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Research Article

Menstruation Impact Scale Development

Menstruasyon Etki Ölçeği Geliştirilmesi

Cigdem Gun Kakasci[1], Dilek Coskuner Potur[2]

[1]Süleyman Demirel University, Faculty of Health Sciences, Department of Midwifery, Isparta, Turkey
[2]Marmara University, Faculty of Health Sciences, Department of Obstetrics and Gynecology Nursing, İstanbul, Turkey

Abstract

Aim: Although there are many measurement tools in the literature to measure menstruation attitudes and symptoms, there is a need for a specific measurement tool that measures the impacts of menstruation alone on women's life, independent of premenstrual syndrome and dysmenorrhea. Our aim was to create a scale so that we could measure the impacts of menstruation in the study.

Materials and Methods: It is a methodological research. The sample consisted of 615 female university students. Menstrual Impact draft scale, which is developed by the researchers, subscale of Menstrual Symptom Questionnaire Negative impacts/ somatic complaints and introductory information form have been used as data collecting forms.

Results: After the factor analysis, a 14-item scale, consisting of physical and psychosocial impact subscales, was developed. The scale is a 5 point Likert type scale evaluated between "5" Strongly Agree and "1" Strongly Disagree. The minimum and maximum scores to be obtained from the overall scale are 14 and 70 respectively. As the score increases, the participant's degree of being affected by menstruation increases as well. The total explained variance of the scale is 54.92%. The Cronbach's alpha coefficient of the scale was 0.87.

Conclusion: The literature has been earned a valid and reliable measurement tool to specifically measure the impacts of menstruation in women's life. Menstrual Impact Scale (MIS) is a short, practical, and easy-to-apply scale. Its validity and reliability in different cultures should be tested.

Keywords: Menstruation, reliability and validity, scale

Öz

Amaç: Literatürde mensturasyon tutumlarını ve belirtilerini ölçmeye yönelik bir çok ölçüm aracı olsa bile premenstrual sendrom ve dismenoreden bağımsız olarak menstruasyonun tek başına kadın yaşamına etkilerini ölçen spesifik bir ölçüm aracına ihtiyaç vardır. Araştırmada menstruasyon etkilerini ölçmeye yönelik bir ölçek geliştirmek amaçlanmıştır.

Materyal ve Metot: Metodolojik bir araştırmadır. Örneklemini üniversitede öğrenim gören 615 kız öğrenci oluşturmuştur. Veri toplama formu olarak araştırmacılar tarafından geliştirilen taslak Menstruasyon Etki Ölçeği ile Menstruasyon Semptom Ölçeği Negatif etkiler/ somatik yakınmalar" alt boyutu ve tanıtıcı bilgi formu kullanılmıştır.

Bulgular: Faktör analizi sonucu fiziksel ve psikososyal etki alt boyutlarından oluşan 14 maddelik bir ölçek geliştirilmiştir. Ölçek, "5" Kesinlikle Katılıyorum ve "1" Hiç Katılmıyorum arasında değerlendirilen 5'li likert tipi bir ölçektir. Ölçekten alınabilecek toplam puan 14 ile 70 arasında değişmektedir. Puan arttıkça katılımcının mensturasyondan etkilenme durumları artmaktadır. Ölçeğin, açıklanan toplam varyansı %54.92'dir. Cronbach's Alfa katsayısının ise 0.87 olduğu saptanmıştır.

Sonuç: Literatüre kadın yaşamında spesifik olarak mensturasyonun etkilerini ölçmeye yönelik geçerli ve güvenilir bir ölçme aracı kazandırılmıştır. Menstruasyon Etki Ölçeği (MEÖ), kısa pratik ve uygulaması kolay bir ölçektir. Farklı kültürlerde geçerlilik ve güvenilirliği sınanmalıdır.

Anahtar Kelimeler: Mensturasyon, geçerlilik ve güvenirlik, ölçek

INTRODUCTION

Menstruation is characterized by the evacuation of blood and mucosal tissue from the uterus. The age at menarche, the first menstruation, usually ranges between 11 and 14 (1). In addition to this, to date, the current literature discusses menstruation as a private and sensitive issue (2). Social and cultural stereotypes on menstruation play an important role in determining the menstrual experience (3). Menstruation also affects women emotionally in addition to physical ailments (4,5). The issue to be taken into consideration during the studies is the multidimensional

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Corresponding Author: Cigdem Gun Kakasci, Süleyman Demirel University, Faculty of Health Sciences, Department of Midwifery, Isparta, Turkey **E-mail**: cigdemkakasci@sdu.edu.tr

psychosocial aspect of the menstrual experience. These dimensions include experiences of embarrassment, fear, nuisance, and discomfort in participating in other activities during menstruation (6).

Therefore, there is an opportunity to add information to the current literature by further investigating both the physical and psychological aspects of menstruation, which is surrounded by taboos (2). To minimize the negative impacts of menstruation, these impacts must be determined and measured. There is a need for standard measuring instruments to measure the impact of menstruation. These measurement tools vary in international studies (7). Premenstrual Symptoms Screening Tool (8), Menstrual Attitude Questionnaire (9), Menstrual Distress Questionnaire (10), Menstrual Symptom Questionnaire (11), Premenstrual Assessment Form (12) and Adolescent Menstrual Attitude Questionnaire (13) all confront us as the measurement tools which are being frequently used all over the world.

Despite all these useful measurement tools, the development of a specific measurement tool that measures the impact of menstruation can be a guide for better understanding and research of the subject. For this reason, it has been thought that developing a measurement tool that focuses on the impact of menstruation on women's lives can contribute to the literature. In this research, we aimed to create a scale so that we could measure the impacts of menstruation on women's lives.

Research question

Is the Menstrual Impact Scale (MIS) really a valid and reliable measurement tool?

MATERIAL AND METHOD

Research Design

The research has a cross-sectional and methodological structure. In this research, we aimed to create a scale so that we could measure the impacts of menstruation on women.

Population and Sample of The Research

The research population consists of female students at a public university in Burdur. The International Test Commission (2018) stated that the minimum sample size should be 200 in order to reveal the psychometric structure of a scale (14). Again, recommended sample calculations were used for scale development studies. Accordingly, 5-30 observations per item are recommended (15). Based on the expert opinion, the number of the items in the scale was reduced to 34 and 615 participants were reached for this scale. The scale especially aims to specifically measure the impacts of menstruation. Therefore, it was important to exclude participants with dysmenorrhea from the scope of the study. Because it is aimed to measure menstruation specifically, free from the impacts of dysmenorrhea. We excluded those who did not want to take part in the study, who did not fill in the data collection tools completely, who did not have menstruation regularly, who had dysmenorrhea, and who were under the age of 18 from the study. Research data were collected based on participants' self-reports.

Data Collecting Tools

The Descriptive Information Form, Menstrual Impact Scale, and Menstrual Symptom Questionnaire were used for data collection,

Descriptive Information Form

The researcher created the form according to the literature. In addition to sociodemographic characteristics such as age and education, the form includes additional questions about menstruation characteristics such as the age at menarche and the duration of menstruation.

Menstrual Symptom Questionnaire (MSQ)

The MSQ was developed by Chesney and Tasto in 1975 to assess menstrual pain and symptoms. In 2009, it was updated by Negriff et al. after being reassessed for the factor structure and usability on adolescents. The scale adapted into Turkish by Guvenc et al. includes 22 items whose responses are rated on a five-point Likert-type scale. Each interval of items namely 1-13, 14-19, 20-22 consecutively refers to the "Negative impacts/somatic complaints" subscale, "Menstrual pain" subscale and " methods of coping with menstrual pain." subscale. Cronbach's Alpha value is 0.86. An increase in the mean score in the subscales indicates an increase in the severity of menstrual symptoms belonging to that subscale (7). Since dysmenorrhea was not questioned in this study, similar scale validity was tested through the "Negative impacts/somatic complaints" subscale of the MSQ. In this study, the Cronbach's Alpha value was 0.81.

The Draft Menstrual Impact Scale (MIS)

A 51-item pool was created by the researchers. Developing the scale to measure the impacts of menstruation was planned. The draft scale is a 5-point Likert type. As the score the participants obtain from the scale increases, so does their level of being affected by menstruation. Before the implementation phase of the scale, a 34-item scale whose content validity was already performed in line with expert opinions was administered to the participants. After the validity and reliability analysis was conducted after the implementation, the draft MIS was finalized to consist of 14 items.

Data analysis

Descriptive Data Analysis

Numbers, Arithmetic Mean, Percentages, standard

deviation, minimum and maximum values were used in the analysis of the descriptive data.

The Stages of Developing the MIS and the Analysis

Scales used by researchers in menstruation studies and studies examining the impacts of menstruation have been reviewed. During the item pooling phase of the draft scale, the current literature was used. Thereafter, the draft scale was examined by 5 academicians who have at least a doctorate degree in the field. Furthermore, it was reviewed by 1 linguist and 1 assessment & evaluation specialist. Then a pilot study including 30 volunteer participants was performed. After the feedback, some stylistic changes were made to increase the clarity of the items. During the validity phase of the scale; 1. expert opinions were used to test content validity, 2. construct validity was tested through the factor analysis, 3. the mean scores obtained from the overall MIS and its subscales were used to examine the menstruation symptom scale, 4. the correlation results between the scores of the Negative Impacts/Somatic Complaints subscale were used to test Criterion-related validity. The sufficiency of the sample size used in the evaluation of the scale for factor analysis was evaluated through Kaiser-Meyer-Olkin (KMO) and Bartlett tests, prior to conducting factor analysis itself. During the reliability phase of the scale; 1. the internal consistency reliability coefficient of total and subscales, 2. Spearman and Guttmann values and item-total score correlation was evaluated to test internal consistency; 3. correlation results were evaluated with Test-retest reliability analysis to test invariance-over-time. SPSS 15.0 program was used in the analysis.

Ethical aspect of research

Before the study was carried out, ethics committee approval was obtained from the ethics committee of Mehmet Akif Ersoy University where the study would be fulfilled (Decision no: GO2017/84). Written and verbal information was provided for the participants.

RESULTS

The Participants' Descriptive Characteristics

The participants' mean age and age at menarche were 20.53±1.88 and 13.64±1.24 years respectively. The majority of the participants (33.5%) were students of first class.

Validity Analysis Results

Content Validity Index

Whether the items in the scale were suitable and valid was determined by consulting the experts. For the first version of the scale, which consisted of the items in the final form, the CVI/CVC ≥0 condition was met, and the content validity was statistically significant (16). Finally, 17 items were eliminated and a 34-item draft MIS was administered to the participants.

Construct Validity

The result of the KMO test performed to determine sampling adequacy was .90. The result of Bartlett's sphericity test was 3649.0 (p<.001). These two findings denote that the sample size used in the research is sufficient and the data are suitable for factor analysis. In this research, no restrictions were placed on the number of factors and factors having an eigenvalue greater than 1.00 were included in the scale. The eigenvalue is taken into consideration while the variance explained by the factors is calculated, and the number of important factors is decided. In factor analysis, factors having an eigenvalue of 1 or greater are considered important factors (Figure 1). Starting from that point, it was decided that the number of factors in the scale could be limited to two.

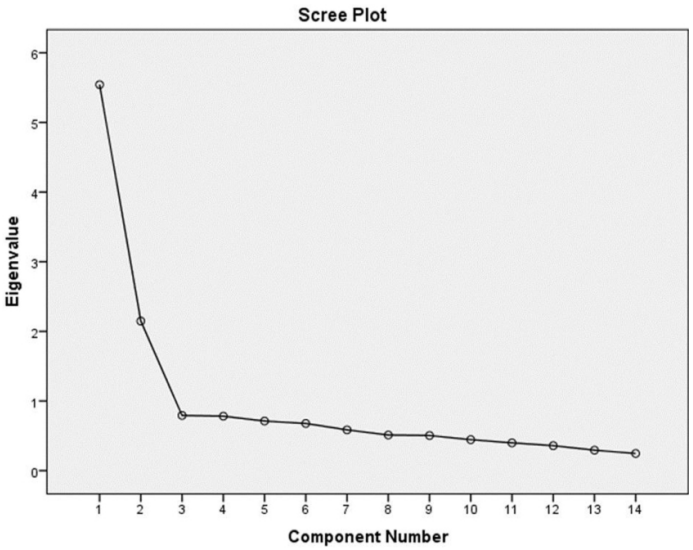

Figure 1. Scree plot of MIS

Variance Ratios Explained by the Subscales of the Menstruation Impact Scale

In Table 1, the eigenvalues of the subscales obtained after the factor analysis and the amount of variance they accounted for are presented. The sub-factor dimensions were named by examining the scale items in each factor. The first factor was named as "physical impact dimension" and the second factor as "psychosocial impact dimension" (Table 1). As seen in Table 2; while the first factor (subscale) with an eigenvalue of 5.54 accounted for 31.83% of the variance, the second factor with an eigenvalue of 2.14 accounted for 23.09% of the variance. The two factors accounted for 54.92% of the total variance.

Table 1. By Subscales of the Menstruation Impact Scale Explained Variance Ratios

Subscales	Eigen Values	Variance (%)	Cumulative Variance (%)
Physical Impact Subscale	5.54	31.83	31.83
Psychosocial Impact Subscale	2.14	23.09	54.92

Factor Loads of the Items Constituting the subscales of the Menstruation Impact Scale

The results of the three-stage factor analysis revealed that the factor loads of some items were below 0.40 or that they had high load values in both factors. Based on these criteria, 20 items (items 7, 8, 12, 13, 14, 15, 18, 20, 22, 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34) were removed from the scale and the factor analysis was performed again. After the analysis, the "Menstruation Impact Scale" consisting of 14 items and 2 subscales took its final form. After factor rotation, the physical subscale of the scale included seven items (items 1, 2, 3, 4, 5, 6, 16) and the psychosocial subscale consisted of seven items (items 9, 10, 11, 17, 19, 21, 29). As seen in Table 2; the factor loads of the items in the physical subscale vary from 0.578 to 0.844, and the factor loads of the items in the psychosocial subscale vary from 0.502 to 0.770.

Table 2. Subscales of the Menstruation Impact Scale Factor Loads for Items

Item (I) number	Common Factor Variance	Factor Loads	
		Physical Impact Subscale	Psychosocial Impact Subscale
I1	.629	.793	---
I2	.648	.788	---
I3	.380	.578	---
I4	.615	.768	---
I5	.730	.844	---
I6	.680	.801	---
I9	.596	---	.745
I10	.624	---	.770
I11	.600	---	.766
I16	.571	.711	---
I17	.524	---	.695
I19	.283	---	.502
I21	.461	---	.678
I29	.348	---	.554

Reliability Analysis Results

After the analysis performed to find out the internal consistency reliability of the Menstruation Impact Scale, the Cronbach's Alpha values for the overall MIS and it physical impact and psychosocial impact subscales were calculated as α=0.87, α=0.89 and α=0.80 respectively. Besides determining the Cronbach's Alpha coefficient, the split-half reliability coefficients obtained by dividing the items into two equivalent halves were also calculated. Accordingly, the Spearman value was calculated as r=0.77 while the Guttman value was calculated as r=0.76. For the first group, obtained from the two halves that have been formed within the estimation process of the Spearman and Guttman, the Alpha coefficient was found to be α1=0.85 while it was calculated as α2=0.76 for the second group.

The Spearman value of the physical impact subscale was calculated as r=0.86 and the Guttman value was determined as r=0.85. The alpha coefficient for the first group obtained from the two halves that have been formed within the estimation process of the Spearman and Guttman was found to be α1=0.80, while the alpha coefficient for the second group was α2=0.84.

The Spearman value of the psychosocial impact subscale was calculated as r=0.77 and the Guttman value was r=0.68. For the first group, obtained from the two halves that have been formed within the estimation process of the Spearman and Guttman, the Alpha coefficient was calculated as α1= 0.80, and the alpha coefficient for the second group was α2=0.70 as well.

Findings obtained via the Item Analysis of the Menstruation Impact Scale (Item-Total, Item-Remaining, and Distinctiveness)

As also seen in Table 3, the results of the "Pearson Multiplication Momentum Correlation Analysis" performed for item-total and item-remaining correlations demonstrated that the relationship between all the items in the inventory and the total score was statistically significant at the p<.001 level. Additionally, the results of the "independent group t-test" administered to find out the distinctiveness of the items demonstrated that the difference between the averages of the lower and upper groups for all the items was statistically significant at the p<.001 level.

Table 3. Item Analysis Results for the Menstruation Impact Scale (Item Remaining, Item Total, Item Discrimination)

Item (I) number	Item remaining		Item total		Item discrimination		
	r	p	r	p	t	SD	p
I1	.869	0.000	.537	0.000	15.88	330	0.000
I2	.864	0.000	.638	0.000	23.35	330	0.000
I3	.870	0.000	.504	0.000	15.78	330	0.000
I4	.865	0.000	.615	0.000	21.08	330	0.000
I5	.863	0.000	.656	0.000	22.45	330	0.000
I6	.863	0.000	.670	0.000	24.18	330	0.000
I9	.868	0.000	.550	0.000	20.01	330	0.000
I10	.868	0.000	.549	0.000	19.00	330	0.000
I11	.871	0.000	.501	0.000	16.72	330	0.000
I16	.864	0.000	.633	0.000	19.83	330	0.000
I17	.870	0.000	.520	0.000	15.92	330	0.000
I19	.874	0.000	.427	0.000	11.87	330	0.000
I21	.877	0.000	.390	0.000	12.78	330	0.000
I29	.874	0.000	.431	0.000	11.72	330	0.000

Another dimension of the reliability study in the scale adaptation study is to apply the adapted scale to the same group in a certain time interval (between the 2nd and 4th weeks) and to review the relationship.between. them by using the "Pearson Product Moments Correlation"

coefficient technique (17). For this purpose, the same test was administered twice at an interval of two weeks and the outcomes of the statistical operations on the results obtained are as seen in table 4.

Test-Retest Results Based on General and Subscales of the Menstruation Impact Scale

The analysis of the relationship between the results of the first and second administrations of the Menstruation Impact Scale in Table 4 demonstrated that the relationship was r=0.987 p<.001 for the overall Menstruation Impact Scale, r=0.987 p<.001 for the physical subscale and r=0.983, p<.001 for the psychosocial dimension.

Correlation Results between General and Subscale Scores of Menstruation Impact Scale and those of Menstruation Symptom Scale

A moderate and significant positive linear relationship was determined between the scores for the overall Menstruation Impact Scale, and the scores for the negative effect/somatic complaint subscale of the Menstruation Symptom Questionnaire (r=0.341, p<.001).

Table 4. Test-Re-Test Results Based on General and Subscales of the Menstruation Impact Scale

	Variables	First Evaluation					
		Menstruation Impact Scale Total Score		Physical Impact Subscale Total Score		Psychosocial Impact Subscale Total Score	
		r	p	r	p	r	p
Second Evaluation	Menstruation Impact Scale Total Score	.987	.000	***	***	***	***
	Physical Impact Subscale Total Score	***	***	.987	.000	***	***
	Psychosocial Impact Subscale Total Score	***	***	***	***	.983	.000

DISCUSSION

As a result of the study, the 14-item structure of MIS, together with its physical and psychosocial subscales, was found to be valid and reliable. Likewise, Test-retest reliability, parallel form reliability and internal consistency values were at acceptable levels. To confirm the content validity of the MIS, a detailed outline is created containing the dimensions of the feature to be examined. In the next process, the researcher should determine how the items covering the feature to be examined should be formed, their content and structure (18). In line with the literature, the scope and content structure of the items to be included in the draft scale were determined, and 51 items were obtained prior to consulting the expert opinion during the MIS development phase. In the first stage of the validity study of the scale, the content validity was examined. Within the scope, the relevance/validity levels of the items in the scale were determined by consulting the field experts' opinions. Experts were asked to evaluate each item and convey correction suggestions if any. Those that were found to be statistically insignificant among the CVRs obtained for the items were eliminated. The Content Validity Index (CVI) was calculated by averaging the total CVRs of these items (16). As the result, 17 items out of 51 were removed from the scale, and the process continued with the remaining 34 items.

Factor analysis in the scale and the suitability of the data are evaluated through Kaiser Meyer Olkin (KMO) and Barlett tests. With KMO, whether the distribution is suitable for factor analysis or not is checked. KMO value above 0.60 is accepted (19, 20). The KMO value for the MIS is 0.90, which suggests that the sample size is adequate for the factor analysis. It is tested with the Barlett test that the data come from the multivariate and normal distribution. Along with the Barlett test, the hypothesis that the "correlation matrix is equal to the unit matrix" is tested. Due to the rejection of the hypothesis, it is understood that the correlation between the variables is different from 1.00, which means that the concept we measure is multivariate in the universe parameter. The higher the result of the Bartlett's test is, the more likely it is to be significant (19,20). Bartlett's test value of the MIS was determined as 3649.0 (p<.001). This result indicates that the data are suitable for the factor analysis.

Exploratory factor analysis was performed to confirm the construct validity of the scale and the "Varimax Rotation Method" was used. One of the most commonly used statistical methods, to ensure construct validity in validity-reliability studies, is factor analysis. The Eigenvalue is used to determine the factors during exploratory factor analysis. Factors whose eigenvalue is ≥1 are used (21, 22)). The eigenvalue is taken into consideration while the variance explained by the factors is calculated, and the number of important factors is decided. In factor analysis, factors whose eigenvalue is ≥1 are considered important. In the present study, the eigenvalue was assumed as 1.00, and six factors were determined. When the eigenvalue line graph of the factors given in Figure 1 is examined, a breakpoint is seen in the second factor and a smooth distribution is observed after this point in the graph. Here, it was decided that the number of factors in the scale could be limited to two. As demonstrated in table 2, the first factor with an

eigenvalue of 5.54 accounted for 31.83% of the variance, and the second factor with an eigenvalue of 2.14 accounted for 23.09% of the variance. The two factors accounted for 54.92% of the total variance. It has been reported in the literature that the total explained variance should be at least 40% during the scale development phase. As this value gets higher, the strength of the factor structure increases as well (23). In this case, it has been assumed that the total variance value explained MIS had a strong factor structure. The factor loading value explains the relationship between the items and the subscales. According to the literature, factor loadings ranging from 0.30 to 0.40 can be taken as the lower cut-off point in factor pattern formation. If an item is included in more than one factor, the item is transferred to one having a higher loading value. But in such a case, there should be a difference greater than 0.10 between the two loading values. In this study, 0.40 was accepted as the lower cut-off point (19). The review of the results of the three-stage factor analysis demonstrated that the factor loading value of some items was below 0.40 or they had high loading values in both factors and the difference was smaller than .10. Based on these criteria, 20 items (items 7, 8, 12, 13, 14, 15, 18, 20, 22, 23, 24, 25, 26, 27, 28, 30, 31, 32, 33, 34) were deleted and the factor analysis was performed again. After the analysis, the "Menstruation Impact Scale" including two subscales and 14 items took its final form. After factor rotation, the first subscale of the scale included seven items (items 1, 2, 3, 4, 5, 6, 16) and the second subscale, the psychosocial dimension, included seven items (items 9, 10, 11, 17, 19, 21, 29).

Internal consistency, which is used to test the reliability of the scale, is checked in Likert-type scales by using the Cronbach alpha coefficient for the overall MIS and its subscales. A high Cronbach's alpha coefficient indicates that the items in the scale are inter-consistent and that they measure the same variable, whatever the variable being measured (24). The accepted lower limit of the Cronbach alpha coefficient is 0.60 (22). Again, Spearman and Guttman values are also checked in the calculation of the reliability coefficient. These values are called "internal consistency coefficients." Reliability coefficients should be above 0.60 (25, 26). Dealing with MIS, the Cronbach alpha coefficients obtained from the factors and the sum of the scale, the Spearman and Guttman values were all greater than the lower limit of 0.60. These results showed that the items in the subscales were inter-related, and the subscales consisted of the items which evaluate the same feature. Another way to calculate internal consistency is to perform "discriminant analysis" through the calculation of the "item-total score and item-remaining correlations". "Item-total correlation" is based on investigating the relationship between the score obtained from each test item (variance of each test item) and the total score obtained from the test. As usually accepted in the literature; 1. if the corrected "item-total correlation coefficient" is .30 and above, then the item is an agreeable one, 2. if the same coefficient has a value between 0.20 and 0.30 then the item can be included in the measurement tool, 3. if the coefficient is below 0.20 then the item should be removed from the measurement tool (27,28). As for the item-remaining correlation, the relationship between the score obtained from a certain item and the score obtained from the entire test in the exclusion of that item is examined. The way to calculate the discrimination analysis is to perform the value discrimination of the scale and the t-test analysis which is used for unrelated groups. The higher the scale value coefficient, the more distinctive value the relevant item has. Moving into the t-test, the distinctiveness is determined not by how big the t coefficient (critical ratio) is, but by the high level of significance (24). Within this scope, item-total, item-remaining and discrimination analysis were fulfilled to calculate the internal consistency of the Menstruation Impact Scale. The results of the "Pearson Product Moment Correlation" analysis performed for item-total and item-remaining correlations indicate a statistically significant relationship between all the items in the inventory and the total score at the p<.001 level. In addition, the results of the independent group t-test performed to determine the distinctiveness of the items indicate that the difference between the averages of the lower and upper groups for all the items was statistically significant at the p<.001 level. The results confirm that the items are distinctive in terms of the feature they measure and that each item is in the same structure. Based on these results, we concluded that all the items were reliable.

In the adaptation study of the MIS, another dimension of the reliability study is to administer the adapted scale to the same group at a certain interval (between the 2nd and 4th weeks) and to investigate the relationship between them using the "Pearson Product Moments Correlation coefficient" technique. In other words, it is the coefficient of correlation between the previous and subsequent measurements. This technique, which is the most applied one in practice, is more commonly known as the "test-retest" technique (17). The analysis of the relationship between the results of the first and second administration of the Menstruation Impact Scale in terms of the overall score demonstrates a statistically significant relationship at the level of (1) r=0.987, p<.001 for the relationship between the first and second administrations of the Menstruation Impact Scale, (2) r=0.987, p<.001 for the relationship between the first subscale and first-and-second administrations, (3) r=0.983, p<.001 for the relationship between the second subscale and first-and-second administrations.

In equivalent scale validity a moderate and significant positive linear relationship was determined between the scores for the overall Menstruation Impact Scale, and the scores for the negative effect/somatic complaint subscale of the Menstruation Symptom Questionnaire (r=0.341, p <.001). According to this result, as the general scores of the MIS increase, the negative effects/somatic complaints subscale scores of the MSQ also increase. "Convergent-divergent validity" is based on the assumption that the scale's dimension score, which concerns a certain area, is

highly correlated with the same dimension of another similar scale, which is claimed to question the same concept, or with some other parameters that show the same thing (29). Since there is no other scale that measures exactly the same feature here, the subscale of Negative effects/somatic complaints in the MSQ was chosen as a similar scale. Negative effects/somatic complaints" subscale is similar to MIS although it does not measure the same feature. In this case, a moderate correlation between MIS and Negative effects/somatic complaints subscale was thought to be an expected result.

Limitations

The reliability and validity study of the MIS was conducted only in Turkish. The validity and reliability of the MIS should be tested in different cultures and introduced to the literature.

CONCLUSION

The measurement tool developed to measure the effects of menstruation in this methodological study is considered as a valid and reliable tool. The MIS is a short, practical and easy-to-apply scale. Our findings show that menstruation affects women's lives both physically and psychosocially. We expect that this scale we developed adds a novelty to the literature since no other measurement tool measures the effects of specific menstruation on women's life, independent of dysmenorrhea and premenstrual syndrome. In future studies, conducting descriptive studies to investigate the relationship between the effects of menstruation with many concepts such as anxiety, depression, personality traits, sexual attitude, gender and introducing them to the literature is of great importance. More importantly, randomized controlled experimental studies such as psychoeducational practices to reduce the effects of menstruation may be valuable in terms of bringing evidence-based practices to the literature.

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Conflict of Interest: *The authors declare that they have no competing interest.*

Ethical approval: *Ethics committee approval with protocol number GO 2017/84 was obtained from ethics committee of Mehmet Akif Ersoy University Turkey.*

MIS (The Menstrual Impact Scale)

Physical impact subscale

1. I get restricted in my physical activities when I am on my period.
2. I avoid staying out long when I am on my period.
3. I try not to wear tight clothes when I am on my period.
4. I avoid activities such as running that require physical effort when I am on my period.
5. I cannot perform my daily routine activities as easily as usual when I am on my period.
6. I have difficulty participating in social activities when I am on my period.
7. My period may prevent me from being physically active.

Psychosocial Impact subscale

8. It is embarrassing for me if people around me realize I am on my period.
9. I try to hide that I am on my period.
10. I do not want my male friends to know that I am on my period.
11. I hesitate to tell the people around me that I am on my period.
12. I feel sluggish when I am on my period.
13. I hesitate to purchase menstrual pads/bumpers.
14. When I need to change my menstrual pad, I carry it in a way that those around me will not see it.

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