

Strategies for Person-Centred AI Integration: A Study Protocol

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Abstract

Background: The integration of Artificial Intelligence in healthcare is transforming care delivery. While Artificial Intelligence offers efficiency and precision, it also raises ethical concerns about the potential for dehumanization. Maintaining person-centred care, with its emphasis on human dignity, empathy, and relationships, becomes essential in this evolving context. This study aims to identify practical strategies that can help ensure the humanization of care is not compromised amid the ongoing technological transformation. **Methods:** A qualitative study will be conducted with healthcare professionals, managers, and Artificial Intelligence experts. Participants will be recruited through purposive sampling and invited via digital platforms and academic networks. Semi-structured interviews will be held online, guided by five dimensions of a Person-Centred Practice Framework. Interviews will be audio-recorded, transcribed, and thematically analysed using Braun and Clarke's method, supported by QDA Miner Lite. **Conclusion:** By examining diverse perspectives, this study aims to identify strategies for upholding person-centred care in Artificial Intelligence -driven contexts. The findings can support the implementation of ethically responsible Artificial Intelligence that reinforces, rather than diminishes the human aspects of care.

Keywords

person-centred care, person-centred practice framework, artificial intelligence, humanization of healthcare

Introduction

In recent decades, healthcare systems worldwide have witnessed an unprecedented rise in the integration of technology across virtually every aspect of care delivery (European Union, 2024; Sinha, 2024). From electronic health records

and telemedicine to advanced imaging and automated monitoring devices, technology has increasingly become essential to enhance clinical efficiency, improve diagnostic accuracy, and optimize resource allocation (Alowais et al., 2023; Krishnan et al., 2023). This transformation has not only

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affected operational workflows. It has begun to shape the interactions between healthcare professionals and service users, particularly in the up-and-coming context of artificial intelligence (AI).

Artificial Intelligence in Healthcare

The rapid development of AI has introduced a new dimension to this technological revolution (Alowais et al., 2023). AI, broadly defined as computer systems capable of performing tasks that traditionally require human intelligence, such as learning, reasoning, problem-solving, and natural language processing, hold immense promise for healthcare (Davenport & Kalakota, 2019). AI applications now span a wide range of functions, including predictive analytics to forecast patient outcomes (e.g., Confluent.io [Confluent, Inc., USA]), decision support to aid clinical reasoning, (e.g., FullScript [Fullscript, Inc., Canada]), image recognition for radiology and pathology (e.g., CellCarta [CellCarta, Inc., Canada]), and even conversational agents capable of interacting with patients (Alowais et al., 2023). The acceleration of AI development, driven by

advances in machine learning, “big data” and computational power, signals that the integration of AI into healthcare will likely deepen and become more pervasive in the near future.

However, there is growing awareness of the profound ethical, relational, and practical challenges of integrating AI into healthcare (Alowais et al., 2023; Mennella et al., 2024; Topol, 2019). Among these, one of the most significant concerns is the risk of dehumanizing healthcare by reducing rich human experiences and patient-provider relationships to mere data points and algorithmic outputs. The prospect of technology mediating or even replacing human interaction raises critical questions about preserving empathy, dignity, and trust in healthcare settings.

In parallel with these technological advances, there has been a sustained movement in healthcare research and practice emphasizing the need to foster more humanized and responsive models of care. Central to this evolution is the growing consensus around the imperative for a person-centred approach to healthcare (Berntsen et al., 2022; Organisation for Economic Co-operation and Development, 2021). This philosophy of care extends beyond personalization, which often

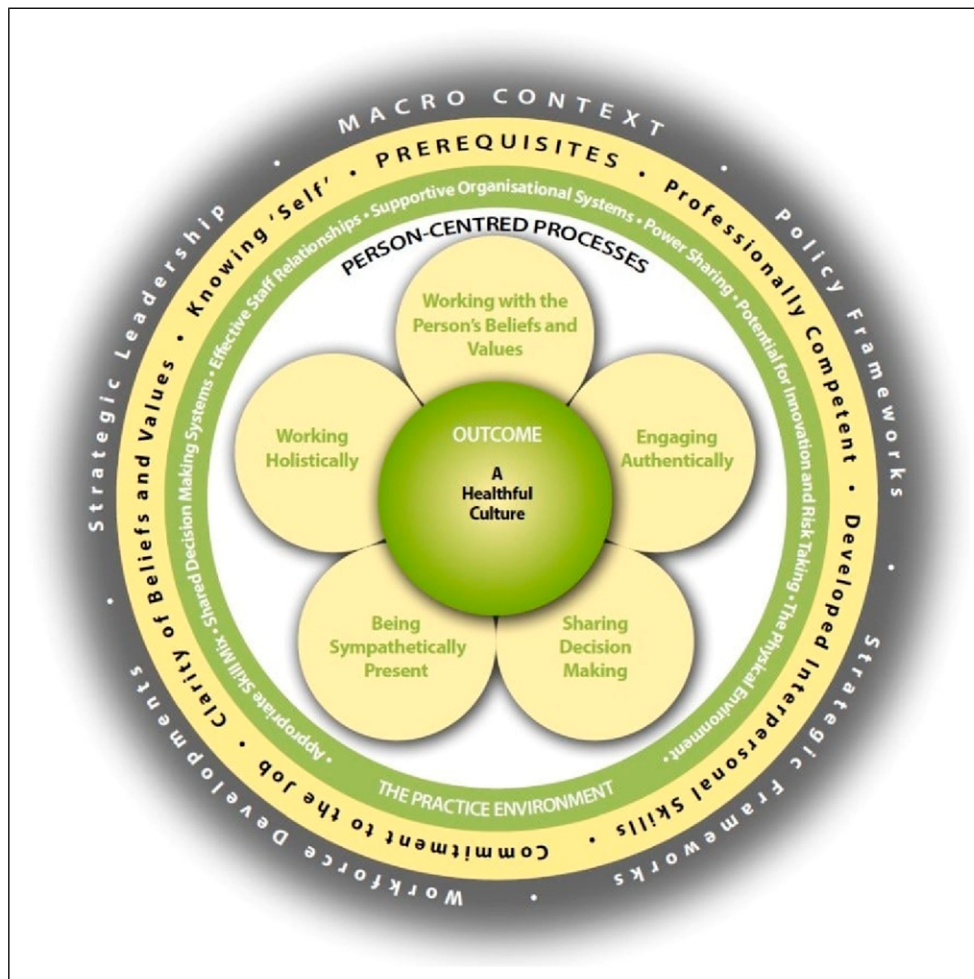


Figure 1. Person-Centred Practice Framework (McCance & McCormack, 2021)

refers to tailoring interventions based on individual clinical profiles. Person-centred care, by contrast, emphasizes the holistic experience of the person as a whole being—physically, emotionally, socially, and spiritually—embedded within broader relational, cultural, and structural contexts. It prioritizes the individual's values, preferences, autonomy, and experiences, positioning them as active partners in the care process rather than passive recipients of services (McCance & McCormack, 2021).

Person-Centred Practice Framework

Among the most influential theoretical frameworks developed to guide the understanding and operationalization of this philosophy is the Person-Centred Practice Framework (Figure 1) developed by McCance and McCormack (2021). Synthesizing both theoretical foundations and empirical insights, this framework offers a structured lens for examining how person-centred care can be enacted in practice. It identifies five interrelated domains that must be aligned to support person-centredness in healthcare environments.

The outer domain is the broad macro context that determines the development of person-centred cultures, including strategic and political factors (McCance & McCormack, 2021).

Sequentially the domain Prerequisites refers to the attributes that healthcare professionals bring into their practice. These include knowing-self, professionally competent, clarity of beliefs and values, developed interpersonal skills and commitment to the job. This domain underscores the importance of the caregiver as a moral agent whose values and reflective capacities influence the quality of relational engagement (McCance & McCormack, 2021).

The Practice Environment pertains to the organizational, structural, and cultural conditions within which care is delivered. The complexity of the practice contexts is evidenced through appropriate skill mix, shared decision-making systems, effective staff relationships, power sharing, supportive leadership, potential for innovation and risk taking and the physical environment constructs. It plays a crucial role in shaping how Person-Centred Practice is operationalized, as it can either hinder or facilitate its development (McCance & McCormack, 2021).

The Person-Centred Processes domain encompasses the specific relational and ethical activities through which person-centred care is practiced. These include engaging authentically, working holistically, sharing decision making, working with person's beliefs and values and being sympathetically present. These processes place emphasis on relational depth, empathy, and mutual respect, ensuring that care decisions are made with, not for, the person (McCance & McCormack, 2021). Finally, the Outcome, addresses the effects of person-centred care. When the prerequisites, care environment, and processes align effectively, a healthful culture that enables human flourishing, maximizes staff potential and potentiates

collaborative relationships can be achieved (McCance & McCormack, 2021).

Barriers to Person-Centred Care

Since its development (McCormack & McCance, 2006, 2010, 2017), the Person-Centred Practice Framework has been applied across a variety of care settings and has served as a valuable guide for understanding, implementing and monitoring person-centred practice (Andersson et al., 2023; Fernandes et al., 2022; Jobe et al., 2020; Slater et al., 2015). It offers a comprehensive structure that informs practice development and supports ongoing research (McCormack et al., 2021). However, despite the broad recognition of the importance of person-centred principles, their consistent and meaningful application in daily practice remains challenging (Kiwunika et al., 2019; Lloyd et al., 2018; Vennedey et al., 2020). Person-centred care often emerges in isolated moments rather than as a sustained, systemic approach (McCormack, 2019). Its implementation can be influenced by various factors, including the values, competencies, and motivation of individual practitioners, as well as broader organizational dynamics such as time constraints, workload, and institutional priorities (Vareta et al., 2025).

Moreover, with the continued advancement of technologies, particularly robotics and AI, there is an increasing risk that the already fragile commitment to person-centred care may be further undermined (Dyb et al., 2021). The shift toward automation, efficiency-driven algorithms, and depersonalized communication platforms can easily erode the space needed for human connection. While digital tools can support aspects of care delivery, their integration must be critically examined to ensure that they do not inadvertently displace the relational core of caring or reduce the person to a data object within a clinical pathway (Akingbola et al., 2024; Hazarika, 2020; Mennella et al., 2024).

The rapid pace of AI development makes these concerns urgent. Unlike previous waves of technological innovation, AI systems possess adaptive learning capabilities, can analyse complex patterns, and increasingly operate autonomously (Holzinger et al., 2025; Soori et al., 2023). These characteristics amplify the risk that care might become more impersonal if ethical frameworks and human-centred design principles are not embedded from the outset (European Parliamentary Research Service, 2022; Mennella et al., 2024). Furthermore, the nature of AI development can create gaps in understanding the nuanced, relational healthcare aspects central to person-centredness.

Bridging the Gap

There is a critical need to bridge expertise from healthcare and AI/informatics to develop strategies that ensure AI integration supports rather than undermines person-centred care. This involves technical design considerations, organizational

policies, professional education, and ethical governance. The Person-Centred Practice Framework offers a valuable guide in this endeavour, providing dimensions and language to critically assess how AI can be aligned with the core values and principles of person-centred care.

This study seeks to explore these complex and evolving issues. By grounding the analysis in the Person-Centred Practice Framework, the research aims to identify practical strategies that can help to ensure the humanization of care is not compromised amid the ongoing technological transformation.

Methods

Study Design

This study adopts a qualitative, exploratory design, which is particularly well-suited to gaining an in-depth understanding of complex, context-dependent phenomena, such as the strategies needed to ensure the humanization of care in the context of AI integration into healthcare (Lim, 2024). By grounding the analysis in the Person-Centred Practice Framework, the study applies a structured yet flexible lens to explore how technology can be integrated without compromising the human dimensions of care.

Population and Recruitment

The study will involve three expert groups: healthcare professionals (e.g., nursing, medicine, clinical ethics), healthcare managers (e.g., hospital administrators, innovation officers, digital health coordinators), and professionals from AI and health informatics fields (e.g., computer scientists, system developers, AI ethicists).

Purposive sampling will intentionally select participants with substantial expertise and experience directly relevant to the study focus. This strategy allows for the inclusion of individuals who can offer rich, contextually grounded insights, thereby enhancing the depth, credibility and applicability of the study findings (Palinkas et al., 2015).

The sampling process will ensure diversity regarding professional background, and experience, and geographic location to capture a broad spectrum of perspectives across disciplines and health systems.

Recruitment will be carried out through two main strategies. First, multiple announcements will be disseminated across digital platforms such as LinkedIn, Facebook, WhatsApp, and Instagram, targeting professional networks and thematic interest groups. Second, researchers will conduct a bibliographic search in scientific databases (e.g., PubMed, Scopus, or similar) to identify authors of articles focused on the intersection of AI and healthcare. Corresponding authors of relevant publications will be contacted directly and invited to participate.

A registration form will be provided during recruitment to support purposive sampling and ensure the inclusion of qualified participants. The form will collect demographic information on participants' professional backgrounds, years of professional experience in the relevant field, and geographic regions, allowing researchers to assess eligibility and ensure a balanced representation of the three expert groups.

Inclusion Criteria

To ensure the relevance and depth of the contributions, participants will be selected based on the following criteria:

- (a) Minimum two years of professional experience in their respective healthcare field;
- (b) Direct involvement in healthcare delivery or management or active participation in the design, implementation, management, or ethical evaluation of healthcare technologies;
- (c) Fluency in English or Portuguese, which are the languages fluent to the research team.

Data Collection

To ensure that all participants clearly understand the study's purpose and the relevance of their contribution, a research team member will schedule an individual video conference with each eligible participant before data collection. These meetings will be held via Microsoft Teams, using the institutional license provided by Egas Moniz School of Health and Science (Microsoft Corporation, Redmond, WA, USA), a widely accessible and secure video conferencing platform. Data will be collected through individual semi-structured interviews conducted online. The principal investigator, JBF, a professor with a PhD in Nursing, experience in qualitative research, and interviewing skills, will lead the interviews. JBF's positionality as an interviewer includes identifying as a cis-gender man with Portuguese nationality. None of the selected participants will have a pre-existing relationship with the interviewer to avoid potential bias.

Each interview will begin with a concise verbal explanation of the study's goals and procedures. Only after participants have provided informed consent will the interview proceed. All interviews will be audio-recorded digitally for subsequent transcription using transcription software.

The Person-Centred Practice Framework's structure will inform the interview guide's development, ensuring coverage of all domains. This alignment aims to facilitate an in-depth exploration of the tensions and synergies between AI and person-centred care. It will begin with brief closed-ended questions to gather sociodemographic information (e.g., sex, age, professional field, and professional experience), followed by open-ended questions aimed at exploring participants' perspectives on strategies to safeguard the

humanization of care in the context of AI integration in healthcare settings.

For example, open-ended questions may include:

(a) Macro Context

How do broader societal or cultural attitudes toward technology influence the way AI is adopted in healthcare, and what implications does it have for maintaining person-centred care?

What national or international health policies do you believe could promote a more humanized and ethically responsible integration of AI in healthcare systems?

In your opinion, how can collaborations between policymakers, technology developers, and healthcare professionals help shape AI systems that reflect humanistic values?

How might economic pressures or health system priorities (e.g., efficiency, cost-containment) affect the ability to sustain person-centred care in technology-driven contexts?

(b) Prerequisites

What training or professional development strategies do you consider essential in preparing healthcare professionals to maintain humanized care when using AI tools?

What mechanisms can be implemented to strengthen ethical and human values in professional practice within increasingly digital environments?

(c) The Practice Environment

In your view, what leadership and management practices are necessary to ensure that the integration of AI supports and reinforces person-centred care?

What organizational strategies could help prevent risks of dehumanization associated with automation and algorithm-driven care?

Can you share examples of healthcare environments that have implemented strategies to humanize care in technology-rich contexts?

(d) Person-Centred Processes

What strategies would you recommend to ensure that service users retain voice, agency, and participation when AI is used in clinical decision-making?

How can communication processes be adapted to preserve the human connection, even when technology mediates part of the care delivery?

(e) Outcome

What indicators do you consider useful to evaluate whether AI integration supports genuine person-centred outcomes?

What strategies can be adopted to continuously monitor AI's impact on the person's care experience and adjust practices when needed?

A pilot test of the interview guide will be conducted with qualitative research experts and participants from each target group. This pretesting phase will help assess the clarity, relevance, and comprehensiveness of the questions and allow for the refinement of wording, the removal of redundancies, and the optimization of the interview flow. The goal is to ensure that the script effectively elicits meaningful responses aligned with the research aim.

The estimated duration of each interview will range from 30 to 45 minutes.

In this study, priority will be given to the depth and relevance of participants' contributions rather than the number of interviews conducted. This aligns with the understanding that in qualitative research, particularly when exploring complex and evolving topics, richness of information is more valuable than sample size alone (Gupta et al., 2019; Vasileiou et al., 2018). Therefore, no fixed number of interviews will be established in advance.

A theoretical saturation strategy will be adopted, following the guidelines of Glaser and Strauss (2017). Data collection will proceed until consecutive interviews no longer yield new insights or dimensions relevant to the research questions. Saturation will be assessed continuously through an iterative process of concurrent data analysis, allowing the research team to identify when thematic saturation begins.

The research team will hold regular meetings to support this process, reviewing emerging patterns and ensuring no new categories or perspectives are introduced.

Data Analysis

The analysis will follow a two-phase approach. First, a descriptive statistical analysis will be conducted on the socio-demographic data using IBM SPSS Statistics for Windows, Version 28.0. We will employ measures of central tendency (mean and median) and dispersion (standard deviation and range) for continuous variables such as age and professional experience that allow sample characterization. Second, the interview data will be analysed through thematic analysis guided by the six-phase framework developed by Braun et al. (2019). This approach provides a flexible yet rigorous structure for interpreting patterns of meaning within qualitative data. The phases are as follows:

- (1) Familiarization with the data: Researchers will immerse themselves in the data by reading and re-reading the transcripts and listening to the recordings, taking preliminary notes to capture initial impressions and potential codes.
- (2) Generating initial codes: Data segments will be systematically coded across the entire dataset. Codes will be deductively assigned to meaningful text features

relevant to the research questions and the Person-Centred Practice Framework.

- (3) Searching for themes: Codes will be grouped into broader patterns or themes representing significant concepts across participants' narratives. At this stage, the goal is to identify potential overarching themes that capture the essence of coded data.
- (4) Reviewing themes: The themes will be reviewed and refined to ensure internal homogeneity and external heterogeneity. This involves verifying that each theme is coherent internally and distinct from others and that the thematic map adequately reflects the dataset.
- (5) Defining and naming themes: Once the thematic structure is finalized, each theme will be clearly defined and named to reflect its central organizing concept. Subthemes may also be identified to represent the nuanced dimensions of each theme.
- (6) Producing the report: Finally, the themes will be integrated into a coherent narrative supported by illustrative quotes from participants. This final phase will link the analysis to the research questions and theoretical framework, providing evidence-based insights into the strategies needed to humanize care in the context of AI integration in healthcare.

The research team will use QDA Miner Lite ([Provalis Research, nd](#)), a qualitative data analysis software, to facilitate the management, coding, and organization of qualitative data. The process will be iterative and reflexive, with ongoing team discussions to validate the coherence of themes and interpretations. These meetings will enhance interpretative depth, ensure consistency in coding decisions, and maintain alignment with the study's objectives and the Person-Centred Practice Framework.

Trustworthiness

Ensuring the trustworthiness of qualitative research is essential to guaranteeing the credibility, dependability, confirmability, and transferability of the study findings ([Nowell et al., 2017](#)). This study will employ several strategies to enhance these quality criteria.

Credibility will be addressed through prolonged engagement with the data and participants, allowing for a deep understanding of the phenomena under study. Triangulation will involve diverse expert groups from healthcare, management, and AI fields to capture multiple perspectives on the humanization of care amid AI integration. Member checking will be conducted by sharing preliminary findings with a subset of participants to confirm the accuracy of interpretations and provide opportunities for clarification or additional insights.

To minimize the risk of social desirability bias, the research team will implement the strategies proposed by [Bergen and Labonté \(2020\)](#), such as building rapport with participants,

encouraging reflexivity, emphasizing the non-evaluative nature of the study, and conducting interviews that support open and authentic dialogue. Interviewers will also avoid leading questions and create a psychologically safe space for participants to share uncertainties, tensions, or critical viewpoints.

Dependability will be ensured by maintaining a detailed audit trail documenting all phases of the research process, including decisions made during data collection and analysis. Regular team meetings will discuss coding, theme development, and interpretations, fostering reflexivity and consistency in the analytic process.

Confirmability will be pursued by ensuring all findings are derived from the collected data. The research team will hold regular discussions to verify that interpretations are supported by direct evidence from the interview transcripts. Coding decisions and theme development will be reached through team consensus and documented to maintain consistency throughout the analytical process. Additionally, external audits may be performed by independent qualitative research experts who will review the data and the researchers' interpretations to identify any potential discrepancies or biases.

Transferability will be supported by providing rich, thick descriptions of the study context, participants, and data, enabling readers to evaluate the applicability of findings to other settings.

Together, these measures will produce trustworthy qualitative insights into strategies for maintaining human-centred care during healthcare's technological transformation.

Ethics and Procedures

This study will follow the ethical principles outlined in the Declaration of Helsinki and relevant national regulations. Researchers have obtained approval from an independent ethics committee (ID:1624). Before participating, all individuals will be provided with detailed information about the study objectives, procedures, risks, and benefits. Informed consent will be obtained using a dedicated online platform designed for this purpose. This platform allows participants to review the consent documents carefully and to provide the consent digitally.

Participants have the right to refuse to answer any questions they do not wish to answer, amend their responses, or withdraw from the study at any point without any consequences. To ensure confidentiality and anonymity, each participant will be assigned a unique code number for data handling. Access to identifiable information will be restricted exclusively to the principal investigator, who manages the identification key separately from the collected data.

Discussion

This research responds to a timely and underexplored challenge: the alignment, or potential misalignment, between AI-driven technologies and person-centred values. It seeks to fill

an important gap in literature by capturing nuanced, interdisciplinary, and culturally diverse expert perspectives on how care humanization can be preserved or strengthened in technologically mediated environments (Ruotsalainen & Blobel, 2025).

This study protocol outlines a qualitative exploration of expert perspectives on the strategies needed to ensure the humanization of care amidst the growing integration of AI in healthcare. Grounded in the Person-Centred Practice Framework, the study aims to generate context-sensitive knowledge that can inform policy development, professional training, and the ethical design of health technologies.

Person-centred care must be viewed as a shared goal among all stakeholders in healthcare, including individuals receiving care, healthcare professionals, managers, and policymakers (Aschmann et al., 2020; World Health Organization, 2007). Evidence demonstrates that person-centred care improves health outcomes, patient satisfaction, better professional engagement, and more sustainable systems (Gluyas, 2015; Havana et al., 2023; Yu et al., 2023). Several studies have identified barriers to implementing person-centred care despite these known benefits. These barriers are multidimensional and occur across all domains described in the Person-Centred Practice Framework (Fernandes et al., 2022; Moore et al., 2017; Schuttner et al., 2022; Younas et al., 2023).

The rapid development of AI represents an important opportunity across multiple sectors, and healthcare is no exception (Soares et al., 2024). Its integration is likely to advance swiftly, highlighting the need to proactively reflect on how such technology can be aligned with core healthcare values—particularly preserving human dignity, compassion, and relational integrity. While AI can significantly enhance diagnostic accuracy, improve service efficiency, and expand accessibility (Huang et al., 2024; Khalifa & Albadawy, 2024), there is a growing concern that the human dimensions of care may be marginalized if AI implementation fails to address the relational and ethical aspects central to health encounters (Akingbola et al., 2024).

The findings from this study may contribute to the development of evidence-informed strategies for integrating AI in ways that support human connection, uphold ethical standards, and promote the active participation of individuals in their care journeys (Maackelberghe et al., 2023). The insights generated can inform future empirical research, guide professional development initiatives, and support policy recommendations to ensure that AI acts as an enabler, rather than a barrier, to person-centred practice. Ultimately, this work aspires to contribute to the design of digital health systems that facilitate the effective implementation of person-centred practices across all levels of care.

Strengths and Limitations

There are strengths and limitations to our planned study approach. The use of purposive sampling will allow for the

inclusion of participants with specific and relevant expertise to critically reflect on the dynamic relationship between AI and person-centred care. Engaging experts from diverse fields and multiple geographical locations is expected to produce a multidimensional and globally informed perspective.

There are several other notable strengths. First, it is a pioneering effort to qualitatively explore the intersection of AI and person-centred care. It creates space to uncover the implicit values, assumptions, and interpretations influencing how professionals perceive and respond to this evolving dynamic. Second, its theoretical foundation in the Person-Centred Practice Framework ensures conceptual integrity and analytical depth. This framework allows for a systematic yet adaptable inquiry into strategies that promote humanized care, supporting a nuanced understanding of how technological integration can align with person-centred principles.

Nevertheless, some limitations are anticipated. Relying on expert informants may lead to a concentration of high-level perspectives, potentially underrepresenting the voices of frontline professionals or individuals receiving care. To address this, the study will implement clearly defined inclusion criteria that ensure disciplinary and contextual diversity within the expert sample.

Another potential limitation is the risk of social desirability bias, where participants may offer idealized responses rather than honest reflections. To minimize this bias, the research team will apply practices recommended by Bergen and Labonté (2020).

Conclusion

This study protocol presents a timely and necessary exploration into how humanized care can be preserved and promoted in an era increasingly shaped by AI. Considering the rapid digital transformation across health systems worldwide, this research addresses an urgent need to understand AI integration's ethical, relational, and practical implications. Rather than opposing technological advancement, the study seeks to critically reflect on how such innovations can be guided by and contribute to person-centred values.

The anticipated findings are expected to offer concrete, context-sensitive strategies for reinforcing the human dimension of care, informing future research, guiding professional education, and supporting policymakers and healthcare leaders in the responsible design and implementation of AI in healthcare. Ultimately, this study aspires to contribute to the co-construction of healthcare systems in which technological progress enhances, rather than compromises, the dignity, voice, and well-being of all people involved in the care process.

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Consent to Participate

Written informed consent will be obtained from all participants involved in the study.

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Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data Availability Statement

The authors confirm that the data supporting the findings of this study are available within the article.

Institutional Review Board Statement

The studies involving humans were approved by Egas Moniz Higher School of Health and the Institutional Ethics Committee. The studies were conducted in accordance with the local legislation and institutional requirements.

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