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Review article

Artificial Intelligence in Dementia Caregiving: Opportunities and Challenges for Caregiver Burden and Psychosomatic Well-Being

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Abstract

Caring for individuals with dementia often places a heavy toll on family members and other caregivers, who may struggle with depression, anxiety, disturbed sleep, and even physical exhaustion. Artificial intelligence (AI) is increasingly discussed as a tool that might ease this burden by improving safety, simplifying daily tasks, and offering new forms of emotional support. Technologies such as monitoring systems, predictive analytics, and conversational agents provide caregivers with moments of respite and reduce strain. At the same time, these innovations introduce challenges. Complex interfaces, concerns about privacy and autonomy, and unequal access can generate new stressors and intensify psychosomatic symptoms. This review considers how AI may both help and complicate dementia caregiving, paying particular attention to psychosomatic well-being, implications for nursing and humanistic care, and broader policy debates. We argue that its responsible use requires caregiver-centered design, strong ethical safeguards, and fair distribution so that benefits can be realized without deepening existing vulnerabilities. By framing AI within the traditions of psychosomatic medicine, the review underscores its transformative promise while also drawing attention to the risks it may pose for caregiver health.

Keywords: Dementia; Caregiver burden; artificial intelligence; psychosomatic medicine

Introduction

Dementia is a progressive neurological condition marked by cognitive decline, behavioural change, and increasing dependency on others. While clinical attention has traditionally focused on patients, caregivers—often family members—experience major psychosomatic consequences. These can take the form of sleep disturbances, chronic stress, depression, anxiety, and declines in physical health [1-3]. Such difficulties reveal that caregiving is not only a social role but also a sustained biological and psychological challenge that falls squarely within the field of psychosomatic medicine. As the total number of dementia cases increase worldwide as populations age, the demands placed on caregivers are expected to grow heavier in the coming years [4]. In response, AI technologies are being developed to support dementia care. These range from wearable devices and predictive health analytics to chatbots and robotic companions [5,6]. Yet, while these technologies may relieve some pressures, they also raise concerns about complexity, ethics, and fairness [6]. The purpose of this review is to explore how AI may influence the psychosomatic well-being of dementia caregivers. It

considers both the opportunities that AI offers, such as improved safety and emotional support, and the risks it introduces, including anxiety from technological failure or barriers to access.

Caregiver Burden and Psychosomatic Outcomes

Providing long-term care to a person with dementia is often described as one of the most demanding forms of caregiving. Psychologically, caregivers frequently develop depressive symptoms, heightened anxiety, irritability, or emotional exhaustion [1-3]. Somatic manifestations are also common, including disrupted sleep, persistent fatigue, cardiovascular strain, and musculoskeletal pain [1-3]. Social isolation further compounds these effects, as caregivers often lose opportunities for leisure and struggle to balance employment with caregiving duties [7]. The relationship between caregiving and psychosomatic health is not one-directional. Heavier caregiving responsibilities increase psychosomatic distress, while poor mental or physical health can make caregiving more difficult to sustain. Interventions that lessen daily strain therefore play a central role in improving overall caregiver health.

Role of AI in Dementia Caregiving

AI is being introduced into dementia care in several key areas. Monitoring technologies—such as home sensors, wearable trackers, and predictive systems—can detect wandering, falls, or early signs of health decline [5-6]. These systems lessen the need for constant vigilance and allow caregivers to rest more securely, often improving sleep quality and reducing anxiety. Task-oriented assistance is another important domain. Robotic devices and AI-enabled scheduling tools can remind patients to take medication, support mobility, and organize daily routines [6,8]. By taking over repetitive or physically tiring responsibilities, such technologies reduce caregiver workload and prevent exhaustion. AI is also being used in communication and emotional support. Conversational agents and social robots provide companionship to patients, which indirectly gives caregivers periods of respite [5-6, 9]. Some platforms further offer tailored advice and decision support for caregivers themselves, enhancing confidence in managing complex care needs [10]. Despite these advances, AI carries potential drawbacks. Technologies that are difficult to use may frustrate caregivers already under pressure [5]. False alarms or system failures can heighten anxiety, and concerns about surveillance and data security may contribute to psychosomatic strain. Moreover, unequal access to advanced technologies risks widening health disparities, leaving disadvantaged caregivers without support.

Psychosomatic Implications of AI Use

The psychosomatic consequences of AI use in dementia caregiving are best understood as a balance of relief and risk. On the positive side, AI can ease stress by reducing uncertainty, providing respite, and improving safety. Predictive alerts may reassure caregivers that crises can be anticipated, while the presence of monitoring systems reduces the sense of constant vigilance. Emotional benefits also emerge when patients engage with AI companions, allowing caregivers moments of rest and reducing their feelings of isolation. Yet the introduction of AI may also produce strain. Caregivers who lack the time, training, or confidence to master new technologies may experience frustration or helplessness, which can add to their existing stress [6]. Malfunctions or overly intrusive monitoring can amplify rather than calm anxiety. Worries about data privacy and autonomy further complicate the emotional landscape [11]. Importantly, the unequal availability of AI tools means that their benefits are often limited to those with financial and technological resources, while others may feel left behind [12]. Viewed through a psychosomatic lens, AI in dementia caregiving thus functions as both a potential intervention and a potential stressor. Whether it relieves or exacerbates caregiver burden depends heavily on design, training, accessibility, and the broader social environment in which it is implemented.

Nursing, Humanistic Care, and Policy Implications

AI has clear relevance not only to individual caregivers but also to nursing practice and health policy. Nurses can use AI technologies to streamline administrative tasks, monitor symptoms, provide guidance, and integrate psychosomatic assessments into care routines [13]. From a humanistic perspective, however, technology must remain a complement to rather than a substitute for empathy and interpersonal connection. Policy frameworks will determine whether AI's potential is realized equitably. Equal access across socioeconomic groups is essential, and caregivers need training and educational support to use technologies with confidence. Ethical safeguards are also critical, particularly in protecting caregiver autonomy, patient dignity, and privacy [12]. Integrated care models that combine AI with psychosomatic medicine and community-based services may offer a more sustainable path forward, ensuring that innovations strengthen rather than weaken the human aspects of dementia care.

Conclusion

Artificial intelligence presents both opportunities and challenges in the context of dementia caregiving. When well designed and properly implemented, it has the potential to relieve psychosomatic distress by reducing stress, improving safety, and supporting emotional well-being [8-9]. Caregivers who benefit from monitoring systems or assistive devices may describe improved sleep, less anxiety, and greater confidence in their ability to provide care. These advantages align with the central aims of psychosomatic medicine, which seeks to address health across psychological, physical, and social dimensions. At the same time, poorly designed or inaccessible technologies can produce the opposite effect. Systems that are confusing, unreliable, or invasive may heighten anxiety, provoke frustration, and erode trust. Privacy risks and unequal access further complicate the picture, raising the possibility that AI could deepen rather than reduce psychosomatic burden [11-12]. The future of AI in dementia caregiving therefore requires a cautious, balanced approach. Research should investigate long-term effects on caregiver health, with particular attention to psychosomatic outcomes. Clinical practice should adopt caregiver-

centred design and provide training that enables caregivers to use AI effectively. Policymakers must establish safeguards that guarantee equitable access and ethical implementation, ensuring that technology contributes to human dignity rather than undermines it. In sum, AI in dementia caregiving should be viewed not as a simple solution but as a complex intervention whose value lies in how it is designed, delivered, and supported. Its integration must be deliberate, guided by humanistic principles and psychosomatic insights, so that technological progress truly lightens the caregiver's load rather than adding to it.

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Conflict of Interest

No conflict of interest.

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