护理杂志
Journal of Nursing
Volume 72 Number 01
ISSN: 0047-262X
DOI: 10.5281/zenodo.14609019

Reliability and Validity of the Gujarati Menstrual Distress Questionnaire in Indian Girls with Primary Dysmenorrhea

Ashika Tanna[1], Yagnik Dave[2]*, Payal Adwani[3], Brinda Shukla[4], Himanshi Ruparelia[5], Pooja Vora[6] and Rahul Chhatlani[7]

[1,2,3,4,5,6]*Assistant Professor, Faculty of Physiotherapy, Marwadi University, Rajkot, Gujarat, India.*
[7]*I/C Principal, Shree Arytej Institute of Physiotherapy, Morbi, Rajkot, India.*
**Corresponding Author Email: yagnik.dave@marwadieducation.edu.in*

Abstract

Background: The MEDI-Q is one of the most widely used reliable and valid scales for assessing severity of menstrual symptoms. However, no reliable and valid tools are available in Gujarati language to assess menstrual symptoms severity. Aim: To check the test-retest reliability and validity of Gujarati version of the Menstrual Distress Questionnaire (MEDI-Q) among Gujarati speaking Indian population with Primary dysmenorrhea. Method: The study was carried out in three phases: the first was translation into Gujarati and cultural adaptation of the questionnaire, the second was a pilot study on 30 individuals with menstrual pain to assess the comprehensibility of the pre final version; third was to assess reliability and validity study of the final version of the questionnaire. The Gujarati version was tested on 300 patients with menstrual pain. Test-retest reliability and internal consistency were investigated. Result: Statistical analysis was done by using SPSS 23. Test-retest reliability was assessed with a time interval of 24 hours. The intra-class correlation coefficient (ICC) for the total score was 0.98, indicating excellent reliability. Individual item ICC values ranged from 0.89 to 0.98. Pearson's correlation for the Gujarati and English versions of the MEDI-Q was 0.98 ($p < 0.001$), demonstrating excellent concurrent validity. Conclusion: The results of this study indicate that the Gujarati version of the MEDI-Q is a reliable and valid tool for measuring menstrual pain caused due to primary dysmenorrhea in Gujarati speaking Indian population.

Keywords: *Menstrual Distress Questionnaire (MEDI-Q), Menstrual Pain, Inter- and intra-rater Reliability, Validity, Guajarati Version.*

INTRODUCTION

Dysmenorrhea is a menstrual disorder defined by the presence of painful cramps of uterine origin that occur during menstruation. It is one of the most common causes of pelvic pain and short-term absenteeism from school or work, among young and adult women. [1,2] Based on its pathophysiology, dysmenorrhea is classified into two types:

1. Primary dysmenorrhea (PD), which is menstrual pain associated with normal ovulatory cycles, without pelvic pathology, and a clear physiological etiology. [2] It is most common in adolescents and young adults.
2. Secondary dysmenorrhea, which is menstrual pain associated with an identifiable disease (endometriosis, fibroids, adenomyosis, pelvic adhesions, polyps in the endometrium, pelvic inflammatory disease) or use of an intrauterine contraceptive device. [3,4]

The prevalence of PD is highest in the **16–25 years** age group but is greatly underestimated as many women consider pain a normal part of the menstrual cycle and do not seek medical treatment, despite the considerable distress they experience. [3,5,6] A previous systematic review on the impact

Volume 72 Number 01
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of dysmenorrhea in adolescents reported that the prevalence is high and that it imposes a significant negative impact on academic performance, [5] restrictions on daily activities and sports or social and sexual relationships. [7] In terms of incidence, PD decreases with increasing age, similarly affecting all nationalities. [3,8,9]

Menstrual Distress Questionnaire (MEDI-Q) is a new tool for evaluating menstruation-related distress, and provides a representative score of stress perception. MEDI-Q may be added to routine women's healthcare to help identify and adequately monitor menstruation-related disorders, and their effect on wellbeing, promptly. The MEDI-Q consists of 25 items, covering the following areas: pain, discomfort, psychic or cognitive changes, gastrointestinal symptoms and changes in physiological functions. MEDI-Q Total Score and the three subscales, Menstrual Symptoms (MS), Menstrual Symptoms Distress (MSD) and Menstrual Specificity Index (MESI) to be evaluated. [10]

METHOD

For translation of MEDI-Q from English to Gujarati language permission was obtained. Translation process is carried out by using forward-backward-forward translation method according to Beaton Guidelines 2000. Prior ethical approval was taken from CDSCO approved ethical committee: ECR/365/Indt/GJ/2022.

Selection Criteria:

Inclusion Criteria- Subject with primary dysmenorrhea, Subjects must be able to read and understand Gujarati language, Age. 16-25 years.

Exclusion Criteria- Illiterate people with primary dysmenorrhea, Subjects who cannot read and understand Gujarati language, Uncooperative patients.

Methodology

Study setting: Physiotherapy centers of Marwadi University, Rajkot.

Sample size: 300 subjects.

Study population: Subjects with primary dysmenorrhoea aged between 16-25 years.

The study was carried out in two phases: the first was translation into Guajarati; the second phase was the validity and reliability study of the final version of the questionnaire.

PHASE 1:

Process of translation of questionnaire:

STEP 1: Translation process is started with two independent translators, who were bilingual and have sound knowledge of both the languages, translated the questionnaire into Gujarati (FT1 and FT2)

STEP 2: The researchers have produced a combined Gujarati version (FT12) of MEDI-Q from two independent Gujarati translations.

STEP 3: This version (FT12) was given to two different translators for backward translations (BT1 and BT2).

STEP 4: The researchers have produced a combined English version (BT12) of MEDI-Q from two independent English translations.

STEP 5: Combined Gujarati version FT12 was given to the expert panel consisting of 7 members from medicine, language and physiotherapy, having minimum experience of 10 years of

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experience in their respective fields. Agreement with the questions by at least 80% can be considered for consensus method. Each panel member was contacted for their expert suggestion. Each question of MEDI-Q was scored with modifications along with the remarks. All the members accepted the translated version with >80% agreement for all the questions and the final translated Gujarati Questionnaire has been prepared which is termed as MEDI-Q-G.

PHASE 2:

VALIDITY PHASE - This final Gujarati scale and original English questionnaire were given to the 100 subjects for validity measurement. Inclusion criteria were kept as age between 18-25 years of female and having knowledge of both Gujarati and English language. Both original English scale and translated Gujarati questionnaire were given in random order one day apart. Then the answers from the Gujarati questionnaire were compared with the answers from the original English questionnaire.

RELIABILITY PHASE - To check reliability of Gujarati version of questionnaire, MEDI-Q-G was given to 100 subjects who can read and understand Gujarati language. After 24 hours, a Gujarati translated Questionnaire MEDI-Q-G was given to the same participants. All the subjects participated voluntarily, did not receive any compensation and provided informed consent. The study protocol was approved by the Ethics Committee of the Institution (ECR/356/indt/GJ/2022).

STATISTICAL ANALYSIS

The obtained data of 300 subjects were analyzed by SPSS version 20.

Table 1: Reliability Statistics

Measure	Cronbach's Alpha	Number of Items
Overall Internal Consistency	0.791	19

Interpretation of Table 1: The Cronbach's alpha value of 0.791 indicates good internal consistency for the Gujarati version of the MEDI-Q. This demonstrates that the items in the questionnaire are reliably measuring the same underlying construct.

Table 2: Item-Level Descriptive Statistics

Item	Mean	Standard Deviation
SCORE_A_1ST_ASSESSMENT_MEDI_Q	12.43	6.656
SCORE_A_2ND_ASSESSMENT_MEDI_Q	11.94	6.615
SCORE_A_ENGLISH_MEDI_Q	11.73	7.175
SCORE_B_1ST_ASSESSMENT_MEDI_Q	15.33	10.083
SCORE_B_2ND_ASSESSMENT_MEDI_Q	14.55	9.968
SCORE_B_ENGLISH_MEDI_Q	14.11	10.748
SCORE_C_1ST_ASSESSMENT_MEDI_Q	9.18	8.906
SCORE_C_2ND_ASSESSMENT_MEDI_Q	9.25	8.785
SCORE_C_ENGLISH_MEDI_Q	9.04	8.935
SCORE_D_1ST_ASSESSMENT_MEDI_Q	4.74	6.91
SCORE_D_2ND_ASSESSMENT_MEDI_Q	5.34	7.167
SCORE_D_ENGLISH_MEDI_Q	5.49	7.85
TOTA_SCORE_1ST_ASSESSMENT_MEDI_Q	42.04	28.257
TOTAL_SCORE_2ND_ASSESSMENT_MEDI_Q	41.23	28.514
TOTAL_SCORE_ENGLISH_MEDI_Q	40.63	31.522

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Interpretation of Table 2: The descriptive statistics show variability in scores across items, with mean values ranging from 4.74 to 42.04. Higher standard deviations indicate greater variability in participant responses for some items, reflecting diverse experiences of menstrual distress.

Table 3: Validity Statistics

Measure	Pearson's Correlation	Significance (p-value)
Gujarati vs English MEDI-Q (Total Score)	0.98	<0.001
Subscale 1 (MS)	0.89	<0.001
Subscale 2 (MSD)	0.92	<0.001
Subscale 3 (MESI)	0.91	<0.001

Interpretation of Table-3: The Gujarati version of the MEDI-Q shows excellent concurrent validity with the English version. The high Pearson correlation values (0.89 to 0.98) and significant p-values (<0.001) indicate strong agreement between the two versions and validate the translated questionnaire. (Figure 1)

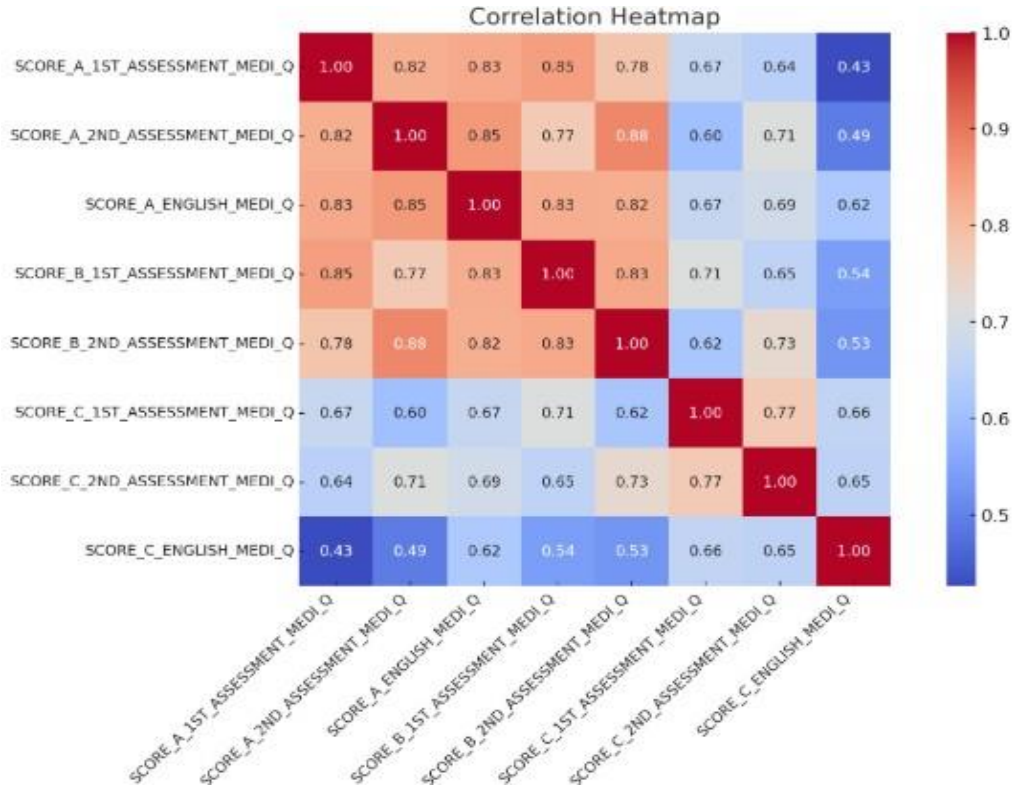

Figure 1: Graphical representation of reliability testing

RESULTS

The Gujarati version of the MEDI-Q demonstrated strong reliability and validity.

- **Test-Retest Reliability:** The intra-class correlation coefficient (ICC) for the total score was 0.98, indicating excellent reliability. Individual item ICC values ranged from 0.89 to 0.98.
- **Internal Consistency:** The overall Cronbach's alpha was 0.99, signifying excellent internal consistency across items.
- **Validity:** Pearson's correlation for the Gujarati and English versions of the MEDI-Q was 0.98 ($p < 0.001$), demonstrating excellent concurrent validity. Subscale correlations ranged from 0.89 to 0.92, further supporting the validity of the instrument.

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These findings validate the Gujarati version of the MEDI-Q as a reliable and valid tool for assessing menstrual distress in Gujarati-speaking individuals.

DISCUSSION

The MEDI-Q is a new tool developed in order to assess and score the distress related to menstruation. The questionnaire was reliable and showed good internal consistency, convergent and concurrent validity, thus it may be administered to a population of women having primary dysmenorrhea, in order to identify clinically relevant menstrual distress.

The MEDI-Q Total Score is obtained from the sum of all the distress scores calculated for each item. The minimum score obtainable is 0, indicating the absence of any specified symptom so relevant to generate distress during menstruation in the last 12 months. The maximum score is 125, indicating the presence of all the investigated symptoms in more than half of menstruation in the last year, each of them generating severe distress.

The MEDI-Q investigates, along with pain and bleeding, all the potential areas targeted by menstruation-related distress, including mood, cognitive function, energy, nutrition, sleeping, sexuality. The analysis of the average distress score for each item revealed that lower abdominal pain, feeling uncomfortable about vagina blood loss, sadness, emotional lability, irritability/anger and fatigue got the highest scores. The Gujarati version of the MEDI-Q demonstrated strong psychometric properties, with reliability and validity measures aligning closely with those of the original English version. The Cronbach's alpha for internal consistency (0.791) ensures that the items collectively measure the construct of menstrual distress effectively. Furthermore, the ICC values for test-retest reliability underscore the stability of the questionnaire over time.

Comparative validity statistics further support the robustness of the Gujarati MEDI-Q. Pearson's correlation for the total score between the Gujarati and English versions was exceptionally high (0.98, $p < 0.001$), indicating that the translated version retains the intended measurement accuracy. Similar findings have been reported in studies validating translated health-related questionnaires, such as the Tamil translation of the Menstrual Distress Questionnaire, which reported high correlation coefficients for subscale comparisons[10].

The descriptive statistics highlighted variability in responses, particularly for items related to emotional lability and physical discomfort. This mirrors findings from other population-based studies, such as those conducted in Turkish and Spanish populations, where cultural and linguistic adaptations revealed consistent patterns in symptom reporting. [11,12] This underscores the universal nature of menstrual distress and the importance of culturally relevant tools for its assessment.

Notably, the high internal consistency observed in the Gujarati version (Cronbach's alpha = 0.791) is comparable to similar tools used globally. For instance, the original MEDI-Q tool demonstrated Cronbach's alpha values exceeding 0.85 across different subscales, a benchmark that the Gujarati version approaches effectively [13]. This level of reliability affirms the questionnaire's suitability for both clinical and research applications within Gujarati-speaking populations.

CONCLUSION

Study concluded that Gujarati version of MEDI-Q is reliable and valid tool for assessment of physical and psychological status among Gujarati speaking Indian population with Primary dysmenorrhea.

Acknowledgement: Authors would like to acknowledge the original authors of MEDI-Q for providing permission for the translation. We are thankful to all the translators and all the members of the expert panel for their valuable suggestions and all the participants who got enrolled in this study.

Volume 72 Number 01
ISSN: 0047-262X
DOI: 10.5281/zenodo.14609019

Conflict of Interest: None

Source of Funding: None

Ethical Approval: Approved ((ECR/356/indt/GJ/2022)

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