INPLASY

Application of Artificial Intelligence (AI) in Cancer Symptom Management for Adult Cancer Survivors: A Scoping Review

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ADMINISTRATIVE INFORMATION

Support - No funds were received.

Review Stage at time of this submission - Piloting of the study selection process.

Conflicts of interest - None declared.

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Amendments - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 13 March 2026 and was last updated on 13 March 2026.

INTRODUCTION

Review question / Objective To map the evidence on application of AI in symptom management in adult cancer survivors.
(1) To describe the key components of the AI-based approaches, such as such as AI type/technique, intended function, data sources, target cancer survivors and symptoms.
(2) To describe the AI-powered protocols for the cancer symptom management, such as development, validation, delivery and integration of AI-based approaches into cancer care.
(3) To evaluate the performance of AI-powered cancer symptom management strategies, such as technical performance of AI-based approaches, user acceptability and satisfaction.
(4) To explore the reported factors influencing the development and delivery of AI-based approaches, identify research gaps, and propose directions for future research.

Background Artificial intelligence (AI)-based technologies, such as chatbots, machine learning, has been increasingly used to support symptom management in cancer survivors. These approaches assist in real-time symptom identification and monitoring, provide personalised recommendations and patient-education, and clinical decision-making, potentially reduce the burden on healthcare providers while improving patient self-management. Despite growing interest, gaps remain in understanding how AI-powered interventions are developed and validated, implemented, and integrated into clinical practice for adult cancer survivors.

Rationale Existing reviews have examined AI in cancer care but often focus on symptom prediction and monitoring rather than comprehensive symptom management. A recent review by Tabataba Vakili et al. (2024) highlighted AI's predictive and detection capabilities but did not provide details of the symptom management pathway, such as the processes from symptom identification to treatment recommendation, intervention delivery approaches. Other reviews broadly explored AI in cancer care (O'Connor, et

al., 2024) or digital health approaches (An et al., 2023; Lim, et al., 2023) without in-depth analyses of AI-powered strategies in symptom management. Given rapid advancements in AI, this scoping review will systematically map current evidence on AI-powered strategies in cancer symptom management for adult cancer survivors.

Key references

Tabataba Vakili, S., Haywood, D., Kirk, D., Abdou, A. M., Gopalakrishnan, R., Sadeghi, S., ... & Multinational Association of Supportive Care in Cancer (MASCC) Survivorship Study Group. (2024). Application of Artificial Intelligence in Symptom Monitoring in Adult Cancer Survivorship: A Systematic Review. JCO clinical cancer informatics, 8, e2400119.

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An, H. J., Kang, S. J., & Choi, G. E. (2023). Technology-based self-management interventions for women with breast cancer: a systematic review. Korean Journal of Women Health Nursing, 29(3), 160-178.

Lim, D. S. C., Kwok, B., Williams, P., & Koczwara, B. (2023). The impact of digital technology on self-management in cancer: systematic review. JMIR cancer, 9(1), e45145.

Peters, M. D. J., Marnie, C., Tricco, A. C., Pollock, D., Munn, Z., Alexander, L., McInerney, P., Godfrey, C. M., & Khalil, H. (2020). Updated methodological guidance for the conduct of scoping reviews. JBI Evidence Synthesis, 18(10), 2119–2126.

METHODS

Strategy of data synthesis MeSH terms, entry terms, and keywords will be used as to locate eligible studies, for example (Pubmed):
((cancer survivors[MeSH Terms]) OR (neoplasms[MeSH Terms]) OR ((((((((Cancer Survivor*[Title/Abstract]) OR (neoplasm*[Title/Abstract])) OR (tumo*[Title/Abstract])) OR (neoplasia[Title/Abstract])) OR (cance*[Title/Abstract])) OR (carcinom*[Title/Abstract])) OR (malignant[Title/Abstract])) OR (Oncolog*[Title/Abstract]) AND (((artificial intelligence[MeSH Terms]) OR (Machine Learning[MeSH Terms])) OR (Deep Learning[MeSH Terms]) OR (((((((((((((Intelligence, Artificial[Title/Abstract]) OR (Machine Learning[Title/Abstract])) OR (Artificial Intelligence[Title/Abstract])) OR (artificial intelligen*[Title/Abstract])) OR (AI[Title/Abstract])) OR (big learning[Title/Abstract])) OR (deep learning[Title/Abstract])) OR (automation[Title/ Abstract])) OR (cognitive computing[Title/Abstract])) OR (neural networks[Title/Abstract])) OR (intellig* computing[Title/Abstract])) OR (natural language processing[Title/Abstract])) OR (chatbot*[Title/Abstract])) OR (chatter robot[Title/Abstract])) OR (conversational agent[Title/Abstract])) OR (expert system[Title/Abstract])) OR (Robotics[Title/Abstract]) AND (((((((((((((((((((((((((symptom[Title/Abstract]) OR (adverse effect*[Title/Abstract])) OR (toxicit*[Title/Abstract])) OR (toxico*[Title/Abstract])) OR (cardiotox*[Title/Abstract])) OR (palpitation[Title/Abstract])) OR (lymphedem*[Title/Abstract])) OR (nausea*[Title/Abstract])) OR (appetite* disorder*[Title/Abstract])) OR (weight loss*[Title/Abstract])) OR (pain*[Title/Abstract])) OR (dyspnea*[Title/Abstract])) OR (breathless*[Title/Abstract])) OR (fatigue[Title/Abstract])) OR (exhaust*[Title/Abstract])) OR (constipat*[Title/Abstract])) OR (diarrhea[Title/Abstract])) OR (postmenopaus*[Title/Abstract])) OR (hot flash*[Title/Abstract])) OR (sex dysfunction[Title/Abstract])) OR (vomiting*[Title/Abstract])) OR (skin dry[Title/Abstract])) OR (skin rash*[Title/Abstract])) OR (mental disorder*[Title/Abstract])) OR (anxiet*[Title/Abstract])) OR (depress*[Title/Abstract])) OR (insomnia*[Title/Abstract]).

Eligibility criteria (1)Population: Adult cancer survivors regardless of the type of cancer and cancer stages
(2)Interests/Topic: Focusing on the use any AI technologies in any cancer-related symptom management symptom assessment, recommendation/planning, implementation, monitoring and follow-up
(3)Study design: Primary studies using either qualitative, quantitative, or mixed-methods study design.
(4)Language: Published in English with accessible full text
(5)Timeframe: studies published in the last 10 years (from 2015).

Source of evidence screening and selection
(1)Electronic databases: PubMed, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Scopus, Embase, Web of Science (WOS), Ovid, PsycINFO, and ProQuest The searches will be limited to human studies and adults (≥18 years older).
(2)Grey literature will be searched via the library.
(3)Manual search: the reference lists of related previous studies, as well as citation tracking until no further relevant articles are identified.

Data management Endnote 21 and Excel will be used.

Reporting results / Analysis of the evidence This approach is consistent with established scoping review guidance (Peters et al., 2024), methodological quality appraisal of the included studies will not be undertaken. Given that this is a scoping review with a broad topic, descriptive statistics and narrative synthesis Subgroup analysis.

Language restriction English.

Country(ies) involved Australia.

Keywords Artificial Intelligence, Cancer, Symptom Management, scoping review.

Dissemination plans The scoping review will be published in a peer-reviewed journal and presented in an academic conference.

Contributions of each author
Author 1 - Tao Wang - Conceptualization, design, implementation, manuscript drafting, and submission.
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