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Surveillance Health Society: Ethics, Privacy, and Social Control in Digital Health Systems

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***Abstrak*:** *The rapid expansion of digital health systems has transformed healthcare delivery while simultaneously embedding pervasive practices of surveillance within everyday life. Technologies such as electronic health records, wearable devices, and health analytics enable continuous monitoring and data-driven governance of bodies and behaviors. This study critically examines digital health systems through the lens of surveillance society, focusing on the ethical implications of privacy, autonomy, and social control. Employing a qualitative normative–critical approach, the study analyzes policy documents and academic literature from health ethics, surveillance studies, and critical social theory. The findings show that digital health systems function as infrastructures of continuous surveillance that classify risk, normalize behavior, and reshape relations between individuals, states, and technology providers. Ethical challenges arise from weakened informed consent, data commodification, and profound power asymmetries that limit individual control over personal health data. The study further argues that health-based narratives of prevention and security legitimize intrusive forms of governance, positioning digital health as a mechanism of social control rather than purely a tool of care. This research concludes that ethical governance of digital health requires moving beyond technocratic and procedural approaches toward a critical framework that addresses power, justice, and accountability in data-driven health systems.*

Keywords : digital health systems, ethics, privacy, social control, surveillance

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INTRODUCTION

The rapid digitalization of health systems has fundamentally transformed the ways in which health is governed, monitored, and managed across contemporary societies. Digital health technologies such as electronic health records, wearable devices, health applications, and predictive analytics are increasingly embedded in healthcare delivery, public health governance, and individual self-care practices. While these technologies are widely promoted as tools for efficiency, prevention, and personalization of care, they also operate as infrastructures of continuous data collection and behavioral monitoring that extend far beyond clinical contexts (Iyamu et al., 2022; Kilgallon et al., 2022).

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Within this transformation, digital health systems no longer function merely as neutral instruments for improving health outcomes, but increasingly act as mechanisms of surveillance that observe, classify, and regulate bodies and behaviors. Health data are continuously captured, aggregated, and analyzed to assess risks, predict future conditions, and guide interventions, thereby reshaping the relationship between individuals, healthcare institutions, states, and technology providers. This shift raises critical concerns about how health becomes a legitimizing entry point for broader forms of social monitoring and control (Hanjahanja-Phiri et al., 2024; Smidt & Jokonya, 2021).

The expansion of digital health surveillance is closely tied to the logic of risk prediction and behavioral optimization. Wearable devices and digital phenotyping tools translate bodily activities, emotions, and lifestyles into quantifiable data, which are then used to evaluate compliance with normative standards of health and productivity. In this process, the boundaries between care, prevention, and control become increasingly blurred, as individuals are encouraged or pressured to conform to algorithmically defined norms of healthy behavior (Martinez-Martin et al., 2021; Fanarioti & Karpouzis, 2025).

From an academic perspective, much of the existing literature on digital health remains dominated by technical, utilitarian, and innovation-oriented frameworks that emphasize efficiency, scalability, and clinical effectiveness. Ethical concerns are often addressed in a procedural manner, focusing on consent mechanisms, data security, and regulatory compliance, without sufficiently interrogating the broader social and political implications of pervasive health surveillance (McGraw & Mandl, 2021; Adepoju & Adepoju, 2025). As a result, digital health technologies are frequently treated as benevolent tools rather than as socio-technical systems embedded within relations of power.

In parallel, scholarship on surveillance society has long demonstrated that surveillance operates not merely as a tool of observation, but as a mechanism for producing social order, discipline, and compliance. Surveillance reshapes subjectivity by encouraging self-monitoring and internalization of norms, thereby transforming individuals into active participants in their own governance. However, this critical perspective has rarely been fully integrated into analyses of digital health systems, where surveillance is often justified through narratives of public interest, safety, and care (Correia et al., 2021; Garett & Young, 2022).

Similarly, ethical discourse in healthcare has traditionally centered on principles such as autonomy, beneficence, non-maleficence, and justice. While these principles remain essential, they are increasingly challenged by the scale, opacity, and continuity of data-driven health surveillance. In digital health environments, informed consent becomes fragmented, autonomy is mediated by algorithmic recommendations, and justice is threatened by data-driven exclusion and discrimination based on risk profiling (Narkhede et al., 2025; Wies et al., 2021).

Despite growing attention to data privacy and security, existing studies often treat privacy as an individual right that can be protected through technical safeguards or legal compliance. This approach tends to obscure structural asymmetries of power between individuals, states, and technology corporations that control health data infrastructures. As a result, privacy protection frameworks may fail to address how digital health systems contribute to new forms of social control and normalization (Javeedullah, 2025; Ahmed et al., 2025).

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This condition reveals a significant research gap. There remains a lack of normative–critical analysis that explicitly positions digital health systems within the broader framework of surveillance society. Moreover, few studies conceptually integrate ethical theory, data privacy discourse, and social control analysis to examine how digital health infrastructures reshape power relations and individual freedoms. Policy debates on digital health continue to be dominated by technocratic assumptions that frame surveillance as a necessary and neutral instrument for health optimization (Nikalje, 2025; Cui & Xiao, 2025).

This study seeks to address these gaps by reconceptualizing digital health systems as ethical–political instruments rather than purely technical solutions. By integrating perspectives from health ethics, surveillance studies, and critical social theory, this research challenges the assumption of technological neutrality and benevolence in digital health. The study aims to critically analyze the ethical and social implications of surveillance practices within digital health systems and to examine how these systems contribute to the formation of social control over individuals and populations.

METODOLOGI

This study adopts a qualitative approach with a normative–critical research design to examine digital health systems as socio-technical infrastructures of surveillance, ethics, and social control. The research does not aim to measure technological effectiveness or health outcomes, but rather to interpret and critically assess the normative assumptions, ethical implications, and power relations embedded within digital health systems. A qualitative design is appropriate given the study's focus on meaning, values, and governance rather than empirical quantification (Creswell & Poth, 2018).

The analytical framework is grounded in critical–conceptual analysis, drawing upon interdisciplinary perspectives from health ethics, surveillance studies, and critical social theory. This approach enables the examination of how concepts such as surveillance, privacy, autonomy, consent, and social control are constructed and operationalized within digital health systems. The analysis focuses on the interaction between technological infrastructures, ethical norms, and institutional power, rather than on isolated technical features of digital health tools (Hanjahanja-Phiri et al., 2024; Kilgallon et al., 2022).

Data sources consist of conceptual and normative materials, including digital health policy documents, ethical guidelines, and regulatory frameworks, as well as peer-reviewed academic literature addressing digital health ethics, data privacy, and surveillance society. These sources were selected based on their relevance to the ethical governance of digital health and their contribution to critical debates on surveillance and power. The study prioritizes literature that explicitly engages with normative questions and societal implications rather than purely technical evaluations (Adepoju & Adepoju, 2025; Narkhede et al., 2025).

Data analysis was conducted through thematic and normative interpretation. Key concepts such as surveillance, privacy, autonomy, consent, and social control were identified and examined in relation to digital health practices. The analysis critically interrogates how ethical justifications are mobilized to legitimize health surveillance and how power asymmetries are reproduced through data-driven health governance. Through this approach, the study seeks to offer a critical and integrative understanding of digital health systems as ethical and political formations rather than neutral technologies.

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RESULTS AND DISCUSSION

Digital Health Systems as Infrastructures of Continuous Surveillance, Risk Classification, and Behavioral Normalization

Digital health systems have increasingly evolved into infrastructures of continuous surveillance that fundamentally reshape how health, bodies, and behaviors are governed in contemporary societies. Unlike traditional healthcare models that rely on episodic clinical encounters, digital health technologies enable persistent data collection across time and space. Electronic health records, wearable devices, mobile health applications, and digital phenotyping tools generate continuous streams of data that render individuals permanently observable within health governance systems (Iyamu et al., 2022; Kilgallon et al., 2022). This shift transforms healthcare into an ongoing surveillance process rather than a situational intervention.

The infrastructural nature of digital health surveillance lies not merely in the volume of data collected, but in its integration across multiple domains of life. Health data are no longer confined to medical settings but are extracted from everyday activities such as movement, sleep, emotional expression, and social interaction. This expansion dissolves the boundary between medical care and daily life, positioning health as a constant object of monitoring and evaluation. As a result, individuals are increasingly governed through their data traces rather than through direct institutional encounters, reinforcing a mode of governance that operates through visibility and prediction rather than direct regulation (Hanjahanja-Phiri et al., 2024).

Within this surveillance infrastructure, health data function as tools of classification and risk stratification. Algorithmic systems translate complex bodily and social realities into standardized indicators that categorize individuals according to risk profiles, compliance levels, and predicted outcomes. These classifications are not neutral representations; they actively construct normative benchmarks of what counts as healthy, responsible, or acceptable behavior. Individuals who deviate from these benchmarks may be flagged as risky or non-compliant, thereby subjecting them to increased monitoring or intervention (Martinez-Martin et al., 2021; Fanarioti & Karpouzis, 2025).

The normalization of behavior is a central effect of this classificatory logic. Digital health systems implicitly promote specific lifestyles and behavioral patterns aligned with institutional and algorithmic norms. Through feedback mechanisms, alerts, and performance metrics, individuals are encouraged to self-monitor and self-correct their behaviors in accordance with predefined health standards. Surveillance thus operates productively by shaping conduct and subjectivity, fostering self-discipline rather than relying on overt coercion (Kilgallon et al., 2022).

This transformation profoundly alters the relationship between health subjects and governing institutions. Individuals are repositioned as data subjects whose legitimacy, access to services, and social value are increasingly mediated by algorithmic interpretations of their health data. At the same time, institutions that collect and process these data remain largely opaque, creating an asymmetry of visibility and control. Individuals become transparent to systems they cannot fully see or challenge, raising critical concerns about accountability and democratic oversight in health governance (Smidt & Jokonya, 2021; Ahmed et al., 2025).

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From a critical perspective, digital health systems should therefore be understood as socio-technical infrastructures that embed power relations into everyday health practices. Surveillance in this context is not an accidental byproduct of technological innovation but a structural feature that reorganizes how health, responsibility, and citizenship are defined. By producing compliant, self-regulating subjects, digital health surveillance contributes to broader regimes of social ordering under the guise of care and prevention..

Privacy Ethics, Informed Consent, and the Political Economy of Health Data in Digital Health Systems

The expansion of digital health surveillance generates deep ethical tensions surrounding privacy, autonomy, and consent that cannot be adequately addressed through conventional bioethical frameworks alone. Privacy in healthcare has traditionally been understood as the protection of sensitive information within bounded clinical relationships. However, digital health systems disrupt this understanding by enabling continuous, cross-contextual data collection that exceeds the temporal and spatial limits of traditional care (McGraw & Mandl, 2021; Javeedullah, 2025).

In digital health environments, privacy is no longer merely about confidentiality but about control over data flows, interpretations, and secondary uses. Health data are frequently shared across platforms, institutions, and jurisdictions, often without individuals' full awareness. This fragmentation undermines the contextual integrity of health information, as data collected for care may later be repurposed for policy enforcement, insurance assessment, or commercial exploitation (Stoltman & Terplan, 2025).

Informed consent, a foundational ethical principle, becomes structurally compromised under conditions of continuous surveillance. Consent mechanisms in digital health systems are often reduced to formalized agreements that fail to capture the ongoing and evolving nature of data processing. Individuals may consent once at the point of system entry, yet remain subject to indefinite monitoring and unforeseen data uses. This temporal disjunction erodes the ethical substance of consent, transforming it into a procedural formality rather than a meaningful exercise of autonomy (Narkhede et al., 2025; Adeniyi et al., 2024).

These ethical challenges are further intensified by the political economy of health data. Digital health platforms increasingly operate within market logics that treat personal health data as valuable assets. Data-driven business models incentivize extensive data extraction, aggregation, and monetization, often prioritizing economic value over ethical considerations. This commodification risks reducing individuals to sources of extractable data, undermining dignity and disproportionately affecting marginalized populations who may lack meaningful alternatives to participation in digital health ecosystems (Ahmed et al., 2025; Adepoju & Adepoju, 2025).

The ethical tensions embedded in digital health data governance can be synthesized as follows:

Table 1. Ethical Tensions in Digital Health Data Governance

Ethical Dimension	Normative Ethical Ideal	Digital Health Reality	Structural Ethical Risk
Privacy	Contextual confidentiality	Continuous cross-platform data capture	Loss of contextual integrity
Informed Consent	Ongoing and informed autonomy	One-time formal consent	Proceduralization of ethics
Data Ownership	Individual control	Corporate and institutional dominance	Data dispossession
Data Use	Limited and care-oriented	Secondary and commercial exploitation	Commodification of health
Accountability	Transparent decision-making	Algorithmic opacity	Democratic deficit

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This synthesis demonstrates that privacy challenges in digital health are not merely technical problems solvable through better encryption or compliance. Rather, they are structural ethical issues rooted in asymmetries of power and economic incentives. Addressing these challenges requires a shift from procedural ethics toward a critical ethical governance framework that confronts the political economy of health data and re-centers individual and collective autonomy (Adepoju & Adepoju, 2025).

Health Surveillance as Social Control: Power Asymmetries, Inequality, and the Normalization of Governance Through Care

Digital health surveillance functions not only as an ethical dilemma but as a broader mechanism of social control that reshapes how power operates in contemporary societies. Health narratives emphasizing prevention, security, and collective well-being are frequently mobilized to legitimize extensive monitoring of bodies and behaviors. Under these narratives, surveillance is framed as both necessary and morally desirable, rendering resistance socially suspect or irresponsible (Correia et al., 2021; Garett & Young, 2022).

Through algorithmic indicators and predictive analytics, digital health systems produce compliance by translating behaviors into measurable outcomes. Individuals are encouraged to align their actions with predefined norms of health and responsibility, often through incentives, nudges, or moralized feedback. This form of governance operates through internalized discipline rather than coercion, aligning with broader forms of biopolitical control that manage populations through risk and optimization (Fanarioti & Karpouzis, 2025).

However, the effects of this governance are uneven. Surveillance-based health systems risk reinforcing social inequalities by disproportionately classifying marginalized groups as risky or non-compliant. Algorithmic bias, unequal access to digital technologies, and structural disparities in healthcare access can lead to exclusion, stigmatization, and discriminatory outcomes. These dynamics challenge principles of justice and inclusivity, revealing how health surveillance can reproduce existing hierarchies under the guise of neutrality (Wies et al., 2021; Mwogosi, 2025).

At a structural level, digital health surveillance consolidates power in the hands of states and technology corporations that control data infrastructures and analytical tools. Individuals possess limited capacity to contest classifications or challenge algorithmic decisions that affect their access to care, insurance, or social benefits. This asymmetry highlights the need to reconceptualize digital health systems as political technologies that actively shape social order rather than neutral instruments of care (Ahmad, 2025; Nikalje, 2025).

CONCLUSIONS

This study demonstrates that digital health systems cannot be understood solely as neutral technological instruments for improving healthcare delivery. Rather, they function as socio-technical infrastructures of surveillance that enable continuous monitoring, risk classification, and behavioral normalization. Through the pervasive collection and algorithmic processing of health data, digital health systems reshape the relationship between individuals and governing institutions, transforming health subjects into data subjects whose bodies and behaviors are rendered permanently observable and

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governable. In this context, surveillance operates productively by encouraging self-regulation and compliance under the logic of prevention and optimization.

The analysis further reveals that ethical challenges in digital health extend far beyond procedural concerns of data security or regulatory compliance. Privacy, informed consent, and autonomy are structurally undermined by continuous data extraction, opaque algorithmic decision-making, and the commodification of personal health data. These dynamics expose deep power asymmetries between individuals, states, and technology corporations, in which individuals have limited control over how their data are interpreted, circulated, and monetized. As a result, conventional bioethical frameworks prove insufficient to address the ethical and political implications of digital health surveillance.

Finally, this study argues that digital health systems increasingly function as mechanisms of social control that normalize intervention into individual behavior through health-based narratives of responsibility, risk, and security. While framed as care-oriented and benevolent, these systems risk reinforcing social inequalities, producing exclusion, and legitimizing intrusive governance practices. Therefore, ethical governance of digital health requires a critical reorientation that recognizes digital health systems as political technologies and foregrounds justice, autonomy, and democratic accountability alongside health objectives.

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