

Bridging Mind and Body: Exploring the Potential of Enhancing Psychosomatic Care for Mental Health Disorders through Artificial Intelligence and Emerging Technologies

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ABSTRACT

The global prevalence of mental health disorders continues to rise despite expanded access to treatment, exposing the limitations of therapeutic models rooted in Cartesian dualism that separate psychological from physical care. Psychosomaticization research has long established a strong association between mental health disorders and somatic symptoms, yet therapeutic integration remains hindered by fragmented approaches and methodological challenges. This paper examines how advancing technologies, particularly artificial intelligence and digital health innovations, can address these gaps by enabling more holistic, personalized, and accessible psychosomatic care. Through a critical analysis of AI-driven interventions, including adaptive hypnotherapy, symbolic translation systems, decision-support frameworks, digital cognitive-behavioral therapy, and tailored e-health tools, the paper highlights their potential to overcome traditional limitations in treating psychosomatic symptoms. However, it also underscores the importance of preserving therapeutic relationships and embodied subjectivity. Ultimately, the future of psychosomatic medicine depends on the ethical and collaborative integration of technology into clinical practice.

Keywords: Psychosomatic care, artificial intelligence, mental health disorders, digital health, holistic treatment

INTRODUCTION

Mental health disorders are some of the most widespread conditions worldwide. According to the World Health Organization (WHO), approximately one in eight people globally, amounting to 970 million individuals, live with some sort of mental disorder, with depression and anxiety being the most common. As of 2019, approximately 301 million people suffered from anxiety disorders, while 280 million from depression, including children and adolescents (WHO, 2022). Major depressive disorder affects around 4.4% of the global population, making it the leading cause of disability worldwide. COVID-19 escalated the situation even further. Reports suggest that anxiety and depression rose by approximately 25% within a year, leading to tens of millions of additional cases. Specifically, an estimated 76 million anxiety disorders and 53 million additional cases of major depressive disorder were attributed to the pandemic (Santomauro et al., 2021). Moreover, a landmark study published in the scientific journal *The Lancet Psychiatry* found that half of all people might experience at least one mental disorder by the age of 75, which is a stark rise from prior estimates (McGrath et al., 2023).

Unfortunately, despite the growing awareness of mental health challenges and the increased access to conventional treatment, the global prevalence of mental health disorders continues to rise. A major factor driving this persistence is the fragmented nature of care, i.e., while most interventions concentrate on alleviating psychological and emotional symptoms, they tend to neglect the somatic manifestations of these conditions. This gap leaves many patients with unresolved psychosomatic symptoms, undermining their recovery and quality of life. Addressing this shortcoming is vital and requires an integrated model of care capable of acknowledging the inseparability of mind and body. The central problem, therefore, is how to enhance psychosomatic care in ways that overcome these limitations.

This paper argues that advancing technology, particularly artificial intelligence and digital health innovations, holds significant potential to improve psychosomatic care by enabling more holistic, personalized, and accessible interventions for mental health.

Background and Problem Statement

When speaking about the diagnosis and treatment of mental disorders, these largely rely on psychological frameworks whereby clinical assessment, guided by criteria like DSM-5 or ICD-11, further informs prescription of talk-based therapies such as cognitive behavioural therapy (CBT), psychodynamic therapy, and interpersonal therapy, and all pharmacological interventions, such as through selective serotonin reuptake inhibitors (SSRIs). Among all of these therapies, CBT has remained one of the most empirically supported interventions. CBT is based on the premise that cognition, i.e., maladaptive thoughts, influences emotions and behaviours and that restructuring these patterns can reduce distress in individuals (Chand et al., 2023). Techniques part of this often include identifying cognitive distortions, practicing behavioural activation, such as engaging in rewarding

activities to counter withdrawal, and structured homework assignments to reinforce new patterns. There is sufficient evidence to show that CBT can be effective for disorders like depression, anxiety, PTSD, and OCD. A meta-analysis by Kindred et al. (2022), for instance, shows that “CBT for Social Anxiety Disorder (SAD) is efficacious in producing enduring reduction of social anxiety symptoms 12 months or longer after treatment cessation” (Kindred et al., 2022). However, research has observed that on the whole, regardless of increased access to therapy and medications, outcomes are not improving. In the US, for example, suicide rates rose by 30% from 2002 (10.9 deaths per 100,000 standard population) to 2018 (Garnett & Curtin, 2024). 46% of people who die by suicide had a known mental health condition (NAMI, 2022). Furthermore, therapy can also sometimes be harmful. This is based on research that suggests that at least 5% of clients report worsened outcomes (Cummins, 2022), especially among marginalised groups, when exposed to such therapies. These findings do raise questions regarding the sufficiency of current mental health care models.

The fundamental issue arises in the fact that conventional treatment models predominantly target cognitive and emotional symptoms while often marginalising physical or somatic manifestations of mental health disorders, including those like fatigue, pain, gastrointestinal discomfort, or even sleep disturbances. This reflects a Cartesian dualism. This concept was proposed by René Descartes and implied that human beings consist of both a physical body, which is governed by physical laws, and a material mind that is not subject to the physical laws (Britannica, 2018). In simple words, it's suggested that the mind and body ought to be treated separately. This often results in fragmented care within our healthcare systems, whereby, despite the widespread implementation of verbal therapies and medication, the physical or somatic aspects of mental disorders are often underaddressed,

potentially undermining recovery and well-being. This persistent separation of the mind and body not only neglects the full spectrum of symptoms of mental health disorders but also exacerbates inequalities and limits treatment efficacy. It may therefore be that the continued rise in mental health disorder prevalence, disability, and suicide, even amid growing treatment, could reiterate the inefficiency and an imperative requirement to reconceptualise mental healthcare in order to account for psychosomatic dimensions, recognising that cognitive, emotional, and bodily symptoms are in fact very deeply integrated.

Understanding Psychosomatisation

Psychosomatisation refers to the interplay between psychological states and physical manifestations (Britannica, 2019). In simpler terms, this is an embodied form of distress whereby mental suffering finds somatic expression. Regarding the origin of the concept, it can be traced back to early holistic frameworks, notably those introduced by Johann Christian August Heinroth in 1818, who introduced the term "psychosomatic" (Steinberg et al., 2013). This term affirmed that the soul holds privacy over the body and that mental state can, in fact, directly precipitate physical illness. This is a direct contrast to the aforementioned Cartesian dualism, which rigidly separates the mind and body, reflecting a long intellectual lineage in German medicine that emphasises treating the human being rather than only the disease.

During the 20th century, a growing level of formalization emerged in psychosomatic thought. Psychosomatic medicine gained organisational momentum through pioneers such as Felix Dutch in the 1920s (Hackett et al., 2010) and the establishment of the CL psychiatry fellowship in the mid-20th century. For instance, around the 1930s, consultation-liaison (CL) psychiatry emerged as its clinical extension, aiming to bridge psychiatric and medical spheres (Friedman & Molay, 1994). In the scientific community, the Society for Biopsychosocial

Science and Medicine, formally known as the American Psychosomatic Society, was founded in 1942 and has consistently promoted the integration of mind, brain, body, and social context in medicine (SBSM, 2025). One of the major conceptual leaps occurred with the biopsychosocial model, first coined by Roy Grinker in 1952 to highlight the interdependent biological, psychological, and social factors in mental illness, and subsequently extended by Engel into a broad theory of illness across domains of medicine (Lugg, 2022). Engel argued that the prevailing biological model was insufficient because it excluded subjective illness experience, patient identity, emotional states, and social environment, which were all dimensions essential for a holistic understanding of health (Bolton & Gillett, 2019). His model remains a foundational, though contested, framework underpinning contemporary education and practice.

Psychosomatisation's relevance to mental health disorders is increasingly established. Mental illnesses like depression, anxiety, trauma-related conditions, and somatic symptom disorders often manifest physically in chronic pain, fatigue, general malaise, or gastrointestinal disturbances and are now understood to involve inflammatory, neuroendocrine, and brain-mediated bodily pathways. The primary culprit for this is the stress hormone identified as cortisol. When an individual perceives a threat in their environment, their emotional processing centre in the brain, known as the amygdala, sends out an alarm signal, which is then picked up by the hypothalamus through neuroendocrine hormones. This triggers the pituitary gland, which then stimulates the adrenal glands, where stress hormones such as cortisol and adrenaline are produced. This is recognized as the hypothalamic-pituitary-adrenal (HPA) axis and is responsible for our fight-or-flight response (Scott, 2023). During this response, cortisol impacts a wide range of body functions through the sympathetic nervous system. The heart rate increases, blood pressure rises, breathing becomes

shallower and more rapid, pupils dilate, and so on. Furthermore, under normal conditions, cortisol directs the metabolism of sugar and fats and proves to be a helpful anti-inflammatory. However, excessive cortisol can lead to metabolic problems, including high cholesterol, increased appetite, weight gain, decreased insulin sensitivity, elevated blood sugar levels, adrenal insufficiency, and sleep problems. Additionally, the gut microbiome is altered in response to stress, leading to the release of toxins, metabolites, and neurohormones that affect eating behavior, mood, energy, and immune functioning (Madison & Kiecolt-Glaser, 2019). “A review of the research published in 2015 shows that people who experience chronic stress have signs of a dysregulated immune system with higher levels of pro-inflammatory cytokines in their bloodstream, lower antibody response to viruses, more frequent illness, and even reactivation of latent viruses like Epstein-Barr. People with ongoing stress also experience more autoimmune flare-ups and slower wound healing. All of these immune system responses place an extra burden on the immune system” (Morey et al., 2015).

Available statistics provide strong evidence of the association between mental health disorders and somatic symptoms. Research suggested depression predicts a 37% greater risk of psoriatic arthritis even after controlling for behaviours like diet and activity, suggesting a direct psychosomatic mechanism involving inflammation and stress hormones like cortisol (Parkinson et al., 2020). Other studies have found that impaired physical health across multiple organ systems correlated with heightened depressive and anxious symptoms mediated by changes in the brain structure. A study by Niles et al. (2016) concluded that the “odds of having asthma, heart disease, back problems, ulcer, migraine headache, and eyesight difficulties also increased as anxiety and depressive symptom severity increased. Anxiety symptoms were independently associated with ulcer, whereas depressive symptoms were independently associated

with heart disease, migraine, and eyesight difficulties”. These findings challenge purely psychologizing models and affirm the brain as a somatic relay in the psychosomatic cascade.

That being said, despite conceptual gains, the current psychosomatic landscape faces some critical limitations that have hindered both therapeutic integration and research in the field. The biopsychosocial model, while influential, has also been criticised for weakness and lack of specificity (Roberts, 2023) – it offers a broad vision but at the expense of actionable diagnostic or therapeutic protocols and lacks methodical rigour in delineating how the psychological, biological, and social factors concretely interact, particularly across different conditions and stages of illnesses. Furthermore, the model's eclectic flexibility has been argued to foster incoherence in application, whereby practitioners may emphasise different dimensions without a principled basis, and this can undermine consistency and replicability. Institutionally, the Cartesian legacy ensures that medical training and systems remain siloed – psychiatry, psychology, and internal medicine, as well as specialties, largely operate in parallel, rather than being integrated. Consultation-liaison in psychiatry, though valuable, remains peripheral in many health systems, which limit psychosomatic care to fragmented referrals rather than routine holistic practice. In addition, cultural biases such as historic associations of psychosomatic illnesses with gender stereotypes of hysteria or even emotional weakness continue to stigmatise patients and delegitimise symptoms. Lastly, there is a lack of robust biomarkers and objective metrics, and this makes psychosomatic conditions inherently nebulous. Without any clear psychological indicators, such as imaging or molecular targets, the diagnosis and treatment effectiveness remain limited. This slows research and diminishes clinical confidence. It is precisely the systemic, conceptual, and methodological constraints that urgently

need innovation. Therefore, a vital opportunity exists where technology, ranging from wearable sensors to neuroimaging, digital phenotyping, and AI-driven integrated diagnostics, can offer promise to render psychosomatic interactions visible, measurable, and actionable.

Leveraging AI and Emerging Technologies to Enhance Psychosomatic Care

The dual embodiment of mind and body has long complicated the treatment of psychosomatic symptoms. Approaches such as cognitive behavioural therapy, hypnotherapy, and psychodynamic methods have demonstrated efficacy in treating such symptoms; however, they do face limitations in personalisation and integration with biomedical data. This is where artificial intelligence (AI) and related technologies can serve as useful tools to bridge the gaps. That being said, even their adoption raises some practical clinical and ethical challenges. The remainder of this section analyses how these technologies can reshape psychosomatic care.

Firstly, AI-based treatment protocols represent a significant change from standardised to adaptive care. With the ability to analyse extensive, heterogeneous clinical data, AI can identify subtle symptom patterns and predict treatment response trajectories, guiding precision interventions. A recent study, for instance, proposed a data-science-driven protocol that utilises machine learning to stratify patients with psychosomatic conditions and optimise treatment allocation (Morande, 2022). This approach directly addresses inefficiencies in current practice, where mismatches between therapy type and patient profile often delay recovery. However, if such techniques are adopted on a broader scale, the systems must rely on high-quality and representative data; if training sets underrepresent certain demographic or diagnostic groups, then the recommendations risk reinforcing bias.

One intervention that can help significantly with psychosomatic symptoms is hypnotherapy. This has long been used to treat stress-related conditions, including insomnia, irritable bowel syndrome, and psoriasis (Khetrapal, 2017). In this domain, AI introduces possibilities for tailoring such a practice to individual physiology and responsiveness (Carnevale, 2025). For instance, algorithms may be able to track biomarkers such as heart rate variability or galvanic skin response to adjust hypnotic scripts in real-time and enhance therapeutic depth. Personalised script generation based on linguistic analysis of patient narratives may also improve adherence and perceived response. Even though these innovations promise great precision, they may raise concerns regarding the overreliance on automated prompts during deeply sensitive interventions (Gardner & Radesca, 2025). Therefore, AI's role is perhaps better framed in such a scenario as being augmentative, providing the physiological insight and linguistic suggestions rather than as a complete substitute for therapist-led guidance.

Beyond augmenting traditional methods, technology could also serve as a medium for accessing and elaborating psychosomatic symptoms at multiple levels of experience. Conceptual frameworks describe conversion symptoms as arising from unconscious bodily logic, which is expressed across proprioceptive, iconic, and symbolic systems. Technological tools, ranging from biofeedback trackers to symbolic representation software, can scaffold therapeutic work across these layers (Vaskivska, 2021). For instance, wearable devices may be able to capture subtle muscle tensions and externalise hidden somatic processes, while digital visualisation platforms may allow patients to reframe bodily discomfort symbolically. This staged translation from body to image to symbol expands the therapeutic repertoire, enabling psychotherapists to move fluidly between embodied and narrative dimensions of wellness.

Additionally, when grounded in a holistic understanding of mental health symptoms, CBT is extensively researched and proven to treat psychosomatic symptoms and stress-related disorders (Nakao et al., 2021). In this instance, digital adaptations, including Internet-based CBT (iCBT) and computer-assisted CBT (cCBT), have expanded access significantly while maintaining efficacy in conditions ranging from depression and anxiety to irritable bowel syndrome and fibromyalgia. The integration of AI can further refine these interventions, whereby algorithms may be able to analyze user interaction data to identify avoidance behaviour or lapses in engagement, prompting timely adaptive feedback. Evidence suggests that cCBT can significantly reduce psychosomatic symptoms in medically ill populations, including chronic fatigue syndrome and cancer, where stress exacerbates physical burden. Moreover, research shows that AI-enabled psychosomatic interventions demonstrate particular value in high-distress medical populations, such as laryngeal carcinoma patients undergoing laryngectomy and experiencing profound psychological sequelae, including anxiety, depression, and insomnia. Studies such as that by Yang et al. (2021) have shown that cCBT can significantly relieve symptoms and improve both psychological outcomes and quality of life in this instance. The integration of AI here could optimise the timing of interventions by detecting preoperative anxiety spikes through physiological monitoring or tailoring insomnia protocols to individual circadian rhythms. Nonetheless, it is vital to acknowledge that some critical challenges persist, wherein automated CBT modules often struggle to maintain long-term engagement, and their reliance on structured exercises can limit adaptability for patients with comorbid presentations. Thus, while AI-enhanced CBT could broaden the reach of psychosomatic care, it may best serve as a complement to, rather than a replacement for, therapist-led therapy.

The potential of AI and technologies in helping to better and more efficiently target psychosomatic symptoms is also evident in system-level innovations such as Medea Mind. This offers a significant transformation through its Clinical Decision Support System (CDSS), which automatically collects biopsychosocial data and provides clinicians with structured insights, as well as interoperability with existing digital infrastructures (eHealth, 2024). In psychosomatic care, where symptoms often blur disciplinary boundaries, such integration is crucial. By leveraging such platforms that help standardize and centralize data, clinicians can avoid fragmented decision-making and maintain continuity of care.

CONCLUSION

Overall, AI and related technologies do hold genuine potential for transforming psychosomatic care by offering personalization, scalability, and integration across the mind-body domain. Protocol-driven AI systems promise more efficient matching of treatments to patient profiles; AI-augmented hypnotherapy leverages psychological monitoring for more adaptive sessions, symbolic translation technologies illuminate hidden bodily logic, decision-support systems streamline biopsychosocial data management, AI-enhanced CBT broadens accessibility to evidence-based therapy, and tailored digital interventions improve outcomes in high-distress medical contexts.

However, across all the cases, a critical balance lies in ensuring AI support rather than completely supplanting the therapeutic relationship and embodied subjectivity at the heart of psychosomatic medicine. If deployed ethically and thoughtfully, AI and technologies can definitely act as a bridge between body, mind, and data. But, if misapplied, it risks reducing psychosomatic complexity into computational abstraction. The future of psychosomatic treatment, therefore, depends less on whether technologies are available and more on how

clinicians, researchers, and patients collectively negotiate their role in care.

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