

Relationships Among Health Locus of Control, Coping Methods, and Dysmenorrhea of Korean Adolescence in Middle School

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Abstract

Background: Recently, sexual issues in youth have become more severe, and sexual education is given to youth almost forcefully and involuntarily. Then, it is necessary to help the youth cultivate accurate information on their own menstruation as the most basic health knowledge.

Objective: This study aimed to examine the correlations and degrees of health locus of control, coping methods, and dysmenorrhea; and the factors influencing the dysmenorrhea of Korean adolescence in middle school.

Design: This was a cross-sectional descriptive design.

Participants: Subjects were 572 female students in middle schools in Seoul, South Korea.

Measurements and findings: Measures were a demographic form, revised MDQ (Menstrual distress Questionnaire), questionnaire for coping methods of dysmenorrhea, and scale for health locus of control. The mean of dysmenorrhea was 77.71 scores indicating lower dysmenorrhea. Physical psychological control in the coping methods of dysmenorrhea was effectively the most using as the highest score (27.20). Internal health locus of control was the most as 79.2%. The analyses showed that the prediction model was significant ($F=20.457$, $p<.001$). The value of the adjusted R^2 was 0.235, which corresponds to the explanatory power of 23.5%. The factor found to have the most influence on the dysmenorrhea of Korean adolescence in middle school were the negative coping ($\beta=0.369$), followed by chance health locus of control ($\beta=0.244$), conversion in coping method ($\beta=-0.159$), dependence health locus of control ($\beta=-0.100$), posture therapy in coping method ($\beta=0.091$).

Conclusions/Implications for practice: Nursing intervention programs should be explored to reduce their negative coping, to apply conversion and posture therapy in coping methods.

Keywords: Sexual health; Dysmenorrhea; School

Introduction

Dysmenorrhea and menstrual pain are often experienced by women in their ovulatory phase. It may start soon after their first menstrual cycle and persist to their late 40s [1]. In the USA, 30-50% of women in their menstrual cycle suffer from moderate to severe dysmenorrhea and menstrual pain, and 10-20% of them complain of such severe pain that they cannot lead a normal life [2]. In Korea, dysmenorrhea and menstrual pain are the most frequent causes of missing work or classes [3].

Right before menstruation, which occurs in the later period of the menstrual cycle when the corpus-luteum in the uterine lining is shed, most women experience various physical and mental symptoms as well as behavior changes [2,3]. Dysmenorrhea is the most frequent symptom among adolescent girls. Considering that adolescence is an important period for the youth because it is when they form their self-identity, develop healthy living habits, and learn to balance their life physically, mentally, and socially, they must develop a positive attitude toward their monthly dysmenorrhea and proactive self-care methods.

Unfortunately, dysmenorrhea tends to breed negative attitudes and emotions toward menstruation in adolescent girls [4]. Personal character and nature are linked to menstrual symptoms and to the attitude toward menstruation, and menstrual symptoms are highly related to neuroticism [5]. Considering that such characteristics can significantly affect a girl's adult life, she must be provided a supportive environment in which she is encouraged to develop a positive response to menstruation, both physically and mentally. Most women believe dysmenorrhea does not require special treatment and is not serious [6]; and previous studies have shown that to alleviate dysmenorrhea, women prefer to sleep and rest [7], take medications [8], warm or

support their body [9], conversion therapy [10], exercise, and take Oriental medications, among other methods. It is necessary to verify through this study which of these methods is most effective.

Also, studies on dysmenorrhea have mainly focused on fragmental and physical mediation, such as surveys on dysmenorrhea or women's attitude toward it or methods that they use to alleviate it, but there has been little research on the health locus of control, which verifies the belief that positively affects the subject's health and implements it to solve problems.

While homeopathic therapies may be effective intervention methods for dysmenorrhea, self-management must also be maintained and strengthened by instigating the individual's behavior change [5]. The health locus of control is one of the parameters that can explain and predict healthy behavior to maintain and improve individuals' health conditions; and to predict and enhance individual behavior, the characteristics of the individual's health locus of control must be determined [10].

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Therefore, this study was conducted to help middle school female students establish effective menstruation management and measurement plans and develop a positive attitude toward menstruation based on the different types of health locus of control by confirming the menstrual symptoms and measures and examining the relationship between the health locus of control and the measures to cope with dysmenorrhea, so as to improve the quality of life and offer basic data on developing nursing interventions that suit each student's type of health locus of control.

Aims

The aims of the study were to (1) confirm general and menstrual characteristics, (2) examine degrees of dysmenorrhea, coping methods of dysmenorrhea, and health locus of control, (3) examine correlations among dysmenorrhea, coping methods, and health locus of control, and (4) examine factors influencing the dysmenorrhea

Methods

Design and participants

This was a cross-sectional descriptive design. The study samples were 572 female Korean students in three middle schools, Seoul, Korea. They were recruited through random sampling using coin. After research approval from the university, the questionnaires were distributed to 650 female students who were willing to participate in this study. The responses were 97.7% (635/650). Due to incomplete data, a total of 572 data were included in the final dataset.

Considering that the ideal sample size in a correlation survey study is five to ten times the number of questions included in the questionnaire [11], the minimum required sample size in this study was 245. Therefore, the sample size of this study was enough.

Procedure

The response data were collected by the author and an assistant researcher from April to September 2010. The researchers visited three middle schools located in Seoul, South Korea. The researcher contacted the prospective participants and explained the purpose of this study as well as the participation details and the instruments that were to be used. The survey consisted of a self-reporting questionnaire to be administered by the researcher and the assistant. Each of the participants took approximately 20 min to complete the questionnaire.

Measures

The study questionnaire was designed to measure general characteristics, menstrual distress, coping methods of dysmenorrhea, and health locus of control. General characteristics consisted of significant variables from reviewing of previous studies. The variables were age, menstruation characteristics like initial age of menarche, regularity of menstrual period, onset of dysmenorrhea, bleeding amount, continuance day of menstruation, family history of dysmenorrhea, and idea of menstruation; also life style characteristics like stress score, health state. This consisted of total 13 items.

MDQ (Menstrual distress Questionnaire) developed by Moos [12] was revised and used to measure the distress level of menstruation among the participants. It consisted of a total of thirty six questions using a six-point scale. The possible score range was from 36 to 216; and the higher the score of the respondent was, the higher their level of dysmenorrhea. The reliability of this instrument was Cronbach's $\alpha = 0.95$.

Questionnaire for coping methods of dysmenorrhea used by Cho [13] was revised and used to measure the coping methods of dysmenorrhea among the participants. It consisted of a total of twenty two questions using a six-point scale. The possible score range was from 22 to 132; and the higher the score of the respondent was, the better effect of coping method. The reliability of this instrument was Cronbach's $\alpha = 0.88$.

Scale for Health locus of control developed by Wallston and Wallston [14] was revised and used to measure the health locus of control among the participants. It consisted of a total of eighteen questions using a six-point scale. The possible score range was from 18 to 108; and the higher the score of the respondent was, the higher propensity of the locus of control. Total reliability of this instrument was Cronbach's $\alpha = 0.85$; internal health locus of control was Cronbach's $\alpha = 0.80$, chance health locus of control was Cronbach's $\alpha = 0.73$, dependence health locus of control was Cronbach's $\alpha = 0.79$.

Data analysis

The collected data were analyzed using the SPSS version 20.0 statistical software program. Demographic characteristics of the participants and the related variables of dysmenorrhea were analyzed using descriptive statistics. Correlations among variables were analyzed using Pearson's correlation coefficient. In order to examine the factors influencing their level of dysmenorrhea, multiple regression analysis was used.

Ethical consideration

This study was approved by the Institutional Review Board of a University in Seoul, Korea. In order to obtain the consent, a researcher first contacted the each individual, and explained the purpose, sample criteria, participation details, and instruments of this study. The participants were informed regarding anonymity and confidentiality of data. The researcher received written permission from all participants.

Results

General and menstrual characteristics

Age of participants was average 13.53 years old, and the range was from 12 to 15 years old. Initial age of menarche was average 11.94 years old, and the range was from 10 to 14 years old. Menstrual period and onset of dysmenorrhea were irregular in the most as 80.2% and 45.6%, respectively. Most of participants (98.6%) were average or large amount in bleeding amount. For continuance day of menstruation, 3~7 days was the most as 87.4%. Family history of dysmenorrhea was the most in none (56.1%), and mother and sister (38.1%), respectively. Most of participants (74.6%) were feeling discomfort in menstruation period. In stress degree, 51~75 scores was the most as 33.6%, 26~50 scores (26.4%), 0~25 scores (20.6%), 76~100 scores (19.4%), respectively. In health state, 76~100 scores was the most as 44.2%, 51~75 scores (40.9%), 26~50 scores (12.6%), 0~25 scores (2.3%), respectively (Table 1).

Degrees of dysmenorrhea, coping methods of dysmenorrhea, and health locus of control

A degree of dysmenorrhea was mean 77.1 scores indicating lower dysmenorrhea. Coping Methods of dysmenorrhea were physical psychological control, take analgesic medicine, conversion, posture therapy, positive coping, and negative coping. Among them, physical psychological control (mean 27.20 scores) was the better effective coping method than others.

Variable		Frequency	%	Mean	SD
Age(yrs)	12	66	11.5	13.53	.84
	13	197	34.5		
	14	247	43.2		
	15	62	10.8		
Initial age of menarche	10	40	7.0	11.94	.04
	11	135	23.6		
	12	238	41.6		
	13	124	21.6		
	14	30	5.2		
Regularity of menstrual period	Regular	113	19.8		
	Irregular	459	80.2		
Onset of dysmenorrhea	From menarche	171	29.9		
	1-2 years of after menarche	140	24.5		
	Irregular	261	45.6		
Bleeding amount	Very large amount	40	7.0		
	Large amount	208	36.4		
	Average amount	316	55.2		
	Very small	8	1.4		
Continuance day of menstruation	1~2	11	1.9		
	3~7	500	87.4		
	≥ 8	61	10.7		
Family history of dysmenorrhea	None	321	56.1		
	Sisters	33	5.8		
	Mother and Sisters	218	38.1		
Idea of menstruation	Discomfort	426	74.6		
	Painfulness	73	12.7		
Stress score	0~25	118	20.6		
	26~50	151	26.4		
	51~75	192	33.6		
	76~100	111	19.4		
Health state (score)	0~25	13	2.3		
	26~50	72	12.6		
	51~75	234	40.9		
	76~100	253	44.2		

Table 1: General and menstrual characteristics (N=572).

Propensity of internal health locus of control was the most as 79.2%. In external health locus of control, propensity of dependence health locus of control (12.8%) was more than that of chance health locus of control (8.0%) (Table 2).

Correlations among dysmenorrhea, coping methods, and health locus of control

Dysmenorrhea was only significant positive correlation with chance of health locus of control ($r=.295, p<.001$). In correlations

between coping method and health locus of control, internal health locus of control was no significant correlation with negative coping, but it was significant positive correlations with physical psychological control ($r=.278, p<.001$), conversion ($r=.246, p<.001$), positive coping ($r=.243, p<.001$), take analgesic medicine ($r=.122, p=.003$), posture therapy ($r=.114, p=.007$). Chance health locus of control was significant positive correlations with negative coping ($r=.261, p<.001$), posture therapy ($r=.249, p<.001$), conversion ($r=.205, p<.001$), positive coping ($r=.195, p<.001$), take analgesic medicine ($r=.157, p<.001$), physical psychological control ($r=.156, p<.001$). Dependence health locus of control was significant positive correlations with take analgesic medicine ($r=.273, p<.001$), physical psychological control ($r=.268, p<.001$), positive coping ($r=.243, p<.001$), conversion ($r=.200, p<.001$), posture therapy ($r=.171, p<.001$), negative coping ($r=.124, p=.003$).

Factors influencing the dysmenorrhea

Multiple-regression analyses to examine the factors influencing the dysmenorrhea of the study participants showed that the prediction model for the dysmenorrhea of Korean adolescence in middle school was significant ($F=20.457, p<.001$). The value of the adjusted R^2 was 0.235, which corresponds to the explanatory power of 23.5%. The factor that was found to have the most influence on the dysmenorrhea of Korean adolescence in middle school were the negative coping ($\beta=0.369$) in coping method, followed by chance health locus of control ($\beta=0.244$), conversion ($\beta=-0.159$) in coping method, dependence health locus of control ($\beta=-0.100$), posture therapy ($\beta=0.091$) in coping method (Table 3).

Discussion

Dysmenorrhea used to be considered a psychological inconvenience specific to women, and no proactive intervention methods were used to alleviate it. Now, it is considered an important issue in women's health, much effort is being made to reduce its discomfort, and the intervention methods being taken are wide-ranging both in Western and Eastern medicine.

Since adolescents are at the stage of life in which they form their self-identity and a healthy lifestyle and establish physical, mental, and social balance, it is important for them to have a positive attitude toward dysmenorrhea, which girls experience monthly, and to be able to use proactive self-management methods. Therefore, to solve the issues regarding dysmenorrhea, physical intervention methods must be implemented and the psychological characteristics needed to positively resolve individual issues must be determined and used to cope with problems. Since the health locus of control rules health behavior and explains and predicts individual behavior toward health improvement, it helps promote health and modify health behavior.

The average age of the subjects of this study when they had their first period was 11.94 years, and their average cycle was 30.01 days, which is younger than the 12.90 days in Hong's study [7] and the 12.10 days in Sung's study [10], and even the 13.34 days in the American Academy of Pediatrics' study [15]. It is believed that the younger age of menarche is, the earlier sex education and menstruation-related hygiene education are required. Most of the subjects (80.20%) said their cycle was irregular. This is because they were middle school female students, whose menstrual cycle is usually irregular until the ovary function matures [16], at which point the menstrual cycle will become regular. Irregular menstruation is bound to cause much discomfort in daily life, though. Most of the subjects said menstruation was inconvenient, which shows that most of them had a negative attitude toward menstruation. Previous studies [4,17] have also shown the negative

Variable	Range	Minimum value	Maximum value	Mean	SD	
DDysmenorrhea	36-216	36	191	77.71	32.07	
Coping method	Physical and psychological control	6-36	8	36	27.20	7.99
	Take Analgesics	1-6	1	6	2.99	1.71
	Conversion	4-24	4	24	10.22	4.39
	Posture therapy	1-6	1	6	2.82	1.58
	Positive coping	3-18	3	18	7.62	3.86
	Negative coping	5-30	5	30	11.09	5.14
Variable	Frequency		%	Mean	SD	
Internal health locus of control	453		79.2	4.03	0.84	
External health locus of control	Chance health locus of control	46	8.0	2.76	0.79	
	Dependence health locus of control	73	12.8	3.26	0.80	

Table 2: Degrees of dysmenorrhea, coping methods of dysmenorrhea, and health locus of control (N=572).

Variables	B	S.E	β	t(p)	Adj R ²	F(p)	
Constant	40.624	6.108		6.651(<.001)	.235	20.457 (<.001)	
Coping method	Physical and psychologic control	.158	.184	.040			.861(.390)
	Take analgesics	1.342	.727	.073			1.846(.065)
	Conversion	-1.145	.346	-.159			-3.310(.001)
	Posture therapy	1.828	.827	.091			2.210(.027)
	Positive coping	-.033	.406	-.004			-.082(.935)
	Negative coping	2.283	.268	.369			8.518(<.001)
Health locus of control	Internal health locus of control	-.066	.224	-.013			-.295(.768)
	Chance health locus of control	1.358	.244	.244			5.559(<.001)
	Dependence health locus of control	-.554	.263	-.100			-2.104(.036)

Table 3: Factors influencing the dysmenorrheal.

feeling of the subjects toward menstruation. If women have a highly negative attitude toward menstruation, they may have a high neurotic tendency, which can worsen the symptoms of dysmenorrhea. Thus, adolescent students must be offered sex education and menstruation-related programs to change their negative attitude, and methods to reduce their dysmenorrhea symptoms.

The subjects' average score for dysmenorrhea was 77.71, and 62.59% of them scored over 60 their menstrual discomfort, which show that most of them had dysmenorrhea. These results support those of the study of Hong [7] and Jung and Kim [18]. Therefore, most middle school female students suffer from dysmenorrhea and require nursing intervention plans to proactively solve this issue. This is because as shown in the results of Park's study [4], while the pain experienced by middle school female students due to menstruation is less than that by female adults, the former have a more negative attitude towards the condition; and thus, dysmenorrhea can have a negative effect on them during the time when they are still forming their identity.

As for the coping methods used by the subjects of this study to cope with dysmenorrhea, control of the physical and mental conditions was scored highest; taking of painkillers, correction of the body posture, conversion, and a positive attitude were scored higher than half of the perfect score; and negative measures were scored lowest. These results supported those of previous studies [7-9] that middle school female students preferred most to rest, take medications, and warm and support their body. Therefore, to solve dysmenorrhea-related issues among middle school female students, nursing interventions to get control of their physical and mental conditions are needed.

The internal locus of control was scored highest among the characteristics of the health locus of control of the subjects, followed

by the dependence locus of control and the chance locus of control. Although the subjects' internal locus of control was generally expected to be weak due to dysmenorrhea and their young age, this study showed that their internal locus of control was much stronger than their other characteristics. This supports the results of the study of Kim [19]. In other words, the subjects of this study had a strong internal locus of control, which showed that they considered health to be determined solely by one's actions; and thus, it is believed that they will be much more interested in their own health issues due to their positive attitude and that they can control and overcome such issues.

The relationship between dysmenorrhea and the health locus of control was shown to be significant among those who had a chance locus of control among the external loci of control. In other words, those with chance loci of control were more sensitive to dysmenorrhea issues. Therefore, encouraging those who have a chance locus of control and who believe that health or diseases are determined by fate, accidents, luck, or the elements to develop an internal locus of control can alleviate the problem of dysmenorrhea and promote a health improvement attitude. The results of the analysis of the relationship between the coping methods to cope with dysmenorrhea and the health locus of control showed that those who had an internal locus of control considered effective the control of the physical and mental conditions, followed by conversion, a positive attitude, control with painkillers, and the posture method, but thought that a negative attitude is not related to the health locus of control. On the other hand, both the chance locus of control and the dependent locus of control had strong positive correlations with all the coping responses. This means that due to dysmenorrhea, those with a tendency to have an external locus of control, who believe that external forces more significantly affect their issues, and who think an external locus of control is highly related

to negative coping methods will continue to have a negative attitude toward menstruation as adults. Therefore, education and nursing intervention programs must be developed to transform an external locus of control to an internal locus of control.

Among the coping methods of coping with menstruation, the factor that affects dysmenorrhea most is a negative coping attitude ($\beta=0.369$), followed by a chance locus of control ($\beta=0.244$) among the health loci of control, conversion ($\beta=-0.159$) among the menstruation-coping methods, a dependent locus of control ($\beta=-0.100$), and the body position therapy ($\beta=0.091$) among the dysmenorrhea-coping methods. The adjusted determinant coefficient ($Adj R^2$) that showed the explanatory power of the model was 0.235. This signifies that middle school female students who cope negatively with dysmenorrhea or who have the external locus of control tend to have more issues with dysmenorrhea, and among the dysmenorrhea-coping methods, conversion and body posture therapy help those most. Therefore, to solve their issues with dysmenorrhea, it is equally important to psychologically educate them to have an internal locus of control and to provide them physical nursing intervention methods. Those who have an internal locus of control can control and overcome their circumstances, can acquire helpful information with a positive attitude, and are very interested in their health condition. To help them cultivate desirable health management and compliance of health behavior, they must be encouraged to acquire wholesome pertinent information, be responsible for their health, and become more interested in solving their issues. Also, health-related programs that suit middle school female students' characteristics must be developed.

Study limitation

In this study, the major limitations were the degree of representativeness of the sample and its generalizability. Additionally, the samples used were recruited from three middle schools in only metropolitan city like as Seoul, Korea, which limited the characteristics of the resulting data. However, the main aim of this study was not to produce generalizable results, but rather, to provide information on which to build future investigations.

Conclusion

The study showed that the negative coping, chance health locus of control, conversion in coping method, dependence health locus of control, and posture therapy in coping method were the factors related to the dysmenorrhea of Korean adolescence in middle school. The factor that was found to have the most influence on the dysmenorrhea of Korean adolescence in middle school was the negative coping in coping method. Based on the findings, nursing interventions are suited with individual characteristics of Korean adolescence in middle school are needed. Nursing intervention programs should be explored to reduce their negative coping, to apply conversion and posture therapy in coping methods. Future studies are recommended using larger samples and/or qualitative methodology. Furthermore, experimental studies using more diverse and concrete nursing interventions should be performed to suggest positive, proactive, and effective dysmenorrhea-coping methods that can be accessed and practiced by students themselves.

Clinical Implications

These findings suggest that the education programs and nursing intervention plans to transform a chance locus of control to an internal locus of control would help alleviate dysmenorrhea. Thus, education programs and nursing intervention plans are needed to change the personality and behavior of middle school female students. In addition,

adolescent female students who experience discomfort in daily life due to menstruation must be given accurate information on menstruation, and up-to-date data on the youth's menstruation-related conditions must be collected and used to plan public health education programs that will encourage the youth to alleviate their discomfort by themselves and maintain and promote their health. It is thus urgent to develop individualized education programs, counseling programs, and coping methods, considering the personal differences in the level of discomfort due to menstruation.

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