

IRSTI 76.29.51
Research article

<https://doi.org/10.32523/2616-7034-2026-156-3-37-51>

Pain Intensity is Associated with Migraine-Specific Quality of Life: A Cross-Sectional Study in a Kazakhstan Cohort

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Abstract. Migraine is a leading cause of disability, yet the relative contribution of individual attack characteristics — pain intensity, frequency, and duration - to migraine-specific quality of life remains incompletely defined, and data from Central Asian populations are scarce. This study examined the clinical and psychometric factors associated with migraine-specific quality of life in a Kazakhstan cohort. In a cross-sectional study, 195 participants (100 patients with migraine [ICHD-3] and 95 controls without migraine) were enrolled; analytic modeling was restricted to 88 women with migraine. Quality of life (MSQ v2.1: RFR, RFP, EF) was modeled against usual-attack pain intensity (VAS), attack frequency and duration, age, and anxiety and depression (HADS) using multivariable linear regression with HC3 confidence intervals and Benjamini–Hochberg correction; HURT burden was reserved for sensitivity analyses to avoid overadjustment. Higher pain intensity was associated with lower RFR ($\beta = -7.51$ per 1 SD; 95% CI -12.18 to -2.84 ; $p = 0.002$) and RFP ($\beta = -10.91$; 95% CI -16.45 to -5.37 ; $p < 0.001$). No independent association was detected for attack frequency, duration, age, or affective symptoms. The pain-intensity association was robust across influence-diagnostic, categorical-VAS (dose–response), and HURT-adjusted sensitivity analyses. Usual-attack pain intensity, rather

than attack frequency or duration, was the predictor most consistently associated with migraine-specific role functioning.

Keywords: migraine, quality of life, pain intensity, MSQ v2.1, anxiety, depression

Introduction

Migraine is one of the most prevalent and disabling neurological disorders worldwide, affecting approximately 14% of the global population and ranking among the leading causes of years lived with disability [1, 2, 3]. It is characterized by recurrent attacks of moderate-to-severe headache accompanied by sensory hypersensitivity, nausea, and substantial functional impairment [4]. Beyond individual attacks, migraine is associated with limitations in daily activities, work performance, and emotional well-being; these dimensions are reflected in migraine-specific quality-of-life measures [5].

Quality of life has become a central outcome in migraine research, in recognition that the burden of the disorder extends beyond the pain of individual attacks [6]. The Migraine-Specific Quality of Life Questionnaire version 2.1 (MSQ v2.1) is a validated patient-reported instrument with three domains: Role Function–Restrictive (RFR), which captures limitations in daily activities; Role Function–Preventive (RFP), which captures activities that migraine prevents patients from performing; and Emotional Function (EF), which assesses the emotional impact of migraine [7, 8]. Although the MSQ v2.1 is widely used in clinical trials and observational studies, the relative contributions of attack frequency, duration, and pain intensity to the individual domains remain incompletely characterized. Population-based research also documents interictal burden, including anxiety about subsequent attacks and avoidance of activities between attacks [9].

Attack frequency is an important clinical measure of migraine severity and contributes to decisions about preventive therapy [10]. Headache-related burden and treatment response can also be assessed using instruments such as the Headache Under-Response to Treatment (HURT) questionnaire [11]. In the International Burden of Migraine Study, chronic migraine was associated with greater disability and poorer migraine-specific quality of life than episodic migraine [12]. Nevertheless, frequency alone does not describe the full experience of an attack. Attack duration is a distinct temporal characteristic whose association with quality of life should be evaluated alongside pain intensity and frequency.

Earlier studies examined the relationships of headache intensity, frequency, and duration with headache-related disability [13, 14]. In a prospective study of patients with chronic migraine treated with onabotulinumtoxinA, improvements in both headache frequency and pain intensity were independently associated with improvement in disability [15]. However, treatment-related changes in disability are not equivalent to cross-sectional differences in MSQ v2.1 domains. Clinical research has also identified headache chronicity and psychological factors as relevant to quality of life [16]. Their relative associations with individual MSQ v2.1 domains therefore warrant assessment in different populations.

Clarifying these associations may improve the assessment of patient burden and support multidimensional evaluation. The OVERCOME (Japan) study documented effects on daily activities, sleep, and mental health, illustrating the value of assessing functioning in addition to headache symptoms [17]. The present study extends this evaluation to a Kazakhstan cohort, providing population-specific estimates of the associations between clinical characteristics and migraine-specific quality of life.

The aim of the present study is to identify independent clinical and psychometric predictors of migraine-specific quality of life across the three MSQ v2.1 domains in a cross-sectional sample of patients with migraine, with particular focus on the relative contributions of pain intensity, attack frequency, and attack duration.

Materials and Methods

Study Design and participants

A cross-sectional observational study enrolled 195 participants: 100 patients with migraine diagnosed according to ICHD-3 criteria [4] and 95 controls without migraine. Descriptive group comparisons used the full sample; analytic modeling of migraine-specific quality of life was restricted to the 88 women with migraine (of the 100 patients, 12 were men and were excluded from subgroup modeling because of their small number). Participant flow is summarized in Figure 1.

Inclusion criteria were a diagnosis of migraine per ICHD-3, age ≥ 18 years, complete clinical data, and written informed consent. Exclusion criteria were secondary headache disorders, severe neurological or psychiatric comorbidity, and incomplete data. The protocol was approved by the Local Ethics Committee (Protocol No. 08-2024, 10 October 2024) and conducted in accordance with the Declaration of Helsinki. All data were de-identified before analysis.

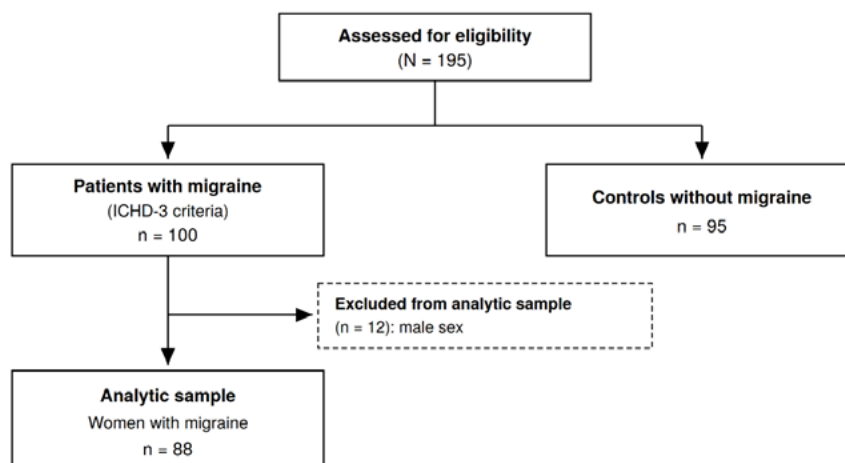


Figure 1. STROBE participant-flow diagram. Of 195 individuals assessed for eligibility, 100 met ICHD-3 criteria for migraine, and 95 were controls without migraine. Twelve men were excluded from the analytic sample, leaving 88 women with migraine.

Clinical and Questionnaire Measures

Clinical assessment recorded monthly attack frequency, the duration of an individual attack (hours), and pain intensity of the usual (average) attack on a 0–10 Visual Analog Scale (VAS); patients rated the intensity typical of their attacks, not the most recent or worst episode. Anxiety and depression were measured with the HADS (HADS-A, HADS-D) [18]. Headache-related burden and treatment response were measured with the HURT questionnaire [11] (disease-burden domain HURT1–3; treatment-effect domain HURT4–6). Migraine-specific quality of life was assessed with the MSQ v2.1 [7, 8] (RFR, RFP, EF domains; higher scores indicate better quality of life). Pain intensity was a single retrospective self-assessment of usual attack pain; a prospective headache diary was not used.

Statistical Analysis

Analyses were performed in Python 3.13 (pandas, numpy, scipy.stats, statsmodels). Distributional assumptions were examined with histograms, Q–Q plots, and the Shapiro–Wilk test; because most variables were non-normal, continuous data are reported as median [Q1; Q3] and categorical data as n (%). The significance threshold was $\alpha = 0.05$, and the Benjamini–Hochberg false discovery rate (FDR) procedure was applied within each pre-specified family of tests (baseline comparisons; the correlation matrix; and regression coefficients within each model) [19].

Between-group comparisons used the Mann–Whitney U test (two groups) and Fisher’s exact test (categorical variables); effect sizes were rank-biserial correlation, Cohen’s d, or Cramér’s V, as appropriate. Bivariate associations among continuous variables used Spearman’s rank correlation (ρ) with 95% confidence intervals.

The primary analysis comprised three multivariable linear regression models estimated using ordinary least squares (OLS), one for each MSQ v2.1 domain. Each model estimated the association of pain intensity (VAS) with the domain after adjustment for attack frequency, attack duration, age, HADS-A, and HADS-D. Attack frequency and duration were natural-log transformed to correct right skew, and continuous predictors were z-standardized; coefficients are reported as the change in the MSQ domain per 1 SD of the predictor, with heteroscedasticity-consistent (HC3) 95% confidence intervals [20]. Migraine chronicity was not entered as a predictor because only 10 patients (11.4%) had chronic migraine, which produced unstable estimates. The HURT questionnaire was excluded from the primary models because it captures headache-related burden that overlaps conceptually with quality of life. Adjustment for an intermediate variable can introduce overadjustment bias [21], although the causal position of HURT burden cannot be established in this cross-sectional study. HURT was therefore analyzed separately and added only in a pre-specified sensitivity analysis.

Multicollinearity was assessed with variance inflation factors (VIF); model fit with R^2 and adjusted R^2 ; and influence with Cook’s distance [22], using $4/n$ as a screening threshold. Pre-specified sensitivity analyses (i) excluded influential observations, (ii) modeled VAS categorically to assess dose–response and relax the linearity assumption, and (iii) added the HURT1–3 burden domain. Given the absence of an a priori sample-size calculation, findings are interpreted as exploratory and hypothesis-generating, emphasizing the direction and precision of estimates rather than statistical significance alone; post-hoc power was not computed.

Results

Cohort Characteristics

The migraine ($n = 100$) and control ($n = 95$) groups did not differ significantly in age (39.5 vs. 39.6 years; $p = 0.927$) or sex distribution (88.0% vs. 89.5% female; $p = 0.823$). Compared with controls, patients had higher pain intensity, anxiety, depression, and HURT burden (all $p < 0.001$; Table 1).

Table 1.

Baseline demographic, clinical, and burden characteristics.

Variable	Control ($n = 95$)	Migraine ($n = 100$)	p	Effect size
Age, years, mean $\pm$ SD	39.6 $\pm$ 9.3	39.5 $\pm$ 8.9	0.927	d = –0.01
Female sex, n (%)	85 (89.5)	88 (88.0)	0.823	V = 0.01
Pain intensity, VAS, median [Q1; Q3]	2.0 [0.0; 3.0]	8.0 [6.0; 8.0]	<0.001	r = 0.97

Variable	Control (n = 95)	Migraine (n = 100)	p	Effect size
Anxiety, HADS-A	4.0 [2.0; 5.5]	7.0 [4.0; 11.0]	<0.001	r = 0.43
Depression, HADS-D	2.0 [1.0; 5.0]	5.0 [3.0; 7.0]	<0.001	r = 0.39
HURT total	1.0 [0.0; 3.0]	10.0 [7.0; 12.0]	<0.001	r = 0.89
HURT1–3 disease burden	0.0 [0.0; 0.0]	1.0 [1.0; 2.0]	<0.001	r = 0.69
HURT4–6 treatment effect	0.0 [0.0; 0.0]	2.0 [1.0; 2.0]	<0.001	r = 0.82

Note: Data are median [Q1; Q3] unless age (mean $\pm$ SD). Between-group comparisons: Mann–Whitney U test (continuous variables), Fisher’s exact test (sex), and Welch’s t-test (age); p-values were adjusted using the Benjamini–Hochberg false discovery rate procedure, and “<0.001” denotes a value below the display threshold. Effect sizes: d, Cohen’s d; V, Cramér’s V; r, rank-biserial correlation (positive r indicates higher values in the migraine group). VAS, Visual Analog Scale; HADS, Hospital Anxiety and Depression Scale; HURT, Headache Under-Response to Treatment.

MSQ v2.1 domains were all markedly reduced in patients, with very large effect sizes and the greatest deficit in RFR (Table 2). Notably, usual-attack pain intensity was high and narrowly distributed in the migraine group (median 8, IQR 6–8 on a 0–10 scale), indicating that most patients experienced severe pain as their typical, not merely their worst, attack.

Table 2.

MSQ v2.1 domain scores: migraine versus control.

MSQ v2.1 domain	Migraine (n = 100)	Control (n = 95)	p	r
Role Function–Restrictive (RFR)	46.0 [26.0; 60.0]	100.0 [88.5; 100.0]	<0.001	–0.97
Role Function–Preventive (RFP)	60.0 [38.8; 75.0]	100.0 [95.0; 100.0]	<0.001	–0.91
Emotional Function (EF)	67.0 [47.0; 80.0]	100.0 [93.0; 100.0]	<0.001	–0.88

Note: Data are median [Q1; Q3]. Mann–Whitney U test with Benjamini–Hochberg false discovery rate correction; “<0.001” denotes a value below the display threshold. r, rank-biserial correlation (negative r indicates lower scores in the migraine group). MSQ v2.1, Migraine-Specific Quality of Life Questionnaire version 2.1; RFR, Role Function–Restrictive; RFP, Role Function–Preventive; EF, Emotional Function.

Bivariate correlations (women with migraine, n = 88)

Higher pain intensity was inversely associated with the RFR ($\rho = -0.349$; 95% CI -0.535 to -0.144 ; FDR-adjusted $p = 0.008$) and RFP domains ($\rho = -0.398$; 95% CI -0.579 to -0.191 ; FDR-adjusted $p = 0.002$), whereas its association with EF did not reach significance ($\rho = -0.128$; FDR-adjusted $p = 0.420$). The HURT1–3 disease-burden domain was inversely associated with all three domains, including EF (RFR $\rho = -0.339$, FDR-adjusted $p = 0.008$; RFP $\rho = -0.283$, FDR-adjusted $p = 0.034$; EF $\rho = -0.268$, FDR-adjusted $p = 0.042$). We did not detect statistically significant

associations between any MSQ domain and attack frequency ($|\rho| \leq 0.18$; all FDR-adjusted $p \geq 0.26$) or attack duration ($|\rho| \leq 0.04$; all FDR-adjusted $p \geq 0.84$). An inverse association between anxiety and EF was present before correction ($\rho = -0.226$; $p = 0.034$) but did not survive FDR adjustment (FDR-adjusted $p = 0.102$); depression was not associated with any domain.

Multivariable regression ($n = 88$)

Variance inflation factors were low for all predictors (all < 1.4), indicating no meaningful multicollinearity. Coefficients are reported as unstandardized β per 1 SD of the predictor with HC3 95% CIs. Higher pain intensity was associated with lower RFR ($\beta = -7.51$; 95% CI -12.18 to -2.84 ; $p = 0.002$; adjusted $R^2 = 0.092$) and RFP scores ($\beta = -10.91$; 95% CI -16.45 to -5.37 ; $p < 0.001$; adjusted $R^2 = 0.116$) (Table 3, Figure 2). The EF model explained little variance (adjusted $R^2 = 0.027$), and pain intensity was not associated with the domain ($\beta = -2.87$; 95% CI -8.61 to 2.86 ; $p = 0.326$). Across all three models, we did not detect statistically significant independent associations for attack frequency, attack duration, age, anxiety, or depression; confidence intervals for these predictors were wide and spanned the null.

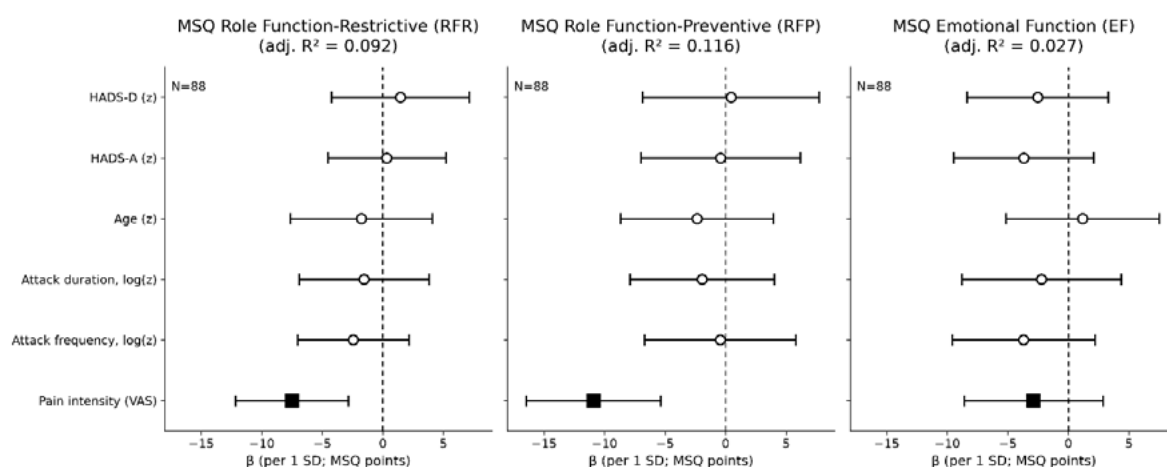


Figure 2. Multivariable associations of predictors with MSQ v2.1 domains ($n = 88$).

Points are unstandardized β per 1 SD of each continuous predictor with heteroscedasticity-consistent (HC3) 95% confidence intervals; the dashed line marks the null. Filled squares denote pain intensity (VAS). RFR, Role Function–Restrictive; RFP, Role Function–Preventive; EF, Emotional Function.

Table 3.

Independent predictors of MSQ v2.1 domains: multivariable linear regression ($n = 88$, HC3 CIs).

RFR domain (adjusted $R^2 = 0.092$): predictor	β (per 1 SD)	HC3 95% CI	FDR-adjusted p
Pain intensity (VAS)	-7.51	-12.18 to -2.84	0.002*
log attack frequency	-2.44	-7.03 to 2.15	0.297
log attack duration	-1.55	-6.91 to 3.81	0.571
Age	-1.78	-7.63 to 4.08	0.552

RFR domain (adjusted R² = 0.092): predictor	β (per 1 SD)	HC3 95% CI	FDR- adjusted p
HADS-A	0.32	–4.55 to 5.20	0.897
HADS-D	1.45	–4.24 to 7.14	0.617
RFP domain (adjusted R² = 0.116): predictor	β (per 1 SD)	HC3 95% CI	FDR- adjusted p
Pain intensity (VAS)	–10.91	–16.45 to –5.37	<0.001**
log attack frequency	–0.45	–6.70 to 5.80	0.888
log attack duration	–1.94	–7.90 to 4.03	0.524
Age	–2.37	–8.68 to 3.95	0.463
HADS-A	–0.43	–7.01 to 6.16	0.899
HADS-D	0.44	–6.84 to 7.73	0.905
EF domain (adjusted R² = 0.027): predictor	β (per 1 SD)	HC3 95% CI	FDR- adjusted p
Pain intensity (VAS)	–2.87	–8.61 to 2.86	0.326
log attack frequency	–3.70	–9.59 to 2.20	0.219
log attack duration	–2.21	–8.79 to 4.37	0.510
Age	1.18	–5.13 to 7.50	0.714
HADS-A	–3.69	–9.47 to 2.09	0.211
HADS-D	–2.54	–8.36 to 3.29	0.393

Note: β, unstandardized regression coefficient per 1 SD of the predictor (continuous predictors z-standardized; attack frequency and duration log-transformed); HC3, heteroscedasticity-consistent (type-3) standard errors; CI, confidence interval; Adj. R², adjusted R². Migraine chronicity was excluded (n = 10 with chronic migraine); VIF <1.4 for all predictors. VAS, Visual Analog Scale; HADS, Hospital Anxiety and Depression Scale; MSQ v2.1, Migraine-Specific Quality of Life Questionnaire version 2.1. * p < 0.05; ** p < 0.001. FDR, false discovery rate. Significance symbols refer to FDR-adjusted p-values.

Sensitivity analyses

Influence diagnostics identified 6, 8, and 9 observations exceeding the Cook's distance threshold (4/n) in the RFR, RFP, and EF models, consistent with the restricted, ceiling-weighted VAS distribution. Excluding influential observations preserved and, if anything, strengthened the pain-intensity association (RFR β = –8.91, 95% CI –13.28 to –4.53, p < 0.001, adjusted R² = 0.162; RFP β = –11.43, 95% CI –16.65 to –6.22, p < 0.001, adjusted R² = 0.172), indicating the finding was not driven by influential low-VAS points.

Modeling VAS categorically revealed a graded (dose-response) pattern: relative to the lowest pain category, role functioning declined progressively with higher pain, reaching significance in the highest category for RFR ($\beta = -14.51$; 95% CI -26.82 to -2.19 ; $p = 0.021$) and in both upper categories for RFP (VAS 7–8: $\beta = -14.03$, $p = 0.035$; VAS 9–10: $\beta = -24.91$, 95% CI -40.21 to -9.60 , $p = 0.001$); no gradient was seen for EF (Figure 3).

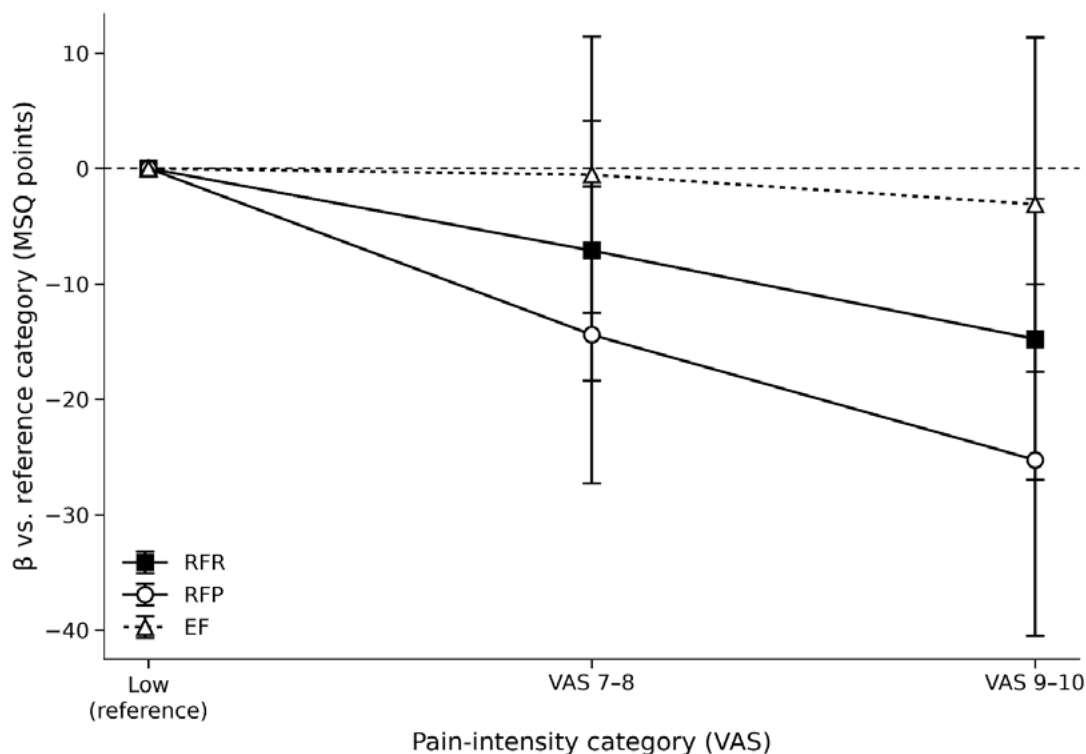


Figure 3. Graded (dose-response) association between pain-intensity category and MSQ v2.1 domains, relative to the lowest-pain reference category ($\beta = 0$). Error bars are HC3 95% confidence intervals. Role functioning (RFR, RFP) declined progressively with higher pain intensity, whereas emotional function (EF) did not.

When the HURT1–3 burden domain was added to the model, the pain-intensity coefficient was modestly attenuated by approximately 11%, but pain intensity remained independently associated with poorer role functioning (RFR $\beta = -6.60$, 95% CI -11.63 to -1.58 , $p = 0.010$; RFP $\beta = -9.63$, 95% CI -15.36 to -3.90 , $p = 0.001$). This partial attenuation is consistent with conceptual overlap between disease burden and quality-of-life constructs and supports the prespecified decision not to include HURT domains in the primary models. The HURT1–3 burden domain was also independently associated with both role-functioning domains, with a graded decline in MSQ scores across increasing burden levels. In contrast, the bivariate HURT1–3–EF association did not persist after multivariable adjustment.

Discussion

The principal finding was that pain intensity was independently associated with migraine-specific role functioning after adjustment for attack frequency, attack duration, age, anxiety, and depression. Higher pain intensity was associated with lower RFR and RFP scores,

whereas no statistically significant independent association was detected for attack frequency or duration. These findings complement earlier work on headache characteristics and disability [13, 14]. They also accord with evidence that pain-intensity improvement is clinically relevant during preventive treatment [15], while differences in design, population, and outcome measure limit direct comparisons. Statistical significance for one predictor and its absence for another does not establish that their associations differ in magnitude.

The association with pain intensity supports assessing patients' functional experience alongside the temporal characteristics of migraine. The MSQ v2.1 has demonstrated validity and reliability in episodic and chronic migraine and in different language versions [23, 24, 25]. However, functional burden also has social and psychological dimensions. In OVERCOME (US), greater migraine-related stigma was associated with greater disability and interictal burden and poorer quality of life [26]. Stigma was not assessed in the present study and may be relevant to future multidimensional investigations.

The pain-intensity association showed a graded pattern across categories and persisted after excluding influential observations and adjusting for headache-related burden (Figures 2 and 3). This consistency supports the robustness of the association to the model specifications examined. It does not establish causality or eliminate residual confounding and measurement error. Because pain intensity reflected the usual rather than the worst attack, the estimates describe retrospectively reported habitual pain severity.

The absence of a statistically significant association between attack frequency and quality of life should not be interpreted as evidence that frequency lacks clinical importance. International observational data show poorer quality of life in chronic than episodic migraine [12], and treatment-related reductions in headache frequency have been associated with improvements in disability [15]. These findings concern different comparisons from the present analysis of monthly attack frequency. The modest attenuation of the pain-intensity coefficient after adding HURT burden is compatible with overlapping constructs, but does not demonstrate mediation.

Attack duration was not significantly associated with any MSQ v2.1 domain in the present analyses. The wide confidence intervals and limited sample size preclude concluding that duration is unrelated to quality of life. Validation studies support the responsiveness of the MSQ v2.1 RFR domain [27], and MSQ scores improved with galcanezumab treatment in a Japanese trial [28]. Neither finding establishes that MSQ is more sensitive to pain intensity than to attack duration. Studies using prospective diaries and repeated quality-of-life measurements are needed to compare these associations more directly.

Anxiety was associated with Emotional Function before multiplicity correction, but this association did not survive FDR adjustment, and neither anxiety nor depression showed a statistically significant independent association with MSQ v2.1 scores. This differs from evidence in other populations: the CaMEQ study associated depression and anxiety with greater headache-related disability after adjustment for headache frequency and other covariates [29], while a hospital-based study identified psychological factors among predictors of quality of life [16]. Differences in instruments, sampling, adjustment, and precision may contribute to these findings. The present results do not establish that affective symptoms are unimportant or explain less variance than pain intensity.

These findings support considering pain intensity together with attack frequency, duration, and patient-reported functioning. Multicountry data and OVERCOME (Japan) demonstrate the breadth of migraine burden across work, daily activities, and emotional well-being [5, 17]. The present associations justify further evaluation of multidimensional assessment, but do not establish that changing assessment practice or targeting pain intensity alone improves quality of life.

Limitations

First, the cross-sectional design precludes causal inference. Second, the primary analytic sample was restricted to 88 women with migraine, which limits generalizability to men and to broader migraine populations. Third, the models were exploratory: each included six predictors relative to a modest sample size, so we report adjusted R^2 and emphasize effect estimates and confidence intervals rather than significance testing alone. Fourth, pain intensity was captured with a single retrospective VAS rating of the usual migraine attack, and the ratings were strongly concentrated at the upper end of the scale (median 8, IQR 6–8). The restricted range may have limited estimation of the pain-intensity association and challenged the linearity assumption; we addressed this with categorical-VAS and influence-diagnostic sensitivity analyses. Retrospective self-report may introduce recall bias. A prospective e-diary study demonstrated discrepancies between patients' recalled migraine-related frequencies and diary-derived measures [30]; the absence of a prospective diary therefore also limits interpretation of frequency estimates in our study. Fifth, several potentially relevant variables—including treatment, socioeconomic status, sleep, and objective disability measures—were not included in the models and may have confounded the observed associations.

Conclusions

In a Kazakhstan cohort of women with migraine, usual-attack pain intensity — rather than attack frequency or duration — was the predictor most consistently and robustly associated with migraine-specific role functioning, following a graded dose–response pattern and persisting after adjustment for headache-related burden. Although emotional function was not explained by pain intensity, these hypothesis-generating findings replicate an established relationship in a previously underrepresented population and suggest that perceived pain intensity is a clinically meaningful target when assessing migraine burden. Larger, longitudinal, and sex-inclusive studies are needed to confirm these associations and to clarify the distinct determinants of role limitation and emotional impact.

Author Contributions

Z.A., Z.K., S.K., A.M. - Conception and design; **Z.A., Z.K., S.K., A.K., Ar.I., A.M.** - Collection and assembly of data; **Z.K., A.I., Z.A., A.M.** - Data analysis and interpretation; **Z.A., A.M.** - Manuscript writing; **Z.A.** - Project administration; **Z.A.** - Funding acquisition. All authors have read and approved the final version of the manuscript.

Funding

This work was financially supported by the Science Committee of the Ministry of Science and Higher Education of the Republic of Kazakhstan (Grant No AP26197925).

Conflicts of Interest

All authors have no conflicts of interest to declare.

Compliance with ethical standards

The study was conducted in accordance with the Declaration of Helsinki and approved by the Local Ethics Committee (Protocol No. 08-2024, October 2024). Informed consent was obtained from all participants. The authors are accountable for all aspects of the work and for ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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Мигрень кезінде ауырсыну қарқындылығының өмір сапасымен байланысы: Қазақстанда жүргізілген көлденең зерттеу

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Аңдатпа. Мигрень тіршілік әрекетінің шектелуіне әкелетін жетекші себептердің бірі болып табылады. Алайда ауырсыну қарқындылығының, ұстамалардың жиілігі мен ұзақтығының мигреньмен байланысты өмір сапасына ықпалы, әсіресе Орталық Азия популяцияларында, жеткіліксіз зерттелген. Зерттеудің мақсаты — қазақстандық когортада мигрень кезіндегі өмір сапасымен байланысты клиникалық және психометриялық факторларды анықтау. Көлденең зерттеуге 195 қатысушы: Бас ауруларының халықаралық жіктемесінің 3-нұсқасына (ICHD-3) сәйкес мигрень диагнозы қойылған 100 пациент және мигрені жоқ 95 адам енгізілді. Регрессиялық талдау мигрені бар 88 әйелмен шектелді. Өмір сапасы Мигрень кезіндегі өмір сапасы сауалнамасының 2.1-нұсқасымен (MSQ v2.1: RFR, RFP және EF), ауырсыну қарқындылығы визуалды аналогтық шкаламен (VAS), ал мазасыздық пен депрессия Госпитальдық мазасыздық және депрессия шкаласымен (HADS) бағаланды. Байланыстар HC3 типті гетероскедастикаға төзімді стандартты қателер және Бенджамини—Хохберг түзетуі қолданылған көптік сызықтық регрессия арқылы бағаланды. HURT1–3 жүктеме домені тек сезімталдық талдауларына енгізілді. Ауырсыну қарқындылығының жоғарылауы RFR ($\beta = -7,51$, 1 SD-ға шаққанда; 95% CA: $-12,18--2,84$; $p = 0,002$) және RFP ($\beta = -10,91$; 95% CA: $-16,45--5,37$; $p < 0,001$) көрсеткіштерінің төмендеуімен байланысты болды. Ұстамалардың жиілігімен немесе ұзақтығымен, жаспен не аффективтік симптомдармен тәуелсіз байланыс анықталған жоқ. Ауырсыну қарқындылығы мен нәтижелер арасындағы байланыс ықпалды бақылауларды диагностикалау, VAS-ты санаттық айнымалы ретінде талдау («доза-жауап») және HURT бойынша қосымша түзету кезінде тұрақты болып қалды. Ұстамалардың жиілігі немесе ұзақтығы емес, әдеттегі ұстама кезіндегі ауырсыну қарқындылығы мигренге тән рөлдік функциялармен ең дәйекті түрде байланысқан предиктор болды.

Түйін сөздер: мигрень, өмір сапасы, ауырсыну қарқындылығы, MSQ v2.1, мазасыздық, депрессия

Связь интенсивности боли с качеством жизни при мигрени: поперечное исследование в Казахстане

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Аннотация. Мигрень является одной из ведущих причин ограничения жизнедеятельности, однако вклад интенсивности, частоты и продолжительности приступов в качество жизни, связанное с мигренью, изучен недостаточно, особенно в популяциях Центральной Азии. Цель исследования — определить клинические и психометрические факторы, ассоциированные с качеством жизни при мигрени в казахстанской когорте. В поперечное исследование включили 195 участников: 100 пациентов с мигренью, диагностированной в соответствии с Международной классификацией головной боли 3-го пересмотра (ICHD-3), и 95 лиц без мигрени. Регрессионный анализ проводили у 88 женщин с мигренью. Качество жизни оценивали с помощью Опросника качества жизни при мигрени версии 2.1 (MSQ v2.1: RFR, RFP и EF), интенсивность боли — по визуальной аналоговой шкале (VAS), тревогу и депрессию — по Госпитальной шкале тревоги и депрессии (HADS). Ассоциации оценивали с помощью множественной линейной регрессии с робастными стандартными ошибками НСЗ и поправкой Бенджамини—Хохберга. Домен бремени HURT1–3 включали только в анализы чувствительности. Более высокая интенсивность боли была ассоциирована с более низкими показателями RFR ($\beta = -7,51$ на 1 SD; 95% ДИ от $-12,18$ до $-2,84$; $p = 0,002$) и RFP ($\beta = -10,91$; 95% ДИ от $-16,45$ до $-5,37$; $p < 0,001$). Независимой ассоциации с частотой или продолжительностью приступов, возрастом либо аффективными симптомами не выявлено. Связь интенсивности боли оставалась устойчивой при диагностике влиятельных наблюдений, анализе VAS как категориальной переменной (доза–ответ) и анализе чувствительности с дополнительной корректировкой по HURT. Интенсивность боли при обычном приступе, а не частота или продолжительность приступов, была предиктором, наиболее последовательно ассоциированным с ролевым функционированием, специфичным для мигрени.

Ключевые слова: мигрень, качество жизни, интенсивность боли, MSQ v2.1, тревога, депрессия

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