

The Role of Early Maladaptive Schemas and Illness Anxiety in Predicting Hypochondriasis in Patients with Recurrent Emergency Department Visits

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ABSTRACT

This study aimed to examine the predictive role of early maladaptive schema domains and illness anxiety in hypochondriasis among patients with recurrent emergency department visits in Tehran. A correlational descriptive design was employed, and 410 participants were recruited based on the Morgan and Krejcie sample size determination table using convenience sampling. Inclusion criteria were being 18 years or older, Persian literacy, and repeated emergency department attendance, with exclusion of individuals with acute psychosis or severe cognitive impairment. Participants completed the Whiteley Index for hypochondriasis, the Young Schema Questionnaire–Short Form (third edition) for early maladaptive schema domains, and the Illness Anxiety Scale. Data were analyzed using IBM SPSS Statistics version 27. Pearson correlation coefficients were computed to examine the relationships between hypochondriasis and each predictor variable. Multiple linear regression analysis was performed with hypochondriasis as the dependent variable and five schema domains plus illness anxiety as independent variables. Statistical significance was set at $p < 0.05$. Pearson correlation analysis revealed that hypochondriasis was significantly and positively correlated with all schema domains and illness anxiety ($p < .001$), with the strongest associations observed for illness anxiety ($r = 0.69$) and disconnection & rejection ($r = 0.61$). Multiple regression analysis showed that the model significantly predicted hypochondriasis, $F(6, 403) = 108.26$, $p < .001$, explaining 61% of the variance (adjusted $R^2 = 0.60$). All predictors were statistically significant, with illness anxiety ($\beta = 0.38$) and disconnection & rejection ($\beta = 0.24$) being the strongest contributors. Early maladaptive schema domains and illness anxiety significantly predict hypochondriasis in patients with recurrent emergency visits. The findings underscore the importance of assessing and targeting both maladaptive schemas and illness-related fears in interventions designed to reduce unnecessary emergency utilization and improve psychological well-being.

Keywords: Hypochondriasis; Illness Anxiety; Early Maladaptive Schemas; Schema Domains; Emergency Department Visits

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Introduction

Hypochondriasis, also referred to as illness anxiety disorder, is characterized by excessive preoccupation with having or developing a serious illness, despite medical reassurance and absence of significant pathology. This condition often leads to repeated medical consultations, unnecessary diagnostic tests, and elevated healthcare costs, while imposing significant psychological distress on the affected individuals. In hospital emergency settings, hypochondriasis presents a unique challenge, as patients may repeatedly attend for evaluation of benign somatic complaints, contributing to overcrowding and resource strain. Research has shown that this disorder is not simply a reaction to physical symptoms, but is deeply rooted in cognitive and emotional processes shaped over the lifespan (1, 2).

One of the most influential theoretical frameworks for understanding the cognitive vulnerability underlying hypochondriasis is schema theory, originally developed by Young. Early maladaptive schemas (EMSs) are pervasive, self-defeating cognitive and emotional patterns that develop during childhood and adolescence, often as a result of unmet core emotional needs. These schemas become activated during adulthood in situations that resemble the original adverse experiences, leading to maladaptive coping strategies and emotional distress (3). Several studies have shown that EMSs are strongly associated with a variety of mental health problems, including anxiety disorders, depression, somatic symptom disorders, and maladaptive health-related beliefs (4-6).

The link between EMSs and health anxiety has been supported by empirical findings. Individuals with hypochondriasis often exhibit heightened vulnerability in schema domains related to mistrust, vulnerability to harm, and emotional deprivation (1, 7). Schema activation in this context can amplify the perception of bodily sensations, reinforce catastrophic misinterpretations, and fuel persistent reassurance-seeking behaviors. For example, research among patients with chronic medical conditions has demonstrated that certain EMSs predict illness-related distress and maladaptive coping, even after controlling for disease severity (7). This suggests that schema-focused conceptualization may help explain the persistence of hypochondriasis in patients with recurrent emergency visits.

In addition to EMSs, illness anxiety itself can be influenced by other cognitive-emotional factors, such as intolerance of ambiguity, worry, and experiential avoidance (8, 9). Patients with elevated illness anxiety tend to interpret normal bodily sensations as signs of serious disease, a process that is reinforced by health-related worry and an inability to tolerate uncertainty regarding health status. Studies have found that experiential avoidance—efforts to avoid distressing thoughts, emotions, or sensations—can mediate the relationship between EMSs and illness anxiety, suggesting a complex interplay between deep-seated cognitive patterns and present-moment coping strategies (1, 9).

Schema therapy, which directly targets EMSs through cognitive, experiential, and behavioral techniques, has been shown to be effective in reducing symptoms in various anxiety-related conditions, including illness anxiety disorder (2, 3, 10, 11). Comparative studies have indicated that schema therapy can outperform other approaches, such as compassion-focused therapy and cognitive-behavioral therapy, particularly when maladaptive schemas are central to the maintenance of symptoms (10, 11). This aligns with evidence that EMS-focused interventions can lead to durable change by addressing the root cognitive-emotional structures rather than solely targeting surface symptoms.

Recent literature has also examined the broader impact of EMSs on health-related behaviors and psychological adaptation to medical conditions. For instance, patients with chronic pain, inflammatory bowel disease, or other long-term illnesses often exhibit EMS patterns that exacerbate symptom perception and emotional distress (7, 12). Such findings support the hypothesis that schema-driven cognitive distortions may contribute to the onset and persistence of hypochondriacal concerns, especially in individuals with frequent healthcare utilization.

Psychological distress, including anxiety, depression, and stress, is known to increase during public health crises, as observed during the COVID-19 pandemic (13, 14). In these circumstances, EMSs related to vulnerability to harm and illness can become hyperactivated, leading to heightened illness anxiety and increased healthcare-seeking behavior. Furthermore, resilience factors, such as integrated self-knowledge and adaptive coping, may buffer against such effects, whereas maladaptive cognitive schemas may exacerbate them (8, 14). These insights underscore the importance of addressing cognitive schema patterns when developing interventions for health anxiety in both clinical and public health contexts.

From a developmental perspective, the relationship between attachment patterns and EMSs offers further explanatory power. Secure attachment has been linked to lower levels of maladaptive schemas, while insecure attachment styles are associated with heightened schema activation and increased vulnerability to mental health symptoms (5). Such findings suggest that EMSs may serve as a mediating pathway through which early relational experiences impact later psychological functioning, including susceptibility to hypochondriasis.

Moreover, EMSs are not static; they can be modified through targeted psychotherapeutic interventions. Systematic reviews have documented the effectiveness of schema therapy in diverse populations, from patients with anxiety disorders to those with obsessive-compulsive disorder and post-traumatic stress disorder (3). These findings imply that similar approaches may hold promise for individuals with illness anxiety disorder, especially those exhibiting recurrent emergency department visits where maladaptive schemas may be a core maintaining factor.

Given the chronic nature of hypochondriasis and its resistance to reassurance-based approaches, exploring the combined influence of EMSs and illness anxiety is clinically important. This perspective allows for a more integrated understanding of the disorder, emphasizing both long-standing cognitive structures and present-moment symptom processes. Furthermore, research has shown that addressing EMSs can produce secondary benefits in reducing associated symptoms of depression, anxiety, and somatization (4, 6).

Despite the growing body of research on EMSs and illness anxiety, there remains a scarcity of studies focusing on populations with recurrent emergency visits, particularly in non-Western contexts. Cultural factors may influence the content, activation, and expression of EMSs, as well as illness beliefs and healthcare-seeking patterns (12). This gap highlights the need for culturally sensitive assessments and interventions, especially in countries like Iran, where health system utilization patterns and sociocultural beliefs about illness may differ from those in Western settings.

In sum, the existing literature suggests a robust link between EMSs and illness anxiety, with implications for understanding and treating hypochondriasis in high-utilization patient groups.

Methods and Materials

Study Design and Participants

This study employed a correlational descriptive design to examine the relationship between early maladaptive schemas, illness anxiety, and hypochondriasis in patients with recurrent visits to the emergency department. The study population consisted of patients residing in Tehran who had a documented history of frequent emergency department attendance. Based on the Morgan and Krejcie sample size determination table, a total of 410 participants were selected using convenience sampling. Inclusion criteria included being aged 18 years or older, the ability to read and write Persian, and willingness to provide informed consent. Exclusion criteria were the presence of acute psychotic disorders or severe cognitive impairment that could interfere with questionnaire completion. All participants completed standardized self-report instruments measuring hypochondriasis, early maladaptive schemas, and illness anxiety.

Data Collection

To measure hypochondriasis, the Whiteley Index (WI) developed by Pilowsky in 1967 was used. This self-report scale is designed to assess health-related anxiety and disease conviction. The WI consists of 14 items rated on a 5-point Likert scale ranging from 1 (“Not at all”) to 5 (“Extremely”), with higher scores indicating greater hypochondriacal concerns. The items are grouped into three subscales: disease phobia, somatic preoccupation, and disease conviction. The total score is obtained by summing all items, yielding a range of 14 to 70. Numerous studies have confirmed the validity and reliability of the WI, including Iranian research in clinical populations, which has demonstrated good internal consistency (Cronbach’s alpha above 0.80) and satisfactory test–retest reliability. The Persian version has been validated for use in both psychiatric and general medical settings, ensuring cultural and linguistic appropriateness.

Early maladaptive schemas were assessed using the Young Schema Questionnaire – Short Form, Third Edition (YSQ-S3), developed by Young in 2005. This instrument evaluates 18 schemas grouped into five schema domains: disconnection and rejection, impaired autonomy and performance, impaired limits, other-directedness, and over-vigilance/inhibition. The YSQ-S3 contains 90 items, each rated on a 6-point Likert scale from 1 (“Completely untrue of me”) to 6 (“Describes me perfectly”). Subscale scores are calculated by averaging the responses to items related to each schema, with higher scores indicating stronger maladaptive schema endorsement. The psychometric properties of the YSQ-S3 have been widely supported in various countries, including Iran, where the Persian version has shown high internal consistency (Cronbach’s alpha values ranging from 0.79 to 0.93) and strong construct validity in both clinical and non-clinical populations.

Illness anxiety was measured using the Illness Anxiety Scale (IAS) developed by Kellner in 1986. The IAS is a self-report questionnaire consisting of 29 items that assess health-related fears, bodily preoccupation, and reassurance-seeking behavior. Responses are given on a 5-point Likert scale ranging from 0 (“No concern”) to 4 (“Extreme concern”). The IAS yields a total score as well as scores for its main subscales: disease worry, bodily preoccupation, and reassurance-seeking tendency. Higher scores indicate greater levels of illness anxiety. The IAS has demonstrated robust psychometric properties across cultures, including in Iran, where the Persian version has shown high internal consistency (Cronbach’s alpha above 0.85) and

strong convergent validity with related measures of health anxiety. Its sensitivity and specificity in detecting illness anxiety disorder have also been confirmed in Iranian clinical samples.

Data Analysis

Data were analyzed using IBM SPSS Statistics version 27. Descriptive statistics, including mean, standard deviation, frequency, and percentage, were calculated to summarize participant characteristics and study variables. The Pearson product–moment correlation coefficient was used to examine the bivariate relationships between the dependent variable (hypochondriasis) and each independent variable (early maladaptive schemas and illness anxiety). Furthermore, standard multiple linear regression analysis was conducted to determine the predictive power of the independent variables on hypochondriasis. Statistical significance was set at $p < 0.05$ for all analyses.

Findings and Results

Of the 410 participants, 229 (55.85%) were female and 181 (44.15%) were male. The age distribution showed that 87 participants (21.22%) were between 18 and 25 years, 152 (37.07%) were between 26 and 35 years, 104 (25.37%) were between 36 and 45 years, and 67 (16.34%) were aged 46 years or older. Regarding educational attainment, 56 participants (13.66%) had completed primary education, 143 (34.88%) had completed secondary education, and 211 (51.46%) had attained a university degree. In terms of marital status, 238 participants (58.05%) were married, while 172 (41.95%) were single, divorced, or widowed.

Prior to conducting the Pearson correlation and multiple linear regression analyses, statistical assumptions were examined and met. Normality was assessed using the Kolmogorov–Smirnov test, which indicated no significant deviation from normality for hypochondriasis ($p = 0.087$), early maladaptive schemas ($p = 0.102$), and illness anxiety ($p = 0.074$). Linearity was confirmed through scatterplot inspection, showing consistent linear relationships between variables. Multicollinearity diagnostics revealed acceptable tolerance values (0.71 for early maladaptive schemas and 0.73 for illness anxiety) and variance inflation factor (VIF) scores of 1.41 and 1.37, respectively, indicating no multicollinearity concern. Homoscedasticity was verified through residual plot analysis, which showed random scatter without systematic patterns. These findings confirmed that all assumptions for the planned analyses were satisfied.

Table 1. Descriptive Statistics of Study Variables

| Variable | Mean | SD |
|---------------------------------|-------|-------|
| Hypochondriasis | 46.37 | 8.21 |
| Disconnection & Rejection | 72.84 | 11.49 |
| Impaired Autonomy & Performance | 68.12 | 10.23 |
| Impaired Limits | 54.76 | 9.15 |
| Other-Directedness | 58.43 | 8.94 |
| Over-Vigilance & Inhibition | 65.39 | 9.86 |
| Illness Anxiety | 73.58 | 10.94 |

Note. $N = 410$.

As presented in Table 1, the mean score for hypochondriasis was 46.37 ($SD = 8.21$). Among the schema domains, the highest mean was observed in Disconnection & Rejection ($M = 72.84$, $SD = 11.49$), followed by Illness Anxiety ($M = 73.58$, $SD = 10.94$). Impaired Autonomy & Performance also showed a relatively high mean score ($M = 68.12$, $SD = 10.23$), whereas Impaired Limits had the lowest mean ($M = 54.76$, $SD = 9.15$).

These descriptive statistics indicate that participants reported substantial maladaptive schema endorsement alongside elevated illness anxiety.

Table 2. Pearson Correlation Coefficients Between Hypochondriasis and Predictor Variables

| Variable | r | p |
|---------------------------------|------|-------|
| Disconnection & Rejection | 0.61 | <.001 |
| Impaired Autonomy & Performance | 0.58 | <.001 |
| Impaired Limits | 0.47 | <.001 |
| Other-Directedness | 0.44 | <.001 |
| Over-Vigilance & Inhibition | 0.56 | <.001 |
| Illness Anxiety | 0.69 | <.001 |

Note. $N = 410$.

Table 2 shows that hypochondriasis was significantly and positively correlated with all predictor variables ($p < .001$). The strongest correlation was observed with Illness Anxiety ($r = 0.69$), followed closely by Disconnection & Rejection ($r = 0.61$). The weakest, though still substantial, correlation was with Other-Directedness ($r = 0.44$). These results indicate that higher levels of maladaptive schema domains and illness anxiety are associated with greater hypochondriacal concerns.

Table 3. Summary of Multiple Regression Analysis Predicting Hypochondriasis

| Source | Sum of Squares | df | Mean Square | R | R ² | R ² adj | F | p |
|------------|----------------|-----|-------------|------|----------------|--------------------|--------|-------|
| Regression | 8754.92 | 6 | 1459.15 | 0.78 | 0.61 | 0.60 | 108.26 | <.001 |
| Residual | 5589.14 | 403 | 13.87 | | | | | |
| Total | 14344.06 | 409 | | | | | | |

As shown in Table 3, the regression model including all schema domains and illness anxiety as predictors explained 61% of the variance in hypochondriasis scores ($R^2 = 0.61$, adjusted $R^2 = 0.60$), $F(6, 403) = 108.26$, $p < .001$. This indicates that the combined predictors significantly account for a large proportion of the variability in hypochondriacal symptoms among participants.

Table 4. Multiple Regression Coefficients for Predicting Hypochondriasis

| Predictor | B | SE B | β | t | p |
|---------------------------------|------|------|---------|------|-------|
| Constant | 7.42 | 2.31 | | 3.21 | .001 |
| Disconnection & Rejection | 0.18 | 0.04 | 0.24 | 4.50 | <.001 |
| Impaired Autonomy & Performance | 0.15 | 0.04 | 0.20 | 3.89 | <.001 |
| Impaired Limits | 0.09 | 0.03 | 0.13 | 3.02 | .003 |
| Other-Directedness | 0.07 | 0.03 | 0.10 | 2.76 | .006 |
| Over-Vigilance & Inhibition | 0.14 | 0.04 | 0.18 | 3.62 | <.001 |
| Illness Anxiety | 0.31 | 0.04 | 0.38 | 7.84 | <.001 |

The regression coefficients presented in Table 4 show that all predictors significantly contributed to the model ($p < .01$). Illness Anxiety emerged as the strongest predictor ($\beta = 0.38$, $t = 7.84$, $p < .001$), followed by Disconnection & Rejection ($\beta = 0.24$, $t = 4.50$, $p < .001$). Impaired Autonomy & Performance ($\beta = 0.20$) and Over-Vigilance & Inhibition ($\beta = 0.18$) also made substantial contributions, while Impaired Limits ($\beta = 0.13$) and Other-Directedness ($\beta = 0.10$) had smaller but still significant effects. These results indicate that both schema domains and illness anxiety are significant and independent predictors of hypochondriasis severity.

Discussion and Conclusion

The present study aimed to investigate the predictive role of early maladaptive schemas (EMSs) and illness anxiety in hypochondriasis among patients with recurrent emergency department visits in Tehran. The results indicated that both EMSs and illness anxiety were significantly and positively correlated with hypochondriasis, and regression analysis confirmed that each variable independently and significantly predicted hypochondriacal tendencies. These findings align with schema theory, which posits that EMSs—deeply ingrained cognitive and emotional patterns formed in early life—can create a predisposition to maladaptive interpretations of physical sensations, fostering persistent health anxiety and excessive healthcare-seeking behaviors (3).

The finding that higher EMS scores predicted greater hypochondriasis resonates with previous evidence showing that individuals with anxiety disorders or somatic symptom disorders often exhibit schema profiles characterized by heightened vulnerability to harm, emotional deprivation, and mistrust/abuse (4, 5). These schemas may predispose individuals to interpret benign bodily sensations as threatening, thereby maintaining the cycle of symptom monitoring and medical reassurance-seeking. In our study population, which consisted of individuals repeatedly attending emergency departments, such schemas could be reinforced by the immediate but short-lived relief obtained after medical evaluation, which serves as a form of negative reinforcement for health anxiety-driven behavior.

The association between illness anxiety and hypochondriasis in our findings was strong, supporting the conceptualization of hypochondriasis as existing along a continuum of health anxiety severity. Illness anxiety involves heightened vigilance toward bodily sensations, catastrophic misinterpretations of symptoms, and excessive worry about health status, all of which can directly contribute to hypochondriacal concerns (1). Our results parallel findings that experiential avoidance—commonly observed in illness anxiety disorder—can mediate the relationship between EMSs and illness anxiety, further explaining why these factors jointly exacerbate hypochondriasis (9).

The predictive power of EMSs in our regression model also supports the position that addressing these underlying cognitive structures is critical for effective intervention. Schema therapy has shown promising outcomes for reducing symptoms of health anxiety and related disorders by modifying maladaptive core beliefs and promoting healthier coping strategies (2, 3). In particular, Ghorbanalipoor et al. found that schema therapy significantly reduced death anxiety among hypochondriacal patients, suggesting that schema modification may indirectly alleviate illness-related fears. This is consistent with our finding that EMSs are not only correlated with hypochondriasis but also serve as independent predictors, making them viable therapeutic targets.

Our results are also supported by studies in medically ill populations, where EMS activation has been associated with higher levels of illness-related distress and maladaptive coping. For example, research on patients with inflammatory bowel disease found that EMS patterns were linked to increased psychotherapeutic needs, highlighting the relevance of schema assessment in chronic illness care (7). In the context of recurrent emergency visits, this suggests that addressing schemas related to vulnerability to harm and catastrophizing may help reduce unnecessary utilization by mitigating maladaptive illness perceptions.

The co-occurrence of high illness anxiety and EMS activation in our participants may reflect the influence of broader psychosocial stressors. Public health crises such as the COVID-19 pandemic have been shown to

amplify illness anxiety, particularly among individuals with low resilience and high maladaptive schema endorsement (13, 14). These findings imply that external stressors can activate latent cognitive vulnerabilities, leading to exacerbated health-related fears and increased healthcare use. Our study, conducted in a post-pandemic context, may have captured lingering effects of such societal stressors on participants' psychological profiles.

Our findings also align with studies showing that specific EMS domains can predict a range of maladaptive behaviors, including substance use relapse and risky interpersonal decisions (6, 12). These studies suggest that schemas function as cross-diagnostic risk factors, influencing multiple behavioral domains, including health-related decision-making. In hypochondriasis, schemas may shape both the cognitive appraisal of bodily symptoms and the subsequent decision to seek medical care, even in the absence of objective pathology.

The therapeutic implications of our results are supported by comparative intervention studies showing that schema therapy can outperform or complement other modalities, such as compassion-focused therapy or cognitive-behavioral approaches, in reducing psychosomatic symptoms (10, 11). Given the strong predictive role of EMSs found in our study, integrating schema-focused strategies into treatment for hypochondriasis could enhance outcomes, particularly for patients with entrenched cognitive patterns resistant to reassurance-based or symptom-focused interventions.

In addition, the relationship between EMSs and illness anxiety observed here can be understood within the framework of attachment theory, as insecure attachment has been shown to contribute to maladaptive schema development and heightened vulnerability to mental health symptoms (5). This developmental pathway may help explain the chronicity of hypochondriasis in individuals with high EMS scores, as early relational experiences could shape both their core beliefs about health and their emotional regulation strategies.

From a resilience perspective, individuals with higher integrated self-knowledge and adaptive coping mechanisms may be less susceptible to illness anxiety despite the presence of maladaptive schemas (8). This underscores the potential value of combining schema therapy with resilience-building interventions to provide a dual focus on modifying maladaptive beliefs and enhancing adaptive coping. In the context of our findings, such combined approaches may be especially useful for individuals with repeated emergency department attendance driven by hypochondriacal concerns.

Overall, the present findings provide empirical support for a model in which EMSs and illness anxiety jointly contribute to hypochondriasis, with implications for both assessment and intervention. Our results extend previous work by focusing on a high-utilization patient population in an Iranian context, addressing a gap in the literature where most studies have been conducted in Western healthcare systems. By confirming that EMSs and illness anxiety are significant predictors of hypochondriasis in this group, our study highlights the need for integrated, schema-informed approaches to reduce unnecessary emergency visits and improve patient well-being.

Despite its contributions, this study has several limitations. First, the cross-sectional design precludes causal inferences regarding the relationships between EMSs, illness anxiety, and hypochondriasis. Longitudinal studies are needed to determine whether changes in EMSs or illness anxiety precede changes

in hypochondriacal symptoms over time. Second, data were collected using self-report measures, which may be subject to social desirability bias and inaccuracies in self-perception. Third, the study sample consisted exclusively of patients from Tehran, limiting the generalizability of findings to other regions or healthcare settings. Fourth, unmeasured variables such as comorbid psychiatric disorders, personality traits, and cultural illness beliefs may have influenced the observed associations. Finally, given the convenience sampling approach, the sample may not fully represent the broader population of patients with recurrent emergency visits.

Future research should employ longitudinal and experimental designs to clarify the causal relationships between EMSs, illness anxiety, and hypochondriasis. Intervention studies comparing schema-focused approaches with standard treatments for hypochondriasis could provide insights into the relative efficacy of these modalities. Expanding research to diverse geographical and cultural contexts would help determine whether the observed patterns hold across different healthcare systems and sociocultural environments. Furthermore, qualitative studies exploring patients' subjective experiences of illness anxiety and schema activation could complement quantitative findings by offering deeper insight into the mechanisms driving repeated emergency utilization. Incorporating biological measures such as stress biomarkers might also provide a more comprehensive understanding of the psychophysiological processes involved.

Clinicians working with patients who present with recurrent, medically unexplained symptoms in emergency settings should consider assessing for EMSs and illness anxiety as part of the diagnostic process. Integrating schema-focused interventions into standard care may help address the underlying cognitive vulnerabilities contributing to hypochondriasis. Psychoeducation aimed at enhancing patients' understanding of the role of schemas in symptom interpretation could foster greater insight and engagement in therapy. Additionally, resilience-building strategies and stress management training could be incorporated to strengthen patients' coping resources. Collaboration between mental health professionals and emergency department staff may facilitate timely referral to psychological services, reducing unnecessary hospital visits and improving patient outcomes.

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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.

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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