AI-Driven Mental Healthcare and the Ageing Population: A Sociological Inquiry into Isolation and Inequality

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Abstract

As the 2030 deadline for the United Nations Sustainable Development Goals (SDGs) approaches, the integration of Artificial Intelligence (AI) has emerged as a disruptive force in achieving Goal 3: Good Health and Well-being. The present paper represents a sociological analysis of changes being wrought in global mental healthcare by AI-driven technologies, especially the shift from the human-centred, traditional models to the algorithmic, a system in which automated systems increasingly steer diagnostic and therapeutic outcomes. From a sociological perspective with multiple levels, this study assesses the role of AI technology towards democratising psychiatric care for less privileged pockets of society and thereby filling the gap of certified psychiatric practitioners for the greater global population. Along with this, it is also analysing the negative role of digital divides and their possible perpetuation of existing divisions in society. On a macro-social platform, it is analysing how there are biases related to race and class. On a micro-social platform, it is analysing how, because of technology, there is a loss of human control and a creation of a new dependency based on GACs.

Keywords: AI, Sustainable Development Goals (SDGs), Mental Health, Biopower, Digital Colonialism, Sociotechnical Systems, and Global Health Equity, etc.

Introduction

The world's demographics are changing dramatically. By 2024, for the first time in history, according to the World Health Organisation, there were more individuals aged 60 and over than children under age five (WHO, 2024). A striking trend has emerged in this ageing of the population: the rise of the solitary senior. In many developed and developing countries, one-person households have become the modal living arrangement for older adults as life expectancy increases, divorce rates rise in later life, and multigenerational households decline (Frontiers in Public Health, 2024). Living alone often attests to independence and autonomy, yet it often acts as a structural precursor to social isolation and loneliness, which are among the primary drivers of geriatric depression. The scale of the problem needs to be quantified to understand its impact. Within the United States, almost 27% of adults aged 60 and over live alone, a number that compares dramatically with countries in cultural regions such as North Africa or Southern Asia, where approximately 5% or fewer live alone (Pew Research Centre, 2020). But the gap is narrowing. Findings from the 2020 China Health and Retirement Longitudinal Study (CHARLS) indicated that solitude among the elderly in China increased by more than 15% over just one decade, primarily fed by the empty nest syndrome due to the mass rural to urban migration of younger generations (Fang et al., 2024).

The implications of the change in health are dire. The meta-analysis results released in 2023 are clear, social isolation is linked to a 50% higher risk of developing dementia and a 29% higher risk of incident coronary heart disease (Centres for Disease Control and Prevention [CDC], 2023). The presence of these physical co-morbidities, combined with the mental burden of being alone, leads to a chronic condition of depression. The most recent longitudinal evidence from 2022 to 2025 attests to the hazard ratio of depression in older adults living alone being a significantly higher value than those living with others after adjusting for socioeconomic status and baseline health (Wang & Sun, 2025). Social isolation has been viewed not only as a personal condition of unfortunate circumstances, but as a severe issue within modern culture concerning health. Social isolation is the objective condition of having little to no social contact or role, whereas loneliness is defined as the subjective feeling of discontent or distress with regard to one's state of solitude (Luo, 2022). When it comes to seniors living alone, both conditions overlap, forming a double burden for these people. According to a meta-analysis completed by Wang & Sun (2025), those living alone are 1.5 times more likely than others to succumb to depression because they lack daily social buffers, or micro-interactions for emotional regulation.

At a sociological level, this can be explained with the help of the Symbolic Interactionism Theory. This theory implies that an individual's concept of 'self' is produced by social mirrors, which, in turn, are generated by social reinforcements that people get from others around them. If an elderly individual stays by himself, it creates a situation where the social mirror for that individual gets lost. This results in social atrophy, which further leads to the emergence of symptoms of depression. In addition, according to the 'Convoy Model of Social Relations', the social support network, which gets reduced with increasing age due to death and retirement, becomes a significant source, if not a leading source, for the development of a vacant support network for those individuals who are living by themselves, which becomes associated with high levels of psychiatric morbidity (Luo, 2022). Moreover, the Convoy Model of Social Relations proposes that with the ageing of an individual, the convoy of support naturally shrinks with bereavement and retirement. With those alone in life, the lack of replacement support with bereavement creates a void that has a strong correlation to psychiatric morbidity (Luo, 2022). This problem is also exacerbated by the Modernisation Theory of Ageing. A more modern and technical world leads to an erosion of respect in society towards older people. This results in a strong correlation to depressive episodes (Jones & Bartlett, 2023).

The relevance of research in this demographic has also been underscored by the implications emanating from the effects of the COVID-19 pandemic. A survey conducted from 2021 to 2025 has indicated that the enforced isolation the seniors experienced during the two decades of the pandemic greatly impacted persons living alone, resulting in a loneliness epidemic, which continued even after the elimination of physical distancing (Tandfonline, 2025). The purpose of the paper is to examine evidence from the past quarter-century and combine sociological theories to adequately interpret the relationship between living arrangements and mental health.

The Digital Panopticon: Biopower and Algorithmic Governance

The general sociological perspective being applied within this review is one that is informed by Michel Foucault's theory of Biopower: The ways through which institutions wield power in contemporary societies through the regulation of the biological and psychological lives of members (Foucault, 2008). In the present digital age of the latter part of the 21st century, Biopower has evolved to manifest as algorithmic governance.

In the initial period of the new millennium (2000-2010), the surveillance paradigm remained primarily within the realm of static, or chronic, clinical records. Yet the increasing focus on digital phenotyping and passive sensing (2015-2025) has brought this surveillance paradigm into the private realm. Through the application of machine learning to the analysis of honest signals, keyboard latency, GPS trajectories, and speech prosody, algorithmic systems manage to realise a situation of permanent visibility (Torous et al., 2021). In the context of the realisation of the aim 3.4 Achieve universal health coverage, ensuring sustainable funding and fair financial participation, the aim is still well-being, while the sociological truth entails a situation of 'Digital Panopticon' (Karppi, 2018).

Distributed Agency: Actor-Network Theory (ANT)

Complementing the critique of power is Bruno Latour's Actor-Network Theory (ANT), through which social reality is fashioned by networks of human and non-human actants (Latour, 2005). As we move into the era of Generative AI (2021–2025), the AI algorithm has been "enrolled" as a central non-human actant in the therapeutic process.

In an empirical sense, research data shows that a transformation is taking place wherein a classical doctor-patient link is being supplanted by a network spread across the user, interface, cloud system, and large databases for training purposes (Bubeck et. al, 2023). This also disconnects with a straightforward understanding of Accountable (SDG-16). Per ANT, if a crisis is not identified by an AI system, Accountability becomes a diffusion of responsibility throughout a network. This de/re-constituted conception of the social refutes a supplementing role of AI systems within therapy to redefine, rather, a perspective of human empathy.

Sustainable Development: The Capability Approach and Health Equity

To connect this literature with international policy, this framework combines the capability approach and the triple balance of sustainability. The capability approach to development argues for measuring development through Sen's (1984) concept of capabilities, the freedom one truly has to succeed in achieving well-being. This intersects with three pillars of sustainability: Firstly, social sustainability & digital colonialism. Underpinning the critique called data colonialism by Kwet, 2019, this lens considers the ways in which AI could perpetuate injustices of inequality in the world with regard to target 10.1. Datasets derived from a Eurocentric perspective, distributed for use within the Global South, could perpetrate acts of epistemic violence. Secondly, economic sustainability which includes economic productivity of health in which AI mitigated the loss of GDP due to unaddressed morbidity (Prah Ruger et al., 2006). However, for eye care delivery through AI in healthcare in developing countries to be sustainable in its present form, it needs to adopt a health marketing strategy that takes into

account business goals while also factoring in social responsibility (Isabalija et al., 2013), and thirdly, sustainability in the environment; A very important but commonly overlooked consideration (SDG 13) is the carbon footprint of AI. For the use of AI in mental health to be sustainable, it must be a larger benefit to society compared to the greatly increased energy use in the training of 'Large Language Models' (Luukkanen et al., 2024; Richie, 2022).

The Era of Digitalization and Rule-Based Automation (2000–2010)

The history of AI for mental health through the first quarter of the 21st century is more a series of sociotechnical waves than a direct measure of increasing technological accuracy. A wave is a shift of societal, technological, and Sustainable Development Goals orientation towards a definition of mental well-being. Until the early 2000s, the focus was all about shifting from paper-based psychiatry to digital systems. AI during this period consisted primarily of expert systems, basically, rule-based algorithms running on if-then logic to provide computerised cognitive behavioural therapy.

- **Technological focus**: Early programs like Beating the Blues and Fear Fighter were designed to scale therapy without the presence of a clinician (Proudfoot et al., 2004).
- **Data Trends**: Much research focused on feasibility and efficacy relative to face-to-face therapy. The studies showed that, although cCBT diminished symptoms in the mild-to-moderate stages of depression, attrition rates were very high, often greater than 70%, for reasons of lack of human loop engagement.
- **Sociological Critique**: The Internet was Medicalised within this era. Critics noted that such tools reduced the complex social reality of suffering into a series of checkboxes that align with the economic productivity pillar of early sustainable development through getting workers back to the labour force.

The Big Data and Predictive Turn (2011–2020)

The latter half of the 2010s introduced a shift from a Rule-Based System to Machine Learning (ML) and Deep Learning. The 2015 acceptance of the SDGs also renamed technology a global equalizer in health.

- **Technological Emphasis**: The main emphasis shifted towards predictive analytics. Scientists utilised NLP (natural language processing) for searching suicidal thoughts on social websites and digital phenotyping for monitoring mood patterns by the use of smartphones (Torous et al., 2016).
- **Data Trends**: This was a transition phase towards big data, enabling researchers to detect biomarkers with a level of accuracy of more than 80% within a controlled setup. This phase also brought forth the first concrete findings on Algorithmic Bias, wherein Western-trained algorithms were prone to misclassifying disturbance patterns among non-Western communities. This was reported by Guntuku et al. (2017).
- **SDG Alignment**: This wave was aligned with SDG 9: Innovation. Nevertheless, the advent of surveillance capitalism presented a challenge to the alignment with SDG 16 since the data on mental health worldwide became controlled by tech companies.

Generative AI and Synthetic Empathy (2021–2025)

The current wave, which began in response to the COVID-19 pandemic and the emergence of 'Large Language Models', is more focused on Interactive Generation.

- **Technological Focus**: The capabilities of current AI agents such as GPT-4o and clinical LLMs have enabled synthetic empathy, simulating human speech patterns with high degrees of fidelity. The application of this technology also pertains to zero-shot psychiatric evaluation as well as the role of AI agents as therapeutic companions.
- **Data Trends**: From 2023 through 2025, data appeared, revealing that 'Large Language Models' might actually perform better than human general practitioners in empathetic responses (Ayers et al., 2023). But this is also when 'Hallucination Risk,' or dangerously generated advice by AI, entered the scene.
- **Sociological Critique**: We have entered the age of post-human therapy. Now, from an ANT perspective, therapeutic alliance is something that is shared between two entities, one of which is a machine. Access is no longer the issue as envisioned in the SDG goals of achieving the global targets of Sustainable Development Goal 3.4 by 2025; now the issue is integrity, in that we are not displacing the social determinants of health by the band-aid of an algorithm.

Thematic Synthesis: Critical Discussion on Sustainability and Equity

The integration of AI and mental health within the framework of the SDG implies a critical evaluation of whether such technology contributes to actual sustainable development or rather accentuates the existing deficit in global disparities. This section integrates the triple bottom line approach to sustainability, which includes the social, economic, and environmental, with data since the last 25 years. The first tension in the 2015 to 2025 decade is the 'Digital Divide 2.0.' On one hand, the SDGs aim to 'Reduce Inequality' (SDG 10), while on the other hand, the emergence of mental health AI research sometimes reflects the existence of 'Digital Colonialism.' Data collection in LMICs, or low and middle income countries, sometimes does not provide any benefit to the region, and psychological nuances in those regions are reduced to Western standards.

In economic terms, the application of Artificial Intelligence is advertised as providing a solution in reducing the trillion dollar gap in worldwide productivity associated with mental illness problems (Prah Ruger et al., 2006). Nevertheless, on closer sociological analysis, there exists a surveillance paradox. Cost-effectiveness in mental health applications via Artificial Intelligence applications meets SDG 1. Nevertheless, there is emphasis on symptoms rather than the social factors associated with health improvements outlined in SDG 11 – Sustainable Cities and Communities. Through automation of therapies, there is the possibility of deskilling of the healthcare personnel as well. According to data from 2020 to 2025, as global healthcare entrusts more to AI agents, there is a subsequent decline in investment in human social workers, which is the true bedrock of sustainable health (Latour, 2005). Economic sustainability, therefore, should not be reduced to mere cost-cutting measures; a sustainable economy is instead the resilience of the human healthcare structure.

In addition, the algorithmic bias recorded from 2017 to 2025 indicates that the current models of Artificial Intelligence for detecting depression performed poorly among persons speaking non-standard varieties or from collectivist societies in which pain is usually conveyed as bodily, not as emotional, experience (Guntuku et al., 2017). Artificial Intelligence, to attain social sustainability, will have to shift from global models to culturally adaptive AI. The issue that has received the least attention in the AI-MH discussion has got to be the effect on the environment (SDG 13). The move towards Generative AI/Large Language Models in 2023-2025 has brought in a huge energy demand. A single mental health large-scale model's training generates as much CO2 in a lifetime of five cars combined (Richie, 2022).

There is an ironic aspect in using carbon-intensive AI technologies to solve climate anxiety in the most affected regions in terms of environmental degradation. A genuinely green framework needs 'green AI, lightweight and energy-conscious AI models to deliver psychological support without perpetuating the ecological disaster that underlies mental health issues in the first place (Luukkanen et al., 2024).

Conclusion

The AI history in mental health from 2000 to 2025 signals a shift from experimental automation to a digital architecture basis in global well-being. Although AI provides an unmatched means to achieve the SDG 3.4 goal to address the world gap in treating mental illness when AI support is needed most, I conclude that success is determined by a challenge in a critical sociotechnical paradox. While on the one hand, AI represents a scalable actant that democratizes access to care, it also exemplifies the potential to create a Digital Panopticon (Foucault, 2008), in which mental health is governed through surveillance rather than social relations. In order for sustainability to become a reality, the techno-optimism implicit in the SDGs must be coupled with 'Epistemic Justice' (SDG 10), in which there must be a transition from 'Digital Colonialism' (Kwet, 2019), which has a Western focus. Finally, the 'Triple Balance' of sustainability, economic, social, and environmental, requires that AI research remain a tool for human capability and not a substitute for human interaction. Looking forward towards the year 2030, the governance of mental health AI needs to focus on dignity and diversity rather than the simple optimisation of the algorithm.

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