



Translating Digital Mental Health Intervention into Psychiatric Nursing Care; Implementing Barriers Facilitators and Practice Framework

*Mbionwu Ugochinyere Chineme, Ibebuike Julia, Emesowum Anthonia, C., Nwagwu Adanma Solomon., Vincent Chinelo and Onyekwuo Festa

Department of Nursing Sciences, Faculty of Health Sciences, Imo State University, Owerri, Nigeria.

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*Corresponding author: Mbionwu Ugochinyere Chineme

Department of Nursing Sciences, Faculty of Health Sciences, Imo State University, Owerri, Nigeria.

Abstract

Digital transformation has changed the delivery of mental healthcare, opening up new possibilities to increase access, quality and continuity of psychiatric services. Today, digital mental health interventions (DMHIs) are an integral part of psychiatric care, including telepsychiatry, mobile health (mHealth) applications, internet-based cognitive behavioural therapy (iCBT), prescription digital therapeutics, artificial intelligence (AI), virtual reality (VR), wearable monitoring devices and remote patient monitoring systems. These technologies promote patient involvement, provide continuous symptom monitoring, encourage treatment adherence, and expand access to evidence-based mental healthcare, particularly for those in rural, underserved, and resource-limited settings. The advent of digital technologies within psychiatric services has meant an expanded role for psychiatric nurses, from traditional clinical duties to digital assessment, telehealth delivery, patient education, remote monitoring, digital literacy support and evaluation of technology-assisted interventions. Although DMHIs have a large potential, the successful implementation in normal psychiatric nursing practice is still influenced by a number of technological, organisational, professional and ethical variables. Common barriers include lack of digital infrastructure, poor connectivity, limited interoperability of electronic health systems, cybersecurity concerns, lack of digital competencies of healthcare professionals, organisational resistance to change, regulatory uncertainties and disparities in patient access to digital technologies. In contrast, supportive leadership, competency-based education, interdisciplinary collaboration, stakeholder involvement, reliable technical assistance and implementation science frameworks have all consistently been identified as critical enablers for effective adoption. This review summarises existing data on the integration of digital mental health interventions into psychiatric nursing practice, including clinical applications, challenges and facilitators to implementation, and evidence-based implementation frameworks. It highlights the growing leadership position of psychiatric nurses in technology-enabled treatment and the significance of balancing technical innovation with compassionate, person-centred and recovery-oriented practice. To ensure sustainable integration of digital mental health therapies, sustained investment in workforce development, digital infrastructure, ethical governance and supportive institutional policies will be necessary to maximise their contribution to safe, egalitarian and high-quality psychiatric care.

Keywords: digital mental health interventions, psychiatric nursing, telepsychiatry, artificial intelligence, digital therapies, implementation science, telehealth, psychiatric mental health nurse practitioner.

Introduction

Worldwide, mental health illnesses continue to be among the top reasons for disability, lower quality of life and early death. Depression, anxiety disorders, schizophrenia, bipolar disorder and substance use disorders continue to impose a tremendous clinical, social and economic burden on individuals, families, health care institutions and society. Despite a significant increase in awareness of mental health, access to quality, evidence-based psychiatric care in a timely manner is still inadequate in many places due to shortages of mental health professionals, inequitable distribution of specialised services, financial barriers, geographic barriers, and persistent stigma.[1] These issues have increased the demand for

novel methods to enhance access to quality mental health care, increase efficiency, and improve patient outcomes. One of the most important breakthroughs in psychiatry today has been the advent of digital mental health interventions (DMHIs). Telepsychiatry, mobile health applications, internet-based cognitive behavioural therapy, prescription digital therapeutics, artificial intelligence, wearable biosensors, virtual reality and remote patient monitoring systems have been made possible by advances in information and communication technologies, allowing mental healthcare delivery outside of traditional hospital and clinic settings. Such technologies provide remote assessment, treatment, monitoring and follow-up, allowing patients to get ongoing and personalised care, independent of geographical location. As a result, digital mental health interventions are gaining recognition as an integral part of modern psychiatric services and not only optional technology advancements[2].

Digital mental health therapies have been embraced due to their potential to increase access, treatment adherence, symptom monitoring, patient involvement, and continuity of care. Remote psychiatric consultations and digital therapeutic platforms provide access to professional mental health care, particularly for people who live in rural and underserved locations, reducing travel costs and waiting times. Mobile applications and wearable technologies further empower patients with support for self-management, monitoring behavioural change, and early recognition of symptom deterioration[3]. These capabilities enable more proactive and personalised approaches to mental healthcare, moving the focus from episodic treatment to continuous disease management. At the same time, the incorporation of digital technologies has revolutionised the job of psychiatric nurses. Traditionally, psychiatric nurses are responsible for mental health assessment, therapeutic communication, medication management, psychoeducation, crisis intervention, rehabilitation and recovery-oriented care. Now they are expected to have competencies in digital health, telehealth, health informatics, artificial intelligence and remote patient monitoring. Advanced Practice Psychiatric Nurses (APPNs) and Psychiatric Mental Health Nurse Practitioners (PMHNPs) are increasingly coordinating care that is technology-assisted, educating patients on digital tools, monitoring health data generated electronically, evaluating digital interventions, and ensuring that technology is used in a safe and ethical way. They are at the crossroads of patients, multidisciplinary teams and digital technologies, placing them at the cutting edge of the continuous revolution of psychiatric practice[4]. The adoption of digital technology in clinical practice, however, is not merely the adoption of new software or electronic platforms. To successfully integrate digital health, healthcare organisations will need to address workforce readiness, digital literacy, infrastructure, organisational culture, leadership commitment, ethical governance, patient participation, and ongoing quality improvement. Implementation science has thus become more relevant for the translation of evidence-based digital advances into sustainable ordinary practice. Structured approaches to identifying implementation barriers, strengthening facilitators, evaluating outcomes, and supporting long-term integration into psychiatric services are provided by frameworks such as the Consolidated Framework for Implementation Research (CFIR), RE-AIM, the Knowledge-to-Action framework, and Normalisation Process Theory [6]. This study aims to synthesise current research about clinical applications, impediments, facilitators, and implementation science frameworks for the translation of digital mental health interventions into psychiatric nursing care. The changing role of psychiatric nurses in leading digital change is highlighted, whilst maintaining the therapeutic ties, ethical standards and person-centred concepts that remain vital to high quality mental healthcare.

Digital Mental Health Interventions for Clinical Use

Digital mental health interventions (DMHIs) are a heterogeneous group of technology-based solutions to support the prevention, assessment, diagnosis, treatment, monitoring, and long-term management of mental health illnesses. These include telepsychiatry, mobile health (mHealth) applications, internet-based cognitive behavioural treatment (iCBT), prescription digital therapeutics (DTx), artificial intelligence (AI), virtual reality (VR), wearable monitoring devices and remote patient monitoring systems. Together, these technologies shift mental health care from the traditional face-to-face interaction to ongoing, personalised and patient-centred care. Telepsychiatry is one of the most extensively adopted digital treatments in the field of psychiatric medicine. It offers psychiatric examination, psychotherapy, medication reviews, crisis intervention and follow-up consultations via secure videoconferencing platforms. It has supported the expansion of access to professional mental health services for those living in rural, remote and underserved locations. Telepsychiatry also results in lower travel costs, fewer missed appointments, continuity of care, and clinical outcomes similar to standard face-to-face consultations for common psychiatric disorders such as depression, anxiety disorders, bipolar disorder, schizophrenia, post-traumatic stress disorder, and substance use disorders[8]. Mobile health applications also boost patient-centred psychiatric care by offering help with mood monitoring, medication reminders, psychoeducation, mindfulness exercises, sleep management, cognitive behavioural techniques and symptom tracking. These applications assist patient self-management and engagement, promote early detection of worsening symptoms and allow for continuous connection with health care providers. Likewise, internet-based cognitive behavioural therapy provides structured psychological interventions via online platforms, delivering evidence-based treatment for depression, anxiety, insomnia, obsessive-compulsive disorder and related conditions. Guided programmes backed by doctors tend to have better adherence and better clinical outcomes than fully self-directed initiatives[9]. Another key breakthrough is the recent progress in prescription digital therapies. Unlike generic wellness apps, these software interventions are evidence-based, clinically validated, and regulated, and prescribed by clinicians. They provide standardised therapeutic material,

track patient involvement, and produce objective clinical data that can guide personalised therapy planning. Artificial intelligence can also help psychiatric care with things like predictive analytics, suicide risk assessment, clinical decision support, symptom monitoring, and personalised treatment recommendations. Virtual reality can also be used to make immersive therapeutic environments for exposure therapy, behavioural training, and developing social skills[10]. These approaches are combined with wearable monitoring devices to continuously measure physiological markers such as sleep quality, physical activity, heart rate variability and stress reactions to enable earlier identification of clinical worsening and timely management.

Evidence Supporting Digital Mental Health Interventions

Recent evidence suggests that digital mental health interventions can considerably increase the availability and quality of psychiatric care in conjunction with traditional therapeutic approaches. There is consistent evidence of improvement in symptom control, adherence to drug regimens, patient participation, self-management, continuity of care and overall patient satisfaction[11]. Digital technologies provide frequent symptom monitoring, which can enable healthcare personnel to recognise clinical deterioration early and intervene before relapse or hospitalisation. The hybrid care strategies, blending digital interventions with continuous support from psychiatric nurses and other mental health professionals, reliably do better than technology-only solutions. These methods maintain therapeutic relationships, increase access to care, and promote collaborative decision making. Patients enjoy greater flexibility, convenience and engagement in treatment planning, while doctors are provided with objective behavioural and physiological data to enable better informed therapeutic decision-making.

Digital interventions have also enhanced service delivery by decreasing geographical obstacles, cutting waiting times and broadening access to specialised care. The capacity to monitor individually and communicate continually is particularly helpful for chronic psychiatric disorders that may require long-term follow-up. However, the research suggests that digital tools should be complementary rather than a replacement to the direct therapeutic encounters and the need of continuous professional clinical judgement and compassionate mental nursing care[12].

Their benefits have been established, but it is still difficult to get digital mental health interventions widely used. Technological impediments are weak digital infrastructure, poor internet connectivity, poor interoperability of electronic health information systems, cybersecurity issues, and unequal access to cellphones, computers, and broadband services. Such constraints disproportionately impact rural communities, older persons, socioeconomically disadvantaged populations, and low-resource health care settings, perpetuating inequities in access to digital mental health care. Human and organisational factors contribute to the obstacles. Inadequate education and training means many psychiatric nurses and other health care workers report low confidence in telehealth platforms, artificial intelligence, digital therapies, and other digital technologies. Patients may also have low digital literacy, concerns about confidentiality, fears about technology, lack of desire or limited trust in implementing digital interventions. Resistance from the organization to change, lack of adequate technical support, increased effort and uncertainty about legal/legal responsibilities can also hinder successful implementation.

Ethical and regulatory considerations

Ethical and regulatory considerations also need to be carefully considered. But the delivery of digital healthcare must also be safe and responsible. That means protecting patient privacy, cybersecurity, informed consent, data confidentiality, algorithmic bias, and equitable access[13]. These issues could erode the trust of patients and healthcare providers without strong governance and clear regulatory guidelines. On the other hand, many facilitators are effective in implementing it. Successful implementation has been repeatedly linked with effective organisational leadership, a supportive institutional culture, enough financial investment, reliable digital infrastructure, competency-based education, continual professional development, and interdisciplinary collaboration. Technology designed with the user in mind will be more usable and accepted by patients. Involvement of clinicians, patients, information technology specialists, administrators, and policymakers throughout the deployment process encourages continued participation and ownership by the organization. Structured patient education also enhances digital literacy, confidence, adherence and long-term use of digital mental health tools[14].

Digital mental health therapies

In psychiatric nursing, the adoption of digital mental health therapies should be addressed with systematic implementation tactics rather than merely picking up technology. Implementation science offers evidence-based frameworks to help organisations translate research into sustainable clinical practice by addressing contextual barriers and facilitating continual quality improvement. The Consolidated Framework for Implementation Research (CFIR) offers a comprehensive approach by examining five interacting domains that affect implementation success: intervention characteristics, the external environment, organisational context, individual characteristics, and implementation processes. In psychiatric nursing, CFIR facilitates evaluation of organisational readiness, leadership engagement, workforce competency, patient requirements and policy impacts prior to the implementation of digital technology. The RE-AIM Framework assesses implementation across 5 dimensions: Reach, Effectiveness, Adoption, Implementation

and Maintenance. It enables healthcare organisations to evaluate patient participation, clinical effectiveness, professional acceptance, fidelity of execution and long-term sustainability. These indicators assist psychiatric nurses to monitor the success of the programme and to identify possibilities for continued quality improvement[15]. The Knowledge-to-Action (KTA) Framework is founded on the transfer of research findings to clinical practice through the ongoing process of knowledge production, adaption, implementation, evaluation and refining. This strategy allows for the customisation of digital mental health therapies to local clinical contexts, while promoting ongoing monitoring and improvement[16]. Similarly, Normalisation Process Theory (NPT) looks at how health workers embed new technologies into their everyday work. NPT focuses on common understanding, staff participation, collective action and continual evaluation to ensure that digital innovations are sustainably embedded into ordinary psychiatric treatment. These implementation science frameworks together illustrate that effective digital transformation is not solely dependent on technological competence but also organisational readiness, worker preparation, leadership commitment, stakeholder involvement, and continual evaluation. The use provides psychiatric nurses with a systematic way to include digital mental health interventions while ensuring patient safety, evidence-based practice and safe, high-quality, person-centred care[17].

Advances in digital health technologies and precision mental healthcare will progressively define the future of psychiatric nursing. New technologies like artificial intelligence (AI), machine learning, predictive analytics, digital phenotyping, wearable biosensors, remote patient monitoring and virtual reality (VR) offer hope for improving early diagnosis, personalised treatment planning, continuous monitoring of symptoms and timely intervention. These technologies have the ability to change the paradigm of psychiatry from reacting to acute episodes to preventing them proactively and managing disease over the long term[18]. Digital phenotyping which evaluates behavioural and physiological data obtained from smartphones, wearable devices and other digital platforms is one particularly promising field for psychiatric practice. Psychiatric nurses, by continuously monitoring sleep, physical activity, speech patterns, social contacts, and mood, can potentially detect minor behavioural changes that predict relapse and so enable earlier intervention and improved clinical outcomes. Similarly, AI-enabled healthcare decision systems could improve risk prediction, suicide prevention, drug management, and personalised therapy recommendations. However, these tools should be used to support, and not replace, professional clinical judgement, therapeutic communication and individualised nursing care[19, 20]. Future nursing education should therefore incorporate digital health capabilities, health informatics, implementation science, cybersecurity, artificial intelligence, and ethical governance into the undergraduate and postgraduate curricula. Continued professional development will be required to prepare psychiatric nurses to apply, evaluate and improve digital therapies while preserving safe, ethical and evidence-based practice. Additional study is also needed to assess the long-term effectiveness, cost-effectiveness, patient involvement, and sustainability of digital mental health therapies in a variety of health care settings, particularly in low- and middle-income countries where evidence remains scarce[21].

Conclusions

As they improve access to mental health care, enhance continuity of care, promote patient participation and support evidence-based therapy, digital mental health treatments have become a significant component of contemporary psychiatric nursing practice. Telepsychiatry, mobile health applications, internet-based cognitive behavioural therapy, digital therapeutics, artificial intelligence, wearable monitoring devices and virtual reality are technologies that provide psychiatric nurses innovative tools to offer accessible, personalised and efficient care. Yet to be implemented sustainably, more than technology innovation is necessary. Successful implementation involves organisational preparation, skilled health professionals, leadership support, suitable digital infrastructure, ethical governance and evidence-informed implementation strategies. Advanced Practice Psychiatric Nurses and Psychiatric Mental Health Nurse Practitioners, in particular, are in a unique position to spearhead this change by means of digital assessment, patient education, remote monitoring, and assessment of interventions helped by technology. As psychiatric care progresses, digital tools should supplement, not substitute, the therapeutic interactions, empathy, and person-centred care that form the bedrock of psychiatric nursing. Through the development of digital competencies, promotion of interdisciplinary collaboration and creation of enabling organisational and policy environments, psychiatric nurses will be able to support digital mental health interventions to promote safe, equitable and sustainable mental healthcare.

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