Leveraging Telehealth for the Management of Breast Cancer Symptoms

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Abstract

Breast cancer affects 2.3 million women and kills 685,000 globally, making it the most prevalent cancer. The telemedicine modality has been used to treat the symptoms associated with breast cancer recovery.

Objective
To analyze the effectiveness of telemedicine to help women recover from the treatment-associated effects and promote overall recovery from breast cancer.

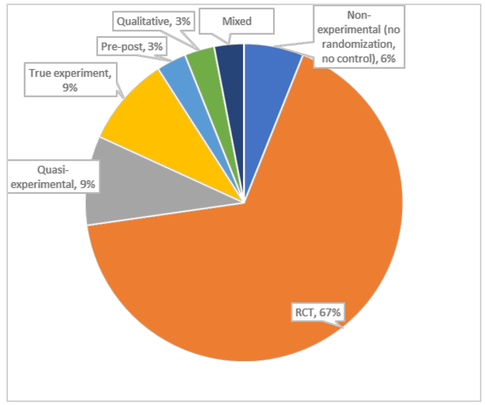
Methods
Four databases were queried for published literature from the last 10 years. The systematic literature review was conducted in accordance with the Kruse Protocol and reported in accordance with PRISMA 2020.

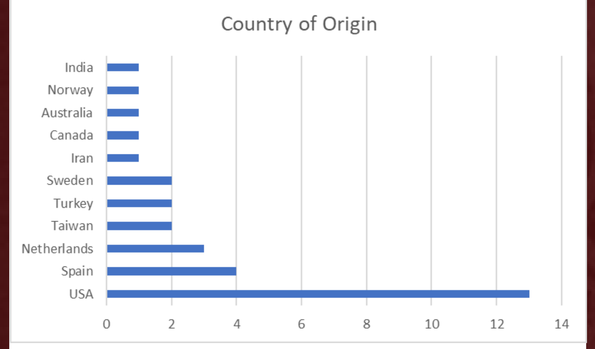
Results

Four interventions were identified in the literature, with the most dominant being eHealth and mHealth. The other interventions were telephone, video teleconference, and a combination of eHealth and mHealth. There were positive effects of these telemedicine interventions in 88% of the studies analyzed. Telemedicine is shown to positively affect physical and mental health, sleep outcomes, quality of life, and body image. The largest barriers to the adoption of telemedicine interventions are training, cost, workflow, time of providers, and low reimbursement.

Conclusion
Telemedicine offers promise to both providers and breast cancer survivors to improve the physical and mental health detriments of both cancer and its associated treatments. It also helps women develop healthy habits to reduce the risk of reoccurrence.

Types of studies analyzed





Weighted average effect size = 0.21 (small)

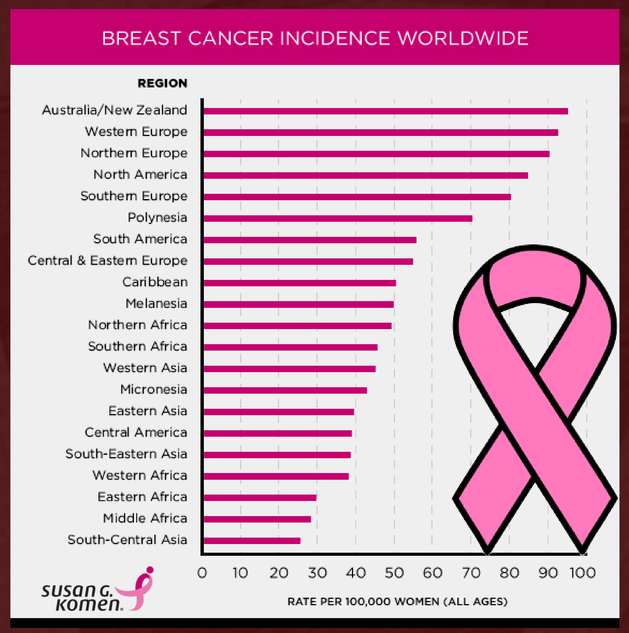
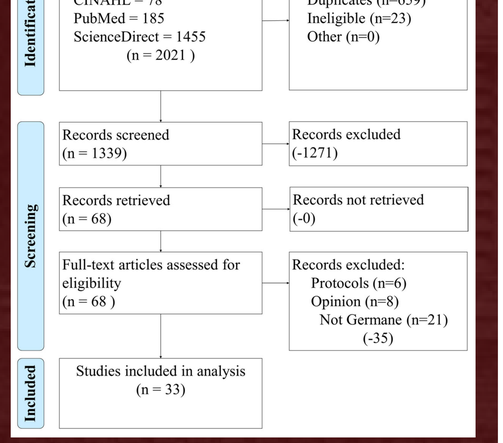


Table provided by Susan Komen



Results

33 studies from 11 countries published over the last decade demonstrated the use of four primary intervention themes: eHealth, mHealth, telephone, and video conference or a combination of these.

Benefits and Effectiveness of interventions

The most cited benefit was improved mental health followed by improved sleep outcomes and improved physical health. Other measures of effectiveness were improved quality of life, improved body image, less nausea, less pain, less numbness. The interventions also provided education, improved engagement with providers, and improved medication adherence.

Effectiveness Themes and Observations	Frequency	%
Improved mental health	17	20%
Improved sleep outcomes	13	15%
Improved physical health	12	14%
Improved quality of life	9	10%
Improved body image	7	8%
Improvements not statistically significant	6	7%
Less nausea / vomiting	5	6%
Provided education / answered questions	5	6%
Less pain	4	5%
Less numbness	2	2%
Improved arm symptoms / upper limb functionality	2	2%
long-term engagement with intervention	2	2%
Improved medication adherence	1	1%
Improved fasting plasma glucose	1	1%

Barriers

Several barriers to the adoption of telemedicine for the management of breast cancer symptoms were identified in the literature.

Barrier Themes and Observations	Frequency	%
Must train users	20	41%
Cost of intervention	18	37%
Time of providers / workflow	6	12%
Intervention not effective	2	4%
Intervention not statistically effective	2	4%
Low reimbursement of treatment	1	2%

Conclusions

Telehealth offers promise to help breast cancer survivors cope with the side effects of treatment, the mental anguish that shakes confidence, and the physical ailments that accompany chemotherapy. Several exercise applications show promise educating and helping survivors establish healthy habits to lower the risk of reoccurrence. The most significant barrier is training followed by cost, but these are not significant barriers to overcome.

Table 1. PICOS.

Authors	Participants	Experimental Intervention	Results (Compared to Control Group)	Medical Outcomes Reported	Study Design
Borosund et al. [19]	Adults ≥ 18, avg age 51.4	Internet-based patient-provider communication service	Intervention group reported significantly lower symptom distress, anxiety, and depression	nurse-administered IPPC alone can significantly reduce depression, decreased symptom distress, decreased anxiety	RCT
Freeman et al. [20]	Adults ≥ 18, avg age 55.4	Telemedicine (TD) [vs live vs. wait list]	TD (and Live) reported less fatigue, cognitive dysfunction, and sleep disturbance with WL	improvements in multiple QOL domains for breast cancer survivors compared with WL Less fatigue, less cognitive dysfunction, fewer sleep disturbances	RCT

PICOS Table includes all 33 articles

Appendix A. Observation-to-Theme Conversion

Authors	Experimental Intervention	Intervention Themes	Results (Compared to Control Group)	Results Themes	Medical Outcomes Reported	Medical Outcome Themes	Study Design
Borosund et al.	Internet-based patient-provider communication service	Web-based (eHealth)	Intervention group reported significantly lower symptom distress, anxiety, and depression	Improved in at least one area Improved mental health Improved mental health Improved mental health Improved mental health	nurse-administered IPPC alone can significantly reduce depression, decreased symptom distress, decreased anxiety	Improved mental health Improved mental health Improved mental health Improved mental health	RCT

Observation-to-theme Table includes all 33 articles and 331 observations

Kruse, C. S., Pacheco, G. J., Vargas, B., Lozano, N., Castro, S., & Gattu, M. (2022, October). Leveraging Telehealth for the Management of Breast Cancer: A Systematic Review. In Healthcare (Vol. 10, No. 10, p. 2015). MDPI.

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