0.6 (-0.7 to -0.4)	<0.001	-0.4 (-0.6 to -0.2)	<0.001
Regular exercise (No) Reference				
Yes	9.8 (6.1 to 13.5)	<0.001	8.5 (5.1 to 11.9)	<0.001

Adjusted R^2 = 0.202

Discussion

The results of this study showed a moderate health-promoting lifestyle and self-efficacy and mild depression among female students with primary dysmenorrhea. Moreover, the findings indicated that a health-promoting lifestyle had a relationship with self-efficacy and depression. Regarding this, a decline in health-promoting lifestyle led to a decrease in self-efficacy and an increase in depression. The variables of general self-efficacy, depression, and regular physical activity were predictors of health-promoting lifestyle among female students with dysmenorrhea.

It was found out higher self-efficacy was one of the predictors of health-promoting lifestyle among students with dysmenorrhea. This finding is in agreement with those of some previous research showing that self-efficacy is related to a health-promoting lifestyle (22, 27) and it is one of the factors influencing health-promoting lifestyle (28). The reason for this may be that individuals with higher self-efficacy overcome barriers with the help of their management skills and perseverance, making them follow behaviors that upgrade their health. Mohammadbeigi et al. (2016) (22) reported that individuals with self-efficacy could improve their health conditions and status. Moreover, since there was a significant relationship between health-promoting lifestyle and self-efficacy, their scores for lifestyle improved with the increase in self-efficacy. This finding is in line with that of our study, which showed that there was a significant positive relationship between self-efficacy and health-promoting lifestyle among students with dysmenorrhea. Self-efficacy may lead to developing more health-promoting behaviors by increasing individuals' belief in their ability to take care of themselves.

Emotional and behavioral problems increase menstrual problems, especially dysmenorrhea. The results of a study on adolescents showed that the incidence of anxiety, depression, and smoking was related to dysmenorrhea (8). The findings of the present study indicated that lower scores for depression were associated with the adoption of a health-promoting

lifestyle. These results are in agreement with those found in a study conducted by Baldi et al. (29). In the aforementioned research, it was reported that improving lifestyle components enabled individuals to stay healthy and cope with daily stresses, and that a proper lifestyle could play an important role in people's happiness and prevention from stress and depression. The results of the current study are also in line with those of a study carried out by Samiei Siboni et al. (2013) (30), who reported that training based on promoting a healthy lifestyle decreased the scores obtained for depression. It is possible that a healthy lifestyle can reduce depression by increasing one's self-awareness and increasing one's ability to cope with environmental stressors.

Another predictor of health-promoting lifestyle among students with dysmenorrhea was regular physical activity. This dimension received the lowest score compared to the other dimensions of a health-promoting lifestyle. This result is in line with the findings of a research carried out by Saeed Firoozabadi (2018) (31). The lowest score obtained by students in the physical activity indicated that performing exercises is not integrated into students' daily lives and is one of the potential reasons for them not exercising. This result is in agreement with similar studies conducted by Kuwait (32) and Turkey (33) on medical students. The association of lower scores of health-promotion behavior with less physical activity has also been observed in other studies (32, 34). Students lacking health-promoting behaviors probably do not pay attention to various aspects of their health and their responsibilities toward self-care, which is why such individuals do not have enough exercise and physical activity.

One of the strengths of the present study was the use of standard questionnaires. The other positive point of this research is its random selection of participants from the students, which may reflect different types of cultures and economic conditions. In addition, including some of the mediator variables, as well as controlling their possible effect on self-efficacy and depression using statistical tests was among the strengths of the present research.

However, one of the limitations of this study was related to the collection of samples from the students studying at the same university. Therefore, it is recommended to conduct future studies in this domain. It is also suggested that interventional studies be designed and conducted among female students with dysmenorrhea to upgrade their health-promoting behaviors.

Conclusion

It can be concluded that the moderate health-promoting lifestyle and self-efficacy among students and the role of psychological and individual factors on them should be considered in preparing and designing educational and cultural programs for students. As a result, the students' lifestyle would improve leading to their health status promotion.

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Conflicts of interest

Authors declared no conflicts of interest.

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