Digital Mental Health Amid COVID-19

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Digital Mental Health is information and communication technology used in mental health services delivered or boosted through the Internet and related technologies, smartphone and wearable technologies as well as immersive solutions (e.g., Virtual Reality and video games). It is predominantly used as self-help services or with the assistance of a (para-)professional and/or artificial intelligence for the provision of mental health promotion as well as mental ill-health identification, prevention and intervention.

COVID-19 digital mental health implementation challenges technology human-computer in-teraction explainable artificial intelligence integrated methodologies efficacy evaluation

Mental healthcare resources have been inundated during the economic and biopsychosocial recovery from COVID-19 [1][2]. Although in use since the early 2000s, an opportunity has arisen for digital mental health to fill unmet needs [3][4][5] and answer calls to improve the quality of and accessibility to mental health care [6][7][8]. It was already on a trajectory to regular practice, but COVID-19 added to demand outstripping supply of mental healthcare resources making a review of digital mental health more urgent. There has been a marked rise in the use of online self-help and telehealth interventions [9][10][11][12]. Systematic reviews found telehealth to be an effective and acceptable form of service delivery at least in the short term [13]. More generally, there are calls for higher levels of evidence, ongoing evaluation, and effective embedment [9][14][15][16]. A rapid meta-review found telehealth, internet-based, and app-based mobile digital interventions are well-placed to mitigate psychosocial consequences at the population level with good quality evidence on usability, safety, acceptance/satisfaction, and effectiveness [17]. Mixed levels of evidence were noted: lacking for apps having successful retention strategies; limited for mental health promotion; and lack of preliminary evidence for the long-term effects, process quality, and cost-effectiveness of digital interventions [17]. This integrative review synthesizes evidence from Scopus, ScienceDirect, CrossRef and Google Scholar searches of the challenges, systemic and practical issues, new progress, ongoing problems, and approaches of digital mental health as well as a focus on young people.

There is a need for rapidly deploying and efficiently integrating effective and evaluated digital solutions for users at individual, organizational, and governmental levels [6][18][19][20]. However, there are hindering issues in enacting a hybrid model of care e.g., the quality of digital mental health solutions needs to be better discerned and there is a need for more studies with vulnerable and at-risk populations [18]. Two systematic reviews and meta-analyses examined the effectiveness of digital mental health interventions. The first, for young adults with depression or substance misuse in low-income and middle-income countries, found moderate effectiveness when compared with control interventions [21]. The second, for anxiety and depression in perinatal patients in high-income countries,

found nonspecialist providers may be effective in delivering counseling interventions [22]. However, only two online interventions were included. Further studies are required for digital intervention implementation processes to inform the optimal delivery and scale-up of these services.

There are a range of digital mental health interventions available for various mental health needs and conditions, from substance abuse recovery to suicide prevention [23]. Stronger evidence and new models of care will be necessary for higher accessibility, equity, and successful clinical implementation [5][20][24][25]. Predictive technologies (e.g., real-time machine learning algorithms) are useful for monitoring but should be deployed carefully as decision support tools [20][25][26]. On an operations level, there is the issue of integrating technology into mental health care delivery for diverse populations. The European Commission addressed organizational barriers (e.g., interoperability, and technical and legal issues) through a consortium action plan that also prioritized digital mental health research to target the most prevalent mental health problems and disorders [27]. Users need assistance to make informed decisions around the efficacy of digital mental health tools [13] as well as the intervention characteristics (e.g., convenience, suitability, reliability, user-friendliness, presentation, organizational integration, and cost). The adoption of digital tools has been hindered at the organizational and policy level—user-friendly workflows, decision models and protocols have been offered as solutions [19][28]. Suitable information, training, infrastructure, clinical guidelines, and policies may counter excessive information/workloads, ambiguous policies, mixed implementation, and a struggle to maintain systems [19][20].

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