Use of Wearable Activity Trackers During Active Breast Cancer Treatment: A Systematic Review

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Introduction

•Breast cancer is the most commonly diagnosed cancer in women

•Active treatments are frequently associated with fatigue, reduced physical activity, and decreased quality of life.

•Wearable activity trackers (e.g., fitness bands, smartwatches) are increasingly integrated into oncology to monitor activity, track symptoms, and enhance patient engagement.

•Use during active treatment offers opportunities for remote monitoring, behavioral support, and early detection of treatment-related toxicities

Objective: To systematically evaluate the use, purpose, and feasibility of wearable activity trackers during active breast cancer treatment.

Methods

•Comprehensive search of PubMed/MEDLINE, Scopus, and Web of Science was conducted through March 2025

•Keywords and MeSH terms related to *breast cancer*, *breast cancer treatment*, and *activity trackers*.

•Inclusion criteria:

- •Adult breast cancer patients receiving active treatment (chemotherapy, radiation, targeted therapies, endocrine therapy).
- •Studies using wearable activity trackers as part of clinical care or research.

•Study types included: observational studies, RCTs, cross-sectional studies, and interventional designs..

•Findings were synthesized using a narrative review approach

Results

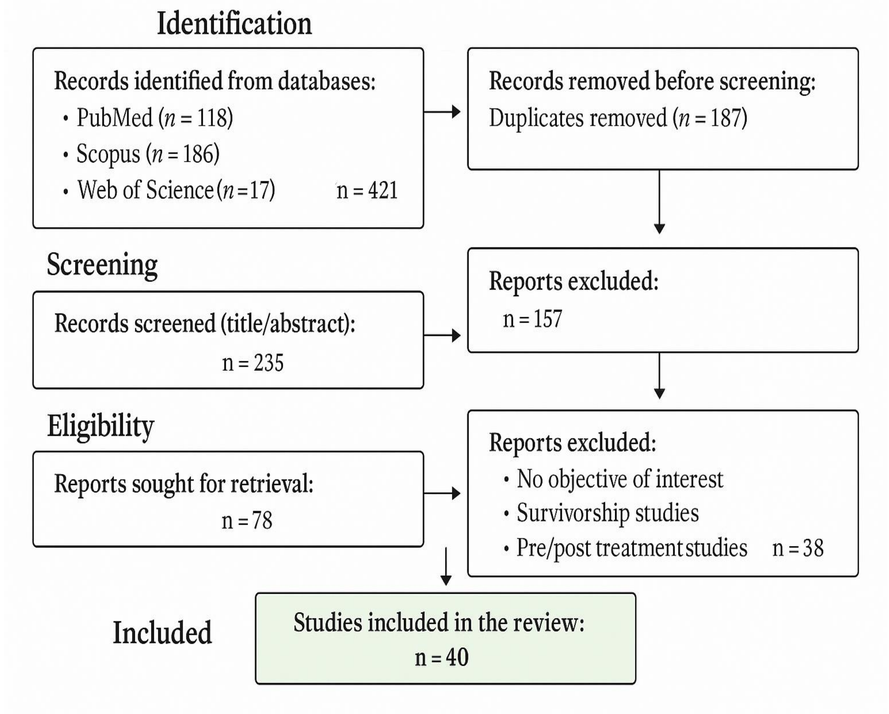
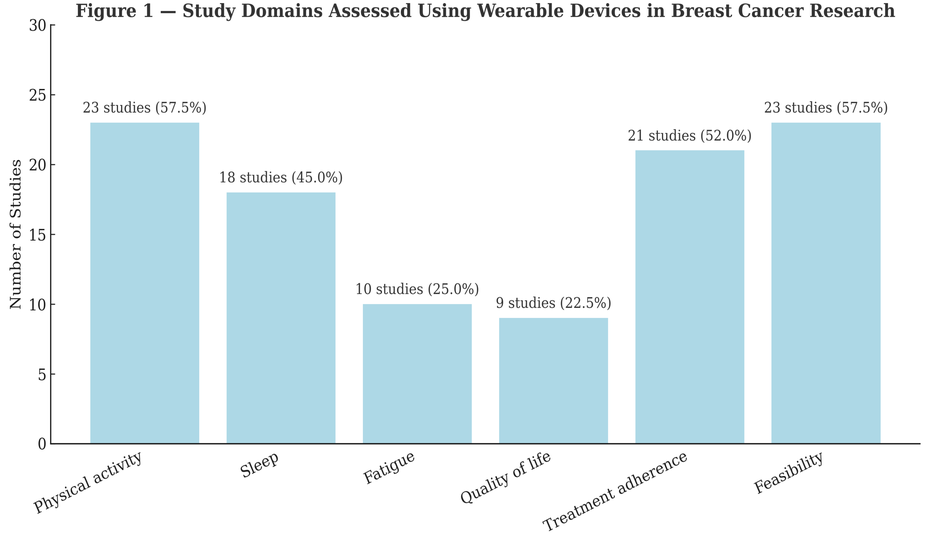


Figure 1 — Study Domains Assessed Using Wearable Devices in Breast Cancer Research



Conclusion

•Wearable activity trackers are practical, feasible, and effective during active breast cancer treatment for monitoring physical activity, sleep, and fatigue.

•Support patient engagement, behavior change, and treatment adherence.

•Technological advances position wearables for real-time toxicity monitoring, passive symptom detection, and personalized supportive care interventions.

•Future research must focus on validating wearable-derived metrics and integrating them into clinical decision-making pathways.

Future Directions

•Evaluate wearable-based monitoring for lymphedema progression, cardiac health after anthracyclines, and toxicity profiles of HER2-targeted ADCs.

•Address barriers including data overload, poor EMR integration, and equity/access gaps.

•Collaborate with industry partners to embed wearable data in clinical trials and promote standardization.

•Establish validation frameworks and interoperable data standards to support adoption in routine oncology care.

References

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