

Review Article

A Review on Mental Health Integration and Digital Therapeutics in Primary Care

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Abstract: The year 2025 marks a pivotal moment in the evolution of mental healthcare, characterized by an accelerating shift towards the integration of mental health services within primary care settings and the burgeoning adoption of digital therapeutics (D Tx). Driven by persistent challenges in access, stigma, and workforce shortages, primary care has emerged as a crucial nexus for addressing mental health needs across the lifespan. This review article offers a comprehensive examination of the landscape of mental health integration in primary care in 2025, detailing current models, their effectiveness, and the formidable barriers to widespread implementation. Concurrently, it critically evaluates the role and impact of digital therapeutics—evidence-based, software-driven interventions—in augmenting integrated care. We explore the diverse applications of D Tx, from AI-powered chatbots and virtual reality therapies to sophisticated mobile applications for conditions like anxiety, depression, and ADHD. Furthermore, the article delves into the transformative potential of artificial intelligence (AI) and machine learning in enhancing personalization, prediction, and efficiency within integrated care pathways. Moving forward, the focus must remain on strengthening the foundational pillars of integrated care while strategically deploying rigorously evaluated digital therapeutics. This requires sustained investment in training, the establishment of sustainable reimbursement models, the creation of interoperable digital infrastructures, and a steadfast commitment to ensuring equitable access for all, regardless of socioeconomic status or technological literacy. It addresses crucial considerations such as clinical validation, regulatory frameworks, reimbursement models, data privacy, and the persistent digital divide. Drawing upon contemporary research, policy initiatives, and market trends in 2025, this review argues that the synergistic integration of mental health services with primary care, significantly amplified by the strategic deployment of validated digital therapeutics, offers the most promising pathway to achieving equitable, accessible, and high-quality mental healthcare for a global population.

Keywords: mental health integration, primary care, digital therapeutics (D Tx), digital mental health

1. INTRODUCTION

The global burden of mental health disorders remains staggering in 2025, with depression alone being a leading cause of disability worldwide [1]. Despite this pervasive need, access to adequate mental healthcare services is often limited by a confluence of factors, including severe workforce shortages, geographic barriers, financial constraints, and deeply entrenched social stigma. In response to these persistent challenges, the integration of mental health services into primary care settings has gained considerable momentum, positioning primary care as the de facto front line for addressing a broad spectrum of mental health concerns. This paradigm shift, advocating for "no wrong door" for mental

health support, recognizes that primary care providers (PCPs) are often the first, and sometimes only, point of contact for individuals experiencing mental health symptoms [2]. The post-pandemic era, with its accelerated adoption of digital technologies in healthcare, has simultaneously propelled the field of digital therapeutics (D Tx) into a prominent role. D Tx, defined as evidence-based therapeutic interventions delivered by high-quality software programs, offer a scalable and accessible means to deliver mental healthcare, potentially bridging significant gaps in traditional service delivery [3]. This review article provides a comprehensive and timely analysis of the current state of mental health integration and the role of digital therapeutics in primary care in 2025. It will explore the evolution of integrated care models, highlight the specific applications and effectiveness of D Tx, and discuss how emerging technologies like Artificial Intelligence (AI) are shaping this landscape. Crucially, it will also address the persistent barriers to widespread implementation, including regulatory, reimbursement, and equity concerns, while offering insights into future directions for achieving truly accessible and effective mental healthcare.

2. THE IMPERATIVE FOR MENTAL HEALTH INTEGRATION IN PRIMARY CARE

The rationale for integrating mental healthcare into primary care is compelling and multifaceted, stemming from both clinical necessity and systemic inefficiencies. **Prevalence of Mental Health Conditions:** A significant proportion of individuals with mental health conditions, particularly common disorders like depression and anxiety, first present to primary care rather than specialty mental health services. Studies consistently show that PCPs manage a substantial caseload of patients with mental health concerns. **Comorbidity with Physical Health:** Mental and physical health are inextricably linked. Individuals with serious mental illness (SMI) often experience higher rates of comorbid physical health conditions, leading to poorer overall health outcomes and reduced life expectancy [4]. **Integrating care** allows for holistic management, addressing both aspects concurrently. **Reduced Stigma:** Seeking mental health support in a familiar primary care setting can help reduce the stigma associated with mental illness, making patients more willing to discuss their concerns and accept treatment. **Early Identification and Intervention:** Primary care's broad reach and continuous patient relationships provide unique opportunities for early detection of mental health issues, enabling timely intervention before conditions escalate. **Convenience and Accessibility:** For many, primary care is geographically more accessible and less intimidating than specialized mental health clinics, particularly in rural or underserved areas [5]. **Mental Health Workforce Shortages:** The severe global shortage of psychiatrists, psychologists, and other mental health professionals creates immense treatment gaps. Primary care integration is seen as a pragmatic strategy to leverage the existing primary care workforce. **Fragmented Care:** Traditional healthcare systems often operate in silos, with distinct pathways for physical and mental health. This fragmentation leads to poor communication, duplication of services, and suboptimal patient outcomes. Integrated models aim to create a seamless care experience. **Economic Burden:** Untreated or poorly managed mental health conditions impose a substantial economic burden through direct healthcare costs, lost productivity, and disability. Integrated care models have demonstrated cost-effectiveness by improving outcomes and reducing emergency department visits and hospitalizations. **Policy Support:** Increasing recognition of these issues has led to policy directives and funding initiatives promoting integrated behavioral health models across various healthcare systems [6].

3. MODELS OF MENTAL HEALTH INTEGRATION IN PRIMARY CARE (2025)

The integration of mental health into primary care takes various forms, ranging from co-location to full integration, with increasing emphasis on collaborative, team-based approaches. **Co-location:** Mental health providers (e.g., social workers, therapists) are physically located within or adjacent to primary care clinics but may operate somewhat independently with separate record systems. While it improves accessibility, full collaboration might be limited. **Coordinated Care:** PCPs and mental health providers

communicate and refer patients, but care remains largely distinct. Collaborative Care Models (CCM): These are evidence-based, team-based models, most notably the Collaborative Care Model (Co CM), which typically involves a primary care provider, a care manager, and a consulting psychiatric specialist [7]. Key elements include: Population-Based Care: Systematically tracking a panel of patients with mental health conditions. Stepped Care: Adjusting intensity of treatment based on patient response. Evidence-Based Treatment: Utilizing interventions with proven efficacy. Measurement-Based Treatment: Regularly assessing symptoms and functional outcomes to inform care. Accountability: Clear roles and responsibilities within the care team. Effectiveness: Co CM has consistently demonstrated improved patient outcomes, service satisfaction, and overall quality of life, particularly for common mental disorders like depression and anxiety. Fully Integrated Care: Mental health services are seamlessly embedded within primary care, sharing physical space, electronic health records (EHRs), and management structures. This model fosters the highest level of communication and shared decision-making [8]. Innovation in Behavioral Health (IBH) Model: Launched by CMS on January 1, 2025, this model aims to deliver person-centered, integrated care to Medicaid and Medicare populations with moderate to severe mental health conditions or substance use disorder (SUD). It supports specialty behavioral health practices in leading interprofessional care teams to address behavioral, physical, and health-related social needs, with compensation based on quality and improved patient outcomes. Interdisciplinary Teams: Effective integration relies on a team of professionals (PCPs, nurses, mental health therapists, social workers, pharmacists, care managers) working collaboratively. Shared Electronic Health Records (EHRs): A unified and accessible EHR system is crucial for seamless communication, information sharing, and coordinated care planning [9]. Systematic Screening: Routine screening for common mental health conditions (e.g., depression, anxiety) within primary care workflows allows for early identification. Referral Pathways and Warm Handoffs: Clear, efficient referral processes, including "warm handoffs" where a PCP introduces a patient directly to a mental health specialist, significantly improve engagement. Training and Education: Equipping PCPs with enhanced skills in mental health assessment, brief interventions, and pharmacotherapy management is critical [10]. Leadership and Management: Strong leadership and management with a clear interest and experience in mental health are vital for fostering teamwork and reducing staff conflict.

4. THE ROLE OF DIGITAL THERAPEUTICS (D TX) IN PRIMARY CARE

Digital therapeutics are revolutionizing mental healthcare delivery by offering accessible, scalable, and personalized interventions, increasingly integrated into primary care settings in 2025. Digital therapeutics are distinct from general wellness apps. They are: Evidence-Based: Clinically validated with proven efficacy, often through randomized controlled trials. Software-Driven: Delivered through digital platforms (apps, web portals, virtual reality). Treat, Manage, or Prevent Disease: Designed to address specific medical conditions, including mental and behavioral health disorders (APA, n.d.). Clinically Regulated: Often require formal regulatory review (e.g., FDA clearance in the US, as seen with prescription digital therapeutics, or PDTs). Personalized and Adaptive: Utilize algorithms, including AI, to tailor content and interventions in real-time based on user data and responses [11]. Cognitive Behavioral Therapy (CBT)-based Apps: These are among the most common and well-researched D Tx. They deliver structured CBT exercises, mood tracking, and guided interventions for conditions like depression, anxiety, insomnia, and PTSD [12]. Apps like Sleepio for insomnia and Free Spira for anxiety/panic disorders are notable examples (APA, n.d.). AI-Powered Chatbots and Virtual Assistants: Leveraging natural language processing and machine learning, these tools provide 24/7 mental health support, offer symptom assessment, deliver psychoeducation, and guide users through self-help exercises. While not replacing human therapists, they serve as valuable adjuncts or initial points of contact [13]. Virtual Reality (VR) Therapy: VR environments are increasingly used for exposure therapy (e.g., for phobias, PTSD) and stress management, placing patients in controlled, realistic settings to

safely confront fears. Night Ware for PTSD (for sleep disturbance due to nightmares) and Endeavor Rx for ADHD are FDA-cleared examples. Wearable Mental Health Monitors: Advanced smartwatches and dedicated biosensors track physiological markers like heart rate variability, stress levels, and sleep quality. This continuous data provides insights into mental well-being and can enable earlier recognition of changes, informing both users and primary care providers [14]. Gamification and Habit-Reinforcement Platforms: These D Tx use game-like elements to enhance engagement and reinforce positive behavioral changes related to mental health (e.g., mindfulness practices, adherence to self-care routines). Telepsychiatry Advancements: While not strictly D Tx, teletherapy platforms have evolved to offer more seamless integration with face-to-face elements, expanding access to specialists and facilitating remote consultations within integrated primary care models. Improved Accessibility and Scalability: D Tx can significantly expand access to mental healthcare, particularly in underserved regions or for individuals facing barriers to in-person care [15]. They offer a highly scalable solution to meet rising demand. Cost-Effectiveness: Studies suggest D Tx can be more cost-effective than traditional therapy, by reducing the burden on conventional systems and offering personalized, continuous interventions (APA, n.d.; Precedence Research, 2025). Personalized and Proactive Care: AI-enabled D Tx can adapt therapeutic content in real-time, providing highly personalized interventions that respond to individual needs and progress. Wearable data allows for proactive monitoring and early intervention. Reduced Stigma: Similar to integrated primary care, digital interventions can offer a discreet and confidential way for individuals to seek help, lowering perceived stigma. Empowering Patients: D Tx empower patients with self-management tools, psychoeducation, and the ability to track their progress, fostering greater autonomy in their mental health journey. Augmenting Provider Capacity: D Tx can reduce administrative burden on providers, free up time for more complex cases, and extend the reach of mental health support beyond the clinic walls [16].

5. ARTIFICIAL INTELLIGENCE (AI) AND MACHINE LEARNING IN INTEGRATED MENTAL HEALTHCARE (2025)

AI is rapidly transforming every facet of healthcare, and mental health integration in primary care is no exception. By 2025, AI and machine learning are increasingly seen as pivotal for enhancing personalization, prediction, and efficiency. Early Detection and Risk Prediction: AI algorithms can analyze vast amounts of data from EHRs, wearable devices, and even speech patterns to identify early signs of mental health deterioration or predict the risk of mental health crises before they occur [17]. Personalized Treatment Planning: AI can integrate patient data (genetics, psychology, emotional states, treatment history) to recommend tailored therapy plans, optimize medication choices (pharmacogenomics), and adjust interventions in real-time. Clinical Decision Support: AI tools can assist primary care providers in navigating complex mental health presentations, suggesting appropriate screening tools, referral pathways, and initial management strategies (World Economic Forum, 2025). Microsoft's MAI-DxO, launched in July 2025, an AI platform for diagnostics, has shown the potential for high accuracy in complex medical cases [18]. Automating Administrative Tasks: AI can streamline workflows by automating repetitive tasks like data entry, prior authorization requests, and appointment scheduling, reducing clinician burnout and freeing up time for direct patient care. Monitoring Treatment Progress and Adherence: AI-powered tools can continuously monitor patient progress, identify non-adherence to medication or therapy, and provide alerts to the care team, allowing for timely adjustments. Behavioral Phenotyping: AI can analyze nuanced behavioral patterns (e.g., speech, movement, social media interactions, if consented) to provide deeper insights into a patient's emotional state and response to treatment. Training and Simulation: AI and VR can create realistic training simulations for PCPs and integrated care teams, enhancing their skills in mental health assessment, communication, and crisis intervention. Benefits: Increased efficiency, enhanced diagnostic accuracy, hyper-personalization of care, improved access, and potential to alleviate

workforce burden. **Ethical Considerations:** Data Privacy and Security: The vast amount of sensitive personal health data processed by AI systems necessitates robust security measures and transparent data governance policies [19]. **Algorithmic Bias:** AI algorithms trained on biased datasets can perpetuate or even exacerbate health disparities. Rigorous testing and continuous auditing are required to ensure fairness and equity. **Transparency and Explainability:** The "black box" nature of some AI models can make it difficult to understand how decisions are reached, potentially impacting trust and accountability. **Maintaining Human Connection:** While AI can augment care, it cannot replace the empathy, nuanced understanding, and human connection essential to mental health therapy. A hybrid model combining AI and human touch is seen as optimal. **Regulatory Oversight:** Developing clear regulatory frameworks for AI-driven mental health tools is crucial to ensure safety, efficacy, and ethical deployment [20].

6. BARRIERS TO WIDESPREAD IMPLEMENTATION

Despite the clear benefits and technological advancements, several significant barriers impede the widespread and equitable integration of mental health services and digital therapeutics into primary care. **Workforce Capacity and Training:** While integration aims to mitigate shortages, a significant barrier remains the limited number of PCPs adequately trained in mental health, and insufficient numbers of mental health specialists available for integrated roles [21]. Ongoing, targeted training is crucial. **Financial Constraints and Reimbursement:** Inadequate funding for integrated care models and fragmented reimbursement systems that do not adequately compensate for collaborative care or digital therapeutics remain significant hurdles. While progress is being made (e.g., new Medicare coverage for FDA-cleared PDTs in May 2025, comprehensive and consistent reimbursement is still needed). **Inadequate Infrastructure:** Many primary care clinics lack the physical space, technological infrastructure, and administrative support necessary to effectively integrate mental health services [22]. **Interoperability of EHRs:** Fragmented and non-interoperable EHR systems hinder seamless information sharing between physical and mental health providers, impacting coordinated care. **Time Constraints:** PCPs are often under immense time pressure, making it challenging to incorporate mental health screenings and brief interventions into already packed schedules. **Stigma:** Despite efforts, stigma surrounding mental illness persists, discouraging individuals from seeking help and potentially affecting clinician attitudes. **Lack of Communication and Role Clarity:** Poor communication and unclear roles within multidisciplinary teams can lead to inefficiencies and suboptimal care [23]. **Provider Reluctance/Lack of Buy-in:** Some PCPs may feel unprepared or uncomfortable addressing complex mental health issues, while some mental health specialists may be hesitant to work in a primary care setting. **Patient Digital Literacy and Trust:** While patient demand for non-drug options is high, not all patients have the digital literacy, reliable internet access, or trust in technology required to effectively utilize D Tx. This contributes to the "digital divide." **Lack of Proven Effectiveness for Many Apps:** Of the over 50,000 mHealth apps available, only a small fraction (around 2.08%) has published evidence of their effectiveness, underscoring a critical "quality gap" [24]. Rigorous clinical validation is essential for widespread adoption. **Regulatory Complexity:** The rapidly evolving nature of D Tx presents challenges for regulatory bodies to keep pace, leading to uncertainty for developers and providers. **Data Privacy and Security Concerns:** Ensuring the privacy and security of sensitive mental health data collected by D Tx is paramount and a constant challenge given evolving cyber threats. **Long-Term Efficacy:** While short-term efficacy for many D Tx is promising, more research is needed on their long-term effectiveness and sustained engagement.

7. POLICY RECOMMENDATIONS AND FUTURE DIRECTIONS

To fully realize the potential of mental health integration and digital therapeutics in primary care, concerted efforts across policy, practice, and technology are required beyond 2025. **Enhanced Funding and Sustainable Reimbursement Models:** Develop and implement innovative funding mechanisms and consistent reimbursement codes that recognize the value of integrated care and FDA-cleared digital therapeutics, encouraging their adoption across public and private payers. This includes payment for professional management services associated with DTx. **Workforce Development and Training:** Invest significantly in training initiatives for primary care providers in mental health assessment and basic interventions, alongside expanding the mental health workforce through increased funding for training programs and incentives to work in underserved areas. **Interoperable EHR Systems:** Mandate and incentivize the development and adoption of truly interoperable EHR systems that facilitate seamless data exchange between physical and mental health domains. **Clear Regulatory Pathways for D Tx:** Establish streamlined, adaptive, and clear regulatory frameworks for digital therapeutics that ensure safety and efficacy without stifling innovation. This includes addressing AI ethics proactively. **Digital Health Equity Frameworks:** Implement policies that actively address the digital divide, ensuring equitable access to technology, broadband internet, and digital literacy training, particularly for marginalized and vulnerable populations. **National Action Plans:** Continue to strengthen and implement national mental health policies that prioritize integration into primary care, as seen with France's 2022-2025 National Strategy and Ireland's Sharing the Vision Implementation Plan 2025-2027. **Hybrid Care Models:** The future will increasingly see sophisticated hybrid models that seamlessly blend in-person primary care, specialist consultations (via telehealth), and personalized digital therapeutic interventions. AI will play a critical role in triaging patients and tailoring the intensity of care. **Proactive and Predictive Mental Health:** Leveraging AI and continuous data streams from wearables will enable a shift towards proactive mental health care, identifying risk factors and intervening before conditions escalate, moving beyond reactive treatment. **Precision Mental Health:** Advances in pharmacogenomics and behavioral phenotyping, powered by AI, will allow for highly personalized treatment plans, optimizing medication and therapeutic approaches based on an individual's unique biological and psychological profile. **Integrated Physical and Mental Health D Tx:** The development of D Tx that address the comorbidity of mental and physical conditions (e.g., managing depression in patients with diabetes) will become more prevalent, reflecting the holistic nature of health. **Community-Based Integration:** Expanding integrated care beyond clinic walls to include community-based mental health programs and social determinants of health, leveraging technology to connect individuals with local resources. **Enhanced Interoperability:** A future where all health data, including mental health records and D Tx usage data, is seamlessly integrated and accessible across care settings, securely and ethically. **Global Mental Health Scale-Up:** Lessons learned and validated models from high-income countries will be adapted and scaled up in low- and middle-income settings, leveraging affordable digital solutions and community health worker integration.

8. CONCLUSIONS

In 2025, the trajectory of mental healthcare is undeniably towards deeper integration within primary care, significantly augmented by the transformative power of digital therapeutics. This dual approach offers a compelling solution to the long-standing challenges of access, stigma, and workforce limitations that have plagued traditional mental health service delivery. Integrated behavioral health models, particularly collaborative care, have demonstrated robust effectiveness in improving patient outcomes by embedding mental health support directly within familiar primary care settings. Concurrently, clinically validated digital therapeutics are proving to be scalable, cost-effective, and highly personalized tools for delivering evidence-based interventions for a wide array of mental health conditions. The

accelerating adoption of Artificial Intelligence further promises to revolutionize this landscape, enabling more precise diagnostics, predictive analytics, and hyper-personalized care pathways. However, the journey towards truly seamless and equitable mental health integration, powered by digital innovation, is not without its obstacles. Systemic barriers such as fragmented reimbursement, workforce training gaps, and infrastructure limitations persist. Crucially, the "digital divide" and ethical considerations surrounding data privacy, algorithmic bias, and the appropriate balance between human connection and technological intervention demand continuous attention and proactive policy development. Moving forward, the focus must remain on strengthening the foundational pillars of integrated care while strategically deploying rigorously evaluated digital therapeutics. This requires sustained investment in training, the establishment of sustainable reimbursement models, the creation of interoperable digital infrastructures, and a steadfast commitment to ensuring equitable access for all, regardless of socioeconomic status or technological literacy. By embracing this synergistic vision, where human expertise is amplified by intelligent technology within a patient-centered primary care framework, we can aspire to a future where mental health is truly treated as an integral component of overall well-being, accessible and effective for everyone.

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