Global and Malaysian Perspectives on Mental Health and Digital Interventions (2020–2025): A Narrative Review

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ABSTRACT

Since 2020, mental health concerns have become more severe worldwide, driven by the COVID-19 pandemic, economic instability, and social inequalities. During this period, digital and remote mental health services expanded, offering alternatives and complements to in-person care. This narrative review synthesizes global evidence on mental health trends from 2020 to 2025 and examines how Malaysia has responded, with a focus on digital and remote solutions. It brings together findings on mental disorders, vulnerable populations, suicide and self-harm, and the growing role of loneliness and social isolation, alongside Malaysian evidence on digital initiatives and implementation challenges. Overall, evidence indicates that depression and anxiety increased in the early stages of the pandemic, although patterns varied across regions and groups; healthcare workers, university students, children and adolescents. Children and adults experienced a disproportionate burden, while loneliness and social isolation emerged as important independent risk factors. Digital and remote interventions, including telepsychiatry, mobile applications, and web-based programs, generally produced small to moderate benefits and were well accepted, yet access remained uneven. Malaysian trials of smartphone- and text-based coaching tools, WhatsApp-delivered community support, and online suicide prevention initiatives demonstrated feasibility and promise but also highlighted barriers related to digital literacy, language, regulation, and infrastructure. Governmental and private-sector initiatives, such as telepsychiatry expansion, digital health platforms, and AI-enabled tools, signal a shift towards digital mental health. The review concludes that a coordinated national strategy that integrates community-based care, promotes digital equity, and is supported by robust governance is needed to realize the potential of digital and remote mental health services in Malaysia.

Keywords: mental health, digital mental health, telepsychiatry, COVID-19, Malaysia, loneliness, suicide, remote care

INTRODUCTION

Mental health disorders are among the leading causes of disability worldwide, and evidence from the COVID-19 period indicates that rates of depressive and anxiety disorders increased substantially in 2020, largely driven by social isolation, fear of infection, and economic disruption. At the same time, disruptions to in-person services and the implementation of infection-control measures accelerated the uptake of digital and remote mental health care, including telepsychiatry, mobile health applications and online counselling (Sharma et al., 2023).

Malaysia reflects these global pressures. Pre-pandemic surveys pointed to a high prevalence of mental distress, while the number of mental health professionals relative to the population remained low. The pandemic not only highlighted these structural limitations but also stimulated new forms of innovation as Malaysian researchers, government agencies and private companies piloted smartphone-based interventions, text based coaching platforms, WhatsApp-based community protocols, and AI-assisted tools to expand mental health support.

This article provides a narrative review of mental health between 2020 and 2025, integrating global trends with Malaysian experiences. The objectives are to (a) summarize global prevalence trends and key vulnerable populations, (b) review evidence on suicide, self-harm, loneliness, and social isolation, (c) examine the rise of digital and remote mental health care, and (d) synthesize Malaysian digital mental health initiatives, policies, and implementation challenges.

GLOBAL MENTAL HEALTH 2020–2025

This section summarizes key trends in the global mental health literature between 2020 and 2025. The focus is on how common mental disorders have evolved over time, in which populations are most vulnerable, trends in suicide and self-harm, and the emergence of loneliness and social isolation as central determinants of health.

Prevalence and trajectories

Global modelling' evidence on the first pandemic year points to significant rises in major depressive disorder and anxiety disorders, with variations by region, gender, and age (Santomauro et al., 2021). Early findings from cross-sectional studies and meta-analyses indicated substantial pooled prevalence of depression, anxiety, psychological distress, and insomnia. This is particularly in settings with strict lockdown measures and inadequate social protection systems (Nochaiwong et al., 2021). Subsequent longitudinal and umbrella reviews point to a more complex pattern. While distress rose sharply during early lockdowns and then partially subsided in many groups, those affected by job loss, heavy caregiving responsibilities, or pre-existing vulnerabilities were more likely to experience ongoing symptoms.

Vulnerable populations

Recent literature consistently highlights three population groups that experience particularly high levels of mental health problems. The first group is the healthcare worker, especially frontline staffs. They showed elevated rates of depression, anxiety and burnout. Evidence suggests that multi-level strategies targeting workload, organizational leadership and peer support are likely to be effective (Anger et al., 2024). Another group is the university students worldwide. This group is reported to have higher level of depression and anxiety that are tied to academic disruption, economic pressure and reduced social contact. Digital mental health interventions provide modest but nonetheless meaningful gains for this group (Madrid-Cagigal et al., 2025). The last group is the children and adolescents that face significant mental health challenges from school closures, disrupted routines and diminished access to face-to-face care (Harrison et al., 2022). Taken together, these findings point to the importance of developing prevention and early intervention approaches that are tailored to specific population groups and coordinated across education, social services and healthcare. This category deals with unlabeled data and focuses on clustering or discovering hidden patterns.

Suicide and self-harm

In contrast to early expectations, pooled analyses of national datasets suggest that suicide rates did not increase uniformly worldwide during the initial stages of the pandemic (Pirkis et al., 2021). However, this average conceals considerable variation. In some countries, suicide rates initially fell but later rose, especially among women and younger populations. More recent burden estimates underscore ongoing regional and demographic disparities, with elevated suicide rates in parts of the low- and middle-income world and among marginalized communities (Weaver et al., 2025). Although the evidence on self-harm is less consistent, it points to rising presentations among adolescents and young adults in some contexts. This underscores the need for robust real-time monitoring, careful media reporting, and integrated crisis support across both digital and in-person services.

Loneliness and social isolation

There is growing recognition that loneliness and social isolation act as key determinants of mental and physical health. Meta-analytic studies in older populations show that these experiences are common and are consistently associated with higher risks of all-cause mortality (Holt-Lunstad, 2022). Policy-focused analyses underline the importance of coordinated, multi-level responses—ranging from community interventions, social prescribing,

and befriending schemes to digital connectivity tools and age-friendly urban design. These recommendations are especially pertinent for countries with rapidly ageing populations, such as Malaysia.

DIGITAL AND REMOTE MENTAL HEALTH CARE

Since 2020, the literature on digital and remote mental health has expanded rapidly, reflecting a major shift in how mental health care is delivered globally. A growing body of reviews and commentaries shows that the COVID-19 pandemic accelerated the uptake of telehealth, mobile applications, and online interventions, with likely long-term consequences for routine practice (Lattie et al., 2022; Torous et al., 2020; Torous et al., 2021; Ratheesh & Alvarez-Jimenez, 2022). Regulatory flexibility, increased public willingness to use remote services, and rapid innovation by health systems and industry have helped position digital mental health as a central rather than peripheral component of service delivery (Lattie et al., 2022; Bond et al., 2023).

Telepsychiatry has been one of the most prominent developments within this landscape. Reviews consistently report that, across a range of conditions and settings, telepsychiatry can achieve outcomes comparable to traditional in-person care, with high levels of patient satisfaction when technical and relational issues such as connectivity, privacy, and therapeutic rapport are well managed (Sharma et al., 2023; Torous et al., 2020). In addition to scheduled video consultations, telephone-based contacts and asynchronous messaging have been used to increase flexibility, particularly in primary care and community settings.

In parallel, mobile applications and web-based programs targeting depression, anxiety, and related conditions have grown rapidly. Meta-analytic evidence suggests that these digital interventions typically yield small to moderate effect sizes, but their scalability means that even modest individual-level benefits can translate into substantial impact at the population level (Torous & Firth, 2018; Lattie et al., 2022). Programs that provide structured, skills-based content (for example, cognitive–behavioral strategies), some form of human guidance, or integration within stepped-care pathways tend to show better engagement and outcomes than unguided, stand-alone apps (Torous et al., 2021; Ratheesh & Alvarez-Jimenez, 2022).

More recent work indicates that the field is evolving beyond basic teleconsultations towards a broader "digital psychiatry" ecosystem. This includes the use of ecological momentary assessment, sensor and wearable data, conversational agents, and virtual reality to monitor symptoms, deliver just-in-time support, and personalise care (Torous et al., 2021; Torous et al., 2025). At the same time, there is growing interest in generative artificial intelligence and in leveraging large, real-world datasets for decision support, triage, and population-level monitoring (Bond et al., 2023; Torous et al., 2025). These developments open new possibilities but also raise complex questions about safety, explainable, accountability, and the evolving role of clinicians in increasingly data-driven systems.

Across this literature, several cross-cutting implementation themes emerge. First, equity and access are central concerns. Although digital tools can extend reach, they may inadvertently widen existing inequalities for groups with limited access to devices, data, stable connectivity, or digital literacy (Lattie et al., 2022; Bond et al., 2023). Second, usability, cultural and linguistic appropriateness, and trust are crucial determinants of sustained engagement, particularly in low- and middle-income and multilingual settings. Third, meaningful integration into existing care pathways—through clear referral processes, shared records, and reimbursement mechanisms—is repeatedly identified as necessary for moving from small-scale pilots to sustainable service models (Ratheesh & Alvarez-Jimenez, 2022; Bond et al., 2023).

Finally, the rapid pace of technological innovation has outstripped the development of robust regulatory and ethical frameworks. Key concerns relate to data protection, privacy, commercial use of sensitive mental health information, and the management of acute risk in digital environments, especially for interventions addressing self-harm and suicide (Torous et al., 2021; Torous et al., 2025). Overall, the global evidence portrays digital and remote mental health care as both a critical opportunity and a substantial implementation challenge, providing an important backdrop for understanding how countries such as Malaysia are beginning to adopt and adapt these approaches within their own mental health systems.

MALAYSIA'S DIGITAL MENTAL HEALTH LANDSCAPE

Malaysia has seen a rapid expansion of digital and remote mental health initiatives across academic, governmental, and private sectors. Research conducted between 2020 and 2025 reflects global shifts towards mobile and text-based support, while also making use of locally pervasive platforms such as WhatsApp. Four key interventions illustrate these developments.

Academic and community-based interventions

First, a pilot randomized controlled trial among outpatients with depressive and anxiety symptoms examined a smartphone-based mental health application used alongside treatment-as-usual, compared with treatment-as-usual alone. Participants in the intervention group showed significant reductions in depressive symptoms, suggesting that structured, skills-based digital tools can enhance routine clinical care (Tan et al., 2023). Second, a larger trial of a text-based coaching application offering one-to-one messaging support and psychoeducational resources reported reductions in both depression and anxiety, with particularly marked improvements in stress among corporate users (Lim et al., 2023). Third, the RELATE-ME protocol engaged community health workers to deliver psychosocial support via WhatsApp to older adults and young people in suburban Malaysia, demonstrating high cultural acceptability and feasibility, while also highlighting barriers related to digital literacy and language diversity (Ting et al., 2025). Fourth, a review of online suicide and mental health support initiatives underscored both the potential and the constraints of digital crisis services, drawing attention to issues such as unstable funding, limited numbers of trained volunteers, technological challenges, and ethical concerns in managing acute risk remotely.

Governmental and private-sector initiatives

Beyond academic projects, several national-level developments point to growing policy interest in digital mental health. Telepsychiatry services in public hospitals and primary care settings expanded during the pandemic, supported by evolving telemedicine guidelines. Digital Health Malaysia has promoted telemedicine and broader digital health ecosystems through conferences and cross-sector partnerships, indirectly influencing the mental health landscape. In parallel, private-sector platforms now offer online counselling and coaching, while digital therapeutics companies have generated large-scale datasets showing high levels of depression and anxiety among working adults. Taken together, these initiatives reflect Malaysia's ambition to use digital technologies to reduce mental health service gaps, although many efforts remain fragmented and project-based.

Implementation challenges

Across these interventions, several recurring challenges can be identified. The digital divide limits access for older adults, low-income groups, and rural residents who may lack suitable devices, reliable connectivity, or sufficient digital literacy. Malaysia's multilingual context further complicates content development, as many existing tools remain predominantly English-centric. Policy and regulatory frameworks for telemedicine, data protection, reimbursement, and professional liability are evolving but still incomplete, which contributes to clinician hesitancy. Ethical and safety concerns are particularly salient in online suicide prevention, where clear protocols for risk management and escalation are essential. In addition, many promising initiatives depend on short-term grants or philanthropic funding, raising concerns about their long-term sustainability and scalability.

DISCUSSION

This narrative review synthesized global evidence on mental health between 2020 and 2025 and located Malaysia's experience within this wider landscape, with particular attention to digital and remote mental health care. Overall, the findings suggest that the COVID-19 pandemic acted as both a stress test for already strained mental health systems and a catalyst for rapid innovation. Rates of depression and anxiety increased, and specific groups especially healthcare workers, university students, and children and adolescents carried a disproportionate burden. Loneliness and social isolation also emerged as salient determinants of mental and physical health. At the same time, in Malaysia digital and remote interventions scaled up quickly. This provides new options for support while exposing persistent inequities in access and infrastructure.

The global literature points to an initial surge in psychological distress during early lockdowns, followed by partial adaptation in many populations. However, this adjustment was uneven in which individuals facing job loss, caregiving burdens, or pre-existing vulnerabilities were more likely to exhibit persistent symptoms. Suicide trends were more complex than initially feared, with no uniform global increase but important variation by country, gender, and age, and indications of rising self-harm among adolescents and young adults in some settings. These patterns reinforce the need for real-time surveillance, careful media reporting, and integrated crisis response that spans online and offline services.

Within this context, Malaysia's experience broadly mirrors global trends. Pre-pandemic service gaps and workforce shortages meant that the system entered the crisis with limited capacity, yet the rapid development of smartphone apps, text-based coaching, WhatsApp-based psychosocial support, online suicide support, and expanded telepsychiatry demonstrates the feasibility and acceptability of digital approaches. These initiatives show how locally pervasive platforms and community health workers can extend reach, but also highlights persistent barriers including digital divides, language and cultural diversity, and evolving regulatory frameworks.

Taken together, the findings point to several priorities. Malaysia would benefit from a coordinated national digital mental health strategy grounded in equity, with clear standards for quality, data protection, and integration into public and primary care services. Blended models that combine digital tools with community-based and in-person care are likely to be more inclusive than purely digital approaches. Future work should focus on strengthening infrastructure and digital literacy, developing multilingual and culturally appropriate content, and conducting longer-term implementation studies that examine effectiveness, sustainability, and ethical and governance considerations.

CONCLUSION AND FUTURE WORK

From 2020 to 2025, mental health has become a central global policy concern, with rising burdens of depression and anxiety, heightened vulnerability among specific populations, and growing recognition of loneliness and social isolation as major health risks. Digital and remote mental health interventions have emerged as essential components of the response, offering scalable support but also raising equity, ethical, and governance challenges. Malaysia's experience exemplifies this duality. Pilot trials of smartphone and text-based interventions, community WhatsApp protocols, and expanding telepsychiatry and AI initiatives demonstrate feasibility and creativity. At the same time, digital divides, cultural and linguistic diversity and incomplete regulatory frameworks pose substantial obstacles.

Future work should focus on strengthening national digital mental health strategies that integrate equity targets; investing in blended models that combine digital tools with community-based care; developing robust ethical governance for data use and AI; and conducting larger, longer-term implementation studies in diverse Malaysian settings. By addressing the social, infrastructural, and ethical foundations of care, digital and remote mental health can reach their full potential in improving population wellbeing.

Machine Learning and Deep Learning continue to shape the future of technology by powering intelligent systems across industries. Despite challenges, ongoing research and technological improvements are making ML/DL more reliable, efficient, and accessible.

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