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Impact of mHealth Interventions on Patient-Reported Outcomes during Treatment and Rehabilitation in Myeloid Neoplasms: A Systematic Review

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ADMINISTRATIVE INFORMATION

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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 18 November 2025 and was last updated on 18 November 2025.

INTRODUCTION

Review question / Objective The purpose of this systematic review is to assess the impact of mHealth interventions on patient-reported outcomes (PROs) in patients with myeloid neoplasms during treatment and recovery, and to identify research gaps, intervention characteristics, and quality of evidence to inform future research and practice.

Condition being studied 1. Patients with myeloid neoplasms (including AML, MDS, MPN, and CML) face significant symptom burden, functional decline, and decreased quality of life during treatment and recover.
2.Mobile health (mHealth) interventions (e.g., mobile apps, wearables, self-management platforms, remote monitoring, etc.) are beginning to be used in several oncology areas, but evidence of systematic synthesis/review in the myeloid neoplasms population is lacking.
3.Existing reviews have mostly focused on overall, or oral treatment adherence in hematologic tumors, with few systematic reviews focusing on mHealth in myeloid neoplasms on PROs (symptoms, fatigue, function, QoL) and functional improvement in recovery.

METHODS

Search strategy ("myeloid neoplasms" OR myeloid malignancy OR myeloid neoplasm* OR acute myeloid leukemia OR AML OR myelodysplastic syndromes OR myelodysplastic neoplasm OR MDS OR myeloproliferative neoplasm* OR MPN OR chronic myeloid leukemia OR CML OR chronic neutrophilic leukemia OR CNL OR polycythaemia vera OR PV OR essential thrombocythaemia OR ET OR primary myelofibrosis OR PMF OR chronic eosinophilic leukemia OR CEL) AND ("mobile health" OR mHealth OR eHealth OR "mobile app*" OR "mobile application*" OR smartphone* OR "smart phone

app*" OR telehealth OR tele-health OR telemedicine OR tele-medicine OR eHealth OR "digital health" OR "remote monitoring" OR "virtual care" OR "video consult*" OR "virtual visit*" OR "Web-based Application") AND ("patient-reported outcome" OR PRO OR PROM OR "symptom burden" OR "quality of life" OR QoL OR "physical function" OR fatigue).

Participant or population Patients with myeloid neoplasms (including AML, MDS, MPN, and CML).

Intervention Any mHealth-based device or platform (e.g., smartphone apps, wearables, remote monitoring platforms, SMS/push, self-management apps, etc.) for symptom monitoring, functional enhancement, adherence management, psychosocial support interventions.

Comparator Controls may include: usual care, no intervention, educational/informational controls, or pre- and post-intervention comparisons.

Study designs to be included Randomized controlled trials, nonrandomized controlled trials, before-and-after controlled trials, and single-arm feasibility trials were included.Randomized controlled trials, controlled trials, single-arm experiments.

Eligibility criteria Sample was only patients with gonorrhea or solid tumors, excluding medullary; intervention was not mobile device or digital platform based; no primary data reporting PROs or self-assessment of physical function; reviews, narrative articles, conference abstracts, and case reports were excluded.

Information sources PubMed/MEDLINE, Embase, Web of Science, Cochrane Library.

Main outcome(s) Primarily patient-reported outcomes (PROs) including: symptom burden, quality of life (QoL/HRQoL), fatigue, self-reported physical functioning, emotional/mental health, and self-management or adherence (self-reported).

Additional outcome(s) Objective physical functioning or treatment adherence may be analyzed, but as a secondary outcome.

Quality assessment / Risk of bias analysis Select the appropriate tool based on the study design: RoB2 for RCTs, ROBINS-I for non-randomized trials.
Use GRADE or other applicable frameworks for certainty of outcome evidence.

Strategy of data synthesis Consider meta-analysis if there is high homogeneity of outcomes, interventions, and designs; otherwise use narrative synthesis (narrative synthesis).

Subgroup analysis Disease subtype (AML vs MDS vs MPN vs CML); type of intervention.

Sensitivity analysis Sensitivity analyses will be performed to test the robustness of pooled results (if meta-analysis is feasible) or of narrative synthesis conclusions under varying assumptions or exclusion criteria. Specifically, we will Exclusion of studies at high risk of bias、Exclusion of non-randomised or single-arm trials (if meta-analysis is feasible) ; Should we be unable to perform meta-analysis (due to heterogeneity or insufficient comparable data), we will provide a narrative sensitivity check—highlighting how conclusions might differ if only low-risk studies or controlled trials are considered.

Country(ies) involved China.

Keywords Myeloid neoplasms; mHealth interventions; Patient-reported outcomes; Health-related quality of life; Symptom burden.

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