*Iyortsuun, N. K., Kim, S.-H., Jhon, M., Yang, H.-J., & Pant, S. (2023). A Review of Machine Learning and Deep Learning Approaches on Mental Health Diagnosis. Healthcare, 11(3), 285. https://doi.org/10.3390/healthcare11030285*

[*https://www.mdpi.com/2227-9032/11/3/285*](https://www.mdpi.com/2227-9032/11/3/285)

This article (2023) demonstrates the potential of ML and DL methods to aid in diagnosing mental illnesses. The authors cite “the wide possibilities of using DL methods for mental health diagnosis with good results”, as one team developed “end-to-end CNN architecture show[ing] excellent precision (99.76%), Recall (99.74%), F1-Score (99.75%), accuracy (99.72%) and AUC (99.75%) in a three-way classification task.” The article cites challenges, including that “[o]nly four search databases (Google Scholar, PubMed, Scopus, and Web of Science) were used to collect data” and that “the focus was limited to seven mental health diseases” in their analysis.

*Bradford A, Meyer AND, Khan S, et al*

*Diagnostic error in mental health: a review*

*BMJ Quality & Safety 2024;****33:****663-672.*

*https://qualitysafety.bmj.com/content/33/10/663.citation-tools*

This article (2024) explores diagnostic error in mental health settings, asserting that it “is well understood to be a problem.” While “various avenues for future research and development” have been suggested regarding “missed, wrong, delayed and disparate diagnosis of common mental disorders,” “a lack of clear consensus on how to conceptualise, define and measure errors in diagnosis will pose a barrier to advancement.” They then point to numerous statistics concerning the accuracy of diagnosis and findings on intersectional dynamics concerning age, gender, race, and other factors that may affect accuracy in diagnosing anxiety disorders, ADHD, ASD, mood disorders, and schizophrenia.

*Martin-Key N, Schei T, Barker E, Spadaro B, Funnell E, Benacek J, Tomasik J, Bahn S*

*The Current State and Diagnostic Accuracy of Digital Mental Health Assessment Tools for Psychiatric Disorders: Protocol for a Systematic Review and Meta-analysis*

*JMIR Res Protoc 2021;10(1):e25382*

*URL: https://www.researchprotocols.org/2021/1/e25382*

*DOI: 10.2196/25382*

This proposition (2021) explores digital assessment tools for mental health screening and diagnosis, noting that, in spite of their rapid growth in number, “little is known about their diagnostic accuracy.” The authors cite challenges patients may face “disclosing mental health difficulties in person” due to social stigma and geographical barriers. They also note the “acceptability and efficacy of digital platforms for improving the reach, quality, and impact of mental health care,” and, coupled with “strong interest” from patients in engaging with digital assessment tools, digital mental health assessment options appear to be growing in feasibility. Because “little attention and effort have been put into establishing their diagnostic accuracy,” it is critical that new digital tools involve an earnest, data-driven approach in their creation.

*Katharine A Smith, Charlotte Blease, Maria Faurholt-Jepsen, Joseph Firth, Tom Van Daele, Carmen Moreno, Per Carlbring, Ulrich W Ebner-Priemer, Nikolaos Koutsouleris, Heleen Riper, Stephane Mouchabac, John Torous, Andrea Cipriani - Digital mental health: challenges and next steps: BMJ Mental Health 2023;26:e300670.*

[*https://mentalhealth.bmj.com/content/26/1/e300670?twclid=2-4ielk6k2msm1gex1xvwv9uccv*](https://mentalhealth.bmj.com/content/26/1/e300670?twclid=2-4ielk6k2msm1gex1xvwv9uccv)

This article (2023) offers a framework by which it conceptualizes digital mental health innovations and explores their efficacy and feasibility of introduction in the broader clinical ecosystem. It notes several key outcomes: “traditional diagnostic systems” may best suit digital approaches, digital approaches “require organisational change” rather than total replacement/automation of traditional methods, “unique ethical issues” warrant the design of “appropriate studies to measure the effectiveness of implementation” of digital solutions, “[a]ccessibility and codesign” of solutions should be considered with regards to their longevity, and “[s]tandardised guidelines” will ensure effective clinical implementation.

*Le Glaz A, Haralambous Y, Kim-Dufor D, Lenca P, Billot R, Ryan T, Marsh J, DeVylder J, Walter M, Berrouiguet S, Lemey C*

*Machine Learning and Natural Language Processing in Mental Health: Systematic Review*

*J Med Internet Res 2021;23(5):e15708*

*URL: https://www.jmir.org/2021/5/e15708*

*DOI: 10.2196/15708*

This review (2021) of 58 articles aims to characterize the use of ML/NLP techniques for mental health and to consider their potential for use in clinical practice. While ML/NLP models “may be considered a new paradigm in medical research,” “these processes tend to confirm clinical hypotheses” rather than introduce new ideas and results. The authors did identify “unexplored” areas from which ML/NLP techniques may offer uniquely beneficial information, “ie, patients’ daily habits that are usually inaccessible to care providers.” Despite this perspective, the article stresses that these techniques are “tools to support clinical practice,” following the theme that existing practices should be augmented, not automated.