ISSN: 2583-9888
DOI: doi.org/10.51219/JAIMLD/light-nwokocha/616

URF PUBLISHERS
connect with research world

Journal of Artificial Intelligence, Machine Learning and Data Science

https://urfpublishers.com/journal/artificial-intelligence

Vol: 3 & Iss: 4

Research Article

Human-Centered Artificial Intelligence in Social Care: A Framework for Ethical and Secure Transformation

Light Nwokocha*

Citation: Nwokocha L. Human-Centered Artificial Intelligence in Social Care: A Framework for Ethical and Secure Transformation. *J Artif Intell Mach Learn & Data Sci 2025* 3(4), 2968-2970. DOI: doi.org/10.51219/JAIMLD/light-nwokocha/616

Received: 19 October, 2025; **Accepted:** 29 October, 2024; **Published:** 31 October, 2025

***Corresponding author:** Light Nwokocha, MSc Founder and CEO, CAREi, Cybersecurity and Digital Health Innovator, Aberdeen, UK

ABSTRACT

Artificial Intelligence (AI) has become a defining force in modern healthcare transformation, yet its impact on social care remains uneven. While most digital innovation targets hospital management or clinical diagnostics, the everyday environments of domiciliary and residential care are still dominated by manual processes and fragmented information systems. This paper presents a conceptual framework for Human-Centered AI in Social Care (HCAI-SC), integrating ethical design, data security and carer empowerment. Drawing upon current NHS guidelines, the European Commission's ethics principles for trustworthy AI and real-world workforce data, the framework proposes that AI should not only improve efficiency but also preserve the dignity, agency and wellbeing of carers and the people they support. The study concludes that a successful transition to AI-enhanced care depends on systems designed with, rather than for, those on the frontline.

Keywords: Artificial Intelligence in Healthcare, Human-Centered Design, Carer Empowerment, Digital Health Innovation, Ethical AI, Data Governance, Trustworthy Technology

1. Introduction

The potential of artificial intelligence to transform healthcare is widely acknowledged, yet its benefits have often bypassed frontline carers. The sector continues to face persistent challenges such as high staff turnover, rising compliance demands and increasing patient complexity. According to Skills for Care[1], over 35 percent of care staff leave their roles annually, largely due to administrative overload and emotional fatigue.

Despite significant investment in hospital and clinical digitalization, social care systems remain heavily dependent on paper records, isolated databases and manual reporting. This gap has left carers burdened by documentation that detracts from the human connection central to care work. AI, when developed through human-centered design principles, offers a pathway to restore balance between technology and empathy. The purpose of this article is to explore how ethical and secure AI can improve communication, reduce errors and strengthen continuity of care, while maintaining trust and preserving carer dignity. It proposes a conceptual framework for developing AI tools that align with ethical, regulatory and emotional realities in social care practice.

2. Background and Literature Review

AI in healthcare has primarily focused on clinical efficiency, diagnostics and operational optimization. Studies by the World Health Organization[2] and the European Commission[3] have

emphasized the need for ethics, transparency and inclusiveness in AI systems, yet implementation in social care has lagged behind. Unlike hospitals, care agencies operate within diverse and decentralized structures. Carers often work independently across homes and shifts, leading to information gaps that compromise safety and continuity. The Care Quality Commission[4] notes that communication failures remain a leading contributor to medication errors, which cost the UK healthcare system approximately £98 million annually. Traditional electronic care systems, while digitized, frequently replicate the inefficiencies of paper forms. Few are built with true user-centered design, resulting in systems that complicate rather than simplify care delivery. Research increasingly supports a shift toward participatory development, where carers actively co-create tools that reflect their cognitive, linguistic and emotional needs. Cybersecurity and data protection are also critical dimensions.

Compliance with GDPR, ISO 27001 and NHS Data Security and Protection Toolkit standards ensures that sensitive health information is handled responsibly. Secure data governance not only protects service users but also reinforces carer trust in technology[5].

3. Ethical Considerations and Design Principles

The ethical design of AI in social care must move beyond compliance to embrace moral accountability and human empathy. Three core principles underpin the HCAI-SC framework: Dignity and Human Agency, Transparency and Explainability and Privacy and Data Sovereignty. Technology must enhance, not diminish, the autonomy of carers and the dignity of service users. Systems should provide carers with contextual insights rather than automated directives, supporting professional judgment while avoiding surveillance-based management models. AI decisions often influence medication, behavioural monitoring and risk assessments. Algorithms should therefore be interpretable, allowing carers to understand and challenge recommendations.

Respecting privacy requires embedding security principles directly into design. Data minimization, anonymization and clear consent mechanisms protect both carers and service users. Trust is earned not by promising security, but by demonstrating it through verifiable governance.

4. Methodology and Conceptual Development

This paper employs a qualitative conceptual analysis, synthesizing insights from academic literature, regulatory frameworks and practitioner feedback. The proposed model was developed through three stages: Literature Integration, Sector Analysis and Framework Synthesis. This methodology allows a holistic understanding of how technological, ethical and human dimensions interact in the social care context.

5. Discussion

AI in care is not only a technological transformation but also a cultural one. Frontline carers often express concern that technology will replace empathy with efficiency. To counter this perception, AI must be framed as an enabler of human potential. By automating documentation through natural language processing, summarizing shift handovers or analyzing wellbeing patterns, AI can return valuable time to carers. More importantly, predictive insights can identify early risks such as missed medication or fatigue, supporting both patient safety and staff wellbeing. Human-centered AI redefines success metrics from speed and cost to trust and continuity. The sector must evolve from viewing carers as data input operators to recognizing them as co-designers of innovation. Ethical AI systems should therefore be evaluated not only by performance indicators but by qualitative outcomes such as satisfaction, reduced burnout and enhanced compassion in practice.

6. Conclusion

Artificial intelligence offers a profound opportunity to reimagine care, but its value depends on how it is implemented. This article has argued that dignity, empathy and trust form the moral infrastructure of successful care technology. The Human-Centered AI in Social Care (HCAI-SC) framework integrates ethical principles, user experience and secure governance to guide future system development. By designing technology that respects human agency and data integrity, social care can evolve into a digitally mature, emotionally intelligent ecosystem. The future of care will not be determined by the sophistication of algorithms but by the sincerity of intention behind them. To build technology that truly cares, we must first design for the people who do.

7. Conceptual Framework Description

The Human-Centered AI Framework for Social Care (HCAI-SC) consists of four interdependent domains: Ethical AI Principles, Carer Experience, Secure Data Governance and Continuity of Care Outcomes. These domains operate as a continuous feedback cycle where ethical design builds trust, trust enhances adoption, adoption yields quality outcomes and outcomes reinforce ethical integrity. This figure can be represented as a schematic diagram showing these four domains in a circular, interconnected layout with arrows indicating the feedback loop **(Figure 1)**.

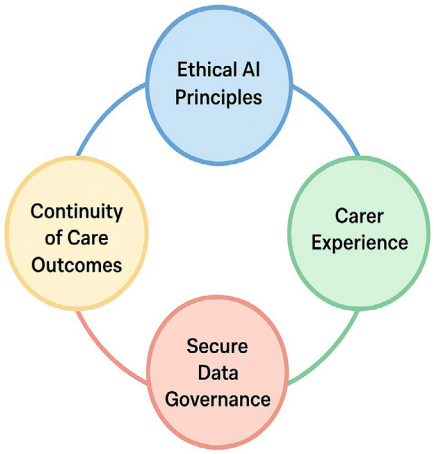

Figure 1: Human-Centred AI Framework for Social Care.

8. Ethical Statement

This work presents a conceptual model and does not involve human subjects or data collection. Ethical approval was not required.

9. Funding Statement

No funding was received for this work. The framework forms part of the author's independent research on ethical AI and digital care systems.

10. Conflict of Interest

The author declares no conflict of interest. CAREi is referenced as a conceptual platform under development and not a commercial product at the time of publication.

11. References

1. Skills for Care. The State of the Adult Social Care Sector and Workforce in England, 2023.
2. World Health Organization (WHO). Ethics and Governance of Artificial Intelligence for Health, 2021.
3. European Commission. Ethics Guidelines for Trustworthy AI. High-Level Expert Group on Artificial Intelligence, 2019.
4. Care Quality Commission (CQC). What Good Looks Like for Digital Social Care. CQC Digital Guidance Series, 2022.
5. NHS Digital. Data Security and Protection Toolkit: Implementation Guidance. NHS England, 2023.
6. NHS Patient Safety Review. Learning from Medication Errors in Social Care: A Systems Perspective, 2021.
7. Torraco RJ. Writing integrative literature reviews: Using the past and present to explore the future. Human Resource Development Review, 2016;15(4): 404-428.
8. Wright D, Friedewald M. Geneva: WHO. Integrating privacy by design into health technology innovation. Journal of Ethics in Information Technology, 2020;22(3): 185-198.