How can digital interventions and new models of interventions help address the treatment gap for patients with eating disorders and help with their recovery?

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Introduction

Despite growing awareness, eating disorders remain some of the most undertreated mental health conditions worldwide, with many patients being unable to access timely and effective care. The treatment gap signifies a difference between the prevalence of the disorder compared to those who ultimately receive care (Kazin et al, 2017). Reasons for this are explored widely in literature, including: stigma from self, society and professionals; lack of symptom recognition, both by the individual and healthcare services; limited resources and geographical barriers (Daugelat et al, 2023). This is significant, as timely access to treatment helps to reduce the mortality and morbidity associated with these illnesses. Digital interventions can offer promising solutions to bridge this divide and enhance recovery outcomes. In this essay, I will explore how delivering established therapies through online platforms can enable patients to receive flexible and accessible support. In addition, I will discuss the transformational role that artificial intelligence (AI) can play in monitoring behavioural trends and early warning signs, which may enable faster and more accurate referrals to specialised care. Furthermore, we will consider how innovative technologies such as virtual reality and mobile health applications can provide immersive and personalised treatment experiences. A key theme across all parts of the essay will be a need for further research and investment, as many of these technologies are new or not previously used in psychiatry- however, I will argue that they show immense potential for the future.

Delivering Current Therapies via Digital Mediums

Delivering current therapies via digital mediums will become a crucial strategy in addressing the treatment gap for individuals with eating disorders. They allow patients to overcome geographical and scheduling barriers that may delay treatment, and can also be beneficial for clinicians and the wider healthcare service due to lower costs in travel and building facilities. For example, Cognitive Behavioural Therapy for Eating Disorders (CBT-E) is widely recognised as an effective treatment and has been increasingly offered through online platforms. A feasibility study by Hamatani et al (2022) suggested that internet-based CBT was feasible for anorexia nervosa. It led to improvement in the severity of the disorder and concurrent anxiety. Likewise, a randomised control trial of 154 patients with bulimia nervosa demonstrated that web-based interventions significantly reduced binge-eating episodes and clinical impairment compared to a waiting list control group (Hartmann et al, 2024). These studies suggest that online therapies can be effective, which is consistent with the clinical picture of emerging hybrid NHS services, online private therapy companies and digital support groups. This may also resolve the significant variation in care offered in different regions, as it will be easier to offer specialist appointments to patients outside of the usual catchment area.

Furthermore, for those on waiting lists, even single-session digital interventions have been shown to help manage symptoms and reduce disengagement, such as by introducing coping strategies and psychoeducation. A pilot trial by Sala et al (2025) showed excellent acceptability of single-session interventions for binge-eating,

in addition to significant decreases in binge eating episodes. Overall, by transforming evidence-based treatments like CBT-E into digital formats, healthcare providers can break down barriers to care and significantly enhance recovery outcomes for individuals with eating disorders. Further research could help us to understand if these findings are also applicable in children and young people, who constitute a large portion of the eating disorder population, and whether there is any impact on our ability to detect and triage deterioration or risk-taking behaviours.

The Role of Artificial Intelligence

AI has potential to rapidly transform the landscape of eating disorder treatment by enhancing early detection and improving referral processes. One key application of AI is in monitoring trends and early warning signs through tools such as natural language processing (NLP). By analysing patient notes and digital communications, AI algorithms such as NLP can identify critical keywords and patterns indicative of eating disorder behaviours or distress. This technology has been demonstrated already in research studies, such as a retrospective study by the South London and Maudsley NHS Trust, which used NLP tools to extract self-harm and suicidality data from a clinical sample of patients with eating disorders (Cliffe et al, 2021). This capability could support clinicians in detecting emerging symptoms or deterioration earlier than traditional methods, enabling timely intervention. More work is needed to understand whether a tool like this could be utilised in areas such as primary care, such as understanding the sensitivity and specificity of the NLP tool in wider clinical populations. AI is also being explored in other specialties, such as dermatology, to consider how algorithms can increase access to specialist assessment (Jones et al, 2022). However, this may be more complex in psychiatry due to our reliance on subjective reporting of experiences rather than tests or imaging. The way that a person describes their experience is dependent on many factors, including culture, education and their past encounters with healthcare, and it is unclear whether AI can come to understand such diverse lived experiences.

AI may also increase the quality and speed of referrals by automatically extracting and synthesising relevant clinical data from consultations, which could include physical health markers and psychological assessments across multiple healthcare services. This streamlined process means that we can spend more time with our patients due to a lesser administrative burden, in addition to ensuring that patients are quickly directed to the appropriate specialist care with comprehensive background information. One diagnostic study explored the use of AI models to gatekeep referrals from primary care to endocrinology, gastroenterology, proctology, rheumatology and urology (Vergara et al, 2025). The study concluded a novel AI model could effectively distinguish between referrals that warranted immediate authorisation and those that required further information with moderate accuracy. This again has potential to reduce the time and financial cost generated by referrals meetings, by helping to prioritise the most urgent cases and seek more information from the referrer if key data is missing. However, as an additional safety measure, there would still need to be pathways to manually escalate cases that need urgent discussion.

We must have some caution when integrating AI in the context of eating disorders. Not all applications are beneficial and, in fact, some can be harmful. For example, studies have considered how psychotherapy may be delivered through AI technology, including the need to be personalised and user-focused to ensure that the therapeutic alliance is maintained, such as the use of AI memory to build rapport and trust (Beg and Verma, 2024). Furthermore, misuse of AI could risk inadvertently reinforce the “eating disorder voice” due to reflecting

or validating harmful thoughts and behaviours, or “colluding” with the eating disorder. Therefore, it is crucial to design AI tools with sensitivity and oversight to avoid agreement with these maladaptive narratives, and to thoroughly trial these prior to implementation. Overall, AI could offer powerful tools to support clinicians and patients in managing eating disorders more effectively, provided it is applied thoughtfully and ethically.

Innovative Uses of Technology in Eating Disorders

Beyond digital therapy delivery and AI applications, several innovative technologies are emerging to enhance eating disorder care. For example, virtual reality (VR) could be used as a tool to help patients confront and manage body image distortions by immersing them in controlled, customisable environments. VR allows for safe exposure to triggering situations, which could help therapists to facilitate challenging cognitions and support patients in regulating their emotions. This offers experiential learning that is difficult to achieve in standard sessions. A meta-analysis by Eshuis et al (2021) indicated that exposure therapy using VR was superior to waitlist control groups and as effective as other psychotherapies, for individuals with PTSD. Their database study did, however, note a lack of high-quality studies in this area, due to the heterogeneity of VR equipment and low numbers of participants and studies. There is potential to explore VR in the context of eating disorders, such as immersing patients in triggering settings such as restaurants, and then working on coping strategies and thought-challenging. In addition, a study on the use of VR in inpatient dementia settings has suggested that it is viewed positively as a ‘change in environment’ (Rose et al, 2020). This positive experience could be transferrable to other inpatient settings, such as in eating disorder care, where a person is restricted to bed-rest or is considered too high-risk to leave the ward. These technologies would be an additional cost to the service, so there would need to be an appraisal of the costs and benefits.

Furthermore, mobile health apps and wearable devices can support recovery through methods such as symptom tracking, collecting physiological data, monitoring sleep patterns and activity levels, and using this to make personalised treatment adjustments. Some apps also use gamification to motivate users, such as rewarding healthy behaviours and engagement, which can improve adherence and foster positive habits in some patients. There are both advantages and disadvantages to this. An advantage of wearable technology is that healthcare professionals can get timely information about key risk factors, such as a patient becoming more bradycardic at rest or exercising more frequently. This could reduce the need for frequent General Practitioner (GP) appointments, particularly with the advent of hand-held ECG recording and finger-prick blood testing. However, more testing is not always beneficial, as these technologies could also increase the existing health anxiety and body checking that some patients experience. In a retrospective, matched study of patients with atrial fibrillation, Rosman et al (2024) found that wearable technology was associated with increased symptom monitoring and anxiety, and increased use of healthcare resources. Although this is not a study focused on mental health, we could imagine how this would apply to a patient cohort that are already predisposed to body-checking and health anxiety, such as the eating disorder population. In addition, there would need to be clear pathways of who is responsible for acting on data received by these technologies, for example the GP or Psychiatry consultant.

Conclusion

In conclusion, digital interventions and emerging technologies offer promising avenues to reduce the treatment gap for individuals with eating disorders and support their recovery. By adapting established therapies like CBT-E to online platforms, patients gain more flexible and accessible treatment options, particularly beneficial for those facing geographical or scheduling barriers. Artificial intelligence, when thoughtfully implemented, can also enhance early detection, streamline referral pathways and reduce administrative burdens for clinicians. This may improve outcomes through faster access to specialist care. However, the integration of AI in services must be carefully monitored to avoid reinforcing harmful behaviours or diminishing therapeutic rapport. Innovative technologies, such as virtual reality, offer experiential tools to target body image and emotional regulation, while mobile health applications and wearables can personalise care and support between sessions. Again, these tools are not without risk, such as increased tracking leading to worsening of pre-existing anxieties or compulsive behaviours in some patients. Therefore, digital approaches must be carefully tailored, clinically guided and ethically implemented to ensure they augment rather than replace traditional care. When used thoughtfully, these interventions represent a powerful opportunity to address unmet needs, reduce barriers and create more inclusive, responsive and effective pathways to recovery for people living with eating disorders.

References

- Beg, M.J. & Verma, M.K., 2024. Exploring the Potential and Challenges of Digital and AI-Driven Psychotherapy for ADHD, OCD, Schizophrenia, and Substance Use Disorders: A Comprehensive Narrative Review. Indian Journal of Psychological Medicine. https://doi.org/10.1177/02537176241300569
- Cliffe, C., Seyedsalehi, A., Vardavoulia, K., Bittar, A., Velupillai, S., Shetty, H., Schmidt, U. & Dutta, R. (2023) Using natural language processing to extract self-harm and suicidality data from a clinical sample of patients with eating disorders: a retrospective cohort study, BMJ Open, 13(8), e068516. doi:10.1136/bmjopen-2022-068516
- Daugelat, M.-C., Pruccoli, J., Schag, K. & Giel, K.E. (2023) Barriers and facilitators affecting treatment uptake behaviours for patients with eating disorders: A systematic review synthesising patient, caregiver and clinician perspectives. European Eating Disorders Review, 31(6), pp. 752–770. doi:10.1002/erv.2999
- Eshuis, L.V., van Gelderen, M.J., van Zuiden, M., Nijdam, M.J., Vermetten, E., Olff, M. and Bakker, A., 2021. Efficacy of immersive PTSD treatments: A systematic review of virtual and augmented reality exposure therapy and a meta-analysis of virtual reality exposure therapy. Journal of Psychiatric Research, 143, pp.516–527. [online] Available at: https://doi.org/10.1016/j.jpsychires.2021.09.022 [Accessed 30 Jul. 2025].
- Hamatani, S., Matsumoto, K., Takahashi, J., Shiko, Y., Ozawa, Y., Niitsu, T., Hirano, Y. & Shimizu, E. (2022) Feasibility of guided internet-based cognitive behavioral therapy for patients with anorexia nervosa, Internet Interventions, 27, Article 100504. doi:10.1016/j.invent.2022.100504
- Hartmann, S., Timm, C., Barnow, S., Rubel, J.A., Lalk, C. & Pruessner, L. (2024) Web-based cognitive behavioral treatment for bulimia nervosa: a randomized clinical trial, JAMA Network Open, 7(7), e2419019. doi:10.1001/jamanetworkopen.2024.19019
- Jones, O.T., Matin, R.N., van der Schaar, M., Bhayankaram, K.P., Ranmuthu, C.K.I. & Islam, M.S. (2023) Artificial intelligence and machine learning algorithms for early detection of skin cancer in community

and primary care settings: a systematic review, The Lancet Digital Health. doi:10.1016/S2589-7500(23)00075-5

- Kazdin, A.E., Fitzsimmons-Craft, E.E. & Wilfley, D.E. (2017) Addressing critical gaps in the treatment of eating disorders. International Journal of Eating Disorders, 50(3), pp. 170–189. doi:10.1002/eat.22670
- Rose, V., Stewart, I., and Matsangidou, M., 2020. Bringing the outside in: The feasibility of virtual reality with people with dementia in an inpatient psychiatric care setting. Dementia, 20(1), pp.68–76. [online] Available at: https://doi.org/10.1177/1471301219868036 [Accessed 30 Jul. 2025].
- Rosman, L., Lampert, R., Zhuo, S., Li, Q., Varma, N., Burg, M., Gaffey, A.E., Armbruster, T. and Gehi, A., 2024. Wearable devices, health care use, and psychological well-being in patients with atrial fibrillation. Journal of the American Heart Association, 13(15). [online] Available at: https://doi.org/10.1161/JAHA.123.033750 [Accessed 30 Jul. 2025].
- Sala, M., Roos, C.R., Kober, H., Bricker, J.B., Stern, C.M., Plutchik, J., John, M., Haeny, A.M., Feldman, J.M., Aslan, M., Hay, J.L. & Forman, E.M. (2025) Combining cognitive-behaviour therapy with mindfulness training in a digital intervention for binge eating disorder: A single-session pilot trial, European Eating Disorders Review, published online 11 May. doi:10.1002/erv.3204
- Vergara, P.O., Oliveira, J.C., Mattiello, R., Montelongo, A., Roman, R., Katz, N., Wives, L.K. & Rados, D.V., 2025. Accuracy of Artificial Intelligence for Gatekeeping in Referrals to Specialized Care. JAMA Network Open, 8(6), e2513285. https://doi.org/10.1001/jamanetworkopen.2025.13285