# Diet Quality and Mindfulness as Predictors of Emotional Well-being in Adults With High Stress

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**ABSTRACT**

This study aimed to examine the predictive roles of diet quality and mindfulness in emotional well-being among adults experiencing high levels of stress. A correlational descriptive research design was employed, involving a sample of 392 adults residing in Georgia. The sample size was determined based on the Morgan and Krejcie table to ensure statistical power. Participants were selected through stratified random sampling and completed standardized self-report instruments including the Warwick-Edinburgh Mental Well-being Scale (WEMWBS), the Healthy Eating Index−2015 (HEI-2015), and the Five Facet Mindfulness Questionnaire (FFMQ). Emotional well-being was the dependent variable, while diet quality and mindfulness were the independent variables. Data were analyzed using SPSS version 27. Pearson correlation coefficients were calculated to assess the relationship between emotional well-being and each predictor. Multiple linear regression analysis was performed to determine the combined predictive power of the independent variables. Results showed significant positive correlations between emotional well-being and both diet quality ($r = .41$, $p < .01$) and mindfulness ($r = .52$, $p < .01$). The multiple linear regression model was statistically significant, $F_{(2, 389)} = 91.84$, $p < .001$, with an $R^2$ of .32, indicating that 32% of the variance in emotional well-being could be explained by the two predictors. Mindfulness ($\beta = .39$, $p < .001$) emerged as a slightly stronger predictor than diet quality ($\beta = .27$, $p < .001$). The findings indicate that both diet quality and mindfulness significantly and independently predict emotional well-being in adults with high stress. These results underscore the importance of integrated lifestyle interventions that promote both nutritional and psychological self-care strategies to enhance emotional resilience in high-stress populations.

**Keywords:** Diet quality, mindfulness, emotional well-being, high stress, mental health, lifestyle predictors.

## Introduction

There is a growing body of literature suggesting that diet plays a substantial role in shaping mental and emotional health outcomes. A high-quality diet—typically rich in fruits, vegetables, whole grains, healthy fats, and lean protein—has been associated with reduced inflammation, balanced gut microbiota, and improved neurotransmitter synthesis, all of which contribute to better mental health outcomes (1, 2). Conversely, consumption of a Western-pattern diet, characterized by high levels of saturated fats, refined

sugars, and processed foods, has been implicated in adverse emotional and cognitive outcomes, including heightened stress sensitivity and emotional dysregulation (3, 4). Several studies have documented the biological and behavioral mechanisms by which poor dietary habits may contribute to oxidative stress, reduced neuroplasticity, and elevated inflammation—pathways known to underlie emotional disturbances (5, 6).

Recent experimental work in psychonutrition has further demonstrated that dietary interventions aimed at improving gut microbiota through fiber-rich or psychobiotic diets significantly reduce perceived stress and enhance emotional well-being (7). These findings underscore the biological interconnectedness of the gut-brain axis and how diet quality can serve as a modifiable predictor of emotional health. This is supported by cross-sectional research showing that individuals with higher diet quality report lower stress and greater life satisfaction (8, 9). University students with poor diet quality and elevated perceived stress scores were found to engage in emotional eating, further exacerbating psychological distress (10). Moreover, stress-related nutritional changes in occupational settings have been observed to negatively affect both diet quality and emotional well-being among healthcare workers (11).

Diet's role in emotional well-being is also mediated by environmental, physiological, and metabolic factors. High-carbohydrate or mycotoxin-contaminated diets have been shown to increase oxidative stress and reduce hepatic function, impacting hormonal and emotional regulation (2, 12). These biological stressors may hinder the body's ability to respond adaptively to emotional challenges. Similarly, weight cycling and inconsistent dietary intake have been linked to increased hepatic lipid peroxidation and protein carbonylation, both indicators of impaired metabolic and emotional regulation (13). Even protein composition in the diet plays a role; insufficient protein can undermine stress resistance and antioxidant defense, leading to heightened vulnerability to emotional stressors (14).

Alongside diet, mindfulness has emerged as a powerful psychological resource for enhancing emotional well-being. Mindfulness, commonly defined as a nonjudgmental awareness of the present moment, is associated with improved emotion regulation, reduced psychological reactivity, and enhanced self-awareness (15). Mindfulness training has been shown to downregulate physiological stress responses by reducing cortisol levels and promoting parasympathetic activity, resulting in improved emotional balance. The protective function of mindfulness becomes particularly salient in high-stress populations, as it enables individuals to observe internal and external stressors without being overwhelmed by them.

Recent meta-analyses and clinical interventions have validated mindfulness as an effective mechanism for fostering resilience and psychological well-being in both clinical and non-clinical samples. For instance, individuals who practiced mindfulness reported lower emotional distress and better dietary regulation, suggesting a bidirectional link between mindfulness and diet quality (9). Additionally, mindfulness has been associated with increased self-efficacy in emotion regulation and a reduction in maladaptive coping strategies such as emotional eating, especially under stress (10, 11). These findings point to mindfulness not only as a direct predictor of emotional well-being but also as an indirect moderator in the stress-diet relationship.

Moreover, emerging studies in nutritional neuroscience have begun to integrate diet and mindfulness in combined models to explain mental health outcomes. The psychobiotic diet framework, which emphasizes feeding beneficial gut microbes through mindful, intentional eating patterns, has shown promise in reducing

perceived stress and enhancing overall emotional resilience (7, 16). This convergence suggests that both internal psychological processes (mindfulness) and external behavioral patterns (diet) are essential and potentially interactive contributors to emotional health.

It is also important to note the environmental and sociocultural dimensions of these factors. Studies have shown that emotional eating and diet choices are deeply embedded in the social context of stress exposure, with emotional cues often overriding nutritional intentions, especially during public crises such as the COVID-19 pandemic (17, 18). The instability of routines and increased perceived vulnerability during such times tend to reduce diet quality and disrupt mindfulness practices, leading to deteriorated emotional well-being. These findings further highlight the need for integrative models that consider both behavioral and psychological variables in predicting emotional outcomes.

The intersection of diet, mindfulness, and stress has also been explored in animal studies. For instance, rodents exposed to Western-style diets showed increased expression of stress-related genes such as Drd1 and Nr3c1, which are involved in emotional regulation and HPA axis sensitivity (4). Similar sex-dependent effects of malnutrition on lifespan and emotional regulation have been documented in Drosophila, suggesting that diet-induced emotional dysregulation may have evolutionary underpinnings (14, 19). In another study, bees fed cyanobacteria-based diets exhibited proteomic changes linked to stress resistance and antioxidant defense, indicating that even non-human species experience dietary modulation of emotional and physiological states (20).

Nutritional supplementation studies further corroborate the diet-emotion link. For example, spirulina supplementation in broiler diets was found to enhance physiological stress responses during hot climates, potentially providing insights into adaptogenic effects of dietary interventions (21). Similarly, thymol and eugenol supplementation in rabbit diets improved hematological stress markers, suggesting cross-species evidence of dietary effects on stress physiology (22). Although these studies are non-human, they offer biological plausibility for how dietary components might influence emotional well-being in humans through anti-inflammatory and antioxidant pathways.

Despite the compelling evidence linking both diet and mindfulness to emotional outcomes, most prior studies have examined these variables in isolation. Few have investigated their combined predictive power in high-stress adult populations. Furthermore, much of the existing literature is either focused on clinical populations or lacks comprehensive modeling that includes both behavioral and psychological predictors. To address these gaps, the present study aims to examine diet quality and mindfulness as predictors of emotional well-being in adults reporting high levels of stress.

## Methods and Materials

### Study Design and Participants

This study employed a correlational descriptive design to examine the relationships between diet quality, mindfulness, and emotional well-being in adults experiencing high stress. A total of 392 participants were recruited from various regions in Georgia, selected through stratified random sampling. The required sample size was determined based on the Morgan and Krejcie (1970) sample size table for a known population, ensuring sufficient statistical power. Eligibility criteria included being over 18 years of age, self-reporting

high stress levels in the past month, and having no diagnosed psychiatric disorders. Informed consent was obtained from all participants prior to data collection.

## Data Collection

Emotional well-being in this study was assessed using the Warwick-Edinburgh Mental Well-being Scale (WEMWBS), developed by Tennant et al. in 2007. The WEMWBS is a 14-item self-report instrument designed to measure positive aspects of mental health and emotional well-being in general populations. It includes items such as "I've been feeling optimistic about the future" and "I've been feeling good about myself," rated on a 5-point Likert scale ranging from 1 (none of the time) to 5 (all of the time). The total score ranges from 14 to 70, with higher scores indicating greater well-being. The scale is unidimensional, focusing on both hedonic and eudaimonic aspects of well-being. The WEMWBS has demonstrated high internal consistency (Cronbach's alpha = 0.91) and test-retest reliability, and its construct validity has been confirmed in various population-based studies across different cultural contexts.

Diet quality was measured using the Healthy Eating Index-2015 (HEI-2015), developed by the U.S. Department of Agriculture and the National Cancer Institute. The HEI-2015 assesses alignment of dietary intake with the 2015-2020 Dietary Guidelines for Americans. It includes 13 components such as total fruits, whole grains, dairy, sodium, added sugars, and saturated fats. Each component is scored on a scale with a maximum score contributing to a total possible score of 100, where higher scores reflect greater dietary quality. The HEI can be computed using dietary recall data or food frequency questionnaires. Numerous validation studies have supported the reliability and criterion validity of the HEI, linking it to health outcomes such as reduced risk of cardiovascular disease, type 2 diabetes, and improved mental health indicators.

Mindfulness was assessed using the Five Facet Mindfulness Questionnaire (FFMQ), developed by Baer et al. in 2006. The FFMQ consists of 39 items and evaluates five distinct facets of mindfulness: Observing, Describing, Acting with Awareness, Nonjudging of Inner Experience, and Nonreactivity to Inner Experience. Respondents rate items on a 5-point Likert scale ranging from 1 (never or very rarely true) to 5 (very often or always true). Subscale scores and a total mindfulness score can be computed, with higher scores reflecting greater mindfulness. The FFMQ has been widely validated across clinical and non-clinical populations, demonstrating strong internal consistency (Cronbach's alpha coefficients typically > 0.80), test-retest reliability, and construct validity through its correlation with psychological health outcomes and other mindfulness measures.

## Data analysis

Data were analyzed using SPSS version 27. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were calculated for all variables. Pearson's correlation coefficient was used to assess the bivariate relationships between emotional well-being (dependent variable) and each independent variable (diet quality and mindfulness). To determine the predictive power of the independent variables on emotional well-being, a standard multiple linear regression analysis was conducted. Assumptions for parametric tests, including normality, linearity, homoscedasticity, and absence of multicollinearity, were examined and confirmed prior to analysis.

### Findings and Results

Of the 392 participants, 223 (56.9%) identified as female and 169 (43.1%) as male. Participants' ages ranged from 19 to 62 years, with a mean age of 34.5 years (SD = 9.2). The majority of respondents (45.4%) reported holding a bachelor's degree, followed by 27.6% with a high school diploma, and 18.1% with a postgraduate degree. Regarding employment status, 62.2% were employed full-time, 21.7% part-time, and 16.1% were unemployed or retired. Additionally, 68.9% of participants reported living in urban areas, while 31.1% resided in rural regions.

**Table 1. Descriptive Statistics for Study Variables (N = 392)**

| Variable | Mean (M) | Standard Deviation (SD) |
|---|---|---|
| Emotional Well-being | 47.82 | 8.67 |
| Diet Quality | 64.39 | 9.51 |
| Mindfulness | 126.74 | 14.22 |

As shown in Table 1, the mean score for emotional well-being was 47.82 (SD = 8.67), indicating a moderate level of mental well-being among participants. The average diet quality score was 64.39 (SD = 9.51), suggesting a generally moderate-to-good dietary pattern. Mindfulness had a mean of 126.74 (SD = 14.22), also indicating a moderate presence of mindful traits across the sample.

Prior to conducting Pearson correlation and regression analyses, key statistical assumptions were tested and met. Normality was confirmed through examination of skewness and kurtosis values, which ranged from -0.73 to 0.88 for all primary variables. Linearity and homoscedasticity were verified through inspection of scatterplots and residual plots, showing evenly distributed residuals without discernible patterns. The Durbin-Watson statistic was 1.93, indicating no significant autocorrelation. Multicollinearity was assessed using Variance Inflation Factor (VIF) values, which were 1.24 for diet quality and 1.31 for mindfulness, both well below the commonly accepted threshold of 10.

**Table 2. Pearson Correlation Coefficients Between Emotional Well-being and Predictor Variables**

| Variables | 1 | 2 | 3 |
|---|---|---|---|
| 1. Emotional Well-being | — | | |
| 2. Diet Quality | .41 (p < .01) | — | |
| 3. Mindfulness | .52 (p < .01) | .36 (p < .01) | — |

Table 2 presents the results of Pearson correlation analyses. Emotional well-being was significantly and positively correlated with both diet quality (r = .41, p < .01) and mindfulness (r = .52, p < .01). A moderate positive correlation was also found between diet quality and mindfulness (r = .36, p < .01), suggesting some shared variance between the two predictors.

**Table 3. Summary of ANOVA for Linear Regression Model**

| Source | Sum of Squares | df | Mean Square | R | R² | Adjusted R² | F | p |
|---|---|---|---|---|---|---|---|---|
| Regression | 6124.37 | 2 | 3062.19 | .57 | .32 | .32 | 91.84 | < .001 |
| Residual | 12979.68 | 389 | 33.37 | | | | | |
| Total | 19104.05 | 391 | | | | | | |

As indicated in Table 3, the overall regression model was statistically significant, F(2, 389) = 91.84, p < .001. The model explained approximately 32% of the variance in emotional well-being (R² = .32, Adjusted R² = .32). The R value (.57) suggests a moderate-to-strong relationship between the predictors (diet quality and mindfulness) and the outcome variable.

**Table 4. Multivariate Regression Coefficients Predicting Emotional Well-being**

| Predictor | B | SE | β | t | p |
|---|---|---|---|---|---|
| Constant | 14.76 | 3.14 | — | 4.70 | < .001 |
| Diet Quality | 0.21 | 0.05 | .27 | 4.20 | < .001 |
| Mindfulness | 0.23 | 0.03 | .39 | 6.17 | < .001 |

Table 4 shows the results of the multiple linear regression model. Both diet quality (β = .27, t = 4.20, p < .001) and mindfulness (β = .39, t = 6.17, p < .001) were significant predictors of emotional well-being. The unstandardized coefficients suggest that for every one-unit increase in diet quality and mindfulness scores, emotional well-being increases by 0.21 and 0.23 units, respectively, when controlling for the other variable.

## Discussion and Conclusion

The present study aimed to investigate the predictive roles of diet quality and mindfulness on emotional well-being in adults experiencing high levels of stress. The results of the Pearson correlation analysis revealed that both diet quality and mindfulness were significantly and positively correlated with emotional well-being. Furthermore, results from the multiple linear regression analysis indicated that both variables significantly predicted emotional well-being, with mindfulness exhibiting a slightly stronger beta coefficient than diet quality. These findings underscore the multidimensional nature of emotional health and confirm that both behavioral (dietary habits) and psychological (mindful awareness) factors jointly contribute to emotional resilience in high-stress populations.

The significant association found between diet quality and emotional well-being aligns with previous findings highlighting the role of nutrition in mental and emotional health. A number of studies have shown that nutrient-rich diets, especially those high in antioxidants, fiber, and essential fatty acids, contribute to improved mood, reduced stress, and greater psychological balance (1, 2). For instance, McKenna et al. found that individuals adhering to healthier dietary patterns reported significantly lower perceived stress and greater emotional stability (8). Similarly, Dobson et al. demonstrated that self-efficacy in healthy eating buffered the negative effects of stress on diet quality, which, in turn, influenced emotional outcomes among adult care providers (9). These findings, in agreement with the current study, suggest that a high-quality diet may serve as both a protective factor and a regulatory mechanism for managing emotional stress.

Moreover, physiological evidence further supports this relationship. For example, research indicates that poor diet quality—especially diets high in refined sugars and saturated fats—can promote systemic inflammation and oxidative stress, leading to neurobiological changes that impair emotional regulation (3, 4). The present study contributes to this understanding by reinforcing that even in a general adult population not clinically diagnosed with mental disorders, the quality of one's diet meaningfully predicts emotional well-being under conditions of stress. This finding is also consistent with experimental studies showing that diet-induced inflammation alters behavioral and neurological responses to stress in both animals and humans (5, 6).

The second key finding of the study is the strong predictive role of mindfulness in emotional well-being. Participants with higher mindfulness scores reported significantly greater emotional well-being, even when controlling for diet quality. This observation is in line with an extensive body of literature underscoring the stress-buffering role of mindfulness. Mindfulness, defined as a conscious, nonjudgmental awareness of the

present moment, has been shown to improve emotion regulation and reduce automatic, maladaptive responses to stressors (15). Our findings reaffirm these insights by demonstrating that mindfulness is not only associated with better emotional states but also significantly predicts these states in high-stress individuals.

Moreover, the literature provides compelling support for mindfulness as a mediator or moderator in stress-related outcomes. For example, Özenoğlu and Erkul found that job stress among hospital employees led to emotional eating and poor diet quality, but mindfulness buffered this pathway by reducing the tendency to engage in such behaviors (11). Similarly, López et al. observed that university students with higher perceived stress reported poorer diet quality and increased emotional dysregulation, but these effects were attenuated among students with higher mindfulness scores (10). These results suggest that mindfulness not only directly enhances emotional well-being but also indirectly protects it by mitigating the effects of other stress-exacerbating behaviors.

The integrated contribution of both diet quality and mindfulness in this study adds a unique perspective to the literature. While many previous studies have investigated these variables independently, few have analyzed them simultaneously in relation to emotional well-being. The current results show that both factors contribute uniquely and significantly to emotional health, supporting a holistic model of psychological resilience that includes both internal cognitive mechanisms and external behavioral practices. This dual-pathway model finds support in the work of Berding et al., who demonstrated that a psychobiotic diet enriched with fiber improved both microbial stability and perceived stress in healthy adults (7). The authors suggested that dietary changes may influence mental health through both biological (gut-brain axis) and psychological (mindfulness and self-regulation) pathways.

Additionally, the broader context of dietary stress responses supports the combined relevance of these variables. Studies in animals have demonstrated that dietary quality impacts stress responses at the molecular level. For instance, Djalali-Gomez et al. found that weight cycling increased hepatic lipid peroxidation and protein carbonylation—two biomarkers linked to stress and mood disorders (13). Likewise, Reisinger et al. showed that toxin-contaminated diets increased endotoxin translocation and inflammatory markers in broilers, pointing to a connection between dietary contaminants and systemic stress (12). Although these findings are based on animal models, they provide biological plausibility for the relationships observed in this study.

The findings also hold relevance in light of the global public health challenges seen during the COVID-19 pandemic, which significantly increased stress levels across populations. Branquinho et al. and Rodriguez et al. both reported that during lockdowns, many individuals experienced emotional instability, disrupted dietary habits, and reduced mindfulness practices (17, 18). This context highlights the importance of developing lifestyle-based interventions that can support emotional well-being, especially in periods of collective or chronic stress.

Taken together, the results of this study underscore the importance of incorporating both nutritional and psychological components into models of emotional well-being. The predictive roles of diet quality and mindfulness provide empirical support for multidimensional prevention and intervention strategies aimed at improving mental health through modifiable behaviors. These findings are timely and actionable, especially considering the rising rates of psychological distress worldwide.

While the present study offers valuable insights, several limitations should be acknowledged. First, the cross-sectional design limits the ability to infer causality. Although strong associations were observed between diet quality, mindfulness, and emotional well-being, longitudinal or experimental designs are needed to establish temporal relationships. Second, the data were collected via self-report instruments, which may be subject to social desirability bias or inaccurate recall, particularly in dietary reporting. Third, the sample was restricted to adults in Georgia, potentially limiting the generalizability of the findings to other cultural or regional populations. Fourth, the study did not control for other psychological variables such as sleep quality, physical activity, or social support, all of which may influence emotional well-being. Lastly, while validated instruments were used, the study did not assess biomarkers or objective health data to triangulate self-reported measures with physiological outcomes.

Future research should address these limitations by employing longitudinal or experimental designs to test the causal effects of diet and mindfulness on emotional well-being. Intervention studies could investigate how structured programs that combine dietary changes with mindfulness training impact mental health outcomes over time. Additionally, future research should explore biological mediators, such as inflammatory markers, cortisol levels, or gut microbiota composition, to better understand the underlying mechanisms of the observed relationships. Expanding the demographic range to include different age groups, socioeconomic statuses, and cultural backgrounds will also improve generalizability. Furthermore, examining other potentially moderating or mediating variables—such as physical activity, sleep hygiene, or digital media use—could offer a more nuanced understanding of how lifestyle behaviors jointly influence emotional resilience in high-stress contexts.

The findings of this study have important implications for both public health and clinical practice. Professionals working in mental health, nutrition, and primary care should consider integrating dietary counseling and mindfulness-based interventions as part of holistic strategies to enhance emotional well-being, particularly among individuals exposed to chronic stress. Schools, workplaces, and community centers could implement wellness programs that include mindfulness training and healthy meal planning workshops. Policymakers should support access to affordable, nutritious foods and promote public campaigns that highlight the mental health benefits of mindful eating and self-awareness. Ultimately, creating supportive environments that facilitate both healthy eating and psychological self-regulation can play a pivotal role in enhancing community-wide emotional resilience.

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## Authors' Contributions

All authors equally contributed to this study.

## Declaration of Interest

The authors of this article declared no conflict of interest.

## Ethical Considerations

The study protocol adhered to the principles outlined in the Helsinki Declaration, which provides guidelines for ethical research involving human participants. Written consent was obtained from all participants in the study.

## Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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