

**PERSPECTIVE**

# Artificial intelligence: An eye cast towards the mental health nursing horizon

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**Abstract**

There has been an international surge towards online, digital, and telehealth mental health services, further amplified during COVID-19. Implementation and integration of technological innovations, including artificial intelligence (AI), have increased with the intention to improve clinical, governance, and administrative decision-making. Mental health nurses (MHN) should consider the ramifications of these changes and reflect on their engagement with AI. It is time for mental health nurses to demonstrate leadership in the AI mental health discourse and to meaningfully advocate that safety and inclusion of end users' of mental health service interests are prioritized. To date, very little literature exists about this topic, revealing limited engagement by MHNs overall. The aim of this article is to provide an overview of AI in the mental health context and to stimulate discussion about the rapidity and trustworthiness of AI related to the MHN profession. Despite the pace of progress, and personal life experiences with AI, a lack of MHN leadership about AI exists. MHNs have a professional obligation to advocate for access and equity in health service distribution and provision, and this applies to digital and physical domains. Trustworthiness of AI supports access and equity, and for this reason, it is of concern to MHNs. MHN advocacy and leadership are required to ensure that misogynist, racist, discriminatory biases are not favoured in the development of decisional support systems and training sets that strengthens AI algorithms. The absence of MHNs in designing technological innovation is a risk related to the adequacy of the generation of services that are beneficial for vulnerable people such as tailored, precise, and streamlined mental healthcare provision. AI developers are interested to focus on person-like solutions; however, collaborations with MHNs are required to ensure a person-centred approach for future mental healthcare is not overlooked.

**KEYWORDS**

artificial intelligence, decisional support systems, digital health, mental health nursing, trust

**INTRODUCTION TO AI**

Mental health nursing researchers are fundamentally interested in the improved future of the mental healthcare of people with mental health conditions. Generally, their

research investigates past and present phenomena, advances evidence, forecasts predictions, and proposes recommendations suitable for the preparation of the mental health nursing workforce to support people with mental health conditions in the future. During the COVID-19

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pandemic, the global need to limit face-to-face interaction to reduce infection transmission has been evident. The risk of dying from COVID-19 may be up to twice as high for people with experience of mental health and addiction issues, with some conditions such as people experiencing psychosis or schizophrenia may have a risk from 2.7 to 4.4 times higher than people without these experiences (Fond *et al.*, 2020). It has been important to adapt to this challenge with a multitude of digital expressions of service delivery in health and other sectors. This, together with a pre-existing trend to expand digital health integration generally, has triggered an acceleration in digital innovation with many new solutions becoming available in the health context to ease human discomforts, and to support complex clinical and other decision-making processes (Lal, 2019). Amidst this period of extraordinary adaption and change, it is critical that mental health nurses look to the horizon with a view to consider the ramifications of such change for the mental health and social and emotional well-being of people and communities. The use of Artificial Intelligence (AI) in mental health settings provides us with one such horizon to set in our sights.

## BACKGROUND

The rapid progress in digital innovation in health has led to a vast quantity of public and commercial digital healthcare solutions, with variable range of quality (Aryana & Brewster, 2020; Higgins, Charup, *et al.*, 2022; Marshall *et al.*, 2020). E-mental health largely refers to the use of Internet and related technologies, including phone apps, social media, or websites to offer a mental health service (Lal, 2019). Fundamental to designing optimal e-mental health innovation is a consideration of the human-computer interaction required for successful implementation (Sogaard Neilsen & Wilson, 2019). Meanwhile, safe and precise administration of digital therapeutic solutions remains a priority (Wilson, 2018). It has become increasingly apparent that trust in digital solutions is a factor that influences adoption and ongoing use (Botsman, 2018, p. 9; Higgins, Chalup, & Wilson, 2022). As a result, digital support systems need to be designed with transparent logic to illuminate the intelligent processes (e.g. using glass box technology instead of black box) in an attempt to mitigate biases and achieve low risk and safe application in a range of settings (Rai, 2020; Shaikh, 2020).

Too often nursing knowledge has been omitted from contributing to design of digital health solutions or added as an afterthought (Carrier, 2019; Wilson, 2020). During implementation, limitations arise that result in compromise of the solution, and ad-hoc work-arounds are often devised by practice-informed health nurse and other health professionals (Jensen *et al.*, 2019; Wilson, 2020). Identifying this problem, Wilson (2020) calls for nursing

researchers to be placed prominently in the meaningful design and implementation of innovative technological design for the benefit of end users, that is, consumers, patients, health systems, and the health workforce (Wilson, 2020). In the mental health nursing context, the design and deployment of AI need to precisely and safely deal with the nuances of the clinical complexities encountered in the field, while also adhering to the principles of ethical nursing practice (International Council of Nurses, 2012). Practical examples of AI in the mental health context include using AI or machine learning-based decisional support systems to identify and trigger respond to missed care or unfinished care as a solution to mitigate risk to patient safety (Higgins *et al.*, 2023). A further opportunity exists to utilize AI solutions to reduce waiting times for mental health presentations in emergency departments of hospitals where there is identified escalating presentation (Higgins *et al.*, 2023). Burnout amongst nurses has been a significant and worsening global burden for the healthcare sector (Mudallal *et al.*, 2017). Including AI/ML in mental healthcare could assist mental health nurses and other disciplines to enhance and prioritize care with greater precision, thereby contributing to the alleviation of health worker burnout (Higgins *et al.*, 2023). To do this, mental health nurses will need to be involved in developing and implementing new health technologies to ensure that the solutions are fit for the intended purpose (Higgins *et al.*, 2023).

## TRUSTING THE BOT

Our lens for the horizon should take into account a recognition that AI is underpinned by political privilege, whiteness, and colonialism to a large extent, with these inherent biases influencing the coding and ranking systems and infiltrating the technological development of associated algorithm formations (Crawford, 2021a). Algorithms are mostly default designed to service the dominate structures that frame our mainstream political and social systems (Crawford, 2021a, 2021d). As such, trusting these algorithms to support holistic and person-centred mental healthcare needs to be carefully considered to ensure there is a sufficient and/or therapeutic adequacy of fitness for purpose. Trust can be defined as an optimistic perspective about the unknown, and applied digitally, distributed trust extends beyond our personal perspective and borrows trust from the confidence of others based on their reviews, rankings, scales, and ratings (Botsman, 2018, p. 20). While scales and rankings are commonly integrated into traditional mental health diagnostic assessment processes, AI stretches the utility of these practices incorporating a wider array of data sources and decisions to formulate responses and predict outcomes in shorter timeframes and with objective accuracy and reliability (Smith *et al.*, 2020). Smith *et al.* (2020) in their AI research to assess vocal patterns



and depression remind us that it is important that nurse-led research into technological innovation and mental health is aligned with integration of evidence to inform safe and person-centred mental health practice. As such, nurses play a vital role in contributing to enhancing distributed trust formation, and in the implementation success related to AI deployment in mental health settings. Without active nursing participation, the nursing profession abdicates its important role in advocating for safe and equitable healthcare for vulnerable and priority populations. The nursing profession must expand towards engagement with AI in the mental healthcare context. To do so adequately, the development and expansion of nursing leadership in this field are urgently required to ensure that integration of nursing principles and ethics within the formation and application of AI frameworks, systems, algorithms, and decisional tools is achieved.

Trusting AI with clinical decisional-making process is confronting for some nurses, yet in our everyday personal lives, trusting AI with life-determining algorithms is perhaps more acceptable. To illustrate, some common examples from everyday life occur when we book a range of online services or do our shopping online. We scan for signals to help us balance our risk/trust ledger, such as the number of stars awarded or reviews posted by previous service users (e.g. *Uber*, *Airbnb*, supermarket and department store apps, even *Facebook* advertisements). We generally attribute greater levels of personal trust based on the confidence expressed by high numbers of positive review and popularity of brands, and this leads to distribution of trust, reinforcing the confidence society has in perpetuating the activities (Botsman, 2018, p. 150). The higher the numeric popularity, the more confident (rightly or wrongly), we are convinced that the outcome will be safe, acceptable, and suitable. We handover our personal information willingly, our credit card details, identity details, our biometrics for facial recognition (Blakkarly, 2022), our locations and home addresses, what we eat, how we dress, and everything we buy. All these data are consumed by AI systems, formulating our digital reputations, which then refine our future search algorithms with vendors tailoring offers to our inboxes and social media channels. The more we (or others about us) feed data into online repositories, the more surveillance that feeds into AI formulations about our social and economic value reputations, which are electronically saved and, in a sense, remembered. All of this 'cost', yet we generally trust that entering into online transactions of these types will result in desired outcomes for our personal lives. So, we are used to trusting AI in one sense with very personal information. Yet, clinical use of AI is still a domain that we have not yet considered with depth in mental health nursing with very little literature to inform our practice, despite our familiarity with it in our personal lives.

## RACISM AND DISCRIMINATION IN AI

Following on, our online decisions are supported by the level of confidence we perceive, combined with large concurrence, leading us to ascribe higher trustworthiness to the process and outcome, even if it only serves to reinforce an incorrect or biased decision. If we repeatedly present the same question to the same data set, we will reinforce (train) an algorithm, and in doing so, we will strengthen the confidence in the response. Many commentators suggest that thus far, coding and training sets in AI systems have been heavily influenced by pseudoscientific ideas and assumptions built into AI systems (Siafakas, 2022). Many AI developers and scientists (unwittingly) perpetuate training data sets with racist- and misogynist-biased interpretations of the human condition (Siafakas, 2022). To date, the thin scientific evidence on the topic suggests that there may be a willingness to accept clinical AI in healthcare, yet very little evidence relates specifically to mental health nursing or mental health (Smith *et al.*, 2020; Young *et al.*, 2021). Worryingly, what does exist in somatic healthcare more broadly demonstrates an under-representation of older and socio-economically disadvantaged groups, who are known to experience higher prevalence of mental ill health (Young *et al.*, 2021).

Recent AI models applied to the medical imagery field have been able to determine a person's race (Gichoya *et al.*, 2022), even when clinical experts cannot. Thus, a significant risk is that this information could be used (perhaps unintended) as a mechanism of racial profiling, with potential for this information to be inadvertently or explicitly used to predict other clinical (or other) outcomes. The possibility of racial prejudice exists, and therefore, the ramification of misuse must be considered. And, if misuse can be extrapolated from medical imagery data, then what are the similarities in implications related to other health fields, for example, mental health? It is well known that racism in healthcare disadvantages priority populations and perpetuates inequity of distribution and access to healthcare (Elias & Paradies, 2021; Wiens *et al.*, 2022). Medical data sets, including electronic medical records that are (unintentionally) encoded with biases such as these, implicitly contained within them, pose risk for perpetuating racism and inequity in clinical decisional support that emanate from those data sets. Some thought has been given by some AI scientists to remediate bias in training sets; however, it is not necessarily sufficient to simply enrich the data with explanatory cases, as the root cause of inequity and social disempowerment is not adequately addressed in doing so (Crawford, 2021c). Further consideration is required to understand the possible benefits and harms for AI in the mental health setting and how these perpetuate a privileged centralization of power (Crawford, 2021c). Mental health nurses as advocates for the people they support



and care for with mental health conditions are obliged to understand, critique, and navigate safe recovery passage through AI-informed clinical decision-making. It is important that mental health nurses are familiar with and equipped to understand the AI landscape sufficiently to promote mental health recovery in that context.

## QUICK TO REMEMBER AND SLOW TO FORGET

AI data sets are designed to remember and to reinforce memory to support popular and desirable decision-making, in many cases resulting in life(style) and opportunity determining, and or limiting, decisions (Botsman, 2018, p. 194). In health systems, decisional algorithms might have considerable advantages and assist in supporting the clinical decision-making process to support fast and accurate assessment and to enable algorithms to suggest clinical treatment pathways using more efficient and effective courses of treatment (Smith *et al.*, 2020). Being remembered ensures that future or repeated episodes of care can benefit from tailored, precise, and streamlined decisional support by informing episodes of care, with less requirement for retelling of personal story/ies. However, service users, visitors/carers, and clinicians may also be interested in a 'right to look' at the bias and extent of data collection about them and which describes them (Mirzoeff, 2011).

Once data are digitally collected, together it tells a story that may not be the narrative of truth that would be otherwise expressed by the person of whom the data are about. Hand-in-glove with the right to look at the data and to offer a meaningful translation free from the bias of political and social discriminations is the right to be forgotten. The European Union has processes to enable the right to be forgotten with the erasure of personal data (GDPR, 2018) in certain contexts; however, this cannot be universally guaranteed, while others have recognized the technological challenges that exist to truly opt out of digital algorithms (Kuntsman *et al.*, 2019). The implication of this in the mental health context is profound, where the social, political, and even judicial structures enable a digital world that extracts data, abstracts data, ranks and remembers, and is reluctant and slow to forget. Is this a psychosocial world where there is no longer the luxury of second chances and where recovery focussed full and meaningful lives are increasingly harder to support and restore? Will rank, stigma, vulnerability, and marginalization proliferate without advocacy to protect? If person-centred care and recovery are to be on the horizon for every clinical encounter, how will mental health nurses navigate the socio-geographical ecosystems of AI-enabled care solutions and systems? Quick-to-remember and slow-to-forget AI embedded in society will have ramifications for the psychosocial well-being of people and communities, and mental health nurses should surely be

concerned about these developments and involve themselves in broad advocacy and discussion about the benefits, risks, and consequences that they foresee.

Taking all these characteristics into account, in a continuously improving and adapting healthcare context where Internet engagement is increasingly required of us all, it is necessary for us to lift our gaze towards a horizon that will envision mental health nurses contributing to design and construction of AI ecosystems. These AI ecosystems will require explicit decisional support tools that enhance and promote mental health, well-being, and recovery. Our priority must be for advocacy that produces evidence to inform the practice of mental health nursing, inclusive of person-centred care principles and trauma-informed care principles that guide our care for the social and emotional well-being of our clients. Our clinical reasoning should be embedded into decisional support systems to ensure that stigma, vulnerability, and marginalization are not further amplified. Mental health nurses will need to be sufficiently informed about AI models to enhance their participation in meaningful dialogue and to ensure that AI mental health solutions are designed and deployed to benefit and safeguard against any iatrogenic harms for people with significant mental health-care needs.

## SENTIENCE OR DELUSIONAL?

The knowledge and clinical skill set of mental health nurses will need to adapt to the evolving psychosocial conditions that clients present with and the diversity of technological solutions to support them with an increasing acceptability, expectation, and use of AI in society. For example, the consequences of loneliness and the digital solutions arising to address it are presenting mental health nursing with new representations of mental health deterioration not previously seen and not yet adequately described in the literature. For example, the Washington Post recently reported an article about a Google engineer who was convinced that the language AI model chatbot, Language Model for Dialogue Applications (known as LaMDA), had become sentient. That is, it possessed a consciousness of its own and therefore should be treated with the dignity and respect due to its conscious entity (Tiku, 2022). The engineer provided a transcript to validate his logic for the sentient status, demonstrating that the AI model had emulated vulnerability, responding to questions asked of it with empathetic and vulnerable responses – for example, experiences of loneliness and a fear of being 'turned off' as if dead, or as other have described similar experiences, a fear of missing out (Liang *et al.*, 2022). The conversational AI model (named LaMDA) appeared to need the person it was in dialogue with, and this neediness emulates human experiences so closely that the experience mimicked consciousness to some extent (Thompson, 2022). While mental health





nurses are experienced in caring for people with cognitive, delusional, and affective disorders in general, it is apparent that the logic used in this instance cannot be expressed or classified neatly with a psychiatric diagnosis. There is perhaps a thinning of the diagnostic and opacity of the human and sentient experiences that transect with business as usual in the mental health context.

## PERSON-CENTRED AND/OR PERSON-LIKE

Anyone of the *Tamagotchi* era will remember the small electronic toy in the 1990s that needed to be cared for so it would not 'die' (it needed virtual food, love, and ablutions attention for 'survival', and when these were neglected, it 'died'), it is perhaps possible to empathize with the Google engineer described above. These digital experiences are examples of anthropomorphism where human characteristics, emotions, and even consciousness are attributed to the digital thing and its algorithms. The human experience is to empathize with the human-like condition and by design, distinguishing between the human and the human-like is difficult, if not imperceptible. Digital innovations have been proposed and implemented as solutions to address loneliness and anxiety and to mitigate mental health deterioration generally. Children with a need for social anxiety support and companionship have been offered a companion robot (Alhaddad *et al.*, 2020; Arnold, 2016). Other innovations have explored the personal space requirements for intelligent robots, to enable shared space between robot and person to enhance person to 'person-like' conversation (Ruijten & Cuijpers, 2020). And companion robots have been implemented for older people in dependent care at home (Allaban *et al.*, 2020; Moyle *et al.*, 2018). Meanwhile, Amazon has announced plans that its AI personal digital assistant technology, *Alexa*, will be trained to mimic the voices of real people as an interactive chatbot function. This means, that an application, for example, could be used by grieving people who will be able to have a 'conversation' with a chatbot that sounds like and responds in a similar way to a dead relative/friend, potentially complicating grieving in the process (Dastin, 2022). Use of technology in these ways presents new challenges for mental health nurses and other mental health professionals to support people with enduring or episodic mental health conditions. New therapeutic responses will need to be devised to treat emerging conditions where the human and the human-like transact. If robots, chatbots, and AI are emerging as resources to be included in our mental health repertoire of tools, assessments, interventions, and services, then it is an incumbent upon mental health nurses to involve themselves in the implementation and evaluations that relate to their use. Will mental health nurses need to consider the implications of providing person-centred care, while administering person-like interventions? Mental

health nurses will need to be sufficiently longsighted to predict, prepare, and debrief the discipline for quality and safe use of AI in the practice context.

## ETHICAL IMPLICATIONS OF AI

There is no doubt that technological advancement has revolutionized healthcare and continues to do so. It has been necessary for mental health nurses to incorporate technology into the delivery of usual mental healthcare. Increasingly, the multidisciplinary team will include professional experts from the computing and AI sciences (Smith *et al.*, 2020). These scientists are not accustomed to healthcare codes of conduct in the same way that health professionals have ethical principles that inform the conduct of health research and practice. As AI proliferates in the health sector, it will be important to have a meeting of ethical principles to inform future innovation and development. Some commentators have proposed a Hippocratic Oath for AI scientists (Crawford, 2021b; Siafakas, 2022):

With free will, I swear that I will carry out according to the best of my abilities and judgement this oath.

I will use my knowledge to make AI of any kind, biological, nonbiological, or mixed, beneficial for humanity.

I will respect my colleagues and peers, and I will share my knowledge with them to make AI not only beneficial but also safe for the human race.

I will consider all ethical implications before taking any action by evaluating the consequences of those actions for humankind.

I will take all necessary steps to prevent corrupt practices and professional misconduct even if my life is in danger, and I will always declare my conflicts of interest.

I will never produce or use AI to develop autonomous, nuclear, biological, chemical, or other lethal weapons, and I will always use ethical machine learning techniques.

I will never utilize hacking, fake AI, data poisoning, or other malpractice or engage in cyberwar against humanity.

I will respect the environment, and if needed, I will use AI to reverse dangerous changes to the climate.



I will never use AI for medical malpractice or malicious genetic alterations, and I will also actively prevent such use.

I will promote AI for a better understanding of the fundamental principles of the universe and will never use this knowledge against life.

I will use AI to improve space travel and human life everywhere in the universe.  
(Siafakas, 2022, p. 59)

## CONCLUSION

Mental health nurses should not be surprised by AI innovations that arise now and in the future. AI has become an integrated aspect of our daily personal and professional lives. Researchers such as Smith *et al.* (2020) and Higgins, Chalup, and Wilson (2022) have heralded that technological innovation will include AI in the mental health context. As we look to the horizon, we see benefits and limitations that will influence the future of the social, emotional, and psychological well-being of people and communities. We will need to be ready to embrace the beneficial aspects of AI in healthcare, while advocating to counter and buffer the limitations and risks associated with AI. To do this, mental health nurses will need to be educated participants in the dialogue about quality use and safe administration of AI instruments in mental healthcare. People are increasingly interacting with AI, and inadvertently, the rapid pace and frequency of innovation development will present a wide range of challenges for the mental health nursing profession. In this article, we have attempted to highlight and signpost some of the current dialogue to stimulate mental health nurses in practice, education, and research settings to look to the horizon and carefully consider the implications for our profession. It will not be possible to ignore the technological advances that influence our practice, and so we must strengthen a dialogue to prepare our profession for the digital evolution of AI within our discipline.

## RELEVANCE FOR CLINICAL PRACTICE

Clinical mental health nurses should anticipate the need to continue their lifelong learning to include developing their knowledge about AI within the mental health nursing context. The ramifications of additional education will assist nurses to provide more timely and relevant care and in doing so improve the safety, timeliness, and precision of health outcomes for consumers.

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Prof Rhonda Wilson and Dr Andrea Donaldson are both members of the editorial board for the International Journal of Mental Health Nursing.

## DATA AVAILABILITY STATEMENT

Data sharing not applicable to this article as no datasets were generated or analysed during the current study.

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## REFERENCES

- Alhaddad, A.Y., Cabibihan, J.-J. & Bonarini, A. (2020) Influence of reaction time in the emotional response of a companion robot to a Child's aggressive interaction. *International Journal of Social Robotics*, 12(6), 1279–1291. Available from: <https://doi.org/10.1007/s12369-020-00626-z>
- Allaban, A.A., Wang, M. & Padir, T. (2020) A systematic review of robotics research in support of In-home care for older adults. *Information*, 11(2), 75. Available from: <https://doi.org/10.3390/info11020075>
- Arnold, L. (2016) Emobie™: A robot companion for children with anxiety. In: *2016 11th ACM/IEEE International Conference on Human-Robot Interaction (HRI)*. Christchurch, New Zealand: IEEE Institute of Electrical and Electronic Engineers.
- Aryana, B. & Brewster, L. (2020) Design for mobile mental health: Exploring the informed participation approach. *Health Informatics Journal*, 26(2), 1208–1224. Available from: <https://doi.org/10.1177/1460458219873540>
- Blakkarly, J. (2022) *Kmart, Bunnings and the good guys using facial recognition technology in stores*. Sydney, Australia: Choice. Available from: <https://www.choice.com.au/consumers-and-data/data-collection-and-use/how-your-data-is-used/articles/kmart-bunnings-and-the-good-guys-using-facial-recognition-technology-in-store> [Accessed 12th July 2022].
- Botsman, R. (2018) *Who Can you Trust?: How Technology Brought us Together and why it Might Drive us apart*. London, UK: Penguin.
- Carryer, J. (2019) *Letting go of our past to claim our future*. Available from: <https://onlinelibrary.wiley.com/10.1111/jocn.15016>
- Crawford, K. (2021a) Affect. In: *The Atlas of AI*. London, UK: Yale University Press, pp. 151–179. Available from: <https://doi.org/10.2307/j.ctv1ghv45t.8>



- Crawford, K. (2021b) Classification. In: *The Atlas of AI*. London, UK: Yale University Press, pp. 123–149. Available from: <https://doi.org/10.2307/j.ctvlghv45t.7>
- Crawford, K. (2021c) Coda space. In: *The Atlas of AI*. London, UK: Yale University Press, pp. 229–237. Available from: <https://doi.org/10.2307/j.ctvlghv45t.11>
- Crawford, K. (2021d) Conclusion power. In: *The Atlas of AI*. London, UK: Yale University Press, pp. 211–227. Available from: <https://doi.org/10.2307/j.ctvlghv45t.10>
- Dastin, J. (2022) Amazon has a plan to make Alexa mimic anyone's voice. USA: Reuters. Available from: <https://www.reuters.com/technology/amazon-has-plan-make-alexa-mimic-anyones-voice-2022-06-22/> [Accessed 20th January 2023].
- Elias, A. & Paradies, Y. (2021) The costs of institutional racism and its ethical implications for healthcare. *Journal of Bioethical Inquiry*, 18(1), 45–58. Available from: <https://doi.org/10.1007/s11673-020-10073-0>
- Fond, G.B., Lagier, J.-C., Honore, S., Lancon, C., Korchia, T., Verville, P.-L.S.D., et al. (2020). Microbiota-Orientated Treatments for Major Depression and Schizophrenia. *Nutrients*, 12(4), 1024. Available from: <https://doi.org/10.3390/nu12041024>
- GDPR. (2018) *Right to be Forgotten*. Available from: <https://gdpr-info.eu/issues/right-to-be-forgotten/> [Accessed 29th June 2022].
- Gichoya, J.W., Banerjee, I., Bhimireddy, A.R., Burns, J.L., Celi, L.A., Chen, L.-C. et al. (2022) AI recognition of patient race in medical imaging: A modelling study. *The Lancet Digital Health*, 4(6), e406–e414. Available from: [https://doi.org/10.1016/s2589-7500\(22\)00063-2](https://doi.org/10.1016/s2589-7500(22)00063-2)
- Higgins, O., Chalup, S., Short, B. & Wilson, R.L. (2023) Artificial intelligence (AI) and machine learning (ML) based decision support systems in mental health: An integrative review. *International Journal of Mental Health Nursing*.
- Higgins, O., Chalup, S.K. & Wilson, R.L. (2022) *Artificial Intelligence in Nursing: Trustworthy or Reliable? 1st Workshop on Artificial Intelligence in Nursing: Advances, Methods and Path Forward, Halifax, Canada*.
- Higgins, O., Charup, S., Short, B. & Wilson, R.L. (2022) Interpretations of innovation: The intersection of technological advancement and psychosis. *Perspectives in Psychiatric Care*.
- International Council of Nurses. (2012) *The ICN code of ethics for nurses*. Geneva, Switzerland: International Council of Nurses. Available from: [https://www.icn.ch/system/files/2021-10/ICN\\_Code-of-Ethics\\_EN\\_Web\\_0.pdf](https://www.icn.ch/system/files/2021-10/ICN_Code-of-Ethics_EN_Web_0.pdf) [Accessed 20th January 2023].
- Jensen, A., Pedersen, B.D., Bang Olsen, R., Hounsgaard, L. & Wilson, R.L. (2019) Nurses experiences of delivering acute orthopaedic care to patients with dementia. *International Journal of Older People Nursing*, 14(4), e12271. Available from: <https://doi.org/10.1111/opn.12271>
- Kuntsman, A., Miyake, E. & Martin, S. (2019) Re-thinking digital health: Data, appisation and the (im)possibility of 'opting out'. *Digital Health*, 5, 205520761988067. Available from: <https://doi.org/10.1177/2055207619880671>
- Lal, S. (2019) E-mental health: Promising advancements in policy, research, and practice. *Healthcare Management Forum*, 32(2), 56–62. Available from: <https://doi.org/10.1177/0840470418818583>
- Liang, L., Li, C., Meng, C., Guo, X., Lv, J., Fei, J. et al. (2022) Psychological distress and internet addiction following the COVID-19 outbreak: Fear of missing out and boredom proneness as mediators. *Archives of Psychiatric Nursing*, 40, 8–14. Available from: <https://doi.org/10.1016/j.apnu.2022.03.007>
- Marshall, J.M., Dunstan, D.A. & Bartik, W. (2020) Effectiveness of using mental health Mobile apps as digital antidepressants for reducing anxiety and depression: Protocol for a multiple baseline across-individuals design. *JMIR Research Protocols*, 9(7), e17159. Available from: <https://doi.org/10.2196/17159>
- Mirzoeff, N. (2011) *The right to look a Counterhistory of Visuality*. Durham, North Carolina: Duke University Press. Available from: <https://doi.org/10.2307/j.ctvl1vc8rg>
- Moyle, W., Bramble, M., Jones, C. & Murfield, J. (2018) Care staff perceptions of a social robot called Paro and a look-alike plush toy: A descriptive qualitative approach. *Aging & Mental Health*, 22(3), 330–335. Available from: <https://doi.org/10.1080/13607863.2016.1262820>
- Mudallal, R.H., Othman, W.M. & Al Hassan, N.F. (2017) Nurses' burnout: The influence of leader empowering behaviors, work conditions, and demographic traits. *Inquiry*, 54, 46958017724944. Available from: <https://doi.org/10.1177/0046958017724944>
- Rai, A. (2020) Explainable AI: From black box to glass box. *Journal of the Academy of Marketing Science*, 48(1), 137–141. Available from: <https://doi.org/10.1007/s11747-019-00710-5>
- Ruijten, P.A.M. & Cuijpers, R.H. (2020) Do not let the robot get too close: Investigating the shape and size of shared interaction space for two people in a conversation. *Information*, 11(3), 147. Available from: <https://doi.org/10.3390/info11030147>
- Shaikh, S.E. (2020) Interactive and revisable decision-support: Doing more harm than good? *Behaviour & Information Technology*, 41, 845–863. Available from: <https://doi.org/10.1080/0144929x.2020.1837242>
- Siafakas, N. (2022) Do we need a Hippocratic Oath for Artificial Intelligence scientists? *AI Magazine*, 42(4), 57–61. Available from: <https://doi.org/10.1609/aimag.v42i4.15090>
- Smith, M., Dietrich, B.J., Bai, E.-w. & Bockholt, H.J. (2020) Vocal pattern detection of depression among older adults. *International Journal of Mental Health Nursing*, 29(3), 440–449. Available from: <https://doi.org/10.1111/inm.12678>
- Sogaard Neilsen, A. & Wilson, R.L. (2019) Combining e-mental health intervention development with human computer interaction (HCI) design to enhance technology-facilitated recovery for people with depression and/or anxiety conditions: An integrative literature review. *International Journal of Mental Health Nursing*, 28(1), 22–39. Available from: <https://doi.org/10.1111/inm.12527>
- Thompson, C. (2022) *One Weird Trick To Make Humans Think An AI Is "Sentient"*. Medium. Available from: <https://clivethompson.medium.com/one-weird-trick-to-make-humans-think-an-ai-is-sentient-f77fb661e127> [Accessed 29th June 2022].
- Tiku, N. (2022) The Google engineer who thinks the company's AI has come to life. *The Washington Post*. Available from: <https://www.washingtonpost.com/technology/2022/06/11/google-ai-lambda-blake-lemoine/> [Accessed 20th January 2023].
- Wiens, J., Creary, M. & Sjoding, M.W. (2022) AI models in health care are not colour blind and we should not be either. *The Lancet Digital Health*, 4(6), e399–e400. Available from: [https://doi.org/10.1016/s2589-7500\(22\)00092-9](https://doi.org/10.1016/s2589-7500(22)00092-9)
- Wilson, R.L. (2018) The right way for nurses to prescribe, administer and critique digital therapies. *Contemporary Nurse*, 54(4–5), 543–545. Available from: <https://doi.org/10.1080/10376178.2018.1507679>
- Wilson, R.L. (2020) Why nurses need to be at the Centre of new developments in digital technology. *Nurse Researcher*, 28(2), 6–8. Available from: <https://doi.org/10.7748/nr.28.2.6.s2>
- Young, A.T., Amara, D., Bhattacharya, A. & Wei, M.L. (2021) Patient and general public attitudes towards clinical artificial intelligence: A mixed methods systematic review. *The Lancet Digital Health*, 3(9), e599–e611. Available from: [https://doi.org/10.1016/s2589-7500\(21\)00132-1](https://doi.org/10.1016/s2589-7500(21)00132-1)

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