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The Use of Artificial Intelligence in Palliative Care Communication: A Narrative Review

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Abstract

Technological advances, such as "machine learning" and "natural language processing," have enabled systems and machines to perform complex tasks that previously required human intervention. Artificial intelligence (AI) has emerged as one of the most significant advancements in the healthcare sector, playing a key role in the evolution of palliative care (PC). Our main objective was to explore how AI can improve the quality of communication in decision-making in PC.

A narrative review was conducted to obtain an interpretative synthesis and a comprehensive perspective on the subject under analysis. The research was carried out using the terms "Palliative Care," "Communication," "Artificial Intelligence," "Forecasting" and "Decision Making."

Nine articles were included in the study, and after data analysis under Jean Watson's Theory of Transpersonal Caring, four categories were defined that respond to the proposed objective: person-centred care and authentic relationships, decision support based on individualised knowledge, facilitation of transparent communication and advanced care planning, promotion of a healing environment and emotional well-being and education of health professionals and critical reflection. As a result, we identified the need for a multifaceted approach, involving the continuous validation of models, proper training of healthcare professionals and engagement of individuals in decision-making processes. This ensures that decisions are grounded in robust evidence and ethical principles, making sure that AI acts as a true ally rather than a source of additional risks.

In conclusion, AI can effectively be a valuable support tool in decision-making, but it is crucial that professionals remain aware of its limitations and can apply critical judgment in each situation.

Keywords: artificial intelligence, communication, decision making, forecasting, palliative care

Introduction and background

Palliative care (PC) promotes a therapeutic approach that aims to provide comprehensive support to people with life-limiting illnesses, focussing on symptom relief, improving quality of life and meeting the emotional, psychological and spiritual needs of people and their families [1].

PC is part of a multidisciplinary approach aimed at minimising suffering and offering comfort to the patient and family. Early access to PC promotes emotional well-being, better coping strategies, reduced health costs and contributes to quality of life [1].

Artificial intelligence (AI) is one of the most significant advances of the digital transformation in the health sector, playing a key role in PC. AI is defined as the ability of a machine to perform tasks that normally require human intelligence, including reasoning, learning, perception and decision-making [2]. Artificial systems such as machine learning (ML) and natural language processing have enabled the creation of conversational agents designed to support activities in healthcare, including treatment, health monitoring, triage and screening [3,4].

In the context of PC, AI can improve communication between healthcare professionals, individuals and families, provide information in real time and enable the personalisation of approaches according to the needs of each individual [5]. Natural language processing and ML have

demonstrated their ability to facilitate the understanding and transmission of complex clinical information [4].

AI can help identify communication patterns that promote empathy and emotional support, especially during the sharing of difficult information, such as end-of-life information [6]. These systems are able to recognise emotional signals and adapt the tone of the conversation according to the person's emotional state, helping professionals to maintain an empathetic and humanised approach, even in critical moments.

However, the use of AI in PC faces important challenges. The humanisation of care is a fundamental principle of PC, and the ability to maintain authentic and empathetic communication remains an area where artificial systems cannot replicate the complexity of human interaction [7].

Conversational agents can offer personalised information, answer questions and provide emotional support, as well as helping to monitor and manage symptoms [4]. However, these systems are complementary tools and do not replace direct interaction between the healthcare professional and the person, which should always be maintained and strengthened [2].

AI can provide clear information, facilitating decision-making processes, but it must not interfere with the autonomy of individuals or their right to informed consent. It must respect ethical and bioethical boundaries, ensuring that decisions about care follow the person's wishes and values [5,6].

Predictive AI models have been studied to identify people who benefit from PC, reducing response time and increasing the likelihood of early appropriate interventions, improving quality of life. These models analyse large volumes of clinical data, identifying patterns that predict disease progression and the need for specific care [1].

The regular implementation of AI is crucial to guarantee privacy, information and informed consent. AI can improve the quality of life of people undergoing PC, optimise decision-making processes and provide a more personalised and efficient approach. However, this implementation must be accompanied by critical reflection on the ethical and bioethical challenges, ensuring that care remains person-centred and does not compromise the therapeutic relationship that is essential to the practice of care [6].

Jean Watson's Transpersonal Care Theory is an appropriate choice for studying AI in PC. Watson emphasises that nursing care involves spiritual, cultural and existential dimensions, which are essential for humanised, person-centred care [8,9]. AI should be a complementary tool that can improve clinical accuracy and decision-making, but which does not replace human contact or the genuine interaction that is fundamental in PC. In light of Watson's theory, this technology must respect and value people's individuality and values, ensuring that care follows principles of dignity and compassion [10]. Watson also recognises the importance of emotional and spiritual support in situations of great vulnerability, such as critical moments in PC [11].

Using AI in PC communication can transform the care provided by personalising communication, improving emotional support and speeding up access to relevant information. This study explores the use of AI in PC communication to improve the quality of care provided by personalising communication, improving emotional support and speeding up access to relevant information, promoting better interactions between the person/family and healthcare professionals.

The results suggest that AI can facilitate more informed and personalised clinical decisions, using technological tools to predict clinical failures and adjust care to individual needs [12,13]. In addition, the results of this research can contribute to improving communication during critical moments, such as discussions about prognosis, therapeutic options, and end-of-life care preferences.

AI can be a supportive tool, making conversations clearer, grounded in scientific evidence and aligned with individuals' values, easing the emotional burden and reinforcing trust in decision-making processes [14].

Review

Methodology

A narrative review was carried out in order to obtain a comprehensive perspective and provide an interpretative synthesis on the subject under analysis. This methodology allows for the expeditious integration of different sources but does not allow for an exhaustive mapping of the literature, and the selection of articles is conditioned by the authors' assessment of their relevance to answering the research question: "How can the use of AI improve the quality of communication between health professionals, people and their families in PC decision-making?"

A narrative literature review was carried out in the CINAHL Complete, MEDLINE Complete, Nursing & Allied Health: Comprehensive Edition, Cochrane Controlled Trials Register, Cochrane Database of Systematic and Medic Latina databases, using the terms “Palliative Care,” “Communication,” “Artificial Intelligence,” “Forecasting” and “Decision Making” in Portuguese, English and Spanish.

Using Boolean operators, the following search equation was formulated: “(palliative care AND artificial intelligence) AND (nursing care OR communication OR decision making OR forecasting)” in the three languages chosen.

The studies were selected based on the following inclusion criteria: (1) studies investigating the use of AI in PC; (2) studies related to safety in the use of AI; (3) studies addressing the use of AI in healthcare decision-making.

The exclusion criteria were: (1) studies that did not present specific results on AI; (2) studies involving people under the age of 18 or the paediatric population; (3) studies that were not available in full-text format.

The selected articles were subjected to a full-text review. For each study included, the following data were extracted: authors, year of publication, country of conduct, type of study, objectives, population analysed and main conclusions.

Results

To answer the study question, nine articles were included; the limited research on this subject focussed on the emergence of AI in the context of PC. The majority took place in the United States of America (USA), totalling 55.6%. The studies analysed have significant differences in the representativeness of the groups involved in PC. The most represented were patients with neoplasms (22.2% of the total). The results are summarised in Table 1.

Table 1. Summary of results from the included studies.

AI: Artificial Intelligence; ML: Machine Learning; NA: Not Available; PC: Palliative Care

S. No.	Authors	Year	Title	Type of study	Objective(s)	Population
1	Cagliero et al. [15]	2023	A framework to identify ethical concerns with ML-guided care workflows: a case study of mortality prediction to guide advance care planning	Case study	Identifying ethical concerns with ML applications to healthcare	Stakeholders interviewed

2 Matt et al. 2023 An acoustical Cohort A pipeline of Hospitalise
[16] and lexical ML study ML algorithms persons wi

pipeline to identify connectional silences to automatically identify and subclassify Connectional Silences in natural clinical settings advanced cancer, thei families (if present) an palliative care specialists

3	Srivastava et 2023 al. [17]	Can artificial intelligence aid communication? Considering the possibilities of GPT-3 in palliative care	Case study	Understand the psychological possibilities of AI-aided communication in palliative care
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4	Schenker et al. [18]	2024	Conversational agents in palliative care: potential benefits, risks and next steps	Review article	Explore conversational tools for improving patient and family outcomes in serious illness	Agents in healthcare
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5	Petersson et al. [19]	Ethical considerations in implementing AI for mortality prediction in the emergency department: linking theory and practice	Qualitative study	Explore healthcare professionals' perspectives on emergency ethical issues in departments. Develop a model based on ethical theory to guide ethical considerations in AI implementation in healthcare.	Healthcare workers in the
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6	Strechen et al. [20]	2024	Harnessing health information technology to promote equitable care for patients with limited English proficiency and complex care needs	Randomised trial	Assess the effectiveness of a comprehensive intervention, integrating artificial intelligence with a human operator into the language services process to provide in-person interpreters to patients with complex care needs	Individuals who have a non-English language preference
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7	Hiratsuka et al. [21]	2023	Prediction of survival in patients with advanced cancer: a narrative review and future research priorities	Review article	Summarise the current situation of prognostication for patients with an expected survival of weeks or months, and clarify future research priorities	Palliative care clinicians
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8	Reddy et al. 2023 [22]	Recent advances in artificial intelligence applications for supportive and palliative care in cancer patients	Literature review	Provide an overview of the recent studies applying AI to support palliative care patients	Cancer patients
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9	Burry et al.	2024	"You are not alone": the allure and limitations of artificial intelligence in serious illness communication	Review article	Exploring the allure of employing AI-powered chatbots to assist nonspecialist clinicians with serious illness communication and highlights the ethical and practical drawbacks.	Nonspecial clinicians
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Jean Watson's Transpersonal Care Theory categorises the data according to its central elements and emphasises holistic care aimed at the integrality of the person. The first category is Centred Care and the Authentic Relationship, which establishes a natural connection between health professionals and the person, considering emotional, spiritual and cultural needs. Information analysis can help communicate and organise information, allowing healthcare professionals to devote more time to direct interaction and therapeutic presence. This can reduce bureaucratic time and provide more opportunities for emotional support [10].

The second category is Decision Support based on Individualised Knowledge, which tailors care to each person's needs and preferences. AI can compile and analyse large volumes of data, offering personalised predictions that support clinical decisions and better care planning and facilitate informed, transparent and assertive communication, respecting Watson's principles of beneficence and autonomy [11].

According to Jean Watson, clear communication and explanation are essential for effective treatment. AI can simplify complex medical terms and provide materials for diagnosis and

treatment options, supporting early care planning. It can also help structure difficult conversations, suggesting appropriate phrasing and guiding healthcare professionals in PC [24].

The fourth category is Promoting the Care Environment and Emotional Wellbeing, which emphasises the importance of the environment for emotional and spiritual growth. AI can monitor emotional symptoms and anxiety symptoms and analyse conversations and emotional well-being data, making it possible to create a more empathetic and personalised therapeutic environment in line with the promotion of emotional well-being advocated by Watson's theory [25].

Finally, Health Professional Education and Critical Reflection is a fundamental aspect of Watson's theory, advocating continuous professional development, including critical thinking and self-knowledge. AI can support the training of healthcare professionals, helping them to recognise patterns in their behaviour and providing feedback based on interactions. In this way, it contributes to the development of critical thinking and the improvement of clinical practice, in line with Watson's theory [11].

Therefore, the results were grouped into five categories for better understanding. The first category, Person-Centred Care and Authentic Relationships, highlighted issues related to the integration of AI into the clinical process. There were disagreements about introducing ML results at critical moments of care, as well as concerns about the distribution of forecasts - specifically, who should receive them: doctors, patients or family members. Additionally, the concept of "connectional silence" in PC was discussed, emphasising the importance of improving quality of life and ensuring that decisions align with the individual's preferences.

In the second category, Decision Support Based on Individualized Knowledge, the discussion emphasized balancing the benefits and potential risks of predictions in sensitive care settings. The fiduciary responsibility of the AI team towards patients and healthcare professionals was also debated. Furthermore, AI's role in simulating human conversations was explored, with the goal of offering emotional support and improving decision-making in alignment with personal preferences.

In the Facilitating Transparent Communication and Advance Care Planning category, we identified that the priorities of the ML team should include developing alternative strategies focussed on advance care planning while protecting research from external influences. The results highlighted the importance of an efficient ML pipeline, particularly in identifying moments of connectional silence and fostering an empathetic environment. In this context, the importance of integrating AI into care planning to enhance service delivery was also emphasised.

The results also address the Promotion of a Healing Environment and Emotional Well-Being. In this category, the discussion focused on future strategies to ensure equity in conversational analyses to support emotional well-being. However, the limitations of AI in this domain were acknowledged, particularly its inability to convey genuine empathy and capture non-verbal nuances essential for care. While advanced technologies such as GPT can assist in conversations, they do not replace the necessity of an authentic human presence.

Finally, in the Health Professional Education and Critical Reflection category, the results suggest that AI can play a role in training and supporting less experienced professionals by providing communication suggestions. However, ethical concerns were raised, including transparency, security and data privacy. The implementation of AI should adhere to an ethical model based on principles such as autonomy, beneficence, non-maleficence, justice, explainability and governance. Additionally, it was recognised that AI still struggles to generate empathy and understand the emotional impact of therapeutic conversations, reinforcing the need for human involvement in these interactions.

Discussion of results

Analysing the studies reveals a significant disparity in the representation of the various groups involved in PC. While patients and their families are often included, other groups such as psychologists, emergency professionals and non-specialised clinicians are less represented. This imbalance in the groups studied impoverishes the holistic and multidisciplinary vision that is required in the PC approach.

AI can help balance the benefits and risks of PC interventions. An example of this is predictive modelling, which helps to make early referrals to PC. However, its results depend on the reliability of the data input and require continuous supervision. This participatory approach ensures that care is aligned with each person's values and preferences, reinforcing the quality of the decisions made [6,26].

The promotion of an emotional environment and emotional well-being is another area that can benefit from the use of AI; although it cannot replicate empathy, it relieves workload and improves operational efficiency. As such, it is a complementary tool, not a substitute for human interaction. Clinical decisions should always be based on robust evidence and supported by a clear ethical understanding of the person's wishes and needs, ensuring that AI is a true ally and not a source of additional risk [2].

The main limitations found in this narrative review were the lack of rigour and systematisation of the studies found, namely in the selection of the study population and the evaluation of the studies. The absence of a strict protocol can lead to bias in the selection of articles, influenced by subjective judgements, resulting in confirmation bias. The lack of strict criteria for assessing the quality of the studies included compromised the robustness of the conclusions. In the specific case of our narrative review, the unequal representation of the different stakeholders stands out, with an under-representation of populations reducing the comprehensiveness and equity of the findings.

This narrative highlights the need for more rigorous and systematic methodologies in future research and future suggestions and guidelines for researchers and professionals have been defined, which will contribute to a more grounded and inclusive practice.

Conclusions

AI use in PC has strengths and limitations, requiring a balance between technology and person-centred care while upholding ethical principles like beneficence, autonomy and privacy.

The appropriate use of AI depends on proper training and the integration of various stakeholders in care decision-making. The use of predictive models must undergo rigorous analysis to ensure that AI-based decisions remain flexible, contextualised and compatible with ethical principles.

Disclosures

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