



Digital Mental-Health Interventions for Young Adults: Integrating Psychological Outcomes, User Experience and Ethical Technology Design

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Abstract— Mental-health problems have worsened among young adults, creating a need for effective, accessible, scalable, and evidence-based interventions. Digital mental-health technologies, such as mobile applications, web-based therapies, telepsychiatry, AI, VR and wearable devices, are all potential solutions in reaching mental-health support beyond clinical settings. This review aims to present a synthesis of the recent literature on digital mental-health interventions, by exploring the psychological outcomes, user experience and ethical design of technology. The scientific evidence suggests that digital interventions can lower symptoms of depression, anxiety and stress, and increase feelings of resilience, emotional regulation and psychological well-being in the presence of evidence-based therapeutic approaches. It is proposed that user-centred design, accessibility, personalization, digital literacy, and sustained engagement are all recognized as key factors in the success of interventions and their adoption over the long-term. The review also emphasizes the role of privacy protection, cybersecurity, algorithmic fairness, transparency, informed consent, and governance frameworks to ensure trustworthy and responsible digital mental-health ecosystems. Although there is significant progress, there are still issues to deal with in implementation, equity, clinical validation and regulatory consistency. Research into inclusive design, culturally responsive approaches, explainable AI, standardized assessments, and multi-disciplinary partnerships should be emphasized to create equitable, effective, and ethical digital mental-health tools for young adults.

Keywords: Digital mental health, Young adults, Psychological outcomes, User-centred design, Ethical technology

1. INTRODUCTION

Adolescent and young people are a developmental phase when there are significant psychological, social, educational, and behavioural transitions, making mental-health issues a growing public-health concern. At these times, there are an increased risk for anxiety, depression, stress, loneliness, identity issues and emotional regulation. These situations may impact a student's educational success, their ability to interact with others, their career readiness and future life. Preventive psychiatry therefore underscores the value of recognizing at an early stage of development risk factors and providing timely, easily accessible, and developmentally appropriate support before symptoms have a chance to escalate or persist (Fusar-Poli et al., 2021). There has also been recent evidence that mental-health issues are more prevalent and expressed in different ways among young people in cultural, socioeconomic, and migration contexts, highlighting the need for flexible, inclusive approaches to intervention (Della Rocca et al., 2024; King et al., 2026). In this regard, digital technologies have proven to be potentially useful tools to extend the scope of mental-health promotion, prevention, evaluation, and treatment.

Digital mental health interventions include mobile apps, online cognitive behavioural therapy, teleconsultation, online peer-support, artificial intelligence-based (AI) conversational agents, wearable monitoring systems, virtual-reality (VR) applications, and digitally delivered psychoeducation. These can offer some assistance outside of traditional healthcare environments and can help overcome geographical, financial, stigma, practitioners' availability and low service hours issues. The COVID-19 pandemic has proved to be a catalyst for the increased use of remote mental-health services and how technology can help ensure continuity of care in times of disruption (Torous et al., 2020). The sweeping growth of mental health care in digital has also raised questions about the quality of intervention, its clinical validation, protection of users, data stewardship, and the possibility of digital tools offering an alternative to, or an addition to, professional mental health services. Therefore, it is not possible to measure the impact of digital mental-health interventions just because they are new or available.

Young adults, who often use smartphones, social media and online communication platforms to function as part of their daily life, have a special interest in the potential of digital interventions. Digital tools can thus provide familiar, Vol. 1 No. 2 (2026)



flexible and discreet avenues for accessing information, symptom tracking, coping strategies and communication with professionals for young people. Digital tools could further aid in the long-term management of stress and anxiety through self-monitoring, emotional awareness, behavioral activation, and on-demand access into therapeutic support (Chen et al., 2025). But as more and more technology moves into the digital world, it does not automatically come with effective mental-health care. Issues of screen overuse, misinformation, social comparison, cyberbullying, loss of privacy and psychological consequences of the constant monitoring are still being raised. They suggest that the debate around the impact of digital technology on youth mental health doesn't focus on the assumption of digital's benefits or detriments, but should pay attention to the individual, the social context, the use patterns, and the quality of the digital experience.

Psychological sequelae are thus a key aspect in assessing digital mental health interventions. Interventions need to not only show short-term reduction in anxiety, depression and/or perceived stress, but also have a positive effect on resilience, emotional regulation, self-efficacy, social functioning, and sustained well-being. Prevention frameworks can help to differentiate between universal, indicated, and selective preventive services and interventions for various populations. It is crucial for digital tools to be clearly classified as they can vary significantly in purpose, intensity, content, and clinical supervision (Stephan et al., 2025). If there are no distinctions, then it becomes hard to compare interventions, and hard to know if a digital platform is a suitable platform for prevention, early support or treatment.

User experience is also a key consideration, as a well-designed intervention can have only minimal impact if it is not easy to use, culturally appropriate, accessible, and/or maintain engagement. The research of human-computer interaction underscores the positive value of usability, personalization, interface clarity, responsiveness, accessibility and emotional sensitivity in digital design for mental health (Balcombe & De Leo, 2022). Repeated, impersonal, technically difficult or unrelated to the users' lives platforms are more likely to lose young users. Therefore, human-centred design should engage young people in the design, testing and improvement of digital interventions and not just as passive end users.

Ethical technology design is also essential, as digital mental-health systems frequently capture highly sensitive details related to mood, behavior, location, communication patterns, psychological symptoms, and so much more. While these technologies offer increased accessibility and personalized support, they also have concerns relating to informed consent, privacy, algorithmic bias, commercial exploitation, accountability, and the processing of information related to crisis situations. Wies et al. (2021) highlight the importance of assessing the ethical commitments of digital mental health alongside surveillance risks, disparities in access, poor evidence, and lack of transparency. Ethical protection should thus be embedded during the design process, not added on at the end.

In this review, a thematic and integrative approach is used to explore digital mental-health interventions for young adults from psychological, experiential, clinical and ethical perspectives. The review looks at engagement, usability, trust, accessibility and responsible innovation in addition to effectiveness when evaluating technology. This integration will be vital to the creation of advanced and clinically meaningful, acceptable, ethically defensible, and sustainable digital interventions for real-world mental-health systems. The objectives of this study are as follows:

1. To examine the psychological outcomes associated with digital mental-health interventions among young adults
2. To evaluate how user experience, accessibility, personalization, and engagement influence intervention effectiveness and adoption
3. To analyse ethical design requirements concerning privacy, consent, fairness, transparency, and responsible digital innovation

2. Digital Mental-Health Ecosystem: Technologies and Intervention Models

2.1 Evolution of Digital Mental Healthcare

From mere psychoeducation on digital mental health platforms, the field has advanced to digital systems that utilize technology, such as mobile apps, telepsychiatry, AI, VR, wearables, and digital therapeutics. This has increased the accessibility of psychological services by offering patient-centered and data-informed treatment beyond the scope of traditional clinical settings. Technological advancements have been key in remote evaluation, interventions, and long-term monitoring of mental health conditions to increase the scalability of mental health services (Bond et al., 2023; Torous et al., 2021). The use of digital technologies in clinical practice has also made the provision of services more consistent through improved continuity of care and multidisciplinary collaboration, though clinical validation and service standardization are imperative.

2.2 Mobile Mental-Health Applications

The mobile mental health apps have been among the most popular interventions since they are useful in monitoring symptoms, moods, performing cognitive behavioral therapies, mindfulness training, and getting help during a crisis through phones (Bond et al., 2023; Torous et al., 2021). The mobility of the technology allows one to manage oneself consistently and get psychological help without going to professional healthcare providers. Mobile mental health



applications have shown great promise when it comes to the detection of symptoms associated with depression and anxiety while boosting self-awareness and regulating behavior. At the same time, issues associated with sustainability, evidence base, ecological validity, and clinical efficacy play an important role in their usefulness.

2.3 Web-Based Psychological Interventions

Psychological interventions using the internet involve delivery of therapeutic programmes through web-based portals offering cognitive behavioural therapy, psychoeducation, counselling, and self-help mental health programs (Seiferth et al., 2023). They are effective because they help to overcome the physical, economic, and organizational constraints of traditional psychological support services. However, their success is determined by the clinical validity of the content, the safety of technology, and their integration within the existing health care system. For the sustainable adoption of web-based interventions, it is essential to design and evaluate them based on users' needs, develop standard quality assessment approaches, and implement quality assurance processes.

2.4 Teletherapy and Telepsychiatry

The introduction of teletherapy and telepsychiatry services has revolutionized mental health service provision through online psychological evaluation, counseling, diagnosis, and management using online digital communication channels. The use of such services improves access for people who face geographical, financial, or mobility barriers while ensuring continuity of care within various healthcare contexts (Bond et al., 2023). However, their increased use has improved communication between the patient and practitioner as well as providing new avenues for providing mental health services. Nevertheless, successful deployment requires proper technological infrastructure, appropriate training, protection of confidentiality, and availability of technology.

2.5 Artificial Intelligence and Conversational Agents

There is an increasing trend in the use of artificial intelligence and conversational agents in digital mental health technologies in order to provide psychoeducation, support, behavioural training, symptom tracking and initial screening of mental health problems. These interventions help in making the process more scalable by offering instant feedback and tailored solutions as well as offloading traditional medical systems from additional pressure. Furthermore, adaptability feature of these digital solutions helps to offer tailored pathways for individuals in light of their behavioral and psychological data (Balcombe & De Leo, 2021; Torous et al., 2021). However, there are still some issues related to algorithmic transparency, accuracy, bias, accountability and clinical safety.

2.6 Virtual Reality and Wearable Technologies

Virtual reality and wearable technologies have allowed the development of digital mental-health interventions through provision of immersion and physiological monitoring. Virtual reality has been found useful in exposure therapies, stress control, emotion regulation, and behavioral training, while wearable technologies offer real-time monitoring of physiological markers that can help in understanding mental health issues (Wani et al., 2024). The use of virtual reality and wearable technologies allows for individualized intervention approaches and feedback, which can enhance intervention adherence and management (Table 1). Yet, the wide-scale use of both approaches needs affordable infrastructure, digital skills, secure data management, and system integration.

Table 1: Overview of Contemporary Digital Mental-Health Intervention Technologies

Intervention Technology	Primary Application	Major Advantages	Key Limitations	References
Mobile applications	Self-monitoring, CBT, mood tracking	Accessible, flexible, continuous support	User dropout, variable evidence quality	Torous et al. (2021); Williams & Pykett (2022)
Web-based interventions	Online therapy and psychoeducation	Cost-effective, scalable	Digital literacy requirements	Seiferth et al. (2023)
Teletherapy & Telepsychiatry	Remote consultation	Improved access and continuity	Connectivity and privacy concerns	Bond et al. (2023)



AI Chatbots	Psychoeducation and behavioural coaching	Immediate support and scalability	Bias and limited clinical judgement	Torous et al. (2021); Balcombe & De Leo (2021)
VR & Wearables	Exposure therapy and physiological monitoring	Personalized intervention	Infrastructure and affordability	Wani et al. (2024)

3. Psychological Foundations and Mental Health Outcomes

The psychological needs of young adults are multifaceted and complex, and digital mental-health interventions are gaining in importance to address some of these needs, such as depression, anxiety, stress, emotional dysregulation, and general psychological well-being. Depression and anxiety are the two most common mental-health issues in this population and are seen to affect academic performance, social interactions and quality of life. Digital interventions, such as online therapeutic platforms, mobile apps, and interventions that are supported by artificial intelligence (AI), have shown significant promise in the field of psychological interventions in alleviating symptom levels by delivering evidence-informed, accessible, timely, and psychological support. Their accessibility beyond clinical settings allows for earlier intervention, especially for those who may be delayed in seeking professional help and limits the chance of symptom progression, resulting in better treatment continuity (Huang et al., 2024). Likewise, psychological programmes delivered online for short periods of time have proven highly acceptable and useful for adolescents and young adults, suggesting that brief digital interventions can be of value and have a positive impact on the psychological well-being of young people when specifically developed for their developmental and emotional needs (Schleider et al., 2020). In addition to symptom alleviation, digital interventions are increasingly focusing on managing stress and emotional regulation through the addition of mindfulness training, cognitive restructuring, behavioural activation, real-time self-monitoring, and relaxation training. These features help people identify emotional cues, learn ways to cope and react better to stress in their lives. These interventions are especially beneficial in young adults who may be under stress from academic, occupational and social factors that could lead to ongoing stress and emotional problems. Finally, social support is also an important predictor of psychological functioning, as greater levels of social support are consistently linked to reduced depression and anxiety scores, indicating that digital interventions that incorporate social interaction and supportive communication may further enhance intervention outcomes (Osborn et al., 2020). Beyond coping with psychological distress, current digital interventions are increasingly concerned with promoting positive mental health through improvements in resilience, self-efficacy, optimism and psychological wellbeing in general. Resilience is key to people's ability to cope with difficult circumstances, to remain emotionally resilient and continue to function well, and is considered an important protective factor in protecting sustainable mental health. The literature suggests that psychological resilience can be fostered through the interplay of factors, including individual strengths, environmental factors, and adaptive coping mechanisms, which suggests that interventions should focus on building resilience within both personal abilities and supportive environments (Fan et al., 2024). Psychological flexibility has also been identified as a key mechanism underpinning long-term mental health, as it allows people to accept difficult emotions, while still pursuing goals and taking adaptive behaviours. Psychological flexibility has been linked to better emotional adjustment, as well as less psychological distress and resilience in various clinical and non-clinical populations, highlighting its significance for digitally delivered psychological interventions (Chalghaf et al., 2026). Moreover, many digital mental-health programs are based on existing cognitive and behavioral theories that can assist participants in changing their negative thought patterns, emotional reactions, and behaviors related to health. Digital interventions are increasingly including cognitive behavioural therapy, acceptance-based therapy and self-regulation strategies to support sustainable behavioural change with personalized guidance, feedback and ongoing interactions. With the advent of AI-driven conversational agents, these features can be extended to provide instant psychoeducation, emotional responses, behavioral guidance, and an adaptive dialogue that supports ongoing engagement and enhances accessibility (Li et al., 2023). Together, these cognitive, emotional, and behavioral processes can lead to immediate decreases in anxiety, depressive symptoms, and other mental-health issues, as well as lasting positive effects on emotional and behavioral flexibility and mental-health functioning. Therefore, multidimensional psychological outcomes should be used to assess the effectiveness of digital mental-health interventions, including improvement in symptoms, emotional regulation, resilience, cognitive adaptation, behavioural change, and psychological functioning in the longer term, not just on short-term clinical outcomes (Figure 1).

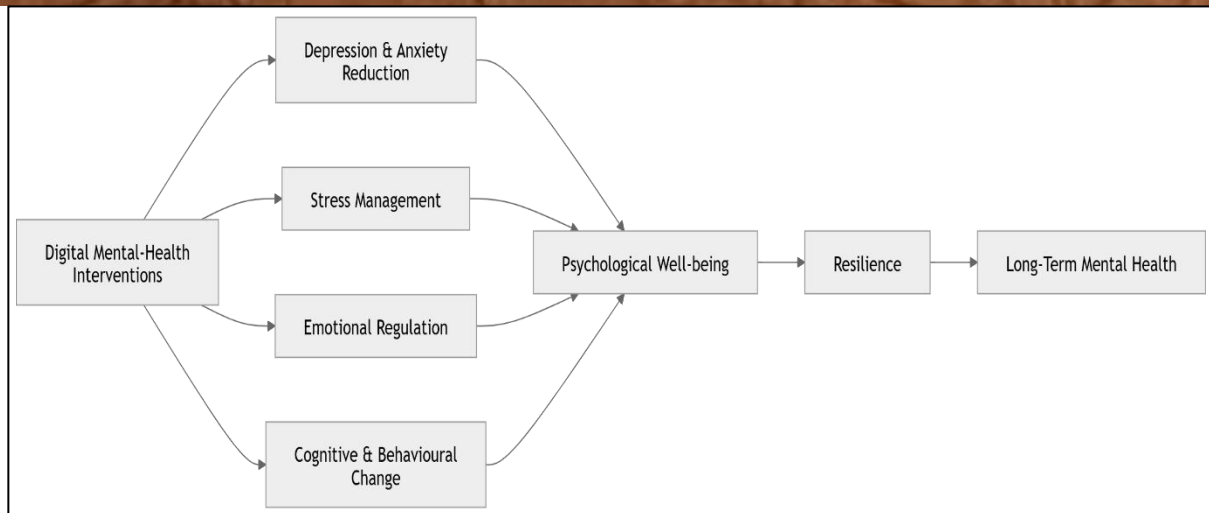


Figure 1: Conceptual Pathways Linking Digital Interventions with Psychological Outcomes

3. User Experience and Human-Centred Design

4.1 User-Centred Design Principles

Users are at the core of all aspects of digital mental health interventions in user-centered design approaches. User involvement is achieved through an iterative design process that allows designers to build in accordance with the needs, wants, and experiences of end-users in order to make digital interventions more relevant, functional, and clinically effective (Bernaerts et al., 2024; Brotherdale et al., 2024). Methods like co-design and co-production show great promise in terms of functionality, acceptability, and adoption of new technologies while being psychologically oriented toward end-user needs. As a result, user involvement has become a basic principle of modern innovation in digital mental health.

4.2 Accessibility and Inclusivity

Both accessibility and inclusivity are critical aspects of ensuring that digital mental-health interventions are designed to meet the needs of people with varying abilities, cultures, languages, education levels, and socioeconomic status (Geiger et al., 2023; Bernaerts et al., 2024). The use of accessible platforms means ensuring that such platforms have easy-to-use navigation systems, flexible interfaces, affordable services, and the capability to work with different digital devices taking into consideration the different levels of ability of the users. Inclusivity will also involve understanding the different psychographic, demographic, and situational aspects of the users in order to reduce the gaps between different service users.

4.3 Personalisation and Adaptive Interfaces

Personalization allows for the adjustment of the therapy-related content, advice, and interaction style depending on the psychological state, behavioral reactions, and preferences of the users of such interventions. Adaptive interfaces improve this strategy through the change of interface elements, feedbacks, and intervention paths depending on the needs of the users (Balaskas et al., 2023; Wong et al., 2021). Personalization of digital experiences makes users feel more useful and engage in therapy more actively. Using adaptive technology within digital mental health tools will allow providing individualized interventions while also making interventions more satisfying for users.

4.4 User Engagement and Retention

User engagement is an important consideration for determining the effectiveness of online interventions in treating mental disorders because success in this regard is dependent upon regular participation in treatment sessions. User engagement can be facilitated through useful content, easy-to-use interface, motivating users, personalization, reminders, and positive experiences for the user. On the other hand, technical issues, repetition in content, lack of interactivity, privacy considerations, and decreased motivation have been some of the main reasons behind user disengagement and non-participation in digital interventions (Borghouts et al., 2021; Wong et al., 2021). Long-term retention is enhanced through the incorporation of behavioral considerations along with user feedback and support.

4.5 Digital Literacy and Technology Acceptance



There are significant effects of digital literacy and technology acceptance on the successful implementation of digital mental health interventions. People who have high levels of digital literacy skills are usually more prepared to handle the technologies, understand the information available online, and interact with the intervention components. There are several factors that determine the level of technology acceptance including usefulness, usability, trust, privacy, and compatibility with individual lifestyle (Table 2) (Figure 2). The lack of digital literacy skills or insufficient user confidence can limit the interaction with the intervention and hinder its efficiency despite having potential clinical success (Balaskas et al., 2023; Borghouts et al., 2021). Therefore, digital competence and user confidence must be improved.

Table 2: Key User Experience Factors Influencing Digital Mental-Health Adoption

UX Factor	Contribution	Common Challenge	Design Recommendation	References
User-centred design	Improves usability	Limited user participation	Co-design throughout development	Bernaerts et al. (2024)
Accessibility	Expands service reach	Digital inequalities	Inclusive interface design	Geiger et al. (2023)
Personalization	Enhances relevance	Generic interventions	Adaptive recommendations	Balaskas et al. (2023)
User engagement	Sustains adherence	High attrition	Feedback and reminders	Borghouts et al. (2021)
Digital literacy	Supports adoption	Low technological confidence	User education and simplified interfaces	Wong et al. (2021)

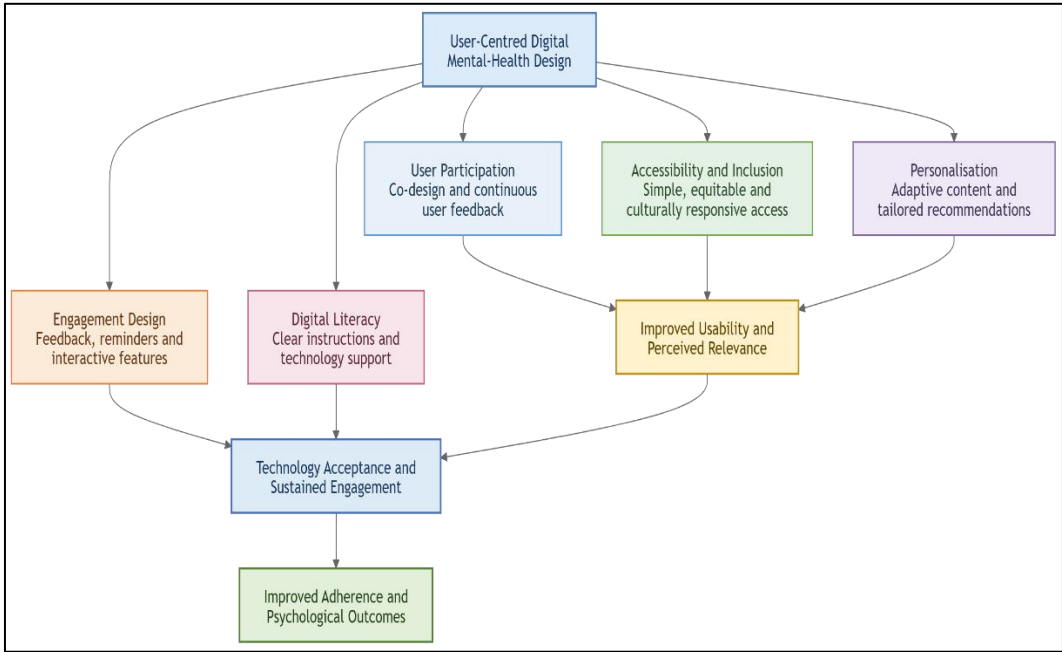


Figure 2: User-Centred Design Framework for Digital Mental-Health Interventions



5. Clinical Effectiveness and Real-World Implementation

Evidence-based data are gaining in importance in the field of mental-health interventions, with digital interventions showing efficacy in alleviating the symptoms of depression, anxiety, stress, and other common psychological conditions to increase access to mental-health services in various populations. Digital interventions have demonstrated positive results when used alongside evidence-based therapeutic strategies across different delivery approaches including within mobile apps, on the web, via telepsychiatry and via integrated digital care models. But clinical effectiveness is not just about the achievement of symptoms, it's also about adherence, engagement, continuity of care and psychological wellbeing in the long-term. Overall, comprehensive evaluations show that digital interventions need to be clinically validated, to use standardized measures of outcomes, and be monitored regularly to ensure innovation results in health effects and not simply behavioural changes (Balcombe & De Leo, 2022). Sustained engagement is especially relevant because the effectiveness of the digital interventions is dependent on sustained engagement during treatment. Poor usability, low motivation, technical challenges, and privacy concerns often lead to dropping out of interventions, while personalized content, adaptive feedback, reminders and continuous professional support are key to treatment adherence. For this reason, behavioral engagement methods need to be part of digital platforms to support their long-term therapeutic efficacy. Adopting digital mental health services within the framework of existing healthcare systems is also a key determinant of implementation success. Combination of digital technologies and traditional clinical care in the form of coordinated care models enable early detection, ongoing surveillance, collaboration across multiple disciplines and timely referral to specialized care if needed. These holistic strategies enhance the reach and accessibility of health services, alleviate the strain on mental health support systems, and promote continuity of care between community and clinical environments (Lim et al., 2024). While these progressions have been made, there are still significant obstacles to broad clinical use. Successful implementation of the HSA is often hindered by differences in technology infrastructure, regulation, professional training, financial constraints, concerns about privacy of the data, and lack of interoperability with existing health information systems. Additionally, there are disparities in digital readiness between healthcare organizations, which can make it more difficult to scale digital EBI into clinical practice (Volpe et al., 2024). There are also cross-cultural and population-specific factors that affect the effectiveness and sustainability of digital mental health interventions, as cultural beliefs, language, socioeconomic context, health literacy and access to technology will impact users perceptions and usage of digital services. Interventions designed in highly-developed environments may not be suited to the context of low and middle income countries, which have unique contextual challenges such as low digital infrastructure, affordability, and lack of digital workers to implement digital education. However, digital interventions that are suitably tailored have shown great promise in improving access to mental health care in resource-limited settings and educational environments, all of which underscore their potential contribution to addressing mental-health inequalities globally (Alagarajah et al., 2024; Musakuro, 2025). In summary, to maximize the clinical effectiveness of digital mental-health interventions, they must be complemented by sustainable implementation strategies, be ready to be integrated within the healthcare system, have the potential to engage users, and be culturally responsive in the way they are delivered to improve mental-health outcomes in an equitable and sustainable manner (Table 3) (Figure 3).

Table 3: Clinical Effectiveness and Real-World Implementation of Digital Mental-Health Interventions

Implementation Dimension	Clinical Significance	Major Challenges	Implementation Priority	References
Clinical effectiveness	Reduces depression, anxiety, and stress while improving psychological well-being	Limited long-term evidence and heterogeneous outcome measures	Conduct rigorous longitudinal evaluations	Balcombe & De Leo (2022)
Treatment adherence	Improves intervention completion and sustained behavioural change	User attrition and declining engagement	Incorporate personalized support and follow-up	Balcombe & De Leo (2022); Lim et al. (2024)



Healthcare integration	Enhances continuity of care and multidisciplinary collaboration	Poor interoperability and workflow integration	Integrate digital tools into routine clinical services	Lim et al. (2024)
Clinical implementation	Expands access to evidence-based mental-health services	Regulatory, financial, and workforce limitations	Strengthen digital infrastructure and professional training	Volpe et al. (2024)
Cross-cultural adaptation	Improves accessibility across diverse populations and healthcare settings	Cultural, linguistic, and socioeconomic disparities	Develop culturally responsive and context-specific interventions	Alagarajah et al. (2024); Musakuro (2025)

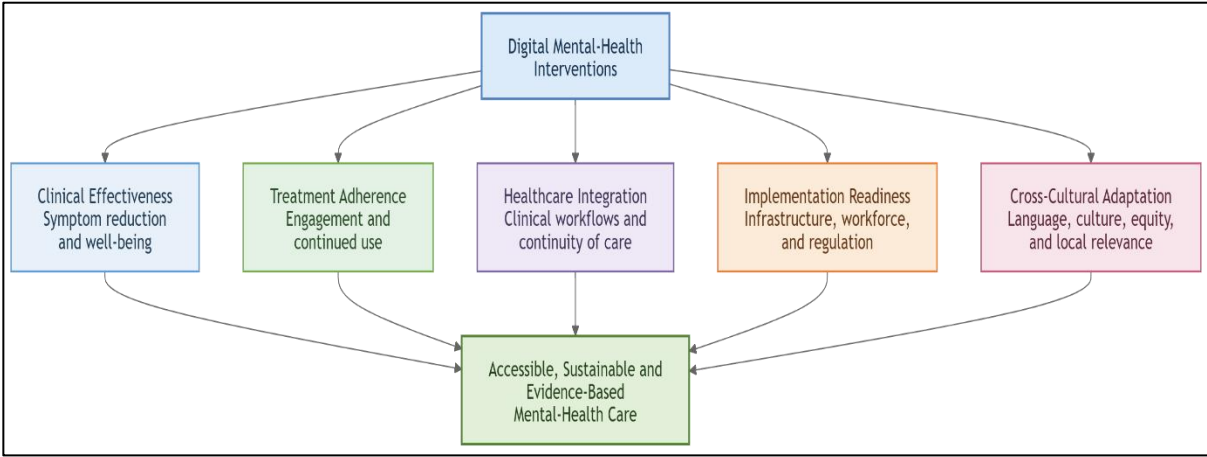


Figure 3: Clinical Effectiveness and Real-World Implementation of Digital Mental-Health Interventions

6. Ethical Technology Design and Responsible Innovation

6.1 Privacy and Data Protection

Privacy and data protection form the basis of ethical considerations since the digital mental health applications constantly gather sensitive data such as emotions, behaviour, physiology, and personal health data, which makes it essential to safeguard privacy of data and keep it protected from any possible security threats. Data governance through ethical data practices will need proper collection, storing, processing, and sharing of the information to keep users' privacy safe and reduce threats of data breaches and possible misuses (Ahmed et al., 2025; Oudin et al., 2023). It is important to implement proper data governance for data ownership, data usage, and data retention to enhance the confidence of users in digital mental health platforms.

6.2 Cybersecurity and Confidentiality

Cybersecurity becomes vital in providing security to the digital mental health systems against any breach in the system, cyber attack, unauthorized access, and information losses that could affect highly confidential psychological information. The notion of confidentiality goes beyond technical security since it guarantees that the personal mental health information can be accessed only by those who have authorization and only for legitimate reasons. Cybersecurity entails encryption of the data, secure authentication processes, risk management, and updates to minimize the vulnerabilities of the digital system (Ahmed et al., 2025; Bodenstein et al., 2023). Confidentiality through cybersecurity builds trust of the users and facilitates the ethical practice of technology-enhanced mental health care services.



6.3 Algorithmic Bias and Fairness

AI and ML play an increasingly important role in digital assessment, prediction, and intervention for mental health problems; nevertheless, the biased training data sets and discrimination-prone computational models might produce misleading and discriminatory results. Hence, to guarantee that the system will be fair, one should use representative data sets, constantly audit the algorithms, and assess their performance (Oudin et al., 2023; Salva et al., 2023). The practice of digital phenotyping proves the need to take into consideration contextual, cultural, and behavioral diversity while designing such systems. The problem of algorithmic bias is of great importance for reducing inequalities in clinical decision making and equal access to personalized digital mental health services.

6.4 Transparency and Explainable Artificial Intelligence

Explainable and transparent artificial intelligence allows users and medical practitioners to comprehend how the digital tool creates its recommendations and clinical predictions (Kostick-Quenet et al., 2026 A). By having an explainable model that justifies the algorithmic outcomes, clinical judgment can be made easier, and the uncertainty in decision-making can be avoided. Transparency is beneficial not only because it enables an external assessment but also because it increases confidence in the use of technology. Hence, being explainable is an essential ethical value for ensuring that artificial intelligence does not undermine the clinical knowledge of professionals.

6.5 Informed Consent and Digital Autonomy

The principle of informed consent is an important aspect of ethics in digital mental health interventions, since patients have to be aware of the processes of collection, processing, storage, and disclosure of their personal data (Kostick-Quenet et al., 2026 B). The concept of digital autonomy obliges people to retain sufficient control over their health data, participation, and disclosure during digital mental health interventions. Hence, ethical use of technologies implies clear communication about the functionality of technologies, associated risks, benefits, and user rights, along with the possibility for patients to stop the intervention without losing access to necessary care.

6.6 Regulatory and Governance Frameworks

Efficient regulatory and governance frameworks need to be developed to ensure consistent implementation and evaluation of digital mental health tools in terms of ethical, legal, and clinical guidelines. A multidimensional framework of governance needs to cover aspects of data security, algorithmic accountability, clinical validation, interoperability, quality assurance, and clinical practice in order to support innovation and protect public interest (Ahmed et al., 2025; Kostick-Quenet et al., 2026 A). Adaptive regulation strategies are essential due to faster development of digital technologies in comparison to conventional healthcare regulation (Figure 4). Formation of multidisciplinary frameworks of governance by healthcare professionals, technologists, regulators, and patients can foster responsible innovation while ensuring the reliability, accessibility, and efficacy of digital mental health tools.

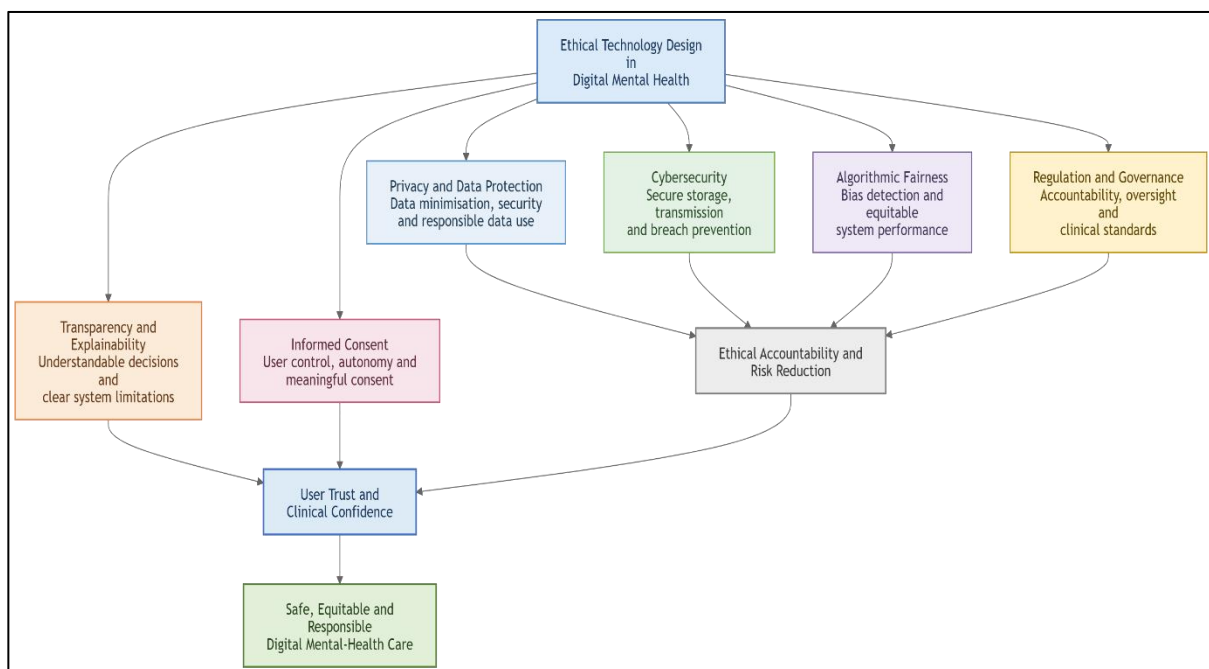


Figure 4: Ethical Technology Design Framework for Trustworthy Digital Mental-Health Systems



7. Integrating Psychological Outcomes, User Experience, and Ethical Technology Design

Future success of digital mental-health interventions requires an integrated approach that combines psychological outcomes, user experience, and ethical design of technology into a cohesive framework that equips with clinically meaningful, user-centred and responsible care. These components are not independent; they are continually feeding into and shaping each other to affect the effectiveness of interventions, user engagement, and ongoing mental health benefits. Digital platforms that are intuitive, accessible, personalized and responsive to the changing needs of users are more likely to have positive psychological outcomes, including lowering of depression, anxiety, and emotional distress, and increases in resilience, well-being. Human-centred design will complement these benefits by making it easier to use, alleviating cognitive load and ensuring that it is consistently used; and ethical safeguards will help build confidence in the technology and mitigate concerns about privacy, fairness, and data security. The study highlights the importance of trust as a key factor that bridges clinical efficacy, user experience, and ethical considerations, as people are more likely to access digital mental-health programs if they believe them to be reliable, transparent, safe, and helpful. It is essential that this trust will not just be built by technology's capabilities, but also through communication, explainable AI, secure information management, and meaningful users' involvement during the development and implementation of intervention. Psychological interventions are also being adopted in a digital format, with solution-focused approaches seamlessly joining collaborative and strengths-based methods to ensure positive emotional outcomes and encourage active user engagement and goal-directed behaviour change (Jerome, McNamee, Abdel-Halim, Elliot, & Woods, 2023). There is also growing evidence that brief solution-focused, positive psychology-based digital interventions can improve social wellbeing, coping skills and psychological functioning in young adults by focusing on strengths and attainable behavioural goals rather than on just presenting common issues and symptoms of psychological distress (Beauchemin et al., 2024; Söderqvist et al., 2025). Likewise, technology-enabled patient-centred interventions like DIALOG+ offer the promise of combining structured therapeutic communication with digital platforms to improve long-term engagement in treatment and clinical outcomes in the context of routine mental-health care (McNamee et al., 2022). When this approach is applied to adolescent mental health care, the benefits of personalized assessment, collaborative decision making, and evidence-based digital support in routine clinical practice in enhancing treatment accessibility and responsiveness are further emphasized (Gómez-Restrepo et al., 2023). Integrated, conceptual models for future digital mental-health systems should therefore include a balance of technological innovations while maintaining clinical evidence, user-centred design, ethical governance, and sustainable implementation (Table 4). These can foster multidisciplinary partnerships between clinicians, behavioural scientists, designers, engineers, policy makers and users to help ensure that digital interventions are effective, trusted, inclusive and flexible in a range of healthcare contexts. The qualitative evidence also confirms that personalization, emotional safety, collaborative problem-solving and flexibility are both key elements to future digital mental health interventions that have been consistently cited by both youth and clinicians as important characteristics of the intervention (Jerome et al., 2026), thus further highlighting the importance of integrated design strategies ensuring psychological effectiveness, user experience and ethical responsibility.

Table 4: Integrated Framework for Sustainable Digital Mental-Health Interventions

Core Dimension	Primary Contribution	Expected Outcome	Strategic Priority	References
Psychological outcomes	Symptom reduction and resilience	Improved mental well-being	Evidence-based interventions	Huang et al. (2024); Li et al. (2023)
User experience	Engagement and usability	Sustained participation	Human-centred design	Bernaerts et al. (2024); Borghouts et al. (2021)
Ethical technology	Privacy, fairness, transparency	User trust	Responsible AI governance	Ahmed et al. (2025); Kostick-Quenet et al. (2026 B)
Clinical implementation	Integration into healthcare	Continuity of care	Multidisciplinary collaboration	Lim et al. (2024)



Digital innovation	Personalized intelligent services	Sustainable digital ecosystem	Continuous evaluation	Jerome et al. (2026); Söderqvist et al. (2025)
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8. Challenges and Research Gaps

Digital mental-health interventions still have a number of scientific, technological, ethical and implementation challenges that hinder their long-term effectiveness and scalability. Many interventions have small samples of follow-up, inconsistent outcome measures, and short-term follow-up, which makes it hard to assess long-term psychological outcomes in different populations. Technological challenges are related to the quality of platforms, interoperability, limited personalization, usability problems and rapidly changing digital environments that make continuous evaluation impossible. Ethical considerations are also relevant, as data privacy, cyber security, algorithmic fairness, transparency, and good governance are crucial to ensure public trust in sensitive mental-health data. In addition, differences in health regulation from one jurisdiction to another make it difficult to provide a safe and uniform deployment of digital mental-health technologies. Equity and digital inclusion are also significant issues, with existing inequities in internet access, digital literacy, socioeconomic status, language, disability accommodation, and cultural appropriateness limiting the access of underserved populations to digital interventions. Future research needs to focus on longitudinal and real-life implementation studies, standardised assessment tools, culturally sensitive interventions, explainable and trustworthy artificial intelligence, user-centred design with inclusivity and multidisciplinary governance models. Clinicians, behavioural scientists, engineers, policy makers and end users must be closely aligned to create sustainable psychological outcomes that can be realised in various health-care scenarios through a digital mental-health system that is responsible, equitable and evidence-based.

9. Conclusion

Digital mental-health interventions have proven to be effective to support the psychological health of young adults by increasing access to mental-health care that is timely, flexible and personalised. The examined data supports the potential of these interventions to be contributing factors to reducing depression, anxiety and stress symptoms and increasing resilience, emotional regulation and long term psychological functioning. Yet, their success relies not just on clinical effectiveness but also on the quality of the user experience and how they are responsibly adopted using ethical principles of technology. Combining psychological effectiveness and user-centred design improves usability, engagement and adherence to treatment, while strong data protection and transparency, fairness and data governance contributes to responsible innovation and trust. The results also show that a multi-disciplinary partnership between the research community, clinical practice, tech developers, health services and policymakers is needed to create clinically valid, ethical, and accessible digital mental-health ecosystems. Going forward, inclusive design, culturally responsive interventions, standardized evaluation frameworks, explainability of AI, and equity and equal access for diverse populations should be emphasized. By advancing these priorities, the reliability, sustainability, and societal impact of digital mental-health technologies will be improved, making them better evidence-based solutions that can meet the increasing mental-health needs of young adults in a wide range of healthcare and community settings.

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