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Turkish Adaptation, Validity, and Reliability Study of the Menstrual Distress Questionnaire

Menstrual Sıkıntı Ölçeği'nin Türkçe Adaptasyonu, Geçerlik ve Güvenirlik Çalışması

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Abstract: Objective: This study aims to adapt MEDI-Q, which evaluates the problems women experience during menstruation in a versatile and objective manner, into Turkish. Methods: A total of 686 women individuals with regular menstrual cycles (23-38 days) aged 18 and above were included in this cross-sectional descriptive study. Descriptive characteristics of the participants, items of the MEDI-Q and Menstrual Symptom Questionnaire (MSQ) were queried using the "Google forms" tool. Results: The average age of the participants was 25.23±7.62 years, and their average menarcheal age was 13.36±1.99 years. The mean scores for "MEDI-Q Total," "MEDI-Q MS Total," "MEDI-Q MSD," and "MEDI-Q MESI" of the participants were found to be 25.91±22.22, 9.62±6.45, 2.22±1.17, and 0.51±0.37, respectively. MEDI-Q sections A, B, C, and D showed high internal consistency (Cronbach's=0.89-0.93). there was a moderate positive correlation between MSQ Total and MEDI-Q Total (r=0.51; p<0.001). Conclusions: The results obtained from this study show that the validity and reliability findings of MEDI-Q in Turkish are sufficient and that it can be used in the evaluation of menstruation-related symptoms and disorders in Turkish women. Conducting new studies with women from diverse lifestyles and cultural backgrounds is expected to enhance the validity and reliability of the Turkish version of the scale.
Keywords: Menstruation, Menstrual cycle, Pain, Validity, Reliability.

Öz: Amaç: Bu çalışma, kadınların menstruasyon döneminde yaşadığı sorunları çok yönlü ve objektif bir şekilde değerlendiren MEDI-Q'nun Türkçe'ye uyarlanmasını amaçlamaktadır. Gereç ve Yöntem: Kesitsel tanımlayıcı tipte olan bu çalışmaya 18 yaş ve üzeri, düzenli adet döngüsü (23-38 gün) olan 686 kadın birey dahil edildi. Katılımcıların tanımlayıcı özellikleri olan MEDI-Q ve Menstruasyon Semptom Ölçeği'nin (MSÖ) maddeleri "Google forms" aracı kullanılarak sorgulandı. Bulgular: Katılımcıların ortalama yaşı 25,23±7,62, ortalama menarş yaşı ise 13,36±1,99 idi. Katılımcıların "MEDI-Q Toplam", "MEDI-Q MS Toplam", "MEDI-Q MSD" ve "MEDI-Q MESI" puan ortalamaları sırasıyla 25,91±22,22, 9,62±6,45, 2.22±1.17, 0,51±0,37 olarak bulundu. MEDI-Q A, B, C ve D bölümleri yüksek iç tutarlılık gösterdi (Cronbach=0,89-0,93). MSQ Toplamı ile MEDI-Q Toplamı arasında orta düzeyde pozitif korelasyon vardı (r=0,51; p<0,001). Sonuç: Bu çalışmadan elde edilen sonuçlar, MEDI-Q'nun Türkçe geçerlik ve güvenirlik bulgularının yeterli olduğunu ve Türk kadınlarında menstruasyona bağlı semptom ve bozuklukların değerlendirilmesinde kullanılabileceğini göstermektedir. Farklı yaşam tarzlarına ve kültürlere sahip kadınlarla yeni çalışmalar yapılmasının ölçeğin Türkçe geçerlik ve güvenirliğini artırması beklenmektedir.
Anahtar Kelimeler: Menstruasyon, Menstrual döngü, Ağrı, Geçerlilik, Güvenilirlik.

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Introduction

Menstruation is a significant process characterized by recurring variations in estrogen and progesterone levels, which manifest in various physical and emotional effects in women. While the normal menstrual cycle averages around 28 days, it varies between individuals and cycles, ranging from 23 to 38 days. These recurring cycles, which typically commence in early adolescence (11-13 years), cease around the average age of 50 with menopause (Reilly, 2000). The menstrual phase begins with shedding the endometrial layer, resulting in bleeding, usually lasting 4 to 6 days. The subsequent 7-14 day period constitutes the follicular or proliferative phase, culminating in ovulation. Finally, the luteal phase encompasses days 15-28 (Farage et al., 2009; Itriyeva, 2022).

During the menstrual cycle, fluctuations in the levels of estradiol and progesterone hormones have a certain degree of impact on the musculoskeletal, cardiovascular, gastrointestinal systems, and central nervous systems (Baerwald, Adams, and Pierson, 2012). This cycle significantly affects women's physical and psychological health (Sundström Poromaa and Gingnell, 2014). According to the results of a large cross-sectional study including women aged 15-45, dysmenorrhea (85%), psychological complaints (77%), and fatigue (71%) were ranked as the most common distresses reported by participants. Nearly half of the women participating in the study reported that they could not carry out their daily activities during their menstrual period. Heavy bleeding and pain are commonly observed during this cycle, leading to work loss (Schoep, Nieboer, and van der Zanden, 2019). Evaluation of menstrual distress is essential, especially in women with chronic heavy menstrual bleeding or complaints of dysmenorrhea, to determine the risk of developing various pathologies associated with menstruation, such as endometriosis, adenomyosis, and uterine fibroids (Maqbool et al., 2021).

Various tools have been created to assess symptoms and impacts related to menstruation. However, these measurement tools have been reported to have specific deficiencies and limitations (Haywood et al., 2002). Recently, the Menstrual Distress Questionnaire (MEDI-Q), developed by Vannuccini et al. (2021), is a measurement tool that assesses menstrual symptoms from a broad perspective. Unlike other scales, the scale's strengths have been reported to include assessing the quality of life across all areas, such as work, social life, and pleasurable activities (Cassioli et al., 2023). There is no Turkish adaptation of the developed English version of the scale. A limited number of internationally available Turkish scales comprehensively assess menstrual symptoms. Therefore, our study aims to adapt the MEDI-Q to Turkish.

Methods

A total of 686 women individuals with regular menstrual cycles (23-38 days) aged 18 and above were included in this cross-sectional descriptive study (Figure 1). The characteristics of the women in the sample are presented in Table 1. Women with mental health problems severe enough to prevent them from providing the required information, those receiving medical treatment for menstruation every month, pregnant or breastfeeding individuals, those with any metabolic or neurological diseases, those receiving hormone therapy, and those undergoing psychiatric treatment were not included in the study. The Non-Interventional Clinical Research Ethics Committee at Karabuk University gave its approval to this study (6 December 2023, 2023/1531. Every volunteer who joined the study gave their informed consent, and the research was carried out in compliance with the Helsinki Declaration's tenets. When adapting a scale from one culture to another, a sample size of at least five to ten times the total number of scale items should be used[11]. In this study, 686 women were included in the 25-item scale. Descriptive characteristics of the participants, items of the MEDI-Q and Menstrual Symptom Questionnaire (MSQ), were queried using the "Google forms" tool.

Table 1: Descriptive Characteristics of Participants (n=686)

Characteristics	**Frequency (n)**	**Percentage (%)**
Menstruation frequency		
Less than 21 days	61	8.9
21-35 days	591	86.2
More than 35 days	34	5
Menstrual period (days)		
Less than 2 days	3	0.4
2-7 days	607	88.5
More than 7 days	76	11.1
	Mean	**SD**
Age (years)	25.23	7.62
Age at menarche (years)	13.36	1.99

n: Frequency, %: Percentage, SD: Standard Deviation

Menstrual Distress Questionnaire

The initial version of the scale was developed in 2021 by Vannuccini et al. to assess the distress related to menstruation in Italian women comprehensively. The 25 items on the scale address a variety of symptoms associated with menstruation, such as pain, discomfort, changes in mood or cognition, and digestive issues. MEDI-Q thoroughly assesses symptoms in multiple menstrual domains and inquires about the effects of these symptoms on everyday activities, employment, and social interactions. Taking symptom frequency into account, the scale

evaluates the impact of symptoms during the menstrual phase in comparison to the intermenstrual or premenstrual phases. Both the Italian (Cronbach's alpha = 0.85) and English versions of the scale (Cronbach's alpha = 0.84, ICC=0.95) have shown excellent test-retest reliability and high internal consistency (Cassioli et al., 2023; Vannuccini et al., 2021).

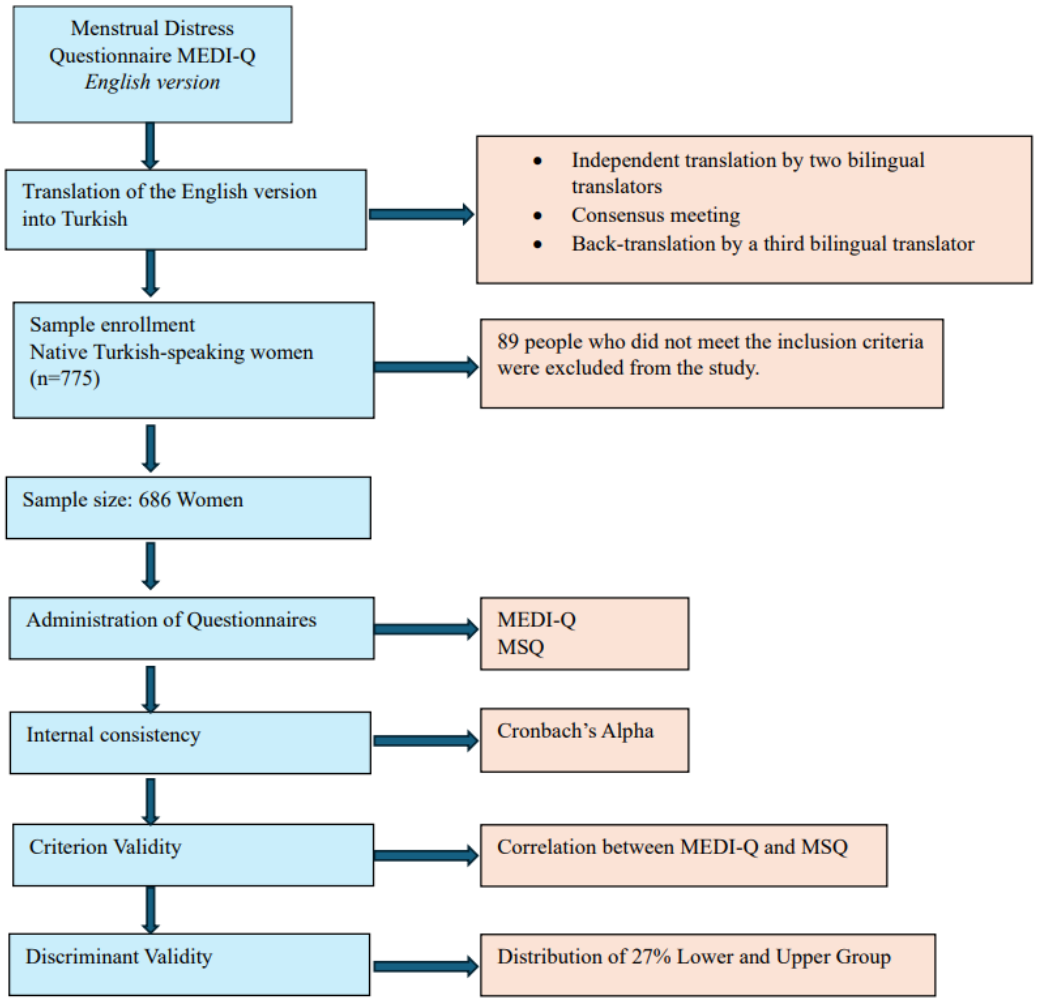

Figure 1. Flowchart of the Study.

Menstrual Symptom Questionnaire

The MSQ was developed by Chesney and Tasto in 1975 to assess menstrual pain and symptoms. Its usability for adolescents was re-evaluated by Negriff et al. in 2009. The MSQ was adapted into Turkish by Güvenc et al. (2014). The scale, consisting of 22 items, is rated on a five-point Likert scale. The MSS comprises three sub-parameters: "Negative Effects Somatic Complaints," "Pain Symptoms," and "Coping Methods." The Cronbach's Alpha value of the

scale is 0.86. A rise in the average score of the sub-parameters signifies a heightened severity of menstruation symptoms linked to that parameter.

Statistical Analysis

The study's data were analyzed using the "IBM SPSS v.22" statistical program (IBM Corp., Armonk, NY, USA). Descriptive statistics of the data were presented as n (%) and mean ± standard deviation. The reliability of MEDI-Q was evaluated using Cronbach's Alpha coefficient. Values of 0.80 and above for Cronbach's Alpha are considered highly reliable. The discriminative ability of the scale between the lower 27% and upper 27% groups was analyzed using an independent t-test. The relationship between MEDI-Q and MSQ items was examined using Pearson correlation analysis to determine criterion validity. A statistical significance level of $p < 0.05$ was considered.

Results

Descriptive Characteristics of Participants

The participants' mean age and menarcheal age were 25.23±7.62 and 13.36±1.99 years, respectively. It was observed that 8.9% of the participants experienced menstruation less frequently than every 21 days, while 5% experienced it more frequently than every 35 days. Regarding the duration of menstrual bleeding, it was determined that 0.4% of the participants had a duration of less than two days, and 11.1% had a duration of more than seven days (Table 1). The mean scores for "MEDI-Q Total," "MEDI-Q MS Total," "MEDI-Q MSD," and "MEDI-Q MESI" of the participants were found to be 25.91±22.22, 9.62±6.45, 2.22±1.17, and 0.51±0.37, respectively (Table 2).

Table 2: Participants' MEDI-Q Average Scores (n=686)

	Mean ± SD	**Min-Max**	**MEDI-Q Min-Max**
MEDI-Q Total	25.91±22.22	0-98	0-125
MEDI-Q MS Total	9.62±6.45	0-24	0-25
MEDI-Q MSD	2.22±1.17	0-5	0-5
MEDI-Q MESI	0.51±0.37	0-1	0-1

SD: Standard Deviation, MEDI-Q: Menstrual Distress Questionnaire, MS: Menstrual Symptoms MSD: Menstrual Symptoms Distress, MESI: Menstrual Specificity Index

Reliability

The scale's internal consistency was evaluated using Cronbach's Alpha coefficient. MEDI-Q sections A, B, C, and D demonstrated high internal consistency (Cronbach's=0.89-0.93). The values for the internal consistency reliability coefficient are presented in Table 3.

Table 3: Reliability Coefficients

	Cronbach Alpha
MEDI-Q-A	0,893
MEDI-Q-B	0,925
MEDI-Q-C	0,927
MEDI-Q-D	0,936

MEDI-Q: Menstrual Distress Questionnaire

Criterion Validity

The relationship between the items of MEDI-Q and MSS was examined using Pearson correlation analysis, and the results are presented in Table 4. According to the correlation analysis results between MEDI-Q Total, MEDI-Q MS Total, MEDI-Q MSD, MEDI-Q MESI, MSQ Total, Negative Effects/Somatic Complaints, Pain Symptoms, Coping Methods scores; there was a moderate positive correlation between MSQ Total and MEDI-Q Total ($r=0.51$; $p<0.001$), a weak positive correlation between MSQ Total and MEDI-Q MS Total ($r=0.44$; $p<0.001$), a weak positive correlation between MSQ Total and MEDI-Q MSD ($r=0.45$ $p<0.001$), a very weak negative correlation between MSQ Total and MEDI-Q MESI ($r=-0.09$; $p=0.015$), a weak positive correlation between Negative Effects/Somatic Complaints and MEDI-Q Total ($r=0.47$; $p<0.001$), a weak positive correlation between Negative Effects Somatic Complaints and MEDI-Q MS Total ($r=0.40$; $p<0.001$), a weak positive correlation between Negative Effects/Somatic Complaints and MEDI-Q MSD ($r=0.39$; $p<0.001$), a very weak negative correlation between Negative Effects/Somatic Complaints and MEDI-Q MESI ($r=-0.16$; $p<0.001$), a weak positive correlation between Pain Symptoms and MEDI-Q Total ($r=0.42$; $p<0.001$), a weak positive correlation between Pain Symptoms and MEDI-Q MS Total ($r=0.37$; $p<0.001$), a weak positive correlation between Pain Symptoms and MEDI-Q MSD ($r=0.42$; $p<0.001$), a weak positive correlation between Coping Methods and MEDI-Q Total ($r=0.41$; $p<0.001$), a weak positive correlation between Coping Methods and MEDI-Q MS Total ($r=0.34$; $p<0.001$), and a weak positive correlation between Coping Methods and MEDI-Q MSD ($r=0.36$; $p<0.001$) was found. According to these findings, we conclude that the MEDI-Q scale demonstrates criterion validity.

Table 4: Correlation Analysis Between MEDI-Q and MSQ Scores

		MEDI-Q Total	MEDI-Q MS Total	MEDI-Q MSD	MEDI-Q MESI
MSQ Total	r	0.51	0.44	0.45	-0.09
	p	<0.001	<0.001	<0.001	0.015
MSQ Sub-Dimensions					
Negative Effects/Somatic Complaints	r	0.47	0.40	0.39	-0.16
	p	<0.001	<0.001	<0,001	<0.001
Pain Symptoms	r	0.42	0.37	0.42	-0.00
	p	<0.001	<0.001	<0.001	0.942
Coping Methods	r	0.41	0.34	0.36	0.03
	p	<0.001	<0.001	<0.001	0.384

MEDI-Q: Menstrual Distress Questionnaire, MSQ: Menstrual Symptom Questionnaire MS: Menstrual Symptoms, MSD: Menstrual Symptoms Distress, MESI: Menstrual Specificity Index

Discriminant Validity

The scale is expected to clearly distinguish between the extreme groups (lower and upper 27%), as Tezbasaran (2008) outlined. The presence of differences between these two groups indicates discriminant validity. Conversely, the absence of differences between the two groups suggests that the range between the lowest and highest scores is negligible (Table 5).

Significant differences were found between the MEDI-Q's lower 27% and upper 27% groups ($p<0.05$). According to these results, it was determined that the scale provided sensitive measurements with discriminant validity.

Table 5: MEDI-Q Average Score's Distribution of 27% Lower and Upper Group

	27% Lower (n=185)		27% Upper (n=185)		t	df	p
	Mean	SD	Mean	SD			
MEDI-Q Total	2.36	2.49	56.29	13.98	-51.631	368	**<0.001**
MEDI-Q MS Total	1.60	1.76	16.67	3.47	-52.628	368	**<0.001**
MEDI-Q MSD	0.99	0.94	3.41	0.59	-29.475	368	**<0.001**
MEDI-Q MESI	0.33	0.43	0.63	0.28	-7.875	368	**<0.001**

SD: Standard Deviation, df: Degrees of freedom p: Independent t-Test, MEDI-Q: Menstrual Distress Questionnaire, MS: Menstrual Symptoms, MSD: Menstrual Symptoms Distress, MESI: Menstrual Specificity Index

Discussion

Our study showed that the validity and reliability of MEDI-Q, which we adapted into Turkish (Cronbach's = 0.89-0.93), are at a sufficient level, and it can be used to evaluate symptoms and discomfort related to menstruation in Turkish women. To reduce the adverse effects of symptoms specific to menstruation on women in terms of physical, psychological, and social aspects, it is necessary first to identify these symptoms. Various standard measurement tools are used to determine menstrual-specific symptoms and the factors affecting them (Cheng et al., 2013; Eke et al., 2011). Using international scales in different societies is

essential for comparing the results of similar international studies. Therefore, MSQ was used in the validity analysis of MEDI-Q. In adapting a scale from one culture to another, reducing the differences between the original scale and the scale in the adapted language is essential. One of the most commonly recommended methods for achieving this language standardization is translating the scale into the adapted language by experts and then translating it back into the original language (Beaton et al., 2000). In this study, translation-back translation were conducted to ensure the linguistic validity of MEDI-Q, and minor differences observed after translation were finalized through a mutual exchange of views between researchers and the translation experts. When adopting a scale from one culture to another, it is necessary to take a sample size of at least five to ten times the number of scale items (Akgul, 2005; Yurdugul, 2005). In this study, 686 female individuals were included in the 25-item scale.

The MEDI-Q considers the frequency and consequences of individual menstrual symptoms when assessing their impact on quality of life and functionality in relation to the premenstrual, intermenstrual, and menstrual phases. Unlike other scales, it does not inquire about the short-term but rather about the individual's discomfort over a long period, such as one year. Thus, the scale allows for a more accurate assessment of the daily life effects of menstruation in women with chronic menstrual cycle-related conditions. The MEDI-Q Total score in our study showed a significantly higher value than the English (12.43 ± 11.27) and Italian (14.94 ± 12.73) population studies. This finding is consistent with a meta-analysis research that found that 50.3% of university students and 66% of the general population in Turkey had premenstrual syndrome (Erbil and Yücesoy, 2023). Women with more premenstrual complaints also tend to have more menstrual discomfort. The presence of chronic illness, psychiatric disorders, health problems in the reproductive organs, dysmenorrhea, menstrual irregularities, negative beliefs about menstruation, never having been pregnant before, not using contraception, alcohol use, family history of premenstrual syndrome, and dysmenorrhea are common risk factors that increase the severity of premenstrual and menstrual symptoms (Boyacioglu et al., 2021). The severity of menstrual symptoms reduces women's quality of life by negatively affecting their self-confidence, work life and social relationships (Derya et al., 2019; Akmalı et al., 2020).

Our study found weak and moderate positive correlations between the MSQ Total and subscales evaluating menstrual symptoms and MEDI-Q Total, MS, and MSD scores for the validity analysis of MEDI-Q. Similar to the Italian and English versions, MEDI-Q's validity analysis revealed moderate positive correlations with different scales. However, our study

found a weak and negative correlation between MEDI-Q MESI and MSQ Total. MEDI-Q MESI distinguishes the participant's discomfort in the menstrual phase from the premenstrual phase.

In our study, the internal consistency of the Turkish adaptation of the scale showed a higher value than both the English (Cronbach's = 0.84, ICC=0,95) and the original version (Cronbach's = 0.85). In this study, the scale items were not questioned in a face-to-face question-answer format. This may be more effective in enabling participants to provide more comfortable and accurate answers. Compared to Western countries, women in Turkish society may hesitate to share their menstrual discomforts face-to-face with someone else (Lim, 2016). The majority of individuals participating in our study consisted mainly of university students, which might have provided an advantage in understanding the questions due to their higher level of education.

The strength of our study is that it has a rather large sample size compared to other versions. In addition, despite including different age groups in our study, it showed a younger average age compared to other versions. The menstrual discomfort and pain complaints are observed more frequently in both young and sexually inexperienced women (Kaur et al., 2015; Omidvar and Begum, 2011). This may provide an advantage in evaluating every dimension of the scale.

Conclusion

In conclusion, this study demonstrates that the Turkish version of MEDI-Q is valid and reliable at a sufficient level and can be used to evaluate symptoms and discomfort related to menstruation in Turkish women. However, the fact that MEDI-Q does not question coping strategies related to menstrual complaints can be considered a weakness of the scale. The fact that our study was conducted with women with specific sociodemographic characteristics and mainly consisted of young individuals is considered as a limitation of the research. Conducting new studies with women from diverse lifestyles and cultural backgrounds is expected to enhance the validity and reliability of the Turkish version of the scale.

Ethical Statement: The Non-Interventional Clinical Research Ethics Committee at Karabuk University gave its approval to this study (6 December 2023, 2023/1531).

Conflict of interest: The authors declare no conflicts of interest.

Author Contributions: Concept: NC; Design: NC; Data collecting or Processing: NC Analysis or Interpretation: TO; Literature Review: TO, NC; Writing: TO, NC; Critical Review: TO.

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