

INFORMASI ARTIKEL

Received: January, 10, 2026

Revised: January, 26, 2026

Available online: January, 27, 2026

at: <https://e-jurnal.iphorr.com/index.php/mhc>

Effects of e-health on family caregiving burden of cancer patients: A scoping review

Hesti Platini*, Sri Hartati Pratiwi, Indra Maulana

Fakultas Keperawatan, Universitas Padjadjaran

Corresponding author: *E-mail: hesti13001@unpad.ac.id

Abstract

Background: The increasing incidence of cancer means that more people are living with cancer, which increases the responsibility of informal caregivers. Most caregivers are not prepared to fulfil their duties when taking on responsibility for the treatment and care of patients, which can become a burden on caregivers and affect the care of cancer patients.

Purpose: To conduct a literature review that assesses the effects of e-health interventions on the burden of informal caregivers.

Method: The research method was a literature review using a scoping review approach. The scoping review used inclusion criteria for articles published between 2020 and 2025, using a randomized control trial and experimental study design, and published in English. Article selection used the PRISMA Flow Diagram. The databases used were PubMed and EBSCO. Proquest and engine search Google Scholar.

Results: The results of this literature search found 16,690 articles on e-health. However, only 18 articles met the inclusion criteria. Ten articles were complete but did not focus on the benefits of e-health on caregiver burden. Thus, only five articles met the inclusion criteria. Four e-health interventions were found to have an effect on reducing caregiver burden, such as stress, in family caregivers.

Conclusion: These findings indicate that e-health interventions have beneficial effects for informal caregivers of cancer patients in long-term care.

Keyword: Burden; Cancer; E-Health; Family Caregiver; Informal Caregiver.

INTRODUCTION

The increasing incidence of cancer has resulted in a growing number of individuals living with the disease, thereby increasing the responsibilities of informal caregivers, such as family members, and leading to significant caregiver burden, depression, and reduced quality of life. The burden associated with caring for patients with cancer has been linked to poorer physical and mental health outcomes for both caregivers and the patients they support (Meecharoen, Northouse, Sirapo-ngam, & Monkong, 2023). Particularly in the context of severe illnesses such as cancer, many patients wish to involve caregivers in treatment planning and care. While many caregivers are willing to be involved, they often

feel insufficiently empowered to do so (Trevino, Prigerson, & Maciejewski, 2018).

Long-term burden and stress resulting from caregiving negatively affect the physical and mental health of family caregivers, as well as their capacity to provide effective care. Cost-effective tools, such as digital health technologies, enable caregivers to delay and reduce public expenditure related to hospitalization, healthcare services, and long-term support (Weis, Pohlmann, Poss-Doering, Strauss, Ullrich, Hofmann, & Wensing, 2020). A diagnosis of a serious illness, such as cancer, in most cases signifies a fundamental change in patients' lives and life plans. The role of caregivers in supporting patients

is highly diverse, including monitoring symptoms and patient well-being outside professional care settings, as well as assisting patients in treatment decision-making. However, research indicates that most caregivers are not adequately prepared to fulfill these responsibilities when assuming caregiving roles in cancer treatment and care. Consequently, caregivers emphasize the need for additional information and support (Kent, Rowland, Northouse, Litzelman, Chou, Shelburne, & Huss, 2016).

The effects of cancer treatment may lead to long-term health problems, including chronic conditions, cognitive impairments, and psychosocial difficulties, all of which require ongoing support and management. In response to these challenges, digital health interventions have emerged as promising innovations to provide accessible support to individuals affected by cancer (Ancona, Caroppo, & De Lellis, 2025). The World Health Organization's (WHO) 2030 Agenda for Sustainable Development highlights that the dissemination of information and communication technologies, along with global connectivity, has significant potential to accelerate human progress, bridge the digital divide, and foster the development of knowledge-based societies (Dhingra & Dabas, 2020).

RESEARCH METHOD

The research method employed was a literature review using a scoping review approach. The scoping review applied inclusion criteria consisting of articles published between 2020 and 2025, utilizing Randomized Controlled Trial and Experimental Study designs, and published in the English language.

Article selection was conducted using the PRISMA Flow Diagram. The databases used included PubMed, EBSCO, and ProQuest. Study searches were carried out across three databases—EBSCO, ProQuest, and ScienceDirect—as well as the Google Scholar search engine. The search was conducted using the keywords *e-health* or *“electronic health”*, *“caregiver burden”* or *“burden caregiver”*, and *“cancer”*. The selected studies were then analysed.

The results of the literature search identified 1,690 articles related to e-health. Of these, 18 articles met the initial inclusion criteria. Ten articles were available in full text but did not specifically focus on the benefits of e-health in reducing caregiver burden. Consequently, five articles met the final inclusion criteria. Four e-telehealth interventions were identified as having a positive effect in reducing caregiver burden, including stress, among family caregivers. All studies indicated that e-health interventions were effective in reducing family caregiver burden. E-health solutions were found to reduce barriers related to distance in accessing information to help manage caregiver burden in the care of cancer patients. Four studies demonstrated that e-health interventions were able to improve quality of life. One study implemented an intervention in the form of online module provision. Across the four studies, depression was identified as one of the burdens experienced by family caregivers. Two articles reported that e-health interventions significantly improved caregivers' quality of life, while two other studies indicated that e-health interventions did not have a significant effect on improving quality of life.

Hesti Platini*, Sri Hartati Pratiwi, Indra Maulana

Fakultas Keperawatan, Universitas Padjadjaran
Corresponding author: *E-mail: hestii3001@unpad.ac.id

Doi: 10.56922/mhc.v4i5.2260

RESEARCH RESULTS

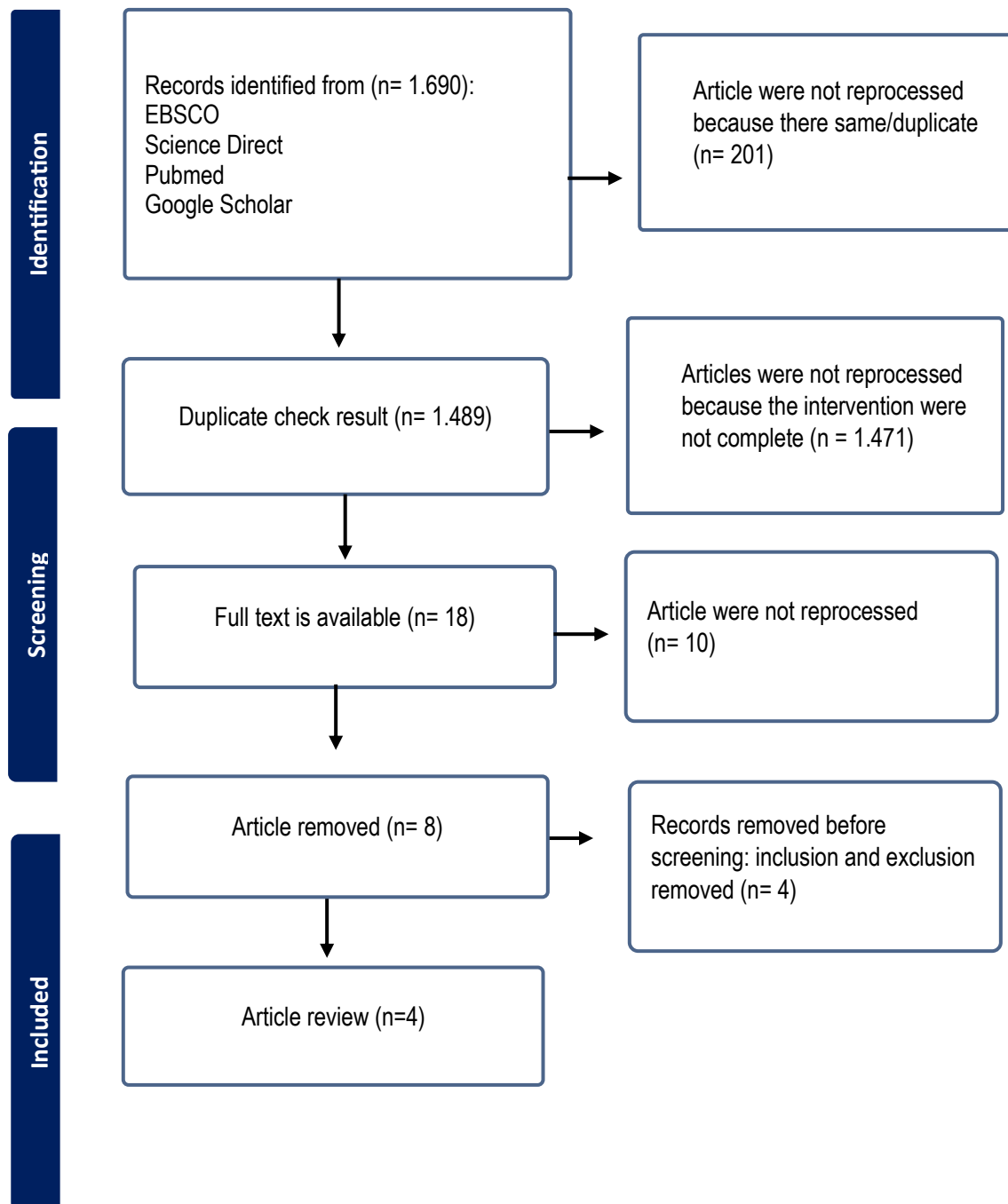


Figure. Diagram Prisma Flow

Hesti Platini*, Sri Hartati Pratiwi, Indra Maulana

Fakultas Keperawatan, Universitas Padjadjaran
Corresponding author: *E-mail: hestii3001@unpad.ac.id

Doi: 10.56922/mhc.v4i5.2260

Table 1. Article Review

(Author, Year) (Country)	Purpose	Method	Results
(Uysal et al., 2021) (Turkey)	To evaluate the effectiveness of a mobile application-based empowerment program specifically developed for caregivers of cancer patients undergoing radiotherapy.	RCT	The study results support the findings that a mobile device-supported empowerment program significantly reduced caregiver stress levels and improved quality of life during the radiotherapy treatment of their loved ones ($p < 0.001$).
(Sadhegi et al., 2025) (Turkey)	To examine the effect of virtual counselling on caregiving burden and quality of life among family caregivers of patients with leukemia.	RCT	The results of this study indicate that virtual counselling had a positive effect in reducing caregiving burden and improving quality of life among caregivers of patients with leukemia.
(Biliunaite et al., 2021) (Sweden)	To evaluate the effectiveness of a therapist-guided, internet-based program in reducing caregiver burden.	Pilot Study	The findings demonstrate that therapist-guided Internet-based Cognitive Behavioural Therapy (ICBT) was effective in reducing caregiver burden, anxiety, depression, and stress, as well as in improving quality of life.
(Mooney et al., 2024) (USA)	To examine the impact of home-based symptom management, an automated digital family caregiver coaching intervention, during home hospice care compared with usual hospice care (UC) on the primary outcome of overall caregiver burden.	RCT	The SCH intervention significantly reduced caregiving burden during home hospice care and supported the maintenance of caregivers' mood and vitality throughout the caregiving period, with benefits extending into the bereavement phase.

Hesti Platini*, Sri Hartati Pratiwi, Indra Maulana

Fakultas Keperawatan, Universitas Padjadjaran

Corresponding author: *E-mail: hesti13001@unpad.ac.id

Doi: 10.56922/mhc.v4i5.2260

DISCUSSION

One of the advantages of internet-based interventions is their ability to reach a wide range of individuals, including those in remote or underserved locations (Andersson, Titov, Dear, Rozental, & Carlbring, 2019). Moderate effect sizes, both between and within groups, were found in reducing caregiver burden in the intervention group (Kuijpers, Groen, Loos, Oldenburg, Wouters, Aaronson, & van Harten, 2025). The purpose of this study was to evaluate the effectiveness of a therapist-guided, internet-based program in reducing caregiver burden. The findings revealed that among the five components of caregiver burden, significant post-treatment reductions were observed in the Physical Health and Development subscales. The latter subscale includes items related to loss of personal life, emotional exhaustion, and restricted social life. Time scheduling, diary keeping, stress management exercises, and relaxation techniques were identified as the most helpful strategies in addressing caregiver burden (Uysal, Bağçivan, Özkaraman, Karaaslan Eşer, Çetin, Çalışkan, & Soylu, 2021). Internet-delivered cognitive behavioral therapy (ICBT) is one of the treatment formats that has been tested across various populations and has demonstrated levels of effectiveness comparable to face-to-face therapy (Carlbring, Andersson, Cuijpers, Riper, & Hedman-Lagerlöf, 2018).

Participants in both the experimental and control groups completed demographic forms, the Caregiver Burden Inventory (CBI), and the Caregiver Quality of Life Index–Cancer (CQOLC) (Sadeghi, Yousofvand, Falahan, Bonyad, & Alafchi, 2025). To assess the suitability of the intervention for the main study, the principal investigator delivered a six-week virtual counselling program (combining offline and online components) to the experimental group. Each weekly session lasted 45–60 minutes and followed a structured format. Multimedia content, including video clips, audio files, and text materials, was delivered weekly to participants via mobile phones. Participants were given 1–3 days to review the materials as part of the offline component. The study demonstrated that virtual counselling had a significant positive impact on caregiving burden and quality of life among family caregivers of patients with leukemia (Eton, Ridgeway, Egginton, Tiedje, Linzer, Boehm, & Anderson, 2025).

Due to limited resources, healthcare systems often respond to the increasing burden on primary care services by shifting care management responsibilities to patient caregivers without adequately enhancing their capacity to manage these conditions (Marcotte, Tremblay, Turcotte, & Michaud, 2019). Virtual visits have been proposed as a cost-effective mechanism to improve access to primary care and enhance chronic disease management through methods such as continuous monitoring and the promotion of behavioural change (Ose, Kunz, Pohlmann, Hofmann, Qreini, Krisam, & Szecsenyi, 2017). Virtual interventions tend to reduce caregiving burden for both patients and family caregivers when caregivers have positive experiences with the technology (Kelley, Phung, Stamenova, Fujioka, Agarwal, Onabajo, & Bhattacharyya, 2020). Therefore, e-health-related research focusing on caregiver burden among family caregivers of cancer patients may offer a scalable solution for reducing caregiver burden through virtual approaches (Vegasna, Tran, Angelaccio, & Arcona, 2017).

The impact of Symptom Care at Home (SCH), an automated digital family caregiver coaching intervention, during home-based care was compared with usual care (UC) to assess its effect on the primary outcome of overall caregiver burden (Sicotte, Clavel, & Fortin, 2017). Secondary outcomes included caregiver burden at weeks 1 and 8, with specific subscales related to mood and vitality. The SCH intervention significantly reduced overall caregiver burden compared with UC ($p < 0.001$), with a 38% reduction observed at eight weeks. The caregiver burden identified in this study included anxiety, depressed mood, fatigue, sleep disturbances, and disruptions to normal daily activities. The findings demonstrated that the intervention significantly reduced caregiving burden and supported the maintenance of family caregivers' mood and vitality throughout the caregiving period (Mooney, Coombs, Whisenant, Wilson, Moraitis, Steinbach, & Donaldson, 2024).

A randomized controlled trial (RCT) was conducted online in Lithuania among the general population. Respondents were allocated to an eight-week internet-based intervention or a waitlist control condition. Measurements were collected online at two time points: at baseline (pretreatment) and at the end

Hesti Platini*, Sri Hartati Pratiwi, Indra Maulana

Fakultas Keperawatan, Universitas Padjadjaran
Corresponding author: *E-mail: hestii3001@unpad.ac.id

Doi: 10.56922/mhc.v4i5.2260

of treatment (posttreatment), with an additional follow-up four weeks later. The primary purpose of the intervention was to provide participants with the opportunity to ask questions regarding treatment use and to express related concerns. Participants were granted access to one new module per week over the eight-week intervention period. The results indicated significant reductions in caregiver burden, including stress as measured by the Perceived Stress Scale–14 (PSS-14), as well as reductions in anxiety and depression scores measured using the Patient Health Questionnaire–9 (PHQ-9) and the Generalized Anxiety Disorder–7 (GAD-7). The study also demonstrated improvements in quality of life among family caregivers (Biliunaite, Kazlauskas, Sanderman, Truskauskaitė-Kuneviciene, Dumarkaitė, & Andersson, 2021).

Based on the reviewed articles, the most frequently assessed components of caregiver burden were psychological aspects, including depression, stress, and anxiety, particularly in the context of prolonged cancer care across various settings such as hospitals and home care. E-health interventions targeting caregivers were found to influence the level of caregiver burden experienced. Quality of life was also a commonly assessed outcome across the included studies. Findings from the four reviewed articles indicated that e-health interventions were effective in reducing anxiety among informal caregivers. These interventions may help meet caregivers' informational needs and enhance their confidence and caregiving abilities. E-health approaches can provide psychological interventions, strengthen interpersonal relationships, and offer training in stress management skills (Baudendistel, Winkler, Kamradt, Brophy, Längst, Eckrich, & Ose, 2025).

CONCLUSION

E-health interventions have beneficial effects for informal caregivers of cancer patients receiving long-term care. E-health interventions can alleviate caregiving burden and anxiety among informal caregivers; however, they do not have a statistically significant impact on depression and overall quality of life.

Hesti Platini*, Sri Hartati Pratiwi, Indra Maulana

Fakultas Keperawatan, Universitas Padjadjaran
Corresponding author: *E-mail: hestii3001@unpad.ac.id

Doi: 10.56922/mhc.v4i5.2260

REFERENCES

- Ancona, C., Caroppo, E., & De Lellis, P. (2025). Digital solutions supporting the quality-of-life of European cancer patients and their caregivers: a systematic literature review. *Health and Technology*, 15(2), 243-272.
- Andersson, G., Titov, N., Dear, B. F., Rozental, A., & Carlbring, P. (2019). Internet-delivered psychological treatments: from innovation to implementation. *World Psychiatry*, 18(1), 20-28.
- Baudendistel, I., Winkler, E., Kamradt, M., Brophy, S., Längst, G., Eckrich, F., & Ose, D. (2025). The patients' active role in managing a personal electronic health record: a qualitative analysis. *Supportive Care in Cancer*, 23(9), 2613-2621.
- Biliunaite, I., Kazlauskas, E., Sanderman, R., Truskauskaitė-Kuneviciene, I., Dumarkaitė, A., & Andersson, G. (2021). Internet-based cognitive behavioral therapy for informal caregivers: randomized controlled pilot trial. *Journal of medical Internet research*, 23(4), e21466.
- Carlbring, P., Andersson, G., Cuijpers, P., Riper, H., & Hedman-Lagerlöf, E. (2018). Internet-based vs. face-to-face cognitive behavior therapy for psychiatric and somatic disorders: an updated systematic review and meta-analysis. *Cognitive behaviour therapy*, 47(1), 1-18.
- Dhingra, D., & Dabas, A. (2020). Global strategy on digital health. *Indian pediatrics*, 57(4), 356-358.
- Eton, D. T., Ridgeway, J. L., Egginton, J. S., Tiedje, K., Linzer, M., Boehm, D. H., & Anderson, R. T. (2025). Finalizing a measurement framework for the burden of treatment in complex patients with chronic conditions. *Patient related outcome measures*, 117-126.

- Kelley, L. T., Phung, M., Stamenova, V., Fujioka, J., Agarwal, P., Onabajo, N., & Bhattacharyya, O. (2020). Exploring how virtual primary care visits affect patient burden of treatment. *International Journal of Medical Informatics*, 141, 104228.
- Kent, E. E., Rowland, J. H., Northouse, L., Litzelman, K., Chou, W. Y. S., Shelburne, N., & Huss, K. (2016). Caring for caregivers and patients: research and clinical priorities for informal cancer caregiving. *Cancer*, 122(13), 1987-1995.
- Kuijpers, W., Groen, W. G., Loos, R., Oldenburg, H. S., Wouters, M. W., Aaronson, N. K., & van Harten, W. H. (2025). An interactive portal to empower cancer survivors: a qualitative study on user expectations. *Supportive care in cancer*, 23(9), 2535-2542.
- Marcotte, J., Tremblay, D., Turcotte, A., & Michaud, C. (2019). Needs-focused interventions for family caregivers of older adults with cancer: a descriptive interpretive study. *Supportive Care in Cancer*, 27(8), 2771-2781.
- Meecharoen, W., Northouse, L. L., Sirapo-ngam, Y., & Monkong, S. (2023). Family caregivers for cancer patients in Thailand: An integrative review. *Sage Open*, 3(3), 2158244013500280.
- Mooney, K. H., Coombs, L. A., Whisenant, M. S., Wilson, C. M., Moraitis, A. M., Steinbach, M. N., & Donaldson, G. W. (2024). Impact of an automated, remote monitoring and coaching intervention in reducing hospice cancer family caregiving burden: A multisite randomized controlled trial. *Cancer*, 130(7), 1171-1182.
- Ose, D., Kunz, A., Pohlmann, S., Hofmann, H., Qreini, M., Krisam, J., & Szecsenyi, J. (2017). A personal electronic health record: study protocol of a feasibility study on implementation in a real-world health care setting. *JMIR Research Protocols*, 6(3), e6314.
- Sadeghi, A., Yousofvand, V., Falahan, S. N., Bonyad, S. A., & Alafchi, B. (2025). Effects of virtual counseling on the care burden and quality of life of family caregivers for leukemia patients: a randomized controlled trial study. *BMC nursing*, 24(1), 189.
- Sicotte, C., Clavel, S., & Fortin, M. A. (2017). A cancer care electronic medical record highly integrated into clinicians' workflow: users' attitudes pre-post implementation. *European Journal of Cancer Care*, 26(6), e12548.
- Trevino, K. M., Prigerson, H. G., & Maciejewski, P. K. (2018). Advanced cancer caregiving as a risk for major depressive episodes and generalized anxiety disorder. *Psycho-oncology*, 27(1), 243-249.
- Uysal, N., Bağçivan, G., Özkaraman, A., Karaaslan Eşer, A., Çetin, F., Çalışkan, B. B., & Soylu, Y. (2021). Empowering caregivers in the radiotherapy process: the results of a randomized controlled trial. *Supportive Care in Cancer*, 29(5), 2395-2404.
- Vegesna, A., Tran, M., Angelaccio, M., & Arcona, S. (2017). Remote patient monitoring via non-invasive digital technologies: a systematic review. *Telemedicine and e-Health*, 23(1), 3-17.
- Weis, A., Pohlmann, S., Poss-Doering, R., Strauss, B., Ullrich, C., Hofmann, H., & Wensing, M. (2020). Caregivers' role in using a personal electronic health record: a qualitative study of cancer patients and caregivers in Germany. *BMC Medical Informatics and Decision Making*, 20(1), 158.

Hesti Platini*, Sri Hartati Pratiwi, Indra Maulana

Fakultas Keperawatan, Universitas Padjadjaran
Corresponding author: *E-mail: hestii3001@unpad.ac.id

Doi: 10.56922/mhc.v4i5.2260