

Validation of the Arabic Version of the Migraine Disability Assessment Scale Among Lebanese Patients with Migraine

Diane Mourad, PharmD*

Aline Hajj, PharmD, PhD*

Laboratory of Pharmacology, Clinical
Pharmacy and Quality Control of Drugs
Faculty of Pharmacy
Pôle Technologie-Santé
Saint-Joseph University
Beirut, Lebanon

Souheil Hallit, PharmD, MSc, MPH, PhD

Faculty of Pharmacy, Saint-Joseph
University, Beirut, Lebanon;
Lebanese University, Hadath, Lebanon;
Research Department, Psychiatric
Hospital of the Cross
Jal Eddib, Lebanon
Faculty of Medicine and Medical Sciences
Holy Spirit University of Kaslik
Kaslik, Lebanon
Occupational Health Environment
Research Team, Université de Bordeaux
Bordeaux, France

May Ghossoub, MD

Department of Neurology
Levant Hospital
Beirut, Lebanon

Lydia Rabbaa Khabbaz, PharmD, PhD

Laboratory of Pharmacology, Clinical
Pharmacy and Quality Control of Drugs
Faculty of Pharmacy
Pôle Technologie-Santé
Saint-Joseph University
Beirut, Lebanon

*These authors contributed equally to this work.

Correspondence to:

Dr Aline Hajj
Campus des sciences médicales et
infirmières (CSM)
Rue de Damas
B.P. 11-5076
Riad El Solh, Beirut 1107 2180
Fax: +961-1-421-022
Email: aline.hajj@usj.edu.lb

Submitted November 24, 2017;
accepted February 16, 2018.
©2019 by Quintessence Publishing Co Inc.

Aims: To validate the Arabic version of the Migraine Disability Assessment Scale (MIDAS) and to evaluate the impact of the most frequently studied risk factors for migraine disability on the total MIDAS score in a Lebanese population. **Methods:** This prospective study was performed from January 2017 to May 2017 and included 44 patients with migraine. Data were obtained using a questionnaire identifying sociodemographic characteristics, medical history, and migraine characteristics. The Arabic MIDAS was used to quantify the disability associated with headaches over a 3-month period. Ten days after completing the MIDAS, the participants were interviewed again to assess test-retest reproducibility. The validity of the MIDAS construct in the Lebanese population was confirmed by carrying out factor analyses for all the items of the questionnaire using the principal component analysis technique with a promax rotation. **Results:** The MIDAS items converged over a solution of one factor that had an eigenvalue > 1, explaining a total of 63.25% of the variance (Cronbach's alpha = 0.812). Photophobia, vomiting, and duration of migraine attack of 24 to 48 hours significantly increased the MIDAS score by 21.396, 22.0, and 17.396 points, respectively, whereas a high socioeconomic level significantly decreased the MIDAS score by 6.837 points. **Conclusion:** This first linguistically validated Arabic version of the MIDAS was developed to improve migraine management in Arabic-speaking patients. Moreover, the results suggest that having longer migraine duration, more accompanying symptoms, and a low socioeconomic level can increase the MIDAS score and thus the level of disability. *J Oral Facial Pain Headache 2019;33:47–53. doi: 10.11607/ofph.2102*

Keywords: attack, duration, MIDAS scale, migraine, photophobia

Migraine is a neurologic disease characterized by ictal (migraine attack) and interictal periods and is the most common type of primary headache. While this disorder has been extensively studied over the past decades and several theories and possible pathways leading to migraine pain have emerged, its pathophysiology is still not fully understood. Migraine is a frequent, chronic, and disabling neurologic condition that affects 1 in 10 people worldwide, with a higher prevalence in women, students, and urban residents,¹ according to a recent study.

Migraine can be very disabling at the social, familial, and professional levels and can thus alter the quality of life of patients. In this context, the Migraine Disability Assessment Scale (MIDAS) is a tool that measures headache-related disability and has been largely used over the past two decades to evaluate the overall impact of migraine on the ability to function.² Moreover, the MIDAS has been used to help identify adequate treatments based on the level of disability.³ Indeed, despite increasing efforts to enhance the awareness of migraine management, approximately 50% of those with frequent and/or severe migraine do not receive professional and appropriate treatment.⁴ The MIDAS can thus help reduce the burden of migraine on these patients by efficiently stratifying their need for treatment. Studies have shown that several factors are associated with disability in migraine patients. The most frequent are psychiatric comorbidities, especially depression,⁵

chronicity of migraine pain,⁶ maladaptive pain-coping strategies,⁷ presence of neck pain,⁸ characteristics of migraine,⁸ and obesity.⁷

As the MIDAS is widely used in several countries and has already been translated into many languages, but not yet Arabic, there is a need to validate and evaluate the Arabic version of the MIDAS so that Lebanese and Arab patients can benefit from this sensitive, specific, and easy-to-use tool for assessing migraine disability. Therefore, the aims of the present study were to validate the Arabic version of the MIDAS and to evaluate the impact of the most frequently studied risk factors for migraine disability on the MIDAS score in a Lebanese population.

Materials and Methods

Study Design

This prospective study was performed between January 3, 2017 and May 31, 2017. The study targeted consecutive patients attending a neurologist's clinic whose conditions were stable and who did not require any significant adjustment to their treatment (ie, new preventive or abortive medication introduced to the patient's therapy). The participants were fully informed about the study's purpose and procedures and were given appropriate time to ask questions and to think about their voluntary participation. Each participant finally signed a written informed consent and completed the questionnaire. The ethics committee of Saint-Joseph University of Beirut approved the study protocol (reference number: USJ-2017-18).

Sample Size Calculation

To calculate the minimal sample size required for this study, with a power of 80% and an expected mean MIDAS score in Lebanon of 25 ± 10 compared to a mean MIDAS score of 30.82 ± 2.54 from previous findings, the G*Power 3.1.9.2 program was used. The results showed that 20 cases were needed.⁹

Conduct of the Study

Patients completed a self-administered questionnaire at their regular clinic appointments and were interviewed again 10 days later. No financial incentive was given to the participants.

The inclusion criteria were a primary diagnosis of migraine based on the International Headache Society criteria¹⁰ and a stable condition, so that no significant change in preventive treatment when completing the first and second questionnaires would take place. Noninclusion criteria were an inability to read the questionnaire and not being gainfully employed or not being a full-time student (as this would interfere with the questions that assess the impact

of headaches on professional/academic activity). Therefore, out of 49 screened patients, 44 consecutive eligible patients of both sexes were enrolled (3 patients were excluded because they were not employed and 2 because they were diagnosed with a tension-type headache, not migraine).

Procedures and Assessments Measurement

The questionnaire used during the interview was in Arabic, Lebanon's official language, and included three parts. The first part concerned sociodemographic characteristics (age, gender, marital status, and socioeconomic level). The socioeconomic level was divided into three levels based on the total income of the household per month: low (< \$1,000); intermediate (\$1,000 to \$2,000); and high (> \$2,000). A participant was categorized as a current smoker if they had smoked more than 100 cigarettes (including hand-rolled cigarettes, cigars, cigarillos, etc) in their lifetime and/or if they smoked every day.¹¹

The second part of the questionnaire included questions about medical history (presence of depression, anxiety, panic attacks, and phobias, as self-reported by the patient) and specific questions about migraine. These included questions related to the type of migraine pain (pulsatile, compression), presence of aura, presence of accompanying symptoms (nausea, vomiting, photophobia, phonophobia, etc), localization of migraine pain (unilateral, bilateral, neck), duration of headache, effect of physical activity on the pain, frequency of migraine attacks per month, and time of first diagnosis. These questions are all based on the International Classification of Headache Disorders criteria.¹⁰

After obtaining approval from Professor Richard Lipton, who holds the copyright, the MIDAS was translated from English to Arabic through an initial translation and then verified through a back-translation process: The English version was translated to Arabic by one professional translator, then this version was back-translated to English by another independent professional translator. Upon completion of this process, the research team and the translators compared the English versions of MIDAS to determine whether the variables had the same meaning. A trained research assistant was responsible for data collection and carried this out via a personal interview with each patient.

Migraine Disability Assessment Scale

The MIDAS aims to quantify the disability associated with headaches over a 3-month period (Appendix 1 available in the online version only, at www.quintpub.com). It is a short, self-administered questionnaire consisting of five questions in three dimensions: questions 1 and 2 assess the number of missed days

or days with significant impairment to activity (defined as a reduction of at least 50% of productivity) due to headache in school or work activities (school/job dimension); questions 3 and 4 assess the number of missed days or days with significant impairment to activity due to headache in housework activities (housework dimension); and question 5 assesses the number of missed days due to headache in family, social, or leisure activities (social dimension). The sum of the responses to questions 1 through 5 constitutes the MIDAS score. The MIDAS adds a clinical value with two supplemental questions (A and B) about headache frequency and the average pain intensity (scale from 0 to 10) of headaches over the previous 3 months.¹² The total MIDAS score can be subdivided into four disability grades as follows: Grade I = little or no disability (score of 0 to 5); Grade II = mild disability (score of 6 to 10); Grade III = moderate disability (score of 11 to 20); and Grade IV = severe disability (≥ 21).¹³

Statistical Analyses

Data analyses were conducted using SPSS software version 23. Qualitative variables were compared using Fisher exact tests and chi-square tests, and continuous variables were compared using Pearson correlation. A *P* value $< .05$ was considered significant. The validity of the MIDAS construct in the Lebanese population was confirmed by carrying out factor analyses for the positive, negative, and general psychopathology symptoms of the questionnaire using the principal component analysis (PCA) technique with a promax rotation, since the extracted factors were found to be significantly correlated. The Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett test of sphericity were carried out to ensure the data were adequate for factor analyses. The factors retained needed to have eigenvalues > 1 . Moreover, Cronbach's alpha was recorded for reliability analysis for the total MIDAS score and for subscale factors: $\alpha \geq 0.7$ and ≥ 0.8 were considered to be acceptable and excellent internal consistency, respectively. Multivariate analyses with linear regressions were carried out using variables that showed a *P* $< .2$ in the bivariate analysis^{14,15}; in order to decrease residual confounding, potential confounders were eliminated only if *P* $> .2$.¹⁶

Results

Sociodemographic and Socioeconomic Characteristics of the Participants

Overall, 44 patients with migraine were enrolled. Details regarding sociodemographic and socioeconomic characteristics of the participants are shown in

Table 1 Sociodemographic and Socioeconomic Characteristics of the Participants

Patients with migraine (n = 44)	n (%)
Gender	
Male	12 (27.3)
Female	32 (72.7)
Marital status	
Single	29 (65.9)
Married	14 (31.8)
Divorced	1 (2.3)
Widowed	0 (0)
Socioeconomic level	
High	4 (9.1)
Intermediate	40 (90.9)
Smoking	
No	31 (70.5)
Yes	13 (29.5)
Alcohol consumption	
No	19 (43.2)
Yes	25 (56.8)
Self-reported depression	
No	40 (90.9)
Yes	4 (9.1)
Self-reported anxiety	
No	25 (56.8)
Yes	19 (43.2)
Self-reported panic attacks	
No	38 (86.4)
Yes	6 (13.6)
Self-reported phobia	
No	32 (72.7)
Yes	12 (27.3)
Neck pain (0–10 VAS) ^a	
No	3 (16.7)
Yes	15 (83.3)
Duration of pain ^b	
No pain	10 (22.7)
Less than 4 h	1 (16.7)
4–12 h	10 (83.3)
12–24 h	6 (54.5)
24–48 h	10 (71.4)
48–72 h	6 (60)
More than 1 wk	1 (16.7)
MIDAS grade	
Grade I	9 (20.5)
Grade II	6 (13.6)
Grade III	11 (25)
Grade IV	18 (40.9)
Age (y), mean \pm SD	32.77 \pm 13.99
BMI	23.35 \pm 4.60
Headache pain intensity, ^a mean \pm SD	7.1 \pm 2.4
Headache frequency (d), mean \pm SD	6.1 \pm 1.8

^aMissing data.

^bMultiple possible answers.

SD = standard deviation; BMI = body mass index; VAS = visual analog scale.

Table 1. It is of note that 40.9% of the participants had a Grade IV migraine according to the MIDAS. Among the whole migraine group, the mean \pm standard deviation (SD) headache pain intensity was 7.1 \pm 2.4, and the mean headache frequency was 6.1 \pm 1.8 days.

Table 2 Correlation Between Each Item on the MIDAS and the Whole Scale

	Item no.	Correlation	P value
No. of work/school days missed	1	0.710	< .0001
No. of days productivity in work/school reduced by 50% or more	2	0.905	< .0001
No. of days missed doing household work	3	0.919	< .0001
No. of days during which productivity in household work reduced by 50% or more	4	0.710	< .0001
No. of days missed doing family, social, or leisure activities	5	0.824	< .0001

Table 3 Promax-Rotated Matrix of MIDAS Score*

Factor	Item no.	Factor loading
No. of work/school days missed	1	0.908
No. of days productivity in work/school reduced by 50% or more	2	0.863
No. of days missed doing household work	3	0.829
No. of days productivity in household work reduced by 50% or more	4	0.752
No. of days missed doing family, social, or leisure activities	5	0.583

*Cronbach's alpha = 0.812.

Table 4 Linear Regression with Total MIDAS Score as Dependent Variable

Factor	Unstandardized β	Standardized β	P value	95% CI	
Photophobia	21.396	1.159	< .0001	14.428	28.364
Vomiting	22	0.511	< .0001	14.289	29.711
Duration of 24 to 48 h	17.396	0.404	.001	7.003	27.788
Socioeconomic level (high vs low)	-6.837	-0.222	.018	-12.464	-1.210

Variables entered in the equation: Nausea, vomiting, photophobia, difficulty concentrating, duration of migraine, physical activity, neck pain, body mass index, socioeconomic level, tobacco smoking, anxiety. Significant variables are shown. CI = confidence interval.

Correlation Factor

Table 2 displays the correlation factors between each item on the MIDAS and the whole scale. The correlation factors ranged from 0.71 to 0.919 for the individual items. The P value was less than .0001 for all studied factors, which were hence significantly correlated with the whole scale.

Factor Analysis

It was possible to extract all five items on the MIDAS for factor analysis, as no items were over-correlated with the total score ($r > 0.9$), had low communality (< 0.3), or had low loading on factors (< 0.3). The MIDAS items converged over a solution of one factor that had an eigenvalue > 1 , explaining a total of 63.25% of the variance. A Kaiser-Meyer-Olkin measure of sampling adequacy of 0.782 was found, with a significant Bartlett test of sphericity ($P < .001$). Moreover, a high Cronbach's alpha was found for the full scale ($\alpha = 0.812$) (Table 3).

Internal Consistency

The internal consistency of the MIDAS was calculated using Cronbach's alpha. The total scale demonstrated excellent internal consistency, with an alpha coefficient of 0.862 for the first test and 0.957 for the second test (retest).

Test-Retest Reliability

The results of the test-retest reliability assessment demonstrated strong reproducibility, with an intra-class correlation coefficient (ICC) of 0.987 (95% confidence interval [CI] = 0.968 to 0.995; $P < .0001$).

Multivariate Analysis

A stepwise linear regression, taking the MIDAS total score as the dependent variable, showed that photophobia, vomiting, and duration of migraine attack of 24 to 48 hours significantly increased the MIDAS score by 21.396, 22.0, and 17.396 points, respectively, whereas a high socioeconomic level significantly decreased the MIDAS score by 6.837 points (Table 4).

Discussion

Validation of the Scale

In this study, the Arabic version of the MIDAS scale, intended specifically to be used among a Lebanese population, was validated. The validity and reliability of the scale as a screening tool for Lebanese patients with migraine were proven. Good psychometric properties were demonstrated for the one factor identified in the MIDAS, with excellent internal consistency. Thus, it is possible to use this Arabic version of the

MIDAS in Lebanon and in other Arabic-speaking countries.

Reliability

The internal consistency was higher than that of the MIDAS used in Iran,⁹ Italy,¹⁷ the United States, and the United Kingdom.¹³ Correlation coefficients, as proposed by Kirshner and Guyatt,¹⁸ were used to verify the reproducibility of the MIDAS. There was a high correlation between each item of the MIDAS and the disease. Moreover, all the items correlated well with the composite score, supporting the good internal reliability of this version of the scale, which is consistent with the findings of Stewart et al.¹³

Validity

The construct validity of the Arabic version of the MIDAS was addressed by calculating the sensitivity and specificity of the scale. The scale properties in this study are also better than those achieved by other researchers.^{9,19,20}

Factors Affecting the MIDAS Score and the Presence of Migraine

Migraine has considerable disabling consequences on professional activities, social activities, and family relationships, which can lead to adverse social and economic consequences. Disability, defined as the number of days the patient with migraine misses their professional or social activities and/or the days their functioning is severely impaired, is determined by the intensity and frequency of headaches and by the headache syndrome itself, with migraine being the lead cause of headache-related disability. The MIDAS is an effective tool for measuring the disability associated with migraine.

Several factors are associated with the disability of migraine patients. The most frequent ones are psychiatric comorbidities, especially depression,⁵ chronicity of migraine pain (via a direct effect and an indirect effect caused by depression itself),⁶ maladaptive pain-coping strategies such as pain catastrophizing,^{7,21} presence of neck pain,⁸ and characteristics of migraine, such as frequency, severity,⁸ and obesity, including the pain catastrophizing with which it is associated.⁷

It is interesting to evaluate whether these factors are indeed associated with higher MIDAS scores in the present sample of the Lebanese population. The results of this study showed that a migraine episode duration of 24 to 48 hours significantly increased the MIDAS score; hence, the longer the duration, the more disabling the migraine attack becomes. Moreover, accompanying symptoms of migraine, particularly photophobia and vomiting, were significantly associated with a higher MIDAS score.

On the other hand, high socioeconomic level was shown to significantly decrease the MIDAS score, which is a finding opposite to that of another study that evaluated migraine in southern Santa Catarina.²² In that study, 57% of the 240 participants belonged to low or medium socioeconomic levels (categories C and D according to the Brazilian Economic Classification Criteria²³), and 57.1% had a level of education ranging from primary school to high school. Of the study population of low or medium socioeconomic level, 80.6% had low MIDAS scores (< 5; Grade I: little or no disability). Nevertheless, lack of sufficient economic means and health insurance status can represent barriers to the diagnosis and treatment of migraine.²⁴ From this perspective, patients of high socioeconomic level who are insured and/or able to afford consultation and medication would be better treated and therefore have a lower MIDAS score. The results of this study also show that other characteristics of migraine, including presence of neck pain, psychiatric comorbidities, and headache chronicity, were not significantly associated with a higher MIDAS score; however, this could be attributed to the relatively small sample size. Also, a high socioeconomic level significantly decreased the odds of having migraine. This is in accordance with some published studies that found that migraine prevalence is higher in those with low income²⁵ or with low education, perhaps because migraine may affect work and studies.²⁶ However, other studies have found that most patients with chronic migraine reported a medium or high education level and a good socio-occupational status,²⁷ which is opposite to the results of the present study. Nevertheless, this study included patients who attended a specialist clinic (and hence who could afford treatment), so these results cannot necessarily be extrapolated to all patients with migraine.

The presence of neck pain increasing the odds of migraine could have been suspected, as previous authors have found that women with migraine exhibit musculoskeletal impairments of the upper cervical spine (restricted cervical rotation, decreased upper cervical rotation, etc²⁸). These data suggest the need to explore the underlying mechanisms by which neck pain influences migraine and to highlight the importance of a multidisciplinary approach to adequately treat migraine.

Finally, the presence of self-reported anxiety increased the odds of having migraine in this study population. When comparing migraine patients to the general population, other studies have shown affective disorders such as anxiety to be more prevalent in the migraine population, and women with a long history of migraine and frequent migraine attacks were the most at risk.²⁹ In fact, migraine and anxiety,

along with depression, fibromyalgia, and irritable bowel syndrome, are sometimes grouped as parts of a family of related conditions referred to as the affective spectrum disorders.³⁰ Thus, it is not surprising to find this strong association between self-reported anxiety and migraine in this sample. While the relationship between these affective spectrum disorders is not fully understood yet, several underlying mechanisms have been implicated, such as those involving stress,³¹ serotonin,³² endocannabinoid deficiency,³³ mitochondrial dysfunction,³⁰ and inflammation.³⁰

Study Limitations

The present study has some limitations that must be acknowledged. First, this preliminary study recruited a relatively small sample of Lebanese patients with migraine. This sample size is comparable to previous pilot studies done in the original and other translated versions of the MIDAS. Further larger studies are needed to confirm these findings. In addition, the capability of the MIDAS to distinguish between episodic and chronic headaches was not demonstrated, and the presence of anxiety, depression, and/or panic attacks was self-reported and not determined by a physician, nor by a validated scale. Finally, exclusion based on employment/student status could be considered as a bias toward lower disability levels. However, the study needed to include patients who could answer all of the questions on the scale. In addition, enrolled patients did not start a preventive treatment as a requisite for enrollment, which could have biased the results toward less severely affected patients.

Conclusions

This study has shown that the Arabic version of the MIDAS has promising psychometric properties and thus might be a useful tool for measuring symptom severity in Arabic-speaking patients with migraine. Moreover, having a longer migraine duration, more accompanying symptoms, and a low socioeconomic level can increase the MIDAS score and thus the level of disability. Based on this study, health care professionals and researchers can readily use the MIDAS questionnaire for patients with migraine in Lebanon, warranting more studies in other Arabic-speaking populations worldwide.

Acknowledgments

This work was supported by grants from the Conseil de la Recherche of the Saint-Joseph University and from the National Council for Scientific Research in Lebanon (CNRS-L). The authors declare no conflicts of interest. The authors would like to thank Professor Richard Lipton for allowing the Arabic translation and validation of the MIDAS scale.

References

1. Woldeamanuel YW, Cowan RP. Migraine affects 1 in 10 people worldwide featuring recent rise: A systematic review and meta-analysis of community-based studies involving 6 million participants. *J Neurol Sci* 2017;372:307–315.
2. Stewart W, Lipton R. Need for care and perceptions of MIDAS among headache sufferers study. *CNS Drugs* 2002;16(suppl):s5–s11.
3. El Hasnaoui A, Doble A, Gaudin AF. Tools for assessing patient perception of the impact of migraine [in French]. *CNS Drugs* 2006;20(spec no.):24–36.
4. Merikangas KR. Contributions of epidemiology to our understanding of migraine. *Headache* 2013;53:230–246.
5. Seng EK, Buse DC, Klepper JE, et al. Psychological factors associated with chronic migraine and severe migraine-related disability: An observational study in a tertiary headache center. *Headache* 2017;57:593–604.
6. Kim SY, Park SP. The role of headache chronicity among predictors contributing to quality of life in patients with migraine: A hospital-based study. *J Headache Pain* 2014;15:68.
7. Bond DS, Buse DC, Lipton RB, et al. Clinical pain catastrophizing in women with migraine and obesity. *Headache* 2015;55:923–933.
8. Ford S, Calhoun A, Kahn K, Mann J, Finkel A. Predictors of disability in migraineurs referred to a tertiary clinic: Neck pain, headache characteristics, and coping behaviors. *Headache* 2008;48:523–528.
9. Zandifar A, Asgari F, Haghdoost F, et al. Reliability and validity of the migraine disability assessment scale among migraine and tension type headache in Iranian patients. *Biomed Res Int* 2014;2014:978064.
10. Headache Classification Committee of the International Headache Society (IHS). The International Classification of Headache Disorders, 3rd edition (beta version). *Cephalalgia* 2013;33:629–808.
11. National Center for Health Statistics. National Health Interview Survey. https://www.cdc.gov/nchs/nhis/tobacco/tobacco_glossary.htm. Accessed 10 July, 2018.
12. Iigaya M, Sakai F, Kolodner KB, Lipton RB, Stewart WF. Reliability and validity of the Japanese Migraine Disability Assessment (MIDAS) Questionnaire. *Headache*. 2003;43(4):343–352.
13. Stewart WF, Lipton RB, Whyte J, et al. An international study to assess reliability of the Migraine Disability Assessment (MIDAS) score. *Neurology* 1999;53:988–994.
14. Mickey RM, Greenland S. The impact of confounder selection criteria on effect estimation. *Am J Epidemiol* 1989;129:125–137.

15. Bursac Z, Gauss CH, Williams DK, Hosmer DW. Purposeful selection of variables in logistic regression. *Source Code Biol Med* 2008;3:17.
16. Maldonado G, Greenland S. Simulation study of confounder-selection strategies. *Am J Epidemiol* 1993;138:923–936.
17. D'Amico D, Mosconi P, Genco S, et al. The Migraine Disability Assessment (MIDAS) questionnaire: Translation and reliability of the Italian version. *Cephalalgia* 2001;21:947–952.
18. Kirshner B, Guyatt G. A methodological framework for assessing health indices. *J Chronic Dis* 1985;38:27–36.
19. Lee HS, Chung CS, Song HJ, Park HS. The reliability and validity of the MIDAS (Migraine Disability Assessment) questionnaire for Korean migraine sufferers. *J Korean Neurol Assoc* 2000;18:287–291.
20. Oikonomidi T, Vikelis M, Artemiadis A, Chrousos GP, Darviri C. Reliability and validity of the Greek Migraine Disability Assessment (MIDAS) questionnaire. *Pharmacoecon Open* 2018;2:77–85.
21. Galioto R, O'Leary KC, Thomas JG, et al. Lower inhibitory control interacts with greater pain catastrophizing to predict greater pain intensity in women with migraine and overweight/obesity. *J Headache Pain* 2017;18:41.
22. Corrêa Tdos S, Santos KM, Galato D. Prevalence and management of headache in a selected area of Southern Santa Catarina. *Arq Neuropsiquiatr* 2010;68:216–223.
23. dos Santos Paivaa GF, do Nascimento Silva DB, Feijó CA. Exploratory note on consumption and socioeconomic classification in Brazil based on evidences from the Family Expenditure Survey [in Portuguese]. *Rev Econ Contemp* 2016;20:207–228.
24. Lipton RB, Serrano D, Holland S, Fanning KM, Reed ML, Buse DC. Barriers to the diagnosis and treatment of migraine: Effects of sex, income, and headache features. *Headache* 2013;53:81–92.
25. Queiroz LP, Barea LM, Blank N. An epidemiological study of headache in Florianopolis, Brazil. *Cephalalgia* 2006;26:122–127.
26. Lipton RB, Stewart WF, Scher AI. Epidemiology and economic impact of migraine. *Curr Med Res Opin* 2001;17(suppl):s4–s12.
27. García-Cabo Fernández C, Sánchez-Lozano P, Pérez-Álvarez A, Martínez-Ramos JM, Martínez-Rodríguez L, Pascual J. Sociodemographic characteristics of a cohort of patients with chronic migraine from a health district in Asturias. *Neurologia* 2016;31:157–160.
28. Ferracini GN, Florencio LL, Dach F, et al. Musculoskeletal disorders of the upper cervical spine in women with episodic or chronic migraine. *Eur J Phys Rehabil Med* 2017;53:342–350.
29. Zarcone D, Corbetta S. Shared mechanisms of epilepsy, migraine and affective disorders. *Neurol Sci* 2017;38(suppl):s73–s76.
30. Gardner A, Boles RG. Beyond the serotonin hypothesis: Mitochondria, inflammation and neurodegeneration in major depression and affective spectrum disorders. *Prog Neuropsychopharmacol Biol Psychiatry* 2011;35:730–743.
31. Dinan TG, Cryan JF. Regulation of the stress response by the gut microbiota: Implications for psychoneuroendocrinology. *Psychoneuroendocrinology* 2012;37:1369–1378.
32. Ruhé HG, Mason NS, Schene AH. Mood is indirectly related to serotonin, norepinephrine and dopamine levels in humans: A meta-analysis of monoamine depletion studies. *Mol Psychiatry* 2007;12:331–359.
33. Smith SC, Wagner MS. Clinical endocannabinoid deficiency (CECD) revisited: Can this concept explain the therapeutic benefits of cannabis in migraine, fibromyalgia, irritable bowel syndrome and other treatment-resistant conditions? *Neuro Endocrinol Lett* 2014;35:198–201.

Appendix 1

إختبار العجز في الصداع النصفي

Mourad & Hajj et al. V1_2018. All rights reserved

جميع الحقوق محفوظة [2018]

لقد تم وضع إستطلاع العجز في الصداع النصفي (MIDAS) لمساعدتكم على قياس مدى تأثير الصداع على حياتكم. كما تُساعد المعلومات المذكورة في هذا الإستطلاع مزود الرعاية الصحية الأولية على تحديد درجة الألم والعجز الصادر عن الصداع إضافة الى إيجاد العلاج الأفضل.

إرشادات

الرجاء الإجابة على الأسئلة التالية في ما يخص كل نوع من أنواع الصداع التي مررتم بها في خلال الأشهر الثلاثة الماضية. ضعوا الإجابة في الخانة الموجودة الى جانب كل سؤال. إختاروا الصفر في حال لم تمرّوا بهذه الحالة في خلال الأشهر الثلاثة الماضية. الرجاء أخذ المستند مع كامل الأجوبة الى إختصاصي الصحة خاصتكم.

1. في خلال الأشهر الثلاثة الماضية، كم يوم تغيّبتم عن العمل أو المدرسة بسبب الصداع؟
 2. في خلال الأشهر الثلاثة الماضية، كم يوم كانت إنتاجيتكم في العمل أو في المدرسة أقل من النصف أو أكثر بسبب الصداع؟ (لا تعدّوا الأيام التي ذكرتموها في السؤال رقم 1 عندما تغيّبتم عن العمل أو المدرسة).
 3. في خلال الأشهر الثلاثة الماضية، كم يوم منعكم الصداع من ممارسة الأعمال المنزلية (تصليحات وصيانة، تسوّق، الإعتناء بالأطفال والأقارب)؟
 4. في خلال الأشهر الثلاثة الماضية، كم يوم كانت إنتاجيتكم في الأعمال المنزلية أقل من النصف أو أكثر بسبب الصداع؟ (لا تعدّوا الأيام التي ذكرتموها في السؤال رقم 3 عندما لم تقوموا بأعمال منزلية).
 5. في خلال الأشهر الثلاثة الماضية، كم يوم فاتكم نشاط عائلي أو إجتماعي أو ترفيهي بسبب الصداع؟
- المجموع (أسئلة 1-5)

ما يحتاجه طبيبك للتعرف الى الصداع الذي تُعانون منه:

- أ. في خلال الأشهر الثلاثة الماضية، كم يوم عانيتم من الصداع؟ (إن استمرّ الصداع أكثر من يوم واحد، أذكر كم يوم)
- ب. على مقياس من صفر الى 10، ما كان معدّل ألم هذا الصداع؟ (صفر=لا ألم بالمرّة، 10=ألم لا يُحتمل).

إحتساب النقاط: بعد أن ملأتم هذا الإستطلاع، إجمعوا عدد الأيام من السؤال 1-5 (تجاهلوا الأسئلة أ و ب)

إحتساب الـ MIDAS	تفسير	علامة الـ MIDAS
5-0	القليل من العجز أو عدم وجوده	1
10-6	عجز غير قويّ	2
20-11	عجز معتدل	3
+21	عجز حاد	4

في حال كان إحتساب MIDAS 6 أو أكثر، الرجاء مراجعة طبيبك.

The Migraine Disability Assessment Test

The MIDAS (Migraine Disability Assessment) questionnaire was put together to help you measure the impact your headaches have on your life. The information on this questionnaire is also helpful for your primary care provider to determine the level of pain and disability caused by your headaches and to find the best treatment for you.

INSTRUCTIONS

Please answer the following questions about ALL of the headaches you have had over the last 3 months. Select your answer in the box next to each question. Select zero if you did not have the activity in the last 3 months. Please take the completed form to your healthcare professional.

- 1. On how many days in the last 3 months did you miss work or school because of your headaches?
- 2. How many days in the last 3 months was your productivity at work or school reduced by half or more because of your headaches? (Do not include days you counted in question 1 where you missed work or school.)
- 3. On how many days in the last 3 months did you not do household work (such as housework, home repairs and maintenance, shopping, caring for children and relatives) because of your headaches?
- 4. How many days in the last 3 months was your productivity in household work reduced by half or more because of your headaches? (Do not include days you counted in question 3 where you did not do household work.)
- 5. On how many days in the last 3 months did you miss family, social or leisure activities because of your headaches?
- Total (Questions 1-5)

What your Physician will need to know about your headache:

- A. On how many days in the last 3 months did you have a headache?
(If a headache lasted more than 1 day, count each day.)
- B. On a scale of 0 - 10, on average how painful were these headaches?
(where 0=no pain at all, and 10= pain as bad as it can be.)

Scoring: After you have filled out this questionnaire, add the total number of days from questions 1-5 (ignore A and B).

MIDAS Grade	Definition	MIDAS Score
I	Little or No Disability	0-5
II	Mild Disability	6-10
III	Moderate Disability	11-20
IV	Severe Disability	21+

If Your MIDAS Score is 6 or more, please discuss this with your doctor.