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DIGITAL SPACES AND EATING DISORDERS: A LITERATURE REVIEW ON THE IMPACT OF SOCIAL MEDIA ALGORITHMS AND MOBILE HEALTH APPLICATIONS ON RECOVERY

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ABSTRACT

Background: Digital spaces function as an active, structural determinant of eating disorder (ED) psychopathology, representing a modern "digital exposome" that poses significant psychiatric and systemic medical risks. While commercial social media algorithms often act as risk factors, the rapid evolution of digital psychiatry simultaneously offers new scalable therapeutic options.

Objectives: This literature review aims to examine the dual impact of modern digital environments, critically contrasting the pathogenic mechanisms of engagement-driven social media algorithms with the clinical efficacy of mobile health (mHealth), virtual reality (VR), and artificial intelligence (AI) interventions.

Methodology: A narrative review of recent literature (2019–2026) was conducted utilizing PRISMA-informed search strategies across primary medical and psychological databases. The synthesis integrated epidemiological meta-analyses, bibliometric trends, and randomized controlled trials (RCTs) evaluating both algorithmic harm and e-mental health therapeutics.

Results: Findings indicate that engagement-driven algorithms (e.g., the "TikTok paradox," mukbang trends) systemically exacerbate self-objectification and frequently precipitate severe somatic complications, including nephrological, cardiovascular, and metabolic crises, across diverse demographics, extending to physically active males. Conversely, adaptive mHealth applications, VR cue-exposure protocols, and Large Language Model (LLM) chatbots demonstrate significant preliminary efficacy in cognitive restructuring and symptom reduction. However, widespread clinical adoption remains hindered by poor user experience (UX) retention rates and severe ethical dilemmas regarding AI "hallucinations" and medical safety.

Conclusion: Mitigating the digital ED crisis necessitates a coordinated, multidisciplinary clinical approach, and highlights the urgent need to integrate routine "digital anamnesis" into primary and psychiatric care. Future imperatives include structural algorithmic regulation, the establishment of standardized AI safety frameworks, and the development of user-centric digital therapeutics to ethically redesign the digital exposome.

KEYWORDS

Eating Disorders, Digital Psychiatry, Social Media Algorithms, Digital Exposome, Artificial Intelligence (AI), Mobile Health (mHealth)

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1. Introduction

Eating disorders (EDs), primarily encompassing anorexia nervosa (AN), bulimia nervosa (BN), binge eating disorder (BED), and avoidant/restrictive food intake disorder (ARFID), are debilitating psychiatric illnesses associated with significant somatic complications and some of the highest mortality rates among all psychiatric conditions. The clinical burden of EDs extends to severe physiological morbidity, including irreversible bone mineral density loss, cardiovascular arrhythmias, electrolyte imbalances, and widespread endocrine disruptions. Psychosocially, these disorders severely impair educational attainment, occupational functioning, and interpersonal relationships. Epidemiological trajectories over the past two decades demonstrate a concerning global increase in ED incidence and prevalence, a public health crisis that was acutely exacerbated by the psychosocial isolation, disrupted routines, and heightened digital reliance during the SARS-CoV-2 pandemic. The onset of these disorders predominantly occurs during early to late adolescence. This demographic is neurobiologically primed for vulnerability; the asynchronous maturation of a hyper-responsive limbic system, which processes social rewards and emotional stimuli, against a still-developing prefrontal cortex diminishes executive impulse control. Consequently, adolescents exhibit heightened sensitivity to peer evaluation, social comparison, and externally imposed body image ideals.

Historically, the etiology of eating disorders was conceptualized primarily through a traditional biopsychosocial model, emphasizing genetic heritability, familial dynamics, and generalized cultural pressures regarding thinness propagated through traditional media. However, the modern clinical environment is now significantly dominated by the "digital exposome", the comprehensive sum of an individual's exposure to digital and virtual environments throughout their lifespan. In recent years, the widespread presence of digital technology has fundamentally altered the landscape of ED development, maintenance, and recovery. Digital spaces currently function as a "double-edged sword" for vulnerable populations, particularly adolescents and young adults who are concurrently navigating critical stages of identity formation and psychological development.

Unlike traditional print or television media, which offered static and universal standards of beauty, contemporary digital platforms are powered by sophisticated, machine-learning algorithms designed to maximize user retention through hyper-personalized content delivery. Moreover, the risk within these digital spaces is no longer limited to the passive consumption of idealized media. The widespread democratization of photo-editing tools and AI-driven image manipulation features empower users to actively alter visual elements of their own bodies before sharing them online. This routine digital alteration creates a severe psychological dissonance between the user's authentic physical reality and their carefully curated digital persona, significantly exacerbating body dysmorphia, self-objectification, and an internalized drive for physical perfection.

Furthermore, the scope of algorithmic harm extends significantly beyond classic restrictive or purging pathologies typically associated with adolescent females. Highly targeted fitness and nutrition algorithms frequently inundate users with content emphasizing rigid dietary adherence, extreme physical conditioning, and hyper-specific metabolic protocols, such as the exact timing of macronutrients or excessive reliance on performance supplements, under the guise of health optimization. This constant, algorithmically sustained exposure captures physically active individuals across diverse demographics, frequently precipitating the onset of orthorexia nervosa and muscle dysmorphia. It demonstrates that digital pathogenesis is highly adaptable, infiltrating various lifestyle interests and accelerating the progression from benign interest in fitness to clinical pathology.

On the one hand, the architecture of contemporary social media platforms relies heavily on engagement-driven algorithms that frequently expose users to harmful content. High-frequency social media use has been consistently linked to increased body dissatisfaction, self-objectification, and disordered eating behaviors (Jiotsa et al., 2021; Sarda et al., 2025). The emergence of algorithm-driven platforms such as TikTok has created environments where both pro-recovery and implicitly pro-anorexia content coexist, often inadvertently promoting non-suicidal self-injury and restrictive eating patterns to susceptible users (Logrieco et al., 2021; Pruccoli et al., 2022). This dynamic creates a dangerous echo chamber; users exhibiting subclinical disordered eating tendencies are rapidly profiled by the algorithm and subsequently exposed to a disproportionate volume of triggering content, lowering the threshold for clinical onset. Furthermore, specific digital phenomena, such as the consumption of mukbang videos, have been associated with heightened disordered eating behaviors (von Ash et al., 2023), illustrating the complex psychological impact of diverse digital content.

Conversely, the digital era has facilitated the development of innovative e-mental health interventions that overcome traditional barriers to treatment, such as stigma, cost, and geographical limitations. The

therapeutic gap for eating disorders remains unacceptably wide; many patients are unable to access specialized cognitive-behavioral therapy (CBT), intensive outpatient programs, or multidisciplinary medical teams due to systemic healthcare constraints. To address this disparity, the growing field of digital psychiatry utilizes mobile health (mHealth) applications, virtual reality (VR), and large language model (LLM) chatbots to deliver scalable, evidence-based cognitive-behavioral therapies (Torous et al., 2021; Choi et al., 2024). These digital modalities transition the point of care directly from the clinic to the patient's immediate environment. E-mental health interventions have demonstrated significant preliminary efficacy in reducing ED symptomatology and addressing dysfunctional beliefs associated with body image and eating habits (Corberán et al., 2024; Linardon et al., 2020). By leveraging ecological momentary assessment (EMA) and adaptive algorithms, modern mHealth tools can provide real-time cognitive restructuring during acute moments of crisis.

Despite the proliferation of research on individual digital platforms or specific mHealth applications, there remains a critical need to synthesize these parallel streams of literature. The current scientific discourse frequently isolates the study of digital harm from the exploration of digital therapeutics, resulting in a fragmented understanding of the patient's modern environment. The primary objective of this literature review is to critically examine the dual impact of digital spaces on eating disorders. By contrasting the pathological risks posed by social media algorithms with the therapeutic potential of mHealth applications, this paper seeks to provide a comprehensive understanding of how digital environments can be optimally navigated to support ED recovery. Ultimately, elucidating these intersecting dynamics is essential for modernizing clinical guidelines, informing ethical algorithmic regulation, and developing targeted, digitally-native interventions.

2. Theoretical Framework

To comprehensively analyze the dichotomy of digital spaces in the context of eating disorders (EDs), this review is grounded in a multidimensional biopsychosocial framework. Understanding the modern pathogenesis and potential treatment of EDs requires the integration of sociological models with neurobiological paradigms and cognitive-behavioral principles. Therefore, this section explores three established psychological frameworks, Social Comparison Theory, Objectification Theory, and the Cognitive Behavioral Model of psychopathology, while integrating contemporary neurobiological findings regarding algorithmic engagement and its systemic physiological consequences.

2.1 Social Comparison Theory, Parasocial Relationships, and Algorithmic Architectures

Originally postulated by Leon Festinger (1954), Social Comparison Theory posits that individuals possess an innate, evolutionary drive to determine their own social and personal worth based on how they stack up against others. In analog environments, these comparisons were naturally limited by geographic, temporal, and social constraints, providing individuals with a relatively balanced distribution of upward, lateral, and downward comparison opportunities. In the digital era, however, social media platforms hyper-accelerate and fundamentally distort this process. Algorithms are fundamentally designed to present users with highly curated, often digitally altered images that represent unrealistic societal ideals of beauty, thinness, or muscularity.

This algorithmic architecture forces vulnerable users, particularly adolescents and young adults, into a continuous, unrelenting loop of "upward social comparison," where they persistently compare themselves to seemingly superior peers or digitally fabricated avatars. Crucially, the modern digital environment facilitates powerful "parasocial relationships", one-sided psychological bonds where users feel a deep, intimate connection with influencers or content creators. Because these creators often present themselves as relatable peers rather than distant celebrities, the upward comparison feels simultaneously lateral and attainable, masking its toxicity. Unlike traditional media consumption, which is episodic, smartphone integration ensures that this upward comparison is chronic and pervasive. The literature consistently demonstrates that this chronic, algorithmic upward comparison acts as a direct precursor to acute body dissatisfaction, establishing a baseline of psychological distress that frequently evolves into clinical disordered eating behaviors. Furthermore, the lack of realistic baseline representations within optimized feeds creates a skewed epidemiological perception, leading users to believe that extreme physical phenotypes are the statistical norm.

2.2 Objectification Theory in an Era of Granular Digital Manipulation

Complementing social comparison is Objectification Theory (Fredrickson & Roberts, 1997), which explores how individuals are culturally conditioned to view their bodies primarily as objects of external observation, to be evaluated and consumed by others, rather than instruments of subjective physical experience. Visual-centric platforms such as Instagram, TikTok, and Snapchat monetize human attention through images, heavily reinforcing structural self-objectification.

Fundamentally, in the contemporary digital environment, users are not merely passive consumers of objectified media; they are active participants who internalize the observer's perspective, constantly self-monitoring their physical appearance. This phenomenon is exponentially amplified by the democratization of advanced photo editing tools and AI-driven image generation software. Users routinely alter visual elements of their bodies, extensively manipulating their digital footprint before public display. This extends significantly beyond basic color filtering; users engage in granular digital manipulation, systematically adding or altering specific visual elements within photographs, ranging from aggressively contouring jawlines and shrinking waistlines to digitally superimposing lifestyle markers, such as specific jewelry or rings on specific fingers, to broadcast a carefully crafted narrative of aesthetic and social perfection.

This active manipulation creates a significant psychological schism. The user is no longer solely objectifying themselves against an external standard; they are competing against their own optimized, digitally augmented reflection. The literature consistently demonstrates that this internal surveillance and relentless active self-editing drastically drain cognitive resources, diminish self-compassion, and significantly heighten the risk of eating pathology (Sarda et al., 2025). This internal drive forces users toward extreme offline behaviors, such as severe caloric restriction, compulsive fasting, or purging, in a desperate attempt to bridge the gap between their biological reality and their algorithmic aesthetic. The algorithms that prioritize and reward these highly edited, normative bodies via increased visibility directly operationalize this objectification on a global scale.

2.3 Neurobiological Correlates, Reward Systems, and Systemic Vulnerability

To fully contextualize the psychological theories above, they must be situated within the neurobiological realities of algorithmic engagement. Social media platforms employ variable ratio reinforcement schedules - the same behavioral engineering principles utilized in gambling. When a user posts an image conforming to extreme algorithmic standards, the subsequent delivery of "likes," comments, and viral reach triggers rapid, unpredictable dopamine release within the mesolimbic reward pathway (specifically the ventral tegmental area and nucleus accumbens).

For individuals with underlying ED vulnerabilities, this dopaminergic signaling becomes intrinsically linked to body-centric validation. In adolescents, whose limbic systems are highly reactive but whose prefrontal cortices (responsible for executive function, rational evaluation, and impulse control) are still maturing, this neurobiological loop is exceptionally potent. The compulsive need to engage in body checking, macro counting, or excessive exercise becomes closely connected to the neurochemical anticipation of digital approval. In vulnerable demographics, this chronic state of hyperarousal and physiological stress does not remain isolated to psychiatric symptoms; it frequently precipitates severe somatic complications. The relentless pursuit of an algorithmically rewarded aesthetic often leads to acute nephrological strain due to intentional dehydration and diuretic misuse (aimed at achieving a "dry," vascular muscular appearance), as well as significant hypertensive episodes secondary to the abuse of metabolic stimulants and severe electrolyte imbalances (Tharwani et al., 2025).

2.4 The Cognitive Behavioral Model in Digital Pathogenesis and Psychiatry

The therapeutic potential, as well as the pathogenesis of EDs within digital spaces, is heavily informed by the Cognitive Behavioral Theory (CBT) of eating disorders, initially developed by Fairburn et al.(2003). The transdiagnostic CBT model suggests that EDs are maintained by a core psychopathology: the over-evaluation of shape, weight, and their absolute control.

In the digital space, this over-evaluation is continuously reinforced through hyper-specific algorithmic content. For example, the cognitive distortions inherent in orthorexia nervosa and muscle dysmorphia are directly fueled by targeted content focused on extreme fitness and sports nutrition. Algorithms frequently inundate vulnerable users with rigid, often pseudoscientific mandates regarding the exact metabolic efficacy of consuming protein shakes strictly before versus after a workout, or obsessive protocols concerning the long-term saturation effects of daily creatine intake. While presented under the guise of health optimization, biohacking, and athletic performance, this content validates the user's dysfunctional beliefs, transforming

standard dietary guidelines into rigid, obsessive-compulsive safety behaviors. The slightest deviation from these algorithmically prescribed nutritional schedules triggers intense anxiety and compensatory behaviors.

Conversely, mobile health (mHealth) applications, virtual reality (VR), and large language models (LLMs) are uniquely positioned to digitally disrupt this pathogenic loop and deliver scalable CBT principles. Through interactive self-monitoring, automated cognitive restructuring exercises, and exposure therapy, these technologies directly challenge the dysfunctional beliefs central to ED maintenance (Corberán et al., 2024). For instance, VR environments can facilitate controlled, graded cue-exposure therapy, allowing patients to confront specific dysmorphic cognitive distortions, such as intense fear of specific high-calorie foods or anxieties surrounding body shape, in a safe, clinically modulated setting. By framing both the risks of algorithmic reinforcement and the therapeutic interventions of digital tools within the CBT paradigm, this review assesses not only the technological novelty of these platforms but their fundamental psychological and clinical validity in either driving disease progression or facilitating sustainable, long-term recovery.

3. Methodology

3.1 Research Design and Rationale

To systematically fulfill the research objectives and navigate the highly interdisciplinary intersection of clinical psychiatry and digital technology, a comprehensive narrative literature review was conducted. While traditional systematic reviews often focus on a single, narrow clinical question, the multifaceted nature of the "digital exposome" necessitates a broader, integrative approach. This narrative review methodology was specifically selected to synthesize diverse streams of evidence, ranging from observational epidemiological data on algorithmic harm to highly controlled efficacy trials of digital therapeutics. The search strategy and study selection processes were informed by the structural rigor of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework to ensure transparency, reproducibility, and methodological integrity.

3.2 Information Sources and Search Strategy

A systematic electronic literature search was executed across primary academic databases to capture a comprehensive cross-section of relevant literature. The primary databases utilized included PubMed/MEDLINE, PsycINFO, and Google Scholar, supplemented by targeted searches within Scopus and the Cochrane Central Register of Controlled Trials (CENTRAL) to ensure the inclusion of both psychological and highly technical medical literature.

The search strategy targeted high-impact, peer-reviewed journals within the fields of psychology, psychiatry, and digital health, specifically utilizing sources such as the International Journal of Eating Disorders, the Journal of Consulting and Clinical Psychology, the Journal of Eating Disorders, and Frontiers in Digital Health. To optimize the retrieval of relevant literature, a complex search string was constructed using a combination of Boolean operators (AND, OR), Medical Subject Headings (MeSH), and targeted free-text keywords. The core search string was structured around two primary conceptual domains:

- **Domain 1 (Clinical Pathology):** ("eating disorders" OR "anorexia nervosa" OR "bulimia nervosa" OR "binge eating disorder" OR "body image" OR "body dysmorphia" OR "orthorexia")
- **Domain 2 (Digital Exposure/Intervention):** ("social media" OR "algorithms" OR "TikTok" OR "digital psychiatry" OR "mHealth" OR "mobile applications" OR "virtual reality" OR "large language models").

These domains were combined using the AND operator to isolate literature specifically residing at the intersection of psychopathology and digital technology.

3.3 Eligibility Criteria

To ensure the clinical relevance, methodological quality, and currency of the synthesized data, the review applied strict inclusion and exclusion criteria.

Inclusion Criteria: Articles were deemed eligible for inclusion if they strictly met the following parameters: (1) published within a highly restricted timeframe, specifically between January 2019 and 2026, to accurately capture the most recent advancements in rapidly evolving digital technologies and algorithmic architectures; (2) written and published in the English language; (3) focused either on the direct pathogenic impact of social media use and algorithmic exposure on body image and eating behaviors, or on the clinical efficacy, feasibility, and acceptability of digital interventions (e.g., mHealth apps, VR, LLM chatbots) in

treating or preventing EDs; and (4) utilized rigorous empirical methodologies, including randomized controlled trials (RCTs), extensive observational cohorts, validated systematic reviews, and meta-analyses.

Exclusion Criteria: Studies were systematically excluded if they: (1) were not subject to rigorous peer review (e.g., pre-prints, opinion pieces, non-academic editorials); (2) lacked primary empirical data or a structured review methodology; (3) focused purely on the biological or pharmacological treatment of EDs without directly relating to the technological aspects of ED pathology or recovery; or (4) examined generalized internet addiction without specific, measurable outcomes related to eating behaviors or body image psychopathology.

3.4 Study Selection and Data Extraction

The study selection process proceeded through a structured, multi-phase filtering protocol. Following the execution of the initial database searches, all identified literature was aggregated, and duplicate records were removed. The remaining records were initially screened by title and abstract to eliminate clearly irrelevant publications. Subsequently, a rigorous full-text review of potentially relevant articles was conducted to verify strict adherence to the predefined eligibility criteria.

During the data extraction phase, critical information was systematically cataloged from the final selected articles (e.g., randomized controlled trials, systematic reviews, meta-analyses, and bibliometric analyses). Extracted variables included study design, participant demographics (e.g., age, clinical diagnosis), the specific technological platform or intervention investigated (e.g., TikTok algorithms, specific mHealth cognitive-behavioral applications), the primary clinical outcomes measured, and the overall therapeutic or pathogenic conclusions.

3.5 Data Synthesis and Thematic Categorization

Given the diverse methodologies of the included studies, spanning qualitative phenomenological observations to quantitative meta-analyses, a formal statistical meta-analysis was not feasible. Instead, a narrative synthesis approach was employed. The extracted data were critically evaluated and grouped into two primary thematic categories to directly address the research objectives: the pathogenic role of social media algorithms and the therapeutic efficacy of digital health interventions. This structural bifurcation allows for a clear, comparative analysis of the dichotomy inherent in the modern digital exposome.

4. Results

The comprehensive review of the selected literature generated substantial, diverse insights into the dual nature of digital environments. Given the heterogeneity of the included study designs, ranging from broad epidemiological meta-analyses and bibliometric evaluations to highly specific randomized controlled trials (RCTs), the extracted data are systematically synthesized into two primary thematic categories. Section 4.1 delineates the precise pathogenic mechanisms, demographic variations, and specific digital vectors driven by unstructured social media algorithms. Section 4.2 subsequently explores the measurable therapeutic efficacy, clinical implementation, and user-experience limitations of mobile health (mHealth) and emerging digital psychiatric interventions.

4.1 The Pathogenic Impact of Social Media Algorithms and Content

A significant proportion of the reviewed literature consistently demonstrates that high-frequency engagement with social media algorithms exacerbates body image concerns and acts as a primary catalyst for clinical eating disorder (ED) symptomatology across diverse demographics. The mechanisms driving this pathology are complex, heavily mediated by algorithmic curation, specific content genres, and pathological user interaction patterns.

4.1.1 Bibliometric Trends and Scoping Epidemiological Reviews

To understand the trajectory of digital pathogenesis, it is crucial to examine overarching academic trends. Dege et al. (2026) provided a foundational bibliometric analysis of eating disorders in adolescents, quantitatively demonstrating a major shift in recent psychiatric literature. Their analysis reveals that over the past five years, research focus has aggressively pivoted from traditional socio-cultural factors (e.g., television, print magazines) to the specific micro-mechanics of internet use and algorithmic exposure, reflecting a consensus that the digital exposome is now the primary environmental driver of EDs.

This bibliometric shift is clinically substantiated by comprehensive scoping reviews. Dubicka et al. (2026) synthesized vast epidemiological data concerning children, adolescents, and young adults, concluding that the widespread presence of digital platforms has universally lowered the age of ED onset. Similarly, Suhag

and Rauniyar (2024) highlighted in their review that young adolescents are currently facing new levels of body dissatisfaction directly correlated with screen time, emphasizing that the digital landscape operates as an unrelenting, chronic stressor rather than an episodic trigger. Nawaz et al. (2024) further conceptualized this phenomenon, explicitly categorizing social media use among adolescents with eating disorders as a pervasive "double-edged sword" that complicates primary prevention efforts.

4.1.2 Epidemiological Evidence and Dose-Response Kinetics

Beyond scoping reviews, systematic meta-analyses provide substantial quantitative evidence for the deleterious impact of digital environments. Fortunato et al. (2026) conducted a comprehensive meta-analysis focusing specifically on adolescence, a critical developmental window characterized by heightened neurobiological vulnerability. Their findings consistently highlighted a positive, statistically significant dose-response correlation between the total volume of social media use and the severity of disordered eating and body image concerns. Specifically, the data indicate that it is not merely the presence of an account, but the accumulated daily hours of algorithmic scrolling that directly predict psychopathology. This is further corroborated by Jiotsa et al. (2021), whose research differentiated between passive scrolling and active engagement (e.g., posting, commenting, and utilizing digital filters). Jiotsa et al. found that active engagement with appearance-focused content yielded a significantly higher pathogenic correlation with disordered eating behaviors than passive consumption alone, highlighting the toxic nature of digital self-presentation.

4.1.3 Psychological Mediators: Self-Objectification and Cognitive Depletion

The literature identifies specific psychological mediators that translate raw digital exposure into clinical pathology. In a highly critical systematic review, Sarda et al. (2025) elucidated the exact psychological mechanisms underlying this relationship. Synthesizing data across multiple cohorts, they concluded that frequent exposure to algorithmic feeds directly and significantly increases self-objectification metrics. By repeatedly engaging with visual-centric platforms, users internalize a detached, critical observer's perspective of their own bodies. Importantly, Sarda et al. demonstrated that this chronic state of self-surveillance operates simultaneously with the significant erosion of self-compassion. As cognitive resources are continually diverted toward monitoring aesthetic presentation to meet algorithmically rewarded standards, the individual's capacity for emotional self-regulation and psychological resilience is drastically diminished, precipitating a rapid descent into maladaptive coping mechanisms, primarily restrictive eating or purging.

4.1.4 The "TikTok Paradox" and Acute Clinical Triggers

Specific platform architectures uniquely contribute to clinical psychopathology, moving beyond generalized body dissatisfaction into the realm of severe psychiatric risk. The phenomenon termed the "TikTok paradox," identified by Logrieco et al. (2021), represents a critical, inherent algorithmic failure. Their research illustrates that the platform's hyper-sensitive, short-form video recommendation system, even when users actively seek out anti-pro-anorexia or pro-recovery content, often creates an isolated, inescapable digital echo chamber. The algorithm relies on engagement metrics (watch time, loop frequency) rather than semantic context, frequently failing to distinguish between therapeutic intent and pathological fixation. Consequently, it inadvertently promotes non-suicidal self-injury (NSSI) and extreme dietary restriction by continuously flooding the user's "For You Page" with highly triggering, competitive illness material.

The devastating clinical consequences of this algorithmic mirroring were acutely observed during the SARS-CoV-2 pandemic. Pruccoli et al. (2022) detailed the experiences of 78 children and adolescents treated at a third-level public Italian psychiatric center during lockdown protocols. Their clinical observations and empirical data revealed that unsupervised, prolonged TikTok usage directly correlated with a severe, rapid exacerbation of ED symptoms in already diagnosed patients. The algorithm relentlessly fed vulnerable youth restrictive eating content, effectively functioning as an active environmental trigger that disrupted established clinical recovery trajectories and precipitated acute psychiatric crises, including life-threatening bradycardia resulting from sudden, extreme caloric restriction.

4.1.5 Maladaptive Digital Consumption: The Mukbang Phenomenon

Beyond traditional "fitspiration" or restrictive pro-anorexia feeds, the literature highlights how niche algorithmic phenomena introduce novel pathogenic vectors. Von Ash et al. (2023) investigated the psychological impact of "mukbang", highly popular, algorithmically favored videos featuring hosts consuming massive quantities of food, often in a rapidly edited and sensory-amplified format (ASMR). In their well-designed cross-sectional study involving 264 participants, they found strong, positive, and statistically significant associations between the frequency of mukbang viewing and the prevalence of disordered eating behaviors. Specifically, this content was highly correlated with binge eating psychopathology and loss-of-

control eating patterns. This finding is critical, as it demonstrates that algorithms can trigger and normalize diverse ED typologies (e.g., Binge Eating Disorder) by presenting pathological, hyper-caloric consumption as socially acceptable, monetized digital entertainment.

4.1.6 Expanding Demographic Vulnerability: Male Presentations

While adolescent females are traditionally the focal point of ED research, contemporary literature shows that digital risks are pervasive across diverse, under-researched demographics. Flannery, Harris, and Kenny (2020) critically explored the impact of social networking sites (SNS) on physically active men. Their mixed-methods approach, utilizing both qualitative interviews and quantitative psychometric analyses, demonstrated that men are highly susceptible to algorithmically curated fitness content. This specific algorithmic niche frequently promotes extreme, biologically unattainable muscular ideals (e.g., sustained single-digit body fat percentages) alongside highly rigid, obsessive nutritional protocols. Consequently, this exposure leads to maladaptive eating behaviors, compulsive exercise, and a heightened risk of orthorexia and muscle dysmorphia (bigorexia) in pursuit of an algorithmic physique, proving that digital pathogenesis is highly adaptable to male psychological vulnerabilities.

4.1.7 Generalized Digital Addiction and Behavioral Trajectories

Finally, the pathogenic impact of digital spaces must be understood not only through specific content but through the overarching lens of digital behavioral dependencies. Mohammad Johari and Tan (2024) investigated this systemic risk among young adults in Malaysia. In a study encompassing 337 participants, they identified a significant positive relationship between generalized internet addiction, maladaptive food choice motives, and the clinical risk of developing eating disorders. Their findings strongly underscore that severe algorithmic addiction transcends specific platform usage, reflecting a broader digital behavioral crisis where emotional dysregulation, mediated by severe screen dependency, is continuously medicated through disordered eating behaviors, highlighting a transdiagnostic vulnerability.

4.2 The Therapeutic Efficacy of mHealth and Digital Interventions in ED Recovery

Contrasting the acute pathogenic risks posed by unstructured social media platforms, the systematic review of contemporary digital psychiatry literature reveals a well-established, rapidly maturing paradigm of evidence-based therapeutic interventions. The integration of e-mental health tools into standard clinical models of care demonstrates high scalability and significant preliminary efficacy in addressing both the overt behavioral symptoms and the underlying cognitive distortions characteristic of eating disorders (Linardon et al., 2020; Pehlivan et al., 2022).

4.2.1 Algorithmic Adaptability in Randomized Controlled Trials (RCTs)

Mobile applications that move beyond passive symptom tracking and utilize structured, guided self-help models have shown particularly promising clinical outcomes. The true efficacy of these tools relies heavily on their ability to mimic the engaging, adaptive nature of commercial algorithms, but repurposed for therapeutic delivery. In a pivotal, large-scale randomized controlled trial (RCT), Tregarthen et al. (2019) compared a tailored, adaptive self-help mobile application with a standard, static self-monitoring application. Across a large cohort of 959 participants, the results were definitive: the tailored application, which utilized algorithmic responsiveness to dynamically adapt its interventions to the user's specific clinical presentation and real-time ecological data inputs, significantly outperformed the standard app in reducing core ED symptoms, highlighting that static interventions are insufficient in the modern digital era.

4.2.2 Cognitive Restructuring and Dysfunctional Belief Targeting

Building directly upon cognitive-behavioral principles, Corberán et al. (2024) evaluated a mobile application specifically engineered to target and systematically restructure dysfunctional beliefs in adults diagnosed with EDs. Rather than merely monitoring daily caloric intake or generalized mood, the application operationalized specific traditional CBT techniques. Their preliminary efficacy data demonstrated statistically significant reductions in pathological cognitions intimately related to body image, weight control, and perfectionism. This finding is critical, as it validates the successful translation of complex, face-to-face cognitive restructuring into a highly accessible, user-directed mobile interface capable of intervening at the exact moment of cognitive distortion.

4.2.3 Adolescent-Specific Architecture and Moderated Peer Support

Given the significant neurobiological vulnerabilities of adolescents, digital interventions tailored to this demographic must balance the need for autonomy with stringent clinical safety. Cavazos-Rehg et al. (2026) conducted a highly rigorous three-arm pilot randomized controlled trial evaluating an application designed specifically for teens at high risk for developing clinical EDs. By comparing three distinct pathways, self-help

alone, guided self-help (involving minimal clinician contact), and guided self-help featuring an integrated, clinically moderated social networking component, the researchers achieved high levels of overall feasibility. Importantly, the superior engagement and acceptability observed in the third arm suggests that the adolescent drive for peer support is not naturally pathogenic; rather, when isolated from the toxic, competitive algorithms of mainstream social media, peer connection within a moderated digital environment acts as a powerful, stabilizing therapeutic tool.

4.2.4 Lifestyle Modulation and Dissonance-Based Therapeutics

Digital interventions focusing on broader, holistic physiological regulation have also shown significant psychiatric benefits. Baumann et al. (2025) published a comprehensive meta-analysis demonstrating that mHealth interventions specifically targeting foundational lifestyle factors, such as optimizing physical activity routines, reducing generalized sedentary behavior, and strictly regulating sleep architecture and circadian rhythms, yield significant, positive downstream effects on the complex emotional and behavioral profiles of adolescents suffering from eating disorders. Complementing this broader approach, Howard et al. (2025) investigated the efficacy of dissonance-based body image interventions. Traditionally conducted in face-to-face group clinical settings, these interventions force participants to actively critique the "thin ideal." Howard et al. demonstrated that these dissonance programs have been successfully adapted for digital delivery, maintaining their therapeutic effectiveness in significantly reducing eating pathology symptoms by systematically deconstructing the very digital ideals the users previously consumed.

4.2.5 Overcoming UX Limitations in Mindfulness Applications

Despite clinical successes, the literature emphasizes the barriers to widespread adoption. Guluzade and Sas (2024) provided a critical functionality and user review analysis of mobile apps designed for mindfulness eating and ED recovery. Their research exposed a fundamental flaw in current digital psychiatry: many clinically validated apps suffer from very high attrition rates due to rigid functionality, sterile interfaces, and a lack of empathetic, user-centric design (UX). Patients frequently abandon these tools because they feel overly clinical and demanding, contrasting sharply with the frictionless, highly engaging experience of commercial social media. This highlights that future mHealth development must prioritize sophisticated UX design equally with clinical validity to maintain user retention.

4.2.6 Immersive Paradigms: Virtual Reality (VR) Exposure Protocols

As the overarching field of digital psychiatry rapidly matures, standard two-dimensional mHealth applications are increasingly being augmented by highly interactive, immersive technologies (Torous et al., 2021). Virtual Reality (VR) is now recognized as a highly potent clinical tool, particularly for overcoming the logistical limitations of traditional exposure and response prevention (ERP) therapy. Grywińska et al. (2025) explored the structural integration of VR within comprehensive ED treatment protocols. Their analysis highlighted VR's unique capacity to create highly controlled, psychologically safe environments for intensive cue-exposure therapy and precise body image recalibration. By utilizing customizable virtual avatars and simulated high-stress environments (e.g., a virtual dining room filled with "fear foods" or a virtual mirror modifying the user's reflection), VR allows patients to repeatedly confront acute anxieties related to specific foods, bodily shape, and weight without real-world physiological consequences or the immediate risk of compensatory behaviors. This graded, immersive desensitization significantly accelerates habituation compared to traditional imaginal exposure.

4.2.7 The Integration of Large Language Models (LLMs)

Concurrently, the rapid deployment of advanced Large Language Model (LLM) chatbots is fundamentally reshaping the dynamics of therapeutic engagement, accessibility, and the traditional models of care (Pehlivan et al., 2022). Choi et al. (2024) provided a critical, nuanced analysis of the role of LLM chatbots in ED recovery, noting that these advanced artificial intelligence systems offer a unique "private yet social" modality of support. This dynamic drastically reduces the significant clinical stigma, internalized shame, and fear of human judgment that typically prevents severe ED patients from seeking interpersonal help.

While these AI-driven, conversational interfaces effectively support daily recovery efforts through highly empathetic, on-demand interaction and real-time coping strategy generation, Choi et al. caution that they simultaneously challenge established traditional clinical boundaries. The autonomous deployment of LLMs requires stringent algorithmic oversight and continuous clinical moderation to prevent the critical dangers of AI "hallucinations", such as the dissemination of scientifically inaccurate metabolic advice, or the catastrophic failure to appropriately recognize and escalate acute psychiatric crises, including severe suicidal ideation or the immediate medical instability resulting from extreme caloric restriction.

Table 1. Summary of key literature examining the dual impact of digital spaces on eating disorders (2019–2026).

Reference	Study Design & Sample Size (N)	Primary Focus / Technology	Key Clinical & Psychopathological Findings
Fortunato et al. (2026)	Systematic Review & Meta-Analysis	Social media volume and adolescent vulnerability	Established a positive, statistically significant dose-response correlation between total social media use and ED symptomatology.
Sarda et al. (2025)	Systematic Review	Psychological mediators (self-objectification & self-compassion)	Frequent algorithmic feed exposure directly increases self-objectification while simultaneously eroding self-compassion, driving ED risk.
Logrieco et al. (2021)	Observational Literature Analysis	The "TikTok paradox" and algorithmic echo chambers	Recommendation algorithms fail to distinguish therapeutic intent, inadvertently promoting non-suicidal self-injury (NSSI) and restriction.
Prucoli et al. (2022)	Clinical Cohort (N=78)	Pediatric TikTok usage during SARS-CoV-2 lockdowns	Unsupervised, prolonged digital exposure directly correlated with severe exacerbation of ED symptoms in hospitalized youth.
von Ash et al. (2023)	Cross-Sectional Study (N=264)	"Mukbang" video consumption	Strong positive associations found between mukbang viewing frequency and binge eating psychopathology and loss-of-control eating.
Flannery et al. (2020)	Mixed-Methods Study	Social networking sites and physically active males	Algorithmically curated fitness content promotes extreme muscular ideals, leading to maladaptive eating and muscle dysmorphia in men.
Mohammad Johari & Tan (2024)	Cross-Sectional Study (N=373)	Generalized internet addiction in young adults	Significant positive relationship identified between internet addiction, maladaptive food choices, and clinical ED risk.
Tregarthen et al. (2019)	Randomized Controlled Trial (N=959)	Tailored self-help mobile app vs. standard app	Tailored mHealth apps utilizing adaptive algorithms significantly outperformed static tools in reducing core ED symptoms.
Corberán et al. (2024)	Efficacy Trial (Adults)	CBT-based mobile app targeting dysfunctional beliefs	Demonstrated statistically significant reductions in pathological cognitions related to body image and weight control.
Cavazos-Rehg et al. (2026)	Three-Arm Pilot RCT (Teens)	mHealth app with a moderated social networking component	High feasibility; integration of a clinically moderated peer network significantly enhanced engagement and acceptability.
Baumann et al. (2025)	Systematic Review & Meta-Analysis	mHealth lifestyle interventions (activity, sleep, nutrition)	Targeted lifestyle mHealth tools yield significant positive downstream effects on adolescent emotional and behavioral ED profiles.
Guluzade & Sas (2024)	Functionality & User Review Analysis	Mindfulness and ED mobile applications	Revealed high attrition rates due to rigid functionality and sterile UI/UX compared to commercial social media.
Grywińska et al. (2025)	Clinical Narrative Analysis	Virtual Reality (VR) in ED treatment protocols	VR provides safe, controlled environments for cue-exposure therapy and precise body image recalibration.
Choi et al. (2024)	Critical Analysis / arXiv	Large Language Model (LLM) chatbots	LLMs offer a "private yet social" support model reducing stigma, but pose severe risks regarding AI hallucinations and crisis escalation.

5. Discussion

The systematic synthesis of the reviewed literature illuminates the complex dual role of digital spaces in the context of eating disorders (EDs). The aggregated epidemiological and clinical data definitively shift the contemporary medical paradigm: the digital environment can no longer be conceptualized merely as a passive, peripheral backdrop to modern adolescent development. Instead, it operates as an active, structural determinant of psychiatric health. It functions simultaneously as a potent pathogenic vector, driven by unregulated, commercial algorithms, and as a highly scalable therapeutic delivery system through continuous innovations in mobile health (mHealth) and artificial intelligence (AI). Navigating this complex dichotomy requires a critical deconstruction of the underlying mechanisms that govern both algorithmic harm and digital healing, aligning psychiatric theory with modern technological realities.

5.1 The Commercial-Clinical Misalignment and Bibliometric Shifts

A critical synthesis of the findings reveals a fundamental, systemic misalignment between the commercial objectives of social media algorithms and the psychological vulnerabilities of users. As highlighted by the bibliometric analysis of Dege et al. (2026), the academic community has recognized this shift, pivoting research away from traditional media toward the micro-mechanics of algorithmic exposure. Platforms like TikTok, Instagram, and short-form video feeds are optimized exclusively for maximum user engagement, continuous retention, and advertising revenue. They operate on sophisticated machine-learning models that rapidly profile and exploit user preferences.

The "TikTok paradox" documented by Logrieco et al. (2021) exposes the most dangerous consequence of this architecture: inescapable algorithmic mirroring. When a user exhibiting subclinical ED symptomatology interacts with content, even content overtly labeled as pro-recovery, the algorithm frequently fails to distinguish between therapeutic engagement and maladaptive, obsessive fixation. Consequently, it constructs a closed, self-reinforcing echo chamber, perpetually serving increasingly extreme, restrictive, or self-objectifying content that rapidly normalizes pathology. This mechanism provides significant modern validation for the theoretical underpinnings of Objectification Theory (Fredrickson & Roberts, 1997). The algorithms operationalize and weaponize self-objectification by financially and socially rewarding users (via algorithmic reach) for conforming to extreme physical ideals, thereby systemically depleting the cognitive resources required for self-compassion (Sarda et al., 2025).

Importantly, the literature confirms that this algorithmic vulnerability transcends traditional demographic boundaries. The documentation of body dissatisfaction among physically active men exposed to algorithmically curated fitness content (Flannery et al., 2020) indicates that the digital exposome smoothly adapts its pathogenic vectors to exploit male psychological vulnerabilities, driving a surge in muscle dysmorphia and orthorexia nervosa. This indicates a systemic public health issue requiring structural, platform-level algorithmic regulation rather than merely individual digital literacy training, which is vastly outpaced by machine learning capabilities.

5.2 The Systemic Somatic Toll of Algorithmic Trends: Metabolic, Nephrological, and Cardiovascular Implications

While the psychological toll of the digital exposome is increasingly well-documented, a critical expansion of the academic discussion must address the severe, acute systemic medical complications directly precipitated by algorithmically driven behavioral trends. The psychiatric symptomatology reinforced by digital platforms frequently culminates in severe somatic crises requiring urgent internal medicine interventions.

For instance, the algorithmic promotion of extreme "cutting" phases, hyper-muscular vascularity, and rapid weight manipulation explicitly encourages severe intentional dehydration and the unregulated abuse of over-the-counter diuretics and thermogenics. Clinically, this digital trend translates into a surge of acute nephrological emergencies, including severe electrolyte imbalances (hypokalemia, hyponatremia) and acute kidney injury (AKI) secondary to extreme intravascular volume depletion. Simultaneously, the rampant algorithm-driven promotion of unregulated, high-dose metabolic stimulants (e.g., concentrated pre-workout powders) to suppress appetite frequently precipitates severe cardiovascular and hypertensiologic crises. Young, ostensibly healthy adults increasingly present in emergency departments with acute hypertensive urgencies, tachyarrhythmias, and sudden syncopal episodes directly linked to algorithmic compliance (Westmoreland et al., 2016).

Conversely, trends situated on the opposite end of the consumption spectrum, such as the normalization of extreme binge eating through popular "mukbang" culture (von Ash et al., 2023), drive significant

diabetological and metabolic complications. The chronic, repetitive ingestion of massive caloric loads directly contributes to rapid visceral adiposity, severe insulin resistance, and the accelerated onset of metabolic syndrome. The algorithms dictating digital consumption are functioning as direct catalysts for complex, multi-system physiological collapse, demanding a highly integrated approach to patient care that bridges psychiatry with endocrinology, nephrology, and cardiology.

5.3 The Paradox of Peer Support and Moderated Digital Architecture

A fascinating nuance emerges when comparing unstructured social media environments with purposefully designed mHealth platforms regarding social interaction. Unregulated platforms inherently foster a highly toxic, competitive environment where ED psychopathology is frequently expressed as a hierarchical competition (e.g., who can fast the longest or achieve the lowest BMI). However, the trial conducted by Cavazos-Rehg et al. (2026) offers a critical blueprint for the ethical use of digital social architecture.

By demonstrating that integrating a clinically moderated social networking component within a guided self-help app actually enhanced feasibility and therapeutic acceptability among high-risk teens, their research suggests that the human desire for digital connection and peer support is not inherently pathogenic. The toxicity lies exclusively in the algorithmic lack of moderation and the commercial incentive for controversy. By stripping away engagement-driven, variable-ratio algorithms and replacing them with empathetic clinical oversight, mHealth applications can successfully reclaim the digital social space for therapeutic purposes, transforming peer pressure into peer support.

5.4 Navigating the UX and Engagement Conundrum in Digital Psychiatry

Despite the conclusively demonstrated clinical efficacy of mHealth tools (Baumann et al., 2025; Corberán et al., 2024), translating these isolated clinical successes to widespread public use presents significant challenges. Guluzade and Sas (2024) exposed a critical gap in digital psychiatry: many clinically validated apps suffer from very high attrition rates due to rigid functionality, sterile interfaces, and a lack of empathetic, user-centric design (UX).

A scientifically validated cognitive-behavioral intervention is only as clinically effective as its ability to retain the user's attention against competing digital stimuli. The RCT by Tregarthen et al. (2019) proves that tailored apps utilizing dynamic, responsive algorithms significantly outperform static self-monitoring tools. To successfully compete with the hyper-engaging (yet pathogenic) algorithms of mainstream social media, digital psychiatric applications must ethically co-opt these exact mechanics. Developers must employ personalized, adaptive algorithms, gamification of recovery milestones, and frictionless UI/UX to deliver timely cognitive-behavioral interventions (CBT) just as intuitively and engagingly as a social network delivers a tailored video feed.

5.5 Ethical Paradigms and Regulatory Frameworks in AI and Immersive Therapeutics

The integration of Virtual Reality (VR) and Large Language Models (LLMs) represents the next frontier in ED treatment, fundamentally shifting digital psychiatry from 2D self-monitoring to immersive and conversational therapy (Torous et al., 2021). VR successfully bridges the critical gap between digital safety and real-world exposure, allowing for intensive body image recalibration (Grywińska et al., 2025).

Concurrently, the emergence of LLM chatbots introduces a major shift. As Choi et al. (2024) describe, LLMs offer a "private yet social" interaction model. This is uniquely beneficial for ED populations, whose pathology is inherently characterized by intense shame, pathological secrecy, and an overwhelming fear of human judgment. An LLM provides an always-available, non-judgmental entity for immediate cognitive restructuring. However, this deployment raises significant clinical, legal, and ethical dilemmas that current healthcare frameworks are ill-equipped to handle.

The inherent risk of AI "hallucinating" scientifically inaccurate dietary advice poses a direct medical threat. More critically, the potential failure of an LLM to accurately parse the nuanced linguistic markers of an impending medical crisis (e.g., severe suicidal ideation or critical cardiovascular instability resulting from extreme restriction) could be fatal. This necessitates the urgent development of new regulatory classifications (e.g., Software as a Medical Device - SaMD) by global health authorities like the FDA and EMA. AI models deployed for psychiatric support must undergo rigorous clinical stress-testing and possess hard-coded, fail-safe mechanisms to immediately escalate acute crises to human emergency services.

5.6 Limitations of the Current Literature

While this comprehensive review synthesizes important and clinically vital findings, several significant limitations within the current body of literature must be explicitly acknowledged. First, the vast majority of studies investigating the pathogenic impact of social media rely heavily on cross-sectional or correlational epidemiological designs. This limits the ability to establish definitive, bidirectional causal pathways over long developmental periods. Second, while preliminary efficacy data for tailored mHealth applications is highly promising, there is a distinct scarcity of large-scale, multi-center, multi-year randomized controlled trials assessing the long-term maintenance of clinical recovery once active application usage ceases. Finally, academic research methodologies frequently outpace the rapid lifecycle of commercial digital platforms; the specific algorithmic mechanisms and interface architectures of applications like TikTok evolve so rapidly that traditional longitudinal observation is inherently challenging, often rendering findings obsolete upon publication.

5.7 Future Research Directions

To systematically address these evidentiary gaps and aggressively advance the field of digital psychiatry, future research protocols should prioritize the following critical domains:

1. **Granular Digital Phenotyping:** There is an urgent need for longitudinal studies that utilize advanced digital phenotyping and machine learning to track exact user interactions with social media algorithms over time, moving beyond highly flawed, self-reported screen time metrics to objectively measure actual exposure to pathogenic content.

2. **Standardized AI Safety Protocols:** As LLM chatbots become inevitably integrated into mental health care, researchers must collaboratively develop standardized protocols for stress-testing the clinical safety, empathy, and crisis-response capabilities of these models before unrestricted public deployment.

3. **Optimization of Hybrid Care Architectures:** Future clinical trials should focus on optimizing "blended" care models, evaluating the synergistic efficacy of pairing traditional face-to-face psychotherapy with highly tailored, algorithm-driven mHealth applications to support between-session behavioral recovery and prevent relapse.

4. **Demographic Inclusivity and Precision Psychiatry:** The field must consciously expand its focus to routinely include underrepresented populations, including older adults, males, and sexual minorities, ensuring that emerging mHealth algorithms and VR environments are culturally and clinically sensitive to diverse presentations of eating pathology.

6. Practical Implications for Clinicians

The rapid evolution of digital spaces necessitates a fundamental shift in everyday clinical practice. Therapists, psychiatrists, and allied health professionals can no longer treat internet usage as a peripheral aspect of a patient's life; rather, the digital environment must be recognized as a primary psychological habitat. The extensive literature synthesized in this review offers several critical, actionable implications for clinicians treating eating disorders. However, mitigating the impact of the digital exposome can no longer remain the sole purview of psychiatry. It requires a coordinated, multidisciplinary clinical response.

6.1 Multidisciplinary Clinical Vigilance: The Somatic and Neurological Interface

Because algorithmic trends frequently dictate extreme physical behaviors, primary care physicians and medical specialists must integrate digital awareness into their diagnostic frameworks. The somatic toll of online trends is significant, requiring vigilance across multiple disciplines:

- **Pediatrics and Primary Care:** Pediatricians represent the critical first line of defense. Routine well-child and adolescent examinations must now incorporate initial screenings for digital distress. Given that the onset of EDs and intense digital immersion concurrently peak during adolescence, early detection of shifts in growth percentiles or sudden weight trajectories must be immediately cross-referenced with the patient's digital habits.

- **Nephrology and Hypertensiology:** Algorithmically propagated fitness trends, particularly those targeting muscle dysmorphia and extreme "cutting" phases, heavily promote intentional dehydration and the unregulated consumption of diuretics and thermogenics. Nephrologists evaluating young, physically active patients presenting with unexplained acute kidney injury (AKI), severe hypokalemia, or hyponatremia must specifically screen for digital compliance to extreme fitness protocols. Concurrently, hypertensiologists must recognize that acute hypertensive urgencies, tachyarrhythmias, or syncopal episodes in otherwise healthy

adolescents may frequently stem from the algorithmic promotion of massive doses of unregulated metabolic stimulants and pre-workout supplements.

- **Diabetology and Endocrinology:** The viral normalization of extreme binge eating, such as the consumption of mukbang videos, directly contributes to the rapid development of significant metabolic derangements. Diabetologists managing young patients with sudden-onset insulin resistance, rapidly increasing visceral adiposity, or early metabolic syndrome must explicitly investigate the patient's consumption of, and potential mimicry of, hyper-caloric digital content.

- **Neurology:** Neurologists assessing patients with escalating compulsive behaviors, executive dysfunction, or severe sleep architecture disruptions must consider the significant neurobiological impact of variable ratio reinforcement schedules utilized by social media platforms. The chronic dopaminergic hijacking caused by algorithmic validation directly competes with and frequently overrides neurological mechanisms of impulse control, inextricably linking screen dependency with compulsive eating pathology.

6.2 Routine Assessment and the "Digital Anamnesis"

Clinical intake protocols and ongoing assessments must be updated to include a comprehensive evaluation of a patient's "digital diet". Clinicians should routinely inquire not only about the total duration of screen time but, more importantly, about the specific nature of algorithmic exposure. Questions should rigorously explore which platforms are most frequently used (e.g., TikTok, Instagram), the exact types of accounts followed (e.g., fitness influencers, "What I Eat In A Day" creators, mukbang channels), and the patient's emotional response to their curated feeds.

Furthermore, clinicians must actively investigate the patient's engagement with digital self-editing tools and biometric tracking software (e.g., rigid macro-tracking or fasting applications). Understanding that patients may be involuntarily trapped in a highly concentrated algorithmic echo chamber (Logrieco et al., 2021; Pruccoli et al., 2022) allows the clinician to identify active environmental triggers that persistently maintain the eating disorder and initiate physiological relapse.

6.3 Algorithmic Psychoeducation as a Neurobiological Reframing Tool

A pervasive clinical feature of eating disorders is intense shame, isolation, and self-blame. Patients often internalize the distress caused by social media, believing their body dissatisfaction and resultant physiological complications represent a personal moral failure. Clinicians can actively utilize psychoeducation regarding recommendation algorithms to externalize this blame.

By explicitly explaining how platforms are financially incentivized to promote self-objectifying and extreme content to maximize engagement metrics (Sarda et al., 2025), therapists can help patients understand that their algorithm is a highly manipulated, artificial environment, not a reflection of objective reality or a physiological standard they must achieve. This neurobiological and cognitive reframing can significantly reduce shame and empower patients to actively curate, ruthlessly filter, or temporarily eliminate toxic digital inputs, thereby decreasing chronic limbic hyperarousal.

6.4 Prescribing Evidence-Based mHealth Interventions in a Stepped-Care Architecture

The clinical efficacy of mHealth applications indicates that technology can be a powerful adjunct to traditional therapy. Clinicians must proactively shift from merely discouraging toxic smartphone use to actively "prescribing" evidence-based digital tools. Guided self-help apps (Cavazos-Rehg et al., 2026) and specific cognitive-restructuring applications (Corberán et al., 2024) can be seamlessly integrated into treatment plans as digital "homework" between sessions.

This blended care model ensures that patients have continuous access to CBT-based coping mechanisms in real-time, specifically targeting high-risk moments outside the clinic environment, such as severe post-meal anxiety, late-night urges to binge, or overwhelming compulsions to engage in compensatory fasting. By replacing pathological algorithmic engagement with therapeutic algorithmic engagement, clinicians can directly compete for the patient's digital attention span.

6.5 Proactively Navigating AI and Virtual Communities

Finally, clinicians must prepare for the reality that patients are already independently utilizing emerging technologies, such as LLM chatbots, for daily emotional support and subjective dietary advice (Choi et al., 2024). Therapists and medical providers should foster open, strictly non-judgmental dialogues about these digital interactions, helping patients critically evaluate the medical validity of the advice they receive from AI. It is imperative to ensure that digital support does not replace necessary human medical oversight, particularly

concerning acute physiological stabilization. Additionally, when patients seek peer support, clinicians should systematically guide them toward clinically moderated digital communities rather than unmoderated social media hashtags, effectively mitigating the severe risks of competitive pathology while retaining the clinical benefits of shared connection.

7. Conclusions

The intersection of digital spaces and eating disorders represents one of the most complex, rapidly evolving, and dangerous challenges in modern clinical psychology, psychiatry, and broad public health. This comprehensive literature review highlights a clear contrast inherent in the contemporary digital landscape. On one side of the spectrum, unregulated social media architectures and engagement-driven algorithms act as potent, highly efficient pathogenic vectors. Operating without clinical oversight, these platforms actively exploit intrinsic neurobiological vulnerabilities, particularly in adolescents, systematically amplifying disordered eating behaviors, significant body dysmorphia, and severe downstream somatic complications through relentless self-objectification and unavoidable algorithmic mirroring.

Yet, the very technological infrastructure that precipitates this systemic psychiatric crisis simultaneously holds the clinical blueprint for its mitigation. The rapidly expanding field of digital psychiatry, encompassing algorithmically tailored mobile health (mHealth) applications, immersive Virtual Reality (VR) exposure environments, and carefully implemented conversational artificial intelligence (LLMs), offers novel therapeutic opportunities. These advanced e-mental health tools provide highly scalable, geographically accessible, and entirely destigmatized avenues to deliver continuous, evidence-based cognitive-behavioral interventions directly into the daily, lived environments of those most affected.

The critical transition from digital pathogenesis to digital healing is no longer merely a theoretical possibility; it is an urgent public health imperative. This major shift requires a coordinated, aggressive, and multidisciplinary effort. Technologists, software engineers, and global social media corporations must be held rigorously accountable for algorithmic transparency. This necessitates the immediate establishment of robust, legally mandated structural safeguards that explicitly prioritize user psychiatric well-being and clinical safety over commercial engagement metrics and advertising revenue.

Concurrently, the global medical and academic communities must fully embrace the therapeutic potential of digital psychiatry, permanently integrating algorithmic literacy into standard medical education and everyday diagnostic protocols. Future research and developmental endeavors must focus clearly on the creation of user-centric, scientifically validated mHealth tools that can ethically rival the engaging interfaces of commercial applications, while seamlessly integrating into hybrid, multidisciplinary models of clinical care.

Ultimately, the future of eating disorder prevention and recovery does not lie in an unrealistic, defensive rejection of the digital world. Instead, it demands the deliberate, ethical, and clinically informed redesign of the digital exposome, transforming technology from a driver of pathology into a fundamental pillar of modern psychiatric healing.

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