ISSN- O: 2458 - 868X, ISSN–P: 2458 – 8687
Index Copernicus Value: 68 . 16
PubMed - National Library of Medicine - ID: 101731606

International Journal of Medical Science and Innovative Research (IJMSIR)
IJMSIR : A Medical Publication Hub
Available Online at: www.ijmsir.com
Volume – 5, Issue – 6, December - 2020, Page No. : 128 - 134

The Development of a Novel Marital Satisfaction Scale in Migraine (MSSM): A Pilot Study

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Citation this Article: Dr. Nitisha Goyal, Dr. Rahul Jain, Dr. Ajoy K Sodani, Dr. Dinesh Chouksey, "The Development of a Novel Marital Satisfaction Scale In Migraine (MSSM): A Pilot Study ", IJMSIR- December - 2020, Vol – 5, Issue - 6, P. No. 128 – 134.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Introduction: Migraine is more common in females across all cultures. Chronic migraine is associated with a significant negative impact on relationships. The ultimate goal of marriage is to attain marital satisfaction. Negative interactions and disagreements within the marital dyad are bound to cause marital dissatisfaction. The factors that contribute to marital satisfaction are complex and vary across different cultures.

Aim: To develop a questionnaire to determine the factors impacting marital satisfaction in married females with migraine.

Methodology: We developed a novel questionnaire 'Marital Satisfaction Scale in Migraine' (MSSM), in this pilot study. We aimed to calculate a cut-off of MSSM, to identify marital dissatisfaction in married females with migraine.

Results and Conclusion: We incorporated five domains, comprising of 27 questions in total in our questionnaire. The reliability (Cronbach's alpha (α)) for individual domains was 0.50 to 0.95. Overall, α for MSSM was found to be excellent (0.94) which clearly demonstrated the good consistency/reliability of the proposed scale intended to measure the marital satisfaction among married females with migraine. Using the receiver operating characteristics (ROC) curve, we determined a cut-off of 37 to differentiate between marital satisfaction and dissatisfaction. Females with MSSM score ≤37 points were classified as satisfied, and those with score >37 were classified as dissatisfied.

Conclusion: To the best of our knowledge, no such previous scale exists which incorporates domains of family life and headache both, for assessing marital satisfaction. It may be used as an objective tool to assess marital satisfaction and also to determine the longitudinal, dynamic, and probable causal relationship of marital satisfaction and its various domains with migraine-related disability and quality of life.

Keywords: Marital Satisfaction, Migraine, Female Migraineurs, Migraine- disability, Migraine- quality of life

Introduction

Migraine is more prominent in women in all cultures worldwide and as migraine frequency increases, the negative impact on relationships also increases.[1-4] Marital dissatisfaction is more common in women than men, in the general population, and also in females with chronic pain.[5,6]

Marital satisfaction reflects a subjective state of marital happiness, and the factors that influence or contribute to marital satisfaction are complex and may differ across cultures. [6,7]

Marriage and family are complementary to each other and when a woman enters matrimony, the adjustment demands expected of her include proficiency in home-making skills, keeping husband sexually satisfied, to earn or give up her job as required by the family, to be physically attractive and to bear children. Alongside she is also expected to make new relationships with love and affection and give up earlier relationships, desires, and aspirations for family harmony. It is said to be more prevalent in India, than other cultures. [8,9]

As the ultimate goal of marriage is to attain marital satisfaction, negative interactions and disagreements within the marital dyad are bound to cause marital dissatisfaction. Inherent problems within the marriage or family can lead to severe psychological stress and can act as an evident, or as a subconscious, unidentified trigger of migraine.

The impact of marital dissatisfaction on the quality of life of married females with migraines, especially from India is quite different from Western society and remains inadequately studied. The objectives of this pilot study included studying unique factors of married life and family dynamics impacting marital satisfaction and migraine in Indian society via a novel questionnaire developed by us. To the best of our knowledge, no such previous scale exists which incorporates domains of family life and headache both, for assessing marital satisfaction.

Materials and Methods

Study Population: This cross-sectional observational pilot study was conducted in a tertiary care teaching hospital in central India, located in the watershed of urban and rural. The minimum sample size required for the study was calculated using the formula $N= [(Z_{1-\alpha})^2 p(1-p)]/d^2$ where N is the sample size, $(Z_{1-\alpha})$ represents standard normal variate, p is expected proportion in population-based on or previous studies and d is the absolute error of precision.[10] The sample size of the pilot study was calculated to be 40.

Inclusion Criteria: All consenting married females with migraine (meeting ICHD-3 criteria) [11] aged ≥18years.

Exclusion Criteria: Patients with secondary headaches**,** divorced/separated/widowed females**,** females with same-sex marriages or females diagnosed/treated for a psychiatric illness, particularly depression in the past.

Methodology: The study was approved by the institutional ethical committee. Female patients presenting to the outpatient department of Neurology

with headaches were screened for migraine by one of the investigators {NG} and patients were enrolled in the study as per the inclusion and exclusion criteria. Written informed consent was taken in the vernacular language. Consenting and qualifying patients were enrolled in the study from 1st April 2019 till 40 patients were enrolled. Data was filled in the approved research proforma. Socio-demographic data recorded included age, religion, level of education, duration of the marriage, number and gender of children, area of residence, occupation, choice of occupation, type of marriage, and type of family.

Marital Satisfaction Scale in Migraine (MSSM): We developed this new scale to assess marital satisfaction in female migraineurs.

The patient's perception of their marital satisfaction was asked and noted as a yes/no response. Marital satisfaction was then assessed objectively using a novel questionnaire. This questionnaire was prepared in tandem with the factors relevant to Indian society, lifestyle, cultural background, expectations, and norms, and after reviewing the literature. We did not use a pre-validated scale as issues in marital life are culture-specific and vary across societies. Domains included in previous internationally validated and frequently used marital satisfaction assessment questionnaires didn't fill our requirements and additionally, had items that are not of significant importance in the Indian scenario. Hence, we developed our indigenous marital satisfaction assessment questionnaire to assess the Indian couples with migraine aptly.

We conceptualized marital satisfaction as a multi-dimensional construct, encompassing multiple domains. We included 5 domains in the proposed questionnaire with 27 items. Each item was rated on a 3-point Likert scale as 1, 2, and 3, where response 1 indicated 'strongly associated with marital satisfaction' and response 3 indicated 'strongly associated with marital dissatisfaction'. The minimum score was 27, and the maximum was 81, and a higher score was associated with a greater degree of marital dissatisfaction. It was aimed to determine a cut-off score that would allow a distinction between the presence of marital satisfaction or dissatisfaction in female migraineurs.

Data Analysis

Data was filled in an excel sheet, analyzed, and evaluated for fulfilling the objectives. Statistical software, SPSS version 17.0 Trial, was used for analysis. The prevalence of an outcome variable along with 95% Confidence Interval, was calculated. Descriptive statistics were used to depict the main features and characteristics of the collected data. Results of continuous measurements were presented on mean ± SD (min-max), and results of categorical measures were presented in numbers/percentages.

Pearson's Chi-Square test, Z-test, Spearman's rho (ρ), and one-way analysis of variance (ANOVA) were used as indicated.

The probability value, $p>0.05$, was considered as statistically insignificant, from $p<0.05$ to $p<0.02$ was regarded as statistically significant while from $p<0.01$ to $p<0.001$ was considered as statistically highly/strongly significant.

Results and Discussion

A total of 40 eligible females were included in the study. Their responses were used to determine the reliability of each of the five domains (D1 to D5) and the whole questionnaire to judge the consistency of MSSM. It is summarized and depicted in Table1.

Table 1: Reliability of MSSM (to assess marital satisfaction among married females with migraine)

Marital Satisfaction Scale in Migraine (MSSM)		Number of Proposed Items (Questions)	Cronbach's Alpha
Domain	Title		
D1	Relationship with Husband	7	0.91
D2	Issues About In-Laws/Husband's Family	5	0.95
D3	Children Related Issues	4	0.50
D4	Issues About Job and Finances	7	0.82
D5	Effect of Headache on Marital Life	4	0.67
Total	MSSM	27	0.94

The pilot study found that the reliability (Cronbach's alpha (α)) for domain 1 (D1- relationship with husband) and domain 2 (D2- issues about in-laws/husband's family) which comprised of seven and five items (questions) respectively, was excellent (0.91 and 0.95). The reliability for domain 4 (D4- issues about job and finances) comprising of seven items (questions) was found to be good (0.82) and that of domain 5 (D5- effect of headache on marital life) comprising of four items (questions) was acceptable (0.67).

However, the reliability of domain 3 (D3- children related issues), which comprised of four items (questions) was found to be poor (0.50) which may be attributed to the fact that 2 of the patients included in the pilot study didn't have children and hence, didn't answer the questions in that domain.

Overall, α for MSSM was found to be excellent (0.94) which clearly demonstrated the good consistency/reliability of the proposed scale intended to measure the marital satisfaction among married females with migraine.

We attempted to calculate a cut-off point of marital satisfaction using the score of MSSM. For this, we subtracted 2×standard deviation (SD) from the mean with the assumption of normality i.e. the chance of MSSM score coming outside this interval will be less than 5%. However, the distribution of the MSSM score rejected the condition of normality due to a high SD (10.56) and a relative SD (27.21%). Table 2 mentions the summary statistics of MSSM.

Table 2: Summary statistics of MSSM to observe the cut-off level of marital satisfaction

Total Score of MSSM (N=268)	Summary value
Lowest value	27.00
Highest value	66.00
Arithmetic mean	38.79
95% CI for the mean	37.52 to 40.06
Median	35.00
95% CI for the median	33.00 to 37.53
Standard deviation	10.56
Relative standard deviation	0.2721 (27.21%)
Standard error of the mean	0.64
D'Agostino-Pearson test for Normal distribution	Reject Normality

Henceforth, the cut-off point of marital satisfaction was calculated by subtracting 2×standard error of mean from the mean with the assumption that the chance of

MSSM scores coming outside this interval will be less than 5%, was 37.51 points.

If a subject had an MSSM score <37.51 on MSSM, she was considered to have marital satisfaction. However, to avoid fractions the cut-off point of 37.51 was equivalently considered as 37.00 points and was further verified using the receiver operating characteristics (ROC) curve (cut-off =37) with diagnostic performances.

Table 3: The area under the curve (AUC) of Score of MSSM and Diagnostic performances of test variable(s)

Area Under Curve (AUC) with CI					
Marital Satisfaction Predictor(s)	AUC	Standard Error	p-value	95% Confidence Interval	
				LB	UB
Score of MSSM	0.97	0.009	<0.0001 #	0.943	0.988

Diagnostic Performances of Test Variable(s)					
Test Variable(s)	Cut-off Point	Sensitivity	Specificity	PPV	NPV
Score of MSSM	*≤37 points*	95.86%	91.06%	92.7%	94.9%

The Area under the curve is highly significant at the 0.0001 level of significance. [Std. Error-Standard Error; LB-Lower Bound, UB-Upper Bound; CI-Confidence Interval; PPV-Positive Predictive Value; NPV-Negative Predictive Value]

Table 3 highlights the ROC curves used to summarize the accuracy of prediction of the perception of married females with migraine about marital satisfaction (yes/no) with a 95% confidence interval (CI) of the area under the curve (AUC) using the score of MSSM. Sensitivity, specificity, positive predictive values (PPV), and negative predictive value (NPV) with criteria of test variable(s) that observed predictor of marital satisfaction (yes/no) are also shown in the table. The cut-off point to classify the cohort into marital satisfaction and marital dissatisfaction was identified by selecting specific sensitivity which was very close to optimal sensitivity with the respective specificity of the score of MSSM.

The ROC curve shows the trade-off between sensitivity and specificity detected the performance of a developed test parameter which classifies cases into two categories (marital satisfaction and marital dissatisfaction). The closer the curve follows the left-hand border and then the top border of the ROC space, the more accurate the test parameter. Accuracy is measured by the area under the ROC curve. An area of 1 (one) represents a perfect test while an area of 0.5 represents a worthless test.

The AUC for the score of MSSM (0.97) was found to be significantly ($p<0.0001$) high in classifying the cohort into marital satisfaction and marital dissatisfaction groups (as can be seen in figure 1). The score of MSSM (≤37 points) of married females with migraine was found to be highly significant ($p<0.001$) predictor of marital satisfaction. Henceforth, the cut-off point of 37 for marital satisfaction in female migraineurs was re-verified and **females with MSSM score ≤37 points were classified as females with**

marital satisfaction (FMS), and those with score >37 were classified as females with marital dissatisfaction (FMD).

Diagnostic accuracy of test variable(s) to predict the score of happily married life (marital satisfaction) of married females with migraine using sensitivity, specificity, PPV and NPV indicated that the score of MSSM noted with specific sensitivity which was very close to optimal sensitivity (≤37 points on MSSM) of 95.86% with a specificity of 91.06%. NPV of the score of MSSM was greater (94.90%) than PPV (92.70%)

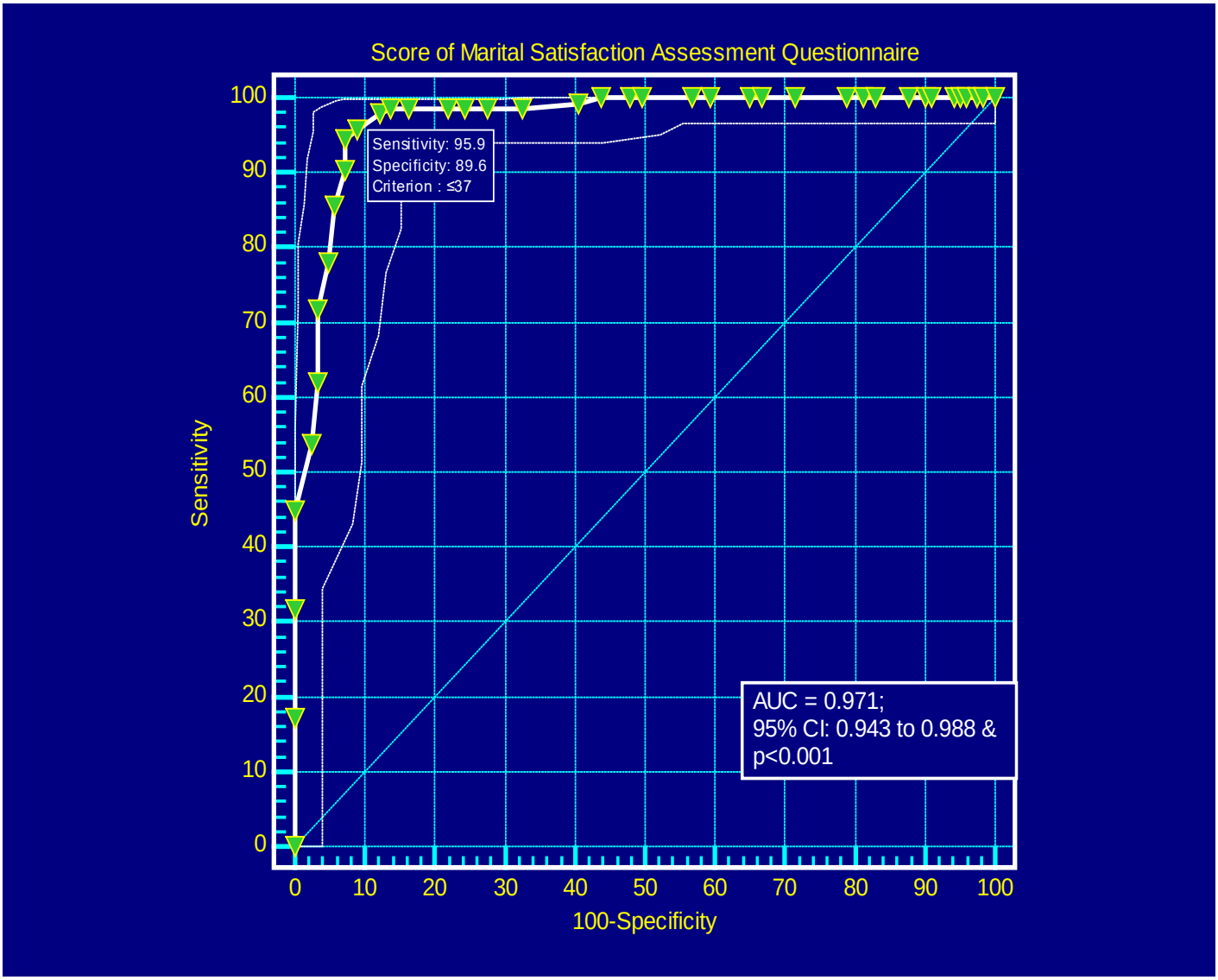

Figure 1: ROC curve shows the relationship between sensitivity and specificity of the score of MSSM of married females with migraine for possible cut-offs to differentiate between marital satisfaction and marital dissatisfaction.

We have incorporated many culturally important and relevant domains affecting marital satisfaction in our novel questionnaire, including the relationship with husband, in-laws, children, finances, sexual relations, and the impact of headache.

Strengths and Limitations of the Study

A culturally relevant questionnaire for assessing marital satisfaction has been developed by us (MSSM) which can be used for screening and assessment of marital satisfaction in females through a cut-off value.

Few limitations of our study include that it was a self-reported (subjective) study, and it did not study longitudinal dynamic changes in the mental and emotional status and relationship perception.

Conclusion

We suggest that MSSM may serve as a reference in future research and clinical practice. It may be used as an objective tool to assess marital satisfaction and also to determine the longitudinal, dynamic, and probable causal relationship of marital satisfaction and its various domains with migraine-related disability and quality of life. Also, future studies may be done on larger cohorts of other cultures, including males.

Ethical Committee Approval for the study was taken from the institutional ethical committee at Sri Aurobindo Institute of Medical Sciences, Indore, Madhya Pradesh, India with IEC No. SAIMS/IEC/2019/30.

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