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ORIGINAL ARTICLE

The Relationship Between Internet and Social Media Addiction And Migraine Disability In Adults With Migraine

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Abstract

Background: Migraine is a chronic headache disorder involving neurovascular hyperexcitability and trigeminovascular sensitization, leading to functional impairment. With digital technologies now pervasive, excessive internet and social media use may contribute to migraine burden. This study examined the relationship between internet and social media addiction, screen exposure, and migraine-related disability in adults.

Methods: Eighty-two adults aged 18–65 years with a diagnosis of migraine according to the International Classification of Headache Disorders, 3rd edition (ICHD-3) and without significant neurological or severe psychiatric comorbidities were included. Sociodemographic data, the Visual Analog Scale (VAS), the Migraine Disability Assessment (MIDAS), the Young Internet Addiction Scale (YIAS), and the Social Media Addiction Scale (SMAS) were administered. Average daily smartphone screen time over the past seven days was recorded. Spearman correlation coefficients and multivariable linear regression models were used for the analyses.

Results: Spearman correlation analysis revealed significant positive associations between MIDAS and both YIAS (ρ = 0.458) and SMAS (ρ = 0.541), with SMAS showing the stronger relationship. Average daily screen time was also correlated with MIDAS (ρ = 0.345). In multivariable models, YIAS and screen time remained independently associated with MIDAS when included together. However, when SMAS was entered alongside screen time, only SMAS remained significant (β = 0.33; 95% CI: 0.18–0.47). Likewise, in the model including both SMAS and YIAS, SMAS remained an independent predictor (β = 0.43; 95% CI: 0.20–0.66), whereas YIAS lost significance (β = –0.21; 95% CI: –0.79 to 0.37).

Conclusion: The findings suggest that migraine burden may be more closely related to social interaction–based digital exposure than to overall internet use. Social media–related behaviors could be a potential target for intervention, although prospective studies are needed to confirm this.

Keywords: Migraine, social media, internet addiction, addictive behavior.

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INTRODUCTION

Migraine is a primary headache disorder characterized by neurovascular activation, cortical hyperexcitability, and trigeminovascular system sensitivity and it causes significant functional impairment and loss of productivity in the adult population (1). With the proliferation of digital technologies in daily life, the impact of screen-based behaviors on migraine threshold mechanisms has become increasingly apparent. Light exposure has been shown to increase sensitivity in thalamic-trigeminal nociceptive networks, suggesting an underlying photic-sensitization mechanism (2-4).

The uncontrolled increase in internet and social media use leads to significant changes in reward, arousal, and emotional regulation circuits. It can result in behavioral patterns characterized by impulsivity, risk-taking, and a loss of control (5). This digital addiction behavior is not merely a behavioral phenomenon at the clinical level, but also significantly affects sleep, mood, and stress (6,7). Data from children and adolescents show that screen time is associated with migraine-like headache patterns (8,9). However, the nature of the relationship between digital addiction scores and migraine disability in the adult migraine population remains insufficiently elucidated.

Social media use is a specific subtype of digital behavior that differs from the classic "internet usage time" criterion, offering users a distinct dopaminergic stimulation model based on social comparison, social feedback, and emotional loading. The unique contribution of this subgroup to migraine burden has been examined in limited studies, primarily in adolescent populations (10,11). A recent longitudinal study among adolescents reported higher headache severity among individuals who used social media more intensively (10).

However, it has been noted that social media is not merely a "risk factor" for migraine; in some patients, it can also serve as a potential tool for education, self-management, and social support (12). Similarly, it has been suggested that migraine sufferers actively using social media to express their feelings and share experiences may also play a protective and therapeutic role in disease management (13). Despite these emerging insights, there remains a notable gap in the literature regarding the relative contributions of internet addiction, social media–specific behavioral patterns, and real-time screen exposure to migraine-related disability in adult populations. Existing studies are sparse, largely adolescent-focused, and do not simultaneously evaluate these digital dimensions within the same analytical framework, leaving the specific behavioral components that most strongly influence migraine burden insufficiently clarified.

Therefore, the literature indicates that social media use is a dual-sided phenomenon for migraine; it can be both a risk factor and a potential behavioral support factor. However, data systematically analyzing the potential impact of social media addiction, internet addiction, and screen exposure on migraine disability when evaluated together in the adult migraine population is extremely limited. This study aims to assess the relationship between digital addiction parameters and migraine disability in adult migraine patients and to investigate whether digital behavior is a clinically targetable area for modification.

In line with the neurobehavioral mechanisms and empirical findings reported in prior literature, we formulated explicit a priori hypotheses to guide the analytic framework of the present study. We anticipated that higher levels of internet-related addictive behaviors—particularly social media–driven engagement would be associated with greater migraine-related disability. Specifically, we expected that both internet addiction and social media addiction scores would correlate positively with MIDAS scores, with the magnitude of association being more substantial for social media–related behavioral parameters. We further hypothesized that greater daily smartphone screen time would be associated with higher disability levels. We hypothesized that higher levels of social media addiction, general internet use, and screen time would be associated with greater migraine-related disability. We further anticipated that these digital behavior–related variables might demonstrate differential associations with disability outcomes when evaluated in multivariable models.

MATERIALS AND METHODS

Study Design and Participants

This cross-sectional descriptive study was conducted between October 5, 2025, and October 31, 2025, at

the Neurology Outpatient Clinic of Ankara Yıldırım Beyazıt University Yenimahalle Education and Research Hospital. Individuals aged 18–65 years who were consecutively referred to the outpatient clinic and diagnosed with migraine by a neurologist according to the criteria of the International Classification of Headache Disorders, 3rd edition (14), and who had at least a primary school education were included in the study. Those who did not provide written informed consent, those with a history of perinatal neurological damage, epilepsy, intracranial tumor, or vascular malformation, and those with severe psychiatric disorders such as cognitive impairment, dementia, schizophrenia, or bipolar disorder were excluded from the study..

Initially, 87 individuals were evaluated; 3 declined to participate, and two were excluded from the analysis because they did not complete the scales. The final analysis included 82 participants.

Since no prior study has directly examined the combined effects of internet addiction, social media addiction, and smartphone screen time on migraine disability, no identical effect size was available in the literature. Therefore, an a priori power analysis was conducted using the closest analogous parameter, a correlation coefficient reported by Tepecik-Büyükbaş et al. (2019), which indicated an association between digital media exposure and headache outcomes ($r \approx 0.63$) (8). This value was used only as an approximate effect size to estimate the minimum sample size for detecting a moderate–to–significant association (two-tailed, $\alpha = 0.05$, power = 0.80), yielding a required sample size of at least 35 participants.

Nevertheless, the primary analyses of the present study are multivariable regression models. Therefore, a post-hoc analysis using the observed effect sizes was also performed. The main regression model (Model B) explaining MIDAS showed an effect size of $f^2 = 0.43$, corresponding to a post-hoc achieved power of 0.99, indicating that the final sample size (n = 82) was sufficient for the regression-based analyses.

Data Collection

The same neurologist collected the data through face-to-face interviews. Participants completed a sociodemographic data form, which included age, gender, education status, marital status, employment status, duration of illness (in months), attack frequency (number of attacks/month), attack duration (in hours), and pain intensity (measured on a Visual Analog Scale (VAS). Subsequently, the Migraine Disability Assessment (MIDAS), Young Internet Addiction Scale (YIAS), and Social Media Addiction Scale (SMAS) were completed by the participants.

Measuring Instruments

MIDAS (Migraine Disability Assessment): A measure developed to assess the functional impact of migraine on patients' daily lives and the disability it causes. It is used to evaluate the effects of migraine on individuals' quality of life. It inquires about migraine-related losses in the last 3 months. It consists of 5 main questions. Each question is scored based on the days experienced. The total score determines the MIDAS score (15). It was adapted into Turkish by Mustafa Ertaş and colleagues in 2004 (16).

Young Internet Addiction Scale: Developed by Young as a diagnostic questionnaire and converted into a 20-item self-report form. The scale uses 6-point Likert-type response options ranging from “never” to “constantly,” and items are rated on a 0–5 scale. An increase in the total score indicates greater problematic use (17). The internal consistency coefficient of the Turkish version adapted by Bayraktar was high (Cronbach's alpha = 0.91; Spearman-Brown = 0.87) (18).

The Social Media Addiction Scale: Developed by Tutgun-Ünal and Deniz, is a 41-item, five-point Likert-type scale that includes four subscales: Occupation, mood regulation, relapse and conflict. Higher scores reflect higher levels of social media addiction. The scale's internal consistency was relatively high (Cronbach's alpha = 0.967). The total score on the SMAS ranges from 41 to 205, with higher scores indicating greater addiction severity (19).

Statistical Analysis

Data were analyzed using IBM SPSS Statistics for Windows, Version 26.0 (IBM Corp., Armonk, NY, USA). Normality was assessed using the Shapiro–Wilk test. Normally distributed variables were reported as mean ± standard deviation, non-normally distributed variables

as median (IQR), and categorical variables as number and percentage. Relationships between MIDAS scores and clinical variables were assessed using Spearman correlation analysis. Average daily smartphone screen time was divided into three tertiles, and differences in MIDAS levels were compared using the Kruskal–Wallis test. To evaluate the independent predictors of MIDAS, age- and gender-adjusted multivariate linear regression analyses were performed. Regression results were reported as β coefficients, 95% confidence intervals, and p-values. Statistical significance was set at two-tailed $p<0.05$. Before conducting multivariable regression analyses, standard assumption checks were performed. Linearity and homoscedasticity were assessed by visual inspection of standardized residual plots and P–P and Q–Q plots. The normality of residuals was evaluated using the Shapiro–Wilk test. Multicollinearity was examined via the Variance Inflation Factor (VIF), and all VIF values were <2.0, indicating no collinearity concerns. No substantial violations of regression assumptions were detected.

Ethical Approval

This study was conducted in accordance with the principles outlined in the Declaration of Helsinki. It was approved by the Clinical Research Ethics Committee of Ankara Yıldırım Beyazıt University Yenimahalle Training and Research Hospital (Decision No: 2025-22). Written informed consent was obtained from all participants.

RESULTS

A total of 82 patients with migraine were included in the study. Seventy-one participants were female (86.6%) and 11 were male (13.4%). The mean age was 39.9 ± 11.2 years, and the median disease duration was 120 months (IQR: 60–180 months). The mean VAS was 8.73 ± 0.89, the mean attack frequency was 5.17 ± 3.28/month, and the median attack duration was 24 (IQR: 15–48) hours. The educational level was evenly distributed between high school graduates and university graduates (n=41 and n=41, respectively). Forty-four participants were employed (53.7%), 64 were married (78.0%), 58 had children (70.7%), and 43 were smokers (52.4%). The mean MIDAS total score was 29.4 ± 16.0.

The mean SMAS and YIAS total scores were 68.3 ± 24.2 and 13.3 ± 9.6, respectively. The SMAS subscale means were Occupation 24.55 ± 8.69, Mood 10.10 ± 4.29, Relapse 8.16 ± 4.51, and Conflict 26.13 ± 14.79. In the Spearman correlation analysis, the YIAS score showed a positive correlation with MIDAS ($\rho = 0.458$), SMAS ($\rho = 0.745$), and attack frequency ($\rho = 0.193$). The SMAS score was positively correlated with MIDAS ($\rho = 0.541$) and attack frequency ($\rho = 0.201$). Attack duration was not related to either YIAS or SMAS. When SMAS subscales were included in the same model, only the Occupation subscale was independently associated with MIDAS ($\beta=1.05$; 95% CI: 0.61–1.50; $p<0.001$). Mood, Relapse and Conflict were not significant.

The strongest relationship was observed with the YIAS score in the Conflict sub-dimension ($\rho = 0.728$). Additionally, disease duration showed an inverse correlation with both YIAS ($\rho = –0.276$) and SMAS ($\rho = –0.250$) (Table 1).

In the multivariate linear regression analysis, after controlling for age and gender, the YIAS score remained an independent predictor variable for MIDAS ($\beta = 0.79$; $p < 0.001$; $R^2 = 0.201$). In the model that included the SMAS subscales, Occupation ($\beta = 0.89$; $p < 0.001$) and Conflict ($\beta = 0.26$; $p = 0.021$) were identified as independent predictors of MIDAS ($R^2 = 0.362$). The primary regression models reported in the main manuscript (Table 2) include only total YIAS and total SMAS scores, which constituted the a priori analytic framework. When YIAS and SMAS were included together in the same model, only SMAS remained an independent predictor of MIDAS (SMAS $\beta = 0.43$; $p < 0.001$), while YIAS lost its significance ($\beta = –0.13$; $p = 0.672$) (Table 2).

Table 2 presents the primary age- and gender-adjusted multivariable regression models that constituted the a priori analytic framework of the study. In contrast, Table 3 summarizes unadjusted exploratory models conducted to illustrate the comparative behavior of digital variables when evaluated without demographic controls.

In addition to the primary, hypothesis-driven regression models presented in Table 2, a set of secondary exploratory analyses was performed to facilitate interpretation of the shared variance among digital behavior variables. These models, summarized in Table 3, were not designed as independent confirmatory analyses but rather to illustrate how internet addiction, social

Table 1. Correlations: MIDAS, Young, SMAS, Attack Frequency, and Daily Screen Time

Variable	MIDAS ϱ (p)	Young ϱ (p)	SMAS ϱ (p)	Attack frequency ϱ (p)	Average daily screen time ϱ (p)
MIDAS	1.000	—	—	—	—
Young	0.458 (p<0.001)	1.000	—	—	—
SMAS	0.541 (p<0.001)	0.745 (p<0.001)	1.000	—	—
Attack frequency	0.542 (p<0.001)	0.193 (p=0.084)	0.202 (p=0.062)	1.000	—
Screen time	0.345 (p=0.002)	0.366 (p=0.001)	0.490 (p<0.001)	0.097 (p=0.398)	1.000

Spearman's rank correlation coefficients (ρ) are presented. MIDAS: Migraine Disability Assessment Scale; SMAS: Social Media Addiction Scale. p<0.05 was considered statistically significant.

Table 2. Multivariable Linear Regression Results (95% CI)

Model A – MIDAS ~ Young + Screen time + Age + Gender			
Variable	**β (p)**	**95% CI**	**Standardized β**
Young	0.63 (p=0.002)	0.25 to 1.02	0.61
Average daily screen time (hours/day)	3.06 (p=0.048)	0.03 to 6.10	0.35
Age	0.19 (p=0.214)	-0.11 to 0.50	0.21
Gender (Female/Male)	1.77 (p=0.706)	-7.54 to 11.07	0.06
Constant	0.54 (p=0.959)	-20.35 to 21.43	—
Adjusted R^2 = 0.202			
Model B – MIDAS ~ Young + SMAS+ Age + Gender			
Variable	**β (p)**	**95% CI**	**Standardized β**
SMAS	0.43 (p<0.001)	0.20 to 0.66	1.03
Young	-0.13 (p=0.672)	-0.73 to 0.47	–0.12
Age	0.19 (p=0.203)	-0.10 to 0.47	0.21
Gender (Female/Male)	3.29 (p=0.462)	-5.56 to 12.13	0.11
Constant	-9.29 (p=0.374)	-30.00 to 11.41	—
Adjusted R^2 = 0.285			

β coefficients represent unstandardized regression coefficients; 95% confidence intervals (CI) are shown in brackets. p<0.05 was considered statistically significant. MIDAS: Migraine Disability Assessment Scale; SMAS: Social Media Addiction Scale.

Table 3. Exploratory Pairwise Regression Models for MIDAS

Model	Predictor	β	%95 GA (CI)	p	R^2
YOUNG score + Screen time	YOUNG score	0.55	0.20 – 0.90	0.003	0.225
	Screen time(hours/day)	3.18	0.19 – 6.17	0.039	
SMAS score + Screen time	SMAS score	0.33	0.19 – 0.47	<0.001	0.305
	Screen time (hours/day)	1.33	–1.74 – 4.40	0.394	
SMAS score + YOUNG score	SMAS score	0.43	0.19 – 0.67	<0.001	0.303
	YOUNG score	-0.21	–0.79 – 0.37	0.480	

β values represent unstandardized regression coefficients; 95% confidence intervals (CI) are provided in parentheses. p<0.05 was considered statistically significant. MIDAS: Migraine Disability Assessment Scale; SMAS: Social Media Addiction Scale.

media addiction, and screen time behave when evaluated in isolation or in simple combinations without demographic adjustment. The purpose of this secondary modeling strategy was to aid conceptual understanding of the overlap between predictors and to support interpretation of the primary findings, particularly the attenuation of the internet addiction effect when social media addiction was included. Accordingly, the main inferential conclusions of the study are based on the adjusted models presented in Table 2, whereas the results in Table 3 should be interpreted as explanatory and exploratory.

Given the observed shared variance between YIAS and SMAS, formal multicollinearity diagnostics were conducted. The VIF values for YIAS and SMAS were 7.42 (tolerance 0.135) with a condition index of 12.55, indicating moderate but not severe collinearity . Therefore, the loss of significance for YIAS in the joint models appears attributable to shared behavioral variance rather than regression instability.

The average daily screen time over the past week was positively correlated with MIDAS ($\varrho = 0.345$), YIAS total score ($\varrho = 0.366$), and SMAS total score ($\varrho = 0.490$); however, it did not show a significant correlation with attack frequency ($\varrho = 0.097$) or attack duration ($\varrho = 0.077$). When screen time was included in the model, both YIAS and screen time remained independent predictors of MIDAS ($\beta = 0.63$ and $\beta = 3.06$; $R^2 = 0.241$).

Across the exploratory pairwise multivariable models summarized in Table 3, social media addiction (SMAS) consistently remained statistically associated with MIDAS across different predictor combinations, whereas the associations of general internet addiction (YIAS) and screen time varied depending on model composition. When SMAS and screen time were included together, both variables showed independent associations with MIDAS (SMAS $\beta = 0.55$, $p = 0.003$; screen time $\beta = 3.18$, $p = 0.039$; $R^2 = 0.225$); however, in an alternative pairwise specification, only SMAS remained statistically significant ($\beta = 0.33$, $p < 0.001$), while screen time was not ($\beta = 1.33$, $p = 0.394$; $R^2 = 0.305$). Similarly, when SMAS and YIAS were evaluated together, the association between YIAS and MIDAS was attenuated ($\beta = –0.21$, $p = 0.480$), whereas SMAS remained significant ($\beta = 0.43$, $p < 0.001$; $R^2 = 0.303$). These findings are presented to illustrate the stability and attenuation patterns among overlapping digital behavior variables and should be interpreted as exploratory rather than as evidence of hierarchical

or relative predictor dominance. To further explore the shared and incremental variance among digital behavior variables, a sequential exploratory modeling approach was applied. In the initial model, YIAS accounted for 18.2% of the variance in MIDAS. When SMAS was subsequently added, the explained variance increased to 30.3% ($\Delta R^2 = 0.1205$; F-change = 13.65; p = 0.0004). The additional inclusion of average daily screen time resulted in a minimal and non-significant increase in explained variance ($\Delta R^2 = 0.0054$; F-change = 0.612; p = 0.436). These analyses were conducted to aid interpretation of overlapping behavioral variance and should be considered exploratory; therefore, they do not support formal inference regarding hierarchical contribution or predictor dominance. Adjusted R^2 values for all models are provided in Tables 2 and 3.

The average daily screen time based on smartphones was divided into three tertiles according to the raw percentile distribution: low screen exposure (T1 ≤ 2.58 hours/day; n = 15), moderate screen exposure (T2 = 2.59–4.41 hours/day; n = 51), and high screen exposure (T3 ≥ 4.42 hours/day; n = 16).

In the tertile analysis of screen time, the median values of the MIDAS were 25.0, 30.0, and 40.5 in the low, medium, and high screen time groups, respectively, and this difference was statistically significant (Kruskal–Wallis H = 9.93, p = 0.0069) (Figure 1). When examining the relationship between YIAS–MIDAS across screen levels, the correlation was weak (ϱ = 0.20) in both the low and high screen exposure groups, and significantly higher (ϱ = 0.70) in the medium screen exposure group (Figure 2). This finding indicates a non-linear modulation effect of digital exposure on the addiction–disability relationship. (Figure 1.)

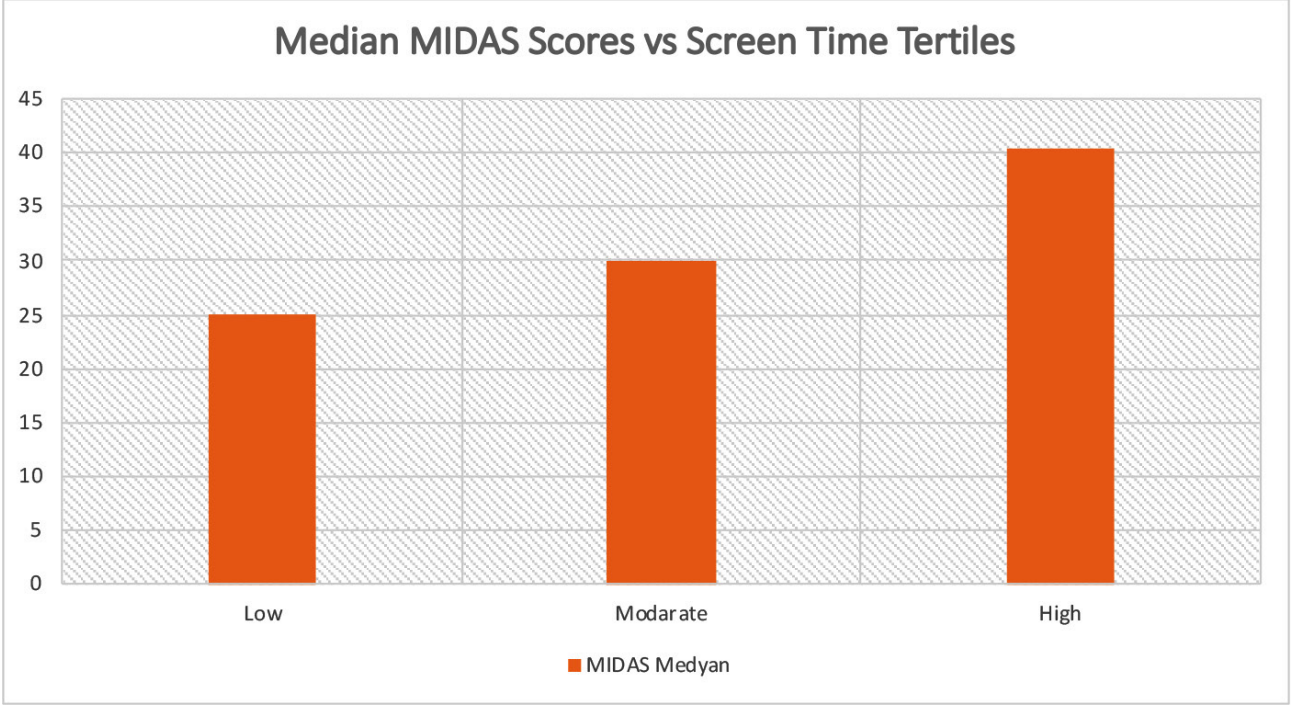

Figure 1: Comparison of MIDAS scores across tertiles of average daily screen time.

Note: *MIDAS median scores increased progressively across screen time tertiles, low (≤2.58 h/day), medium (2.59–4.41 h/day), and high (≥4.42 h/day), indicating a significant association between greater screen exposure and higher migraine-related disability (Kruskal–Wallis H = 9.93, p = 0.0069).*

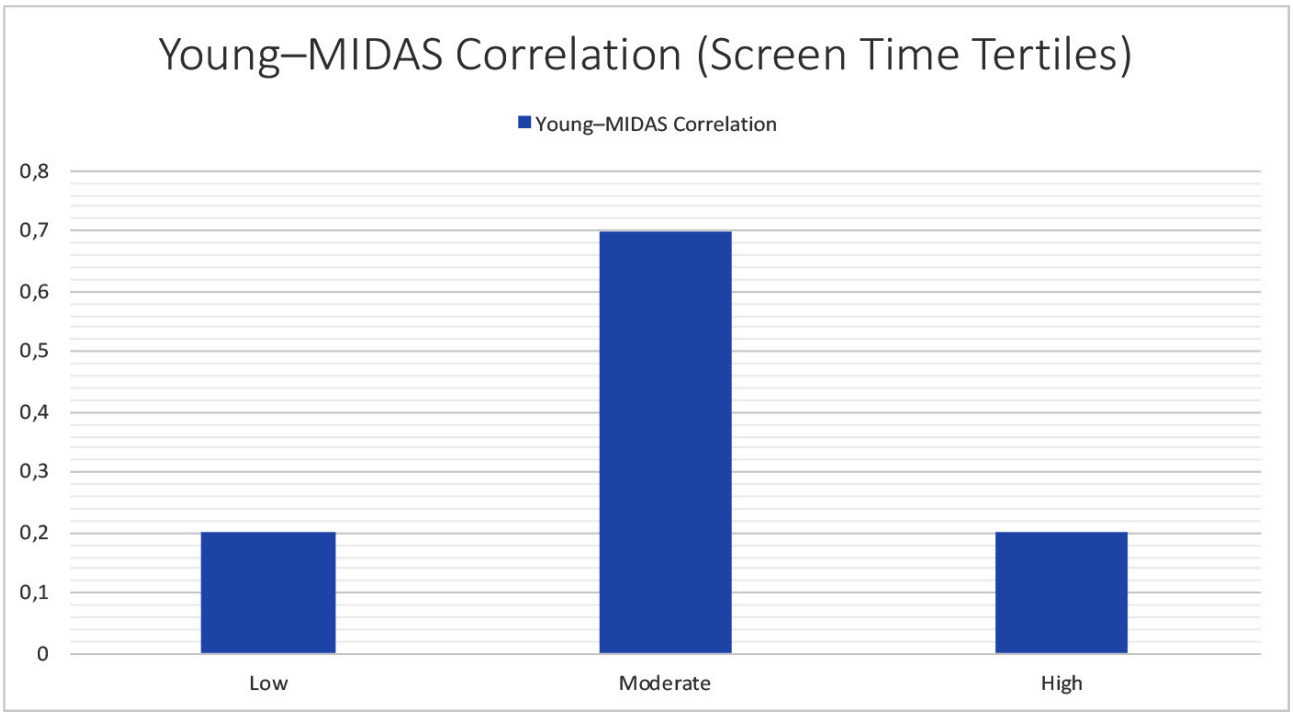

Figure 2: Young–MIDAS correlation coefficients across screen-time tertiles.

Note: *The correlation between Young Internet Addiction Scale scores and MIDAS was weak in the low (ρ ≈ 0.20) and high (ρ ≈ 0.20) screen-time groups, but markedly stronger in the moderate exposure group (ρ ≈ 0.70), suggesting a non-linear modulation effect of digital exposure on the relationship between internet-related addictive behavior and migraine-re*lated disability.

DISCUSSION

This study is one of the limited number of investigations evaluating the clinical interaction between digital addiction levels and migraine-related disability in adults with migraine. Our findings indicate that social media addiction levels represent the most consistently associated behavioral factor with migraine disability and that social media addiction scores remain the only variable that can be independently associated, even when internet addiction and screen time are included in the model. This result suggests that the burden of migraine may be more closely related to forms of digital exposure based on social interaction rather than the overall intensity of digital behavior.

This finding is consistent with the neuro-emotional mechanisms reported in the literature. Internet addiction has been associated with impaired decision-making, risk-taking behavior, and impulsivity regulation (5). Internet addiction has also been shown to significantly increase sleep disturbance, depression, anxiety, and stress scores in university students (6). Screen exposure in children and adolescents has been reported to trigger migraine-type headaches (8). It has been shown that photophobic flare-ups associated with screen exposure can create hyperexcitability in trigeminal pain circuits (2). On the other hand, social comparison, expectations, and emotional overload that develop during social media use can create more targeted emotional pressure on the stress-reward axis (11). When these mechanisms are considered together, the highest correlation observed in our study at moderate screen exposure levels is consistent with the non-linear digital behavior threshold and allostatic load theory (20).

Notably, the slight decrease in both YIAS and SMAS scores as the duration of illness increased may suggest

that a more extended history of migraine could indicate a behavioral adjustment toward "adaptive avoidance" or "habit stabilization" in digital behaviors. However, this observation does not imply causality and should be confirmed in future longitudinal designs.

From a clinical perspective, the findings suggest that digital hygiene and social media behavior may be targets for behavioral interventions in migraine management.

These findings are also consistent with behavioral and psychosocial dynamics. It has been reported that excessive social media use increases emotional stressors such as emotional overload, social comparison, expectation tension, and social bullying, which may be associated with depression and stress symptom profiles (21). A longitudinal study of adolescents showed that headache intensity increased with increased social media consumption (10). Furthermore, in chronic pain populations, the fear-avoidance model suggests that the tendency to avoid pain triggers may lead to social withdrawal, decreased physical activity, and passive behavior patterns (22). Such a behavioral cycle can transform social media use into a secondary coping strategy by increasing the tendency toward a quieter environment/digital space. However, the literature suggests that social media can serve not only as a risk factor but also as a supportive tool for some individuals (23). It has been reported that individuals with migraine actively use social media to receive social support from people with similar experiences, share information, and develop self-management strategies, thereby reducing feelings of isolation and uncertainty (24). Therefore, social media behavior in the context of migraine is more complex than a one-way "risk exposure"; it is a two-way phenomenon that can produce both adverse and supportive outcomes depending on the context, purpose of use, and the user's psychosocial characteristics. The findings suggest that social interaction-focused digital behavior in adults with migraine may have a more pronounced effect on migraine disability compared to overall internet usage intensity; therefore, social media-focused behavioral modification strategies should be considered a rational target in clinical management.

This study has several important strengths. First, the simultaneous examination of internet addiction, social media addiction, and real screen exposure in the adult migraine population within the same sample is a rare approach in the literature. It has enabled a multidimensional analysis of the specific contribution of digital behavior to the migraine burden. Additionally, the use of standard measurement tools with well-documented validity and reliability, such as MIDAS, YIAS, and SMAS, enhances the clinical comparability and methodological robustness of the results obtained. The fact that digital exposure is assessed based on actual measurements of smartphone screen time over the past week, rather than solely on subjective reports, is another strong point that reduces bias in digital behavior measurement. In addition, examining social media addiction at the sub-dimension level has provided a unique contribution in terms of revealing which psychosocial mechanisms more clearly reflect the behavioral components associated with migraine burden.

Although both YIAS and SMAS demonstrated significant univariable associations with migraine-related disability, the attenuation of the YIAS effect in multivariable models is consistent with shared behavioral variance rather than statistical instability. Formal collinearity diagnostics (VIF = 7.42; tolerance = 0.135; condition index = 12.55) indicated moderate but not critical multicollinearity, suggesting that the observed loss of significance for YIAS reflects conceptual overlap, particularly the interpersonal and conflict-driven behavioral dimensions captured more strongly by SMAS rather than model distortion. Taken together, the primary age- and gender-adjusted models indicate that social media addiction shows a more stable independent association with migraine-related disability than general internet addiction. The exploratory analyses were used solely to aid interpretation of overlapping digital behavior patterns rather than to infer hierarchical or relative predictor dominance.

Finally, controlling for potential confounding variables such as age and gender in multivariate models has made it possible to test the effect of social media addiction on migraine disability as an independent determinant beyond a simple correlation finding.

This study has some limitations. First, the research has a cross-sectional design; therefore, the direction and causality of the relationship between digital addiction levels and migraine disability cannot be interpreted. Screen exposure was measured solely based on smartphone use, and other digital platforms, such as computers, tablets, and televisions, were not included in

the assessment. MIDAS is based on self-reporting for variables such as attack duration and attack frequency and is susceptible to retrospective recall bias. The study was conducted at a single center, limiting the generalizability of the results. Psychiatric comorbidities known to have a strong interaction with migraine burden, such as depression, anxiety, sleep disorders, and especially insomnia, were not systematically measured in this study. This omission may potentially exaggerate the magnitude of the observed relationship or distort its direction. Therefore, at least part of the effect of digital addiction scores on MIDAS may be indirectly reflected through psychosocial comorbidity burden. Consequently, the current findings should be interpreted with caution in light of possible third variables with regulatory/modulatory roles, without implying causality. Furthermore, the types of social media platforms and the use of pharmacological prophylaxis have not been disaggregated. Given these limitations, the findings should be interpreted with caution.

CONCLUSION

This study reveals that the level of social media addiction in adults with migraine shows a stronger relationship with migraine-related disability than internet addiction. The findings suggest that digital behavior, particularly its social-interaction-focused component, may be a potential target for reducing migraine burden. Increased smartphone-based screen exposure partially strengthens this relationship; however, the level of social media addiction remains the key determinant in explaining migraine burden. Therefore, it is reasonable to consider the "digital hygiene" approach as a behavioral intervention area in migraine management. Prospective studies that differentiate platform types are needed.

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Abbreviations List

VAS: Visuel Analog Scala
MIDAS: Migraine Disability Assessment
YIAS: Young Internet Addiction Scale
SMAS: Social Media Addiction Scale

Ethics Approval and Consent to Participate

This study was conducted in accordance with the principles outlined in the Declaration of Helsinki. It was approved by the Clinical Research Ethics Committee of Ankara Yıldırım Beyazıt University Yenimahalle Training and Research Hospital (Decision No: 2025-22).

Consent for Publication

Written informed consent was obtained from all participants included in the study. Participants were clearly informed that they could withdraw from the study at any time, and this would not affect their medical care.

Availability of Data and Materials

All data has been anonymized, and no participant information has been shared with third parties or institutions. The data has been used solely for scientific analysis purposes.

Competing Interests

All authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest or nonfinancial interest in the subject matter or materials discussed in the manuscript.

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Author Contributions

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