

## **SURAT KETERANGAN**

Nomor: 1829/UNUSA-LPPM/Adm-I/XI/2023

Lembaga Penelitian dan Pengabdian Kepada Masyarakat (LPPM) Universitas Nahdlatul Ulama Surabaya menerangkan telah selesai melakukan pemeriksaan duplikasi dengan membandingkan artikel-artikel lain menggunakan perangkat lunak **Turnitin** pada tanggal 02 November 2023.

Judul : *Effectiveness E-Health To Self Management Of Diabetes Mellitus Type 2 : Literature Review*

Penulis : Umdatus Soleha Firnanda Erindia, Siti Hardiyanti, Sigit Mulyono,  
Achsan Tudhonny

No. Pemeriksaan : 2023.11.17.598

Dengan Hasil sebagai Berikut:

**Tingkat Kesamaan diseluruh artikel (*Similarity Index*) yaitu 18%**

Demikian surat keterangan ini dibuat untuk digunakan sebagaimana mestinya

Surabaya, 17 November 2023

Ketua LPPM,



UNUSA  
LPPM

Achmad Syafiuddin, Ph.D.

NPP. 20071300

**LPPM Universitas Nahdlatul Ulama Surabaya**

Website : lppm.unusa.ac.id

Email : lppm@unusa.ac.id

Hotline : 0838.5706.3867

# EFFECTIVENESS E-HEALTH TO SELF MANAGEMENT OF DIABETES MELLITUS TYPE 2 : LITERATURE REVIEW

*by* Umdatus Soleha

---

**Submission date:** 02-Nov-2023 11:32AM (UTC+0700)

**Submission ID:** 2214947691

**File name:** 9\_Artikel\_EFFECTIVENESS\_E-HEALTH.pdf (250.59K)

**Word count:** 3037

**Character count:** 17143



## EFFECTIVENESS E-HEALTH TO SELF MANAGEMENT OF DIABETES MELLITUS TYPE 2 : LITERATURE REVIEW

Siti Hardiyanti<sup>1</sup>, Firnanda Erindia<sup>2</sup>, Sigit Mulyono<sup>2</sup>, Achsan Tudhony<sup>3</sup>, Umdatul Soleha<sup>4</sup>

<sup>1</sup>Indonesia University, Depok, West Java, Indonesia

<sup>2</sup>Airlangga University, Surabaya, East Java, Indonesia

<sup>3</sup>Muhammadiyah Lamongan University, Lamongan, East Java, Indonesia

<sup>4</sup>Nahdlatul Ulama Surabaya University, Surabaya, East Java, Indonesia

### ARTICLE HISTORY

Received: 14 July 2022  
Accepted: 28 August 2022

### CONTACT

Firnanda Erindia  
firnanda.erindia-  
2022@fkip.unair.ac.id  
Airlangga University, Surabaya,  
East Java, Indonesia

### ABSTRACT

**Introduction:** Patient and nurse is constructive relationship beneficial in a self-management support approach. Research shows e-health intervention has the potential to support self-management for adults with type 2 diabetes. The purpose this article to apply the application of e-health to people with type 2 diabetes mellitus.

**Method:** Method is search journal articles through basic data in ProQuest, Clinical key, EBSCO with a time span of 2018-2022, using the keywords "e-health intervention" and "diabetes mellitus type 2". The number of related articles is 10 journals.

**Results:** Results the literature review conducted showed that e-health has an effective and efficient impact on self-management in patients with type 2 diabetes mellitus, nurses can find time to find out the progress of people with diabetes mellitus, reduce the incidence of diabetes and complications.

**Conclusion:** Conclusion the use of e-health in self-management of people with diabetes mellitus has provided positive benefits for the development and improvement of service quality for the community. Health is a new medium in health services that requires broader knowledge and more in-depth practice, so the use of digital media in management needs to conduct further research in the focus of research on health.

**Keywords:** e-health, self-management, diabetes mellitus.

### Cite as:

Hardiyanti, S., Erindia, F., Mulyono, S., Tudhony, S., & Soleha, U. (2022). Effectiveness E-Health To Self Management Of Diabetes Mellitus Type 2 : Literature Review. *Indonesian J. of Community Health Nurs.*, 7(2), 74-79. Doi: 10.20473/ijchn.v7i2.30685

## INTRODUCTION

Diabetes mellitus is a chronic disease caused by an increase in blood glucose concentration which can cause various health complications (Menon et al., 2019). Diabetes mellitus is a disease that is still a problem for Indonesia. According to WHO data, in 2020 the prevalence of diabetes in Indonesia is in fourth place in the world, namely in 2010 there were 8.4 million diabetics and in 2020 it increased to 21.3 million sufferers (WHO, 2020).

One of the management in managing diabetes is self-management and multidisciplinary from various health workers regarding drug therapy, prevention and delay of diabetes complications (Menon et al.,

2019). The increasing number of diabetics requires an effort to reduce the incidence of diabetes, one of which is with health technology. Self-management is considered the most important factor in ensuring well-controlled blood glucose (BGL) levels and thus, preventing complications of diabetes, it has the potential to relieve the burden on the healthcare system by encouraging patient autonomy and enabling disease monitoring outside the clinical setting (Jeffrey et al., 2019).

The use of digital technology today greatly affects human life. increasingly sophisticated information technology has a positive impact on public health. In its application, many nursing activities can be carried out using modern technology (Jeffrey et al., 2019).

The use of electronic health services (eHealth) as self-management support for people with type 2 diabetes, has benefits in many ways, and is a promising way to reduce costs, increase the availability of care, and empower patients (Hansen AH, Bradway M, Broz J, Claudi T, Henriksen, Wangberg SC, 2019).

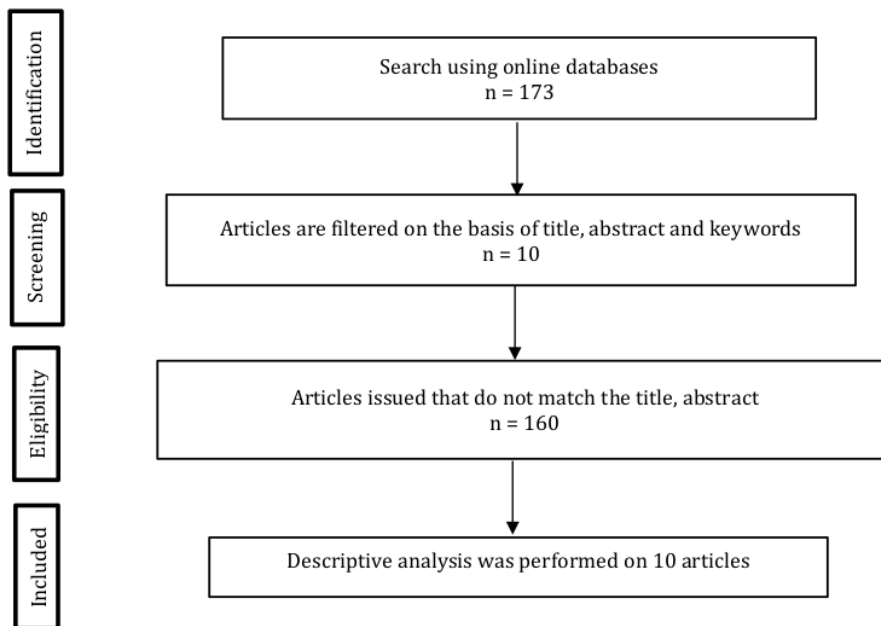
One of the benefits that can be used to improve the health and well-being of diabetics, especially the elderly, is technology-based diabetes management that helps diabetics change bad lifestyle behaviors (Menon et al., 2019), namely behavior in the lifestyle of diabetics, namely lack of exercise, lack of controlling blood sugar, consuming foods that are high in sugar, high in salt and high in fat, managing therapy and diets that are often underestimated by diabetics.

The increasing incidence requires an increasing expansion of services in people with diabetes. The use of health technology in nursing interventions or e-health interventions is expected to greatly help reduce the incidence of diabetes, WHO defines that with digital-based health technology or e-health and its use in information and communication technology for health, e-health can potentially provide high-quality health services. , effective, efficient, organized with the aim of supporting diabetes self-management in the community (Menon et al., 2019). Online interventions that target healthy lifestyles in adults with type 2 diabetes are more effective when informed by behavior change theory (Boels et al., 2019)

Diabetes is a chronic disease that requires long-term care that makes diabetics distress with the care they have so that if treatment is only done by having to visit a health service, it makes diabetics feel bored and difficult to make changes to their lifestyle behavior. The existence of this health technology (e-health) helps diabetics reduce their boredom with diabetes medication and care, because with this e-health they get more efficient and effective treatment to change their bad lifestyle behavior in order to reduce the occurrence of diabetes and complications in sufferers diabetes.

**METHOD**

This article is based on a literature review of several research journal articles that have been published in electronic databases. The electronic databases include: ProQuest, Clinicalkey, Ebsco with a span of 2018 to 2022 with findings of 173 journals. Identification of journals related to the topic raised by looking through the abstract and the contents of the research according to the keywords "e-health intervention" and "type 2 diabetes mellitus". As appropriate with related topics consider for a literature review. The final result of the selection of journals or articles obtained and critical appraisal is 10 journals.



Picture 1. Prisma Diagram Flow

**RESULTS**

The implementation of interventions has a great influence on the process of nursing care to help people meet the expected level of health. With the existence of intervention technology or e-health interventions to help nurses or the community in

controlling self-management and multidisciplinary from various health workers regarding drug therapy, preventing and delaying the occurrence of diabetes complications, reducing people's jumps lining up for health services, increasing time efficiency with a faster process and more affordable.

Table 1. Literature Search Results

No	Identity of Journal	Research Method	Result
1	(Anderson et al., 2021) International feasibility study for the Women's Wellness with Type 2 Diabetes program (WWDP): An eHealth enabled 12-week intervention program for midlife women with type 2 diabetes	True Experiment (RCT)	Women's Wellness With T2DM (WWDP) program with Health electronics
2	(Menon et al., 2019) Rethinking models of outpatient specialist care in type 2 diabetes using ehealth: Study protocol for a pilot randomized controlled trial	True Experiment (RCT)	Use of the Mobile Diabetes Management System (MDMS) in the elderly with type 2 DM
3	(Lie et al., 2019) The influence of an eHealth intervention for adults with type 2 diabetes on the patient-nurse relationship: a qualitative study	Qualitative research	Exploring the use of eHealth Interventions based on the Guided Self-Determination Program (eGSD) influencing the relationship between T2DM patients and caregivers
4	(Litchman et al., 2018) The diabetes online community: Older adults supporting self-care through peer health	Qualitative research	Exploring the use of Diabetes Online Community (DOC) and interest in use in the elderly.
5	(Poppe et al., 2018) Experiences and opinions of adults with type 2 diabetes regarding a self-regulation-based eHealth intervention targeting physical activity and sedentary behavior	Qualitative research	Use of regulatory interventions ('Myplan 2.0')
6	(Boels et al., 2019) Effectiveness of diabetes self-management education and support via a smartphone application in insulin-treated patients with type 2 diabetes: Results of a randomized controlled	True Experiment (RCT)	The use of "TRIGGER" in the intervention of diabetes mellitus
7	(Jeffrey et al., 2019) Mobile phone applications and their use in the self-management of Type 2 Diabetes Mellitus: A qualitative study among app users and non-app users	Qualitative research	Use of HP Applications in type 2 diabetes self-management
8	(Hansen AH, Bradway M, Broz J, Claudi T, Henriksen, Wangberg SC, 2019) Inequalities in the Use of eHealth Between Socioeconomic Groups Among Patients With Type 1 and Type 2 Diabetes: Cross-Sectional Study.	Cross Sectional	Use of 4 different eHealth platforms (app, search engine, video service, and social media site) and relationship to socioeconomic status (SES) among people diagnosed with type 1 and type 2 diabetes mellitus
9	(Guo et al., 2021) Relationships between mobile ehealth literacy, diabetes self-care, and glycemic outcomes in Taiwanese patients with type 2 diabetes: Cross-sectional study	Cross Sectional	Information search and use of health applications for behavior change in type 2 diabetes patients
10	(Schimmer et al., 2019)	Qualitative research	Explore the influence of ehealth design to support services

No	Identity of Journal	Research Method	Result
	Digital person-centered self-management support for people with type 2 diabetes: Qualitative study exploring design challenges		centered on the self-management of type Diabetes

**DISCUSSION**

Nursing is part of health services that are dynamic and will continue to experience changes from developments in the world and science. The rapid development of the digital world and the demands of the needs of today's digital society make nursing must continue to improve and adapt to the accelerated development of the world in health services. There are many renewable technologies that help the health care process, thereby enhancing the wider and more effective nursing process. E-health is a promising alternative to conventional therapy in the treatment of diabetics. Informative interaction between patient and team health by using information technology-based interventions may lead to improved diabetes care.

Nursing care activities that have these 5 activities namely assessment, data analysis, planning, implementation and evaluation require more time and effort if done manually. However, with digital developments that are quite sophisticated, helping nursing care activities is easier and more time efficient. The use of technology or digital media in the planning process helps health services, especially nurses, in dealing with diabetes health problems which are increasing with the rapid growth of the elderly.

Diabetes is a chronic disease that often occurs as a result of lifestyle behaviors, so a program is needed to help diabetes patients improve their behavior. Changes in behavior have triggers, namely triggers for behavior which are stimuli, or conditions for action.

One of the factors in changing behavior is self-management. The use of electronic self-management has more benefits:

1. Improved access

Getting something needed quickly, for example easily contacting the nurse on duty or the community in providing advice and new therapies. People do not have to wait long to get treatment or treatment when they have urgent problems, and get fast and strong answers and support as a service experience and support community learning about their own health. Thus reducing the incidence of complications due to diabetes mellitus. Patient support technology that allows patients to receive support from members of

the healthcare team either by telephone or through other applications.

2. Resource efficient

Limited resources in each health service lead to less than optimal service to the community, with the existence of this health technology it provides time and space to find out the needs in the community and collaborate with various health workers so that public health services are expected to be fulfilled in a better way. E-health through self-management, will bring convenience to patients and their family members who serve them.

3. Reducing administrative burden

The experience with overarching ministries is that they are forced to prioritize among administrative tasks. Much of the work is also governed by the increased use of time-consuming checklists over other tasks. This is very influential for the role of nurses to improve the health of type 2 diabetes mellitus. With the existence of health technology, there is no task required to report visits in electronic patient records and make records in the Swedish National Diabetes Register. There is no integration between the two systems, resulting in the recording of the same data in two places.

4. Ongoing support

E-health-based interventions increase knowledge and awareness of people with type 2 diabetes and its risk factors but some have no detectable impact on disease outcomes. Complex techniques and interfaces are a recurring problem among patients and healthcare workers. The community wants, what they want is something that is "easy to use" and equipped with "simple support", so that it responds to lifelong learning needs and takes into account differences in previous knowledge.

5. Targeted treatment

E-health is used as a communication device and is able to become a personal assistant in learning or controlling an activity in real terms. A strong desire and expectation for more individualization when using eHealth solutions. Patient goals for more personalization and expressed hope that eHealth technology should provide better tools for assessing individual patient needs. One nurse pointed out that it would be fine with "Customized profile, what the patient has to work on." Availability of more and more



easily accessible data was appointed as a promising enabler.

#### 6. Strong communication

The primary care unit shows that nurse-patient communication tends to be one-sided. The nurse leads the conversation, and the patient passively listens and responds to direct questions. With ehealth, communication between nurses and patients will be more efficient. save time and money. One-sided communication can lead to different perspectives, it is hoped that with this ehealth a change of perspective can be made and it is hoped that the community will express all the problems that the individual is experiencing.

#### 7. Empowerment of people with diabetes mellitus

The development of health technology helps patients increase their responsibility and self-care abilities and the importance of involving relatives, one nurse said that the goal is to make yourself redundant in order to work in a way that makes patients and relatives thrive

### CONCLUSION

The use of health technology (ehealth) is very beneficial in the nursing process. With the existence of eHealth, it can help nurses and the public in the process of improving self-management in people with type 2 diabetes mellitus. The use of eHealth can be expressed as an integral part of the nurse-sufferer relationship, improving patient self-management, increasing time efficiency with appointments at health services when needed. Leveraging ehealth is a good strategy as a multi-modal package (a pragmatic approach) to better understand its effects on clinical outcomes, stakeholder satisfaction and healthcare providers and reduce the hefty cost burden.

### REFERENCES

- Anderson, D., Sturt, J., McDonald, N., White, C., Porter-Steele, J., Rogers, R., Temple, A., Seib, C., McGuire, A., Tjondronegoro, D., Walker, R., & Sapkota, D. (2021). International feasibility study for the Women's Wellness with Type 2 Diabetes Programme (WWDP): An eHealth enabled 12-week intervention programme for midlife women with type 2 diabetes. *Diabetes Research and Clinical Practice*, 171(2021), 108541. <https://doi.org/10.1016/j.diabres.2020.108541>
- Boels, A. M., Vos, R. C., Dijkhorst-Oei, L. T., & Rutten, G. E. H. M. (2019). Effectiveness of diabetes self-management education and support via a smartphone application in insulin-treated patients with type 2 diabetes: Results of a randomized controlled trial (TRIGGER study). *BMJ Open Diabetes Research and Care*, 7(1), 1–11. <https://doi.org/10.1136/bmjdr-2019-000981>
- Guo, S. H. M., Hsing, H. C., Lin, J. L., & Lee, C. C. (2021). Relationships between mobile ehealth literacy, diabetes self-care, and glycemic outcomes in Taiwanese patients with type 2 diabetes: Cross-sectional study. *JMIR MHealth and UHealth*, 9(2), 1–14. <https://doi.org/10.2196/18404>
- Hansen AH, Bradway M, Broz J, Claudi T, Henriksen, Wangberg SC, Å. E. (2019). Inequalities in the Use of eHealth Between Socioeconomic Groups Among Patients With Type 1 and Type 2 Diabetes: Cross-Sectional Study. *Journal of Medical Internet Research*, 1438-8871, 21(5).
- Jeffrey, B., Bagala, M., Creighton, A., Leavey, T., Nicholls, S., Wood, C., Longman, J., Barker, J., & Pit, S. (2019). Mobile phone applications and their use in the self-management of Type 2 Diabetes Mellitus: A qualitative study among app users and non-app users. *Diabetology and Metabolic Syndrome*, 11(1), 1–18. <https://doi.org/10.1186/s13098-019-0480-4>
- Lie, S. S., Karlsen, B., Graue, M., & Oftedal, B. (2019). The influence of an eHealth intervention for adults with type 2 diabetes on the patient-nurse relationship: a qualitative study. *Scandinavian Journal of Caring Sciences*, 33(3), 741–749. <https://doi.org/10.1111/scs.12671>
- Litchman, M. L., Rothwell, E., & Edelman, L. S. (2018). The diabetes online community: Older adults supporting self-care through peer health. *Patient Education and Counseling*, 101(3), 518–523. <https://doi.org/10.1016/j.pec.2017.08.023>
- Menon, A., Fatehi, F., Bird, D., Darssan, D., Karunanithi, M., Russell, A., & Gray, L. (2019). Rethinking models of outpatient specialist care in type 2 diabetes using ehealth: Study protocol for a pilot randomised controlled trial. *International Journal of Environmental Research and Public Health*, 16(6). <https://doi.org/10.3390/ijerph16060959>
- Poppe, L., Crombez, G., De Bourdeaudhuij, I., van der Mispel, C., Shadid, S., & Verloigne, M. (2018). Experiences and opinions of adults with type 2 diabetes regarding a self-regulation-based eHealth intervention targeting physical activity and sedentary behaviour. *International Journal of Environmental Research and Public Health*, 15(5), 1–12. <https://doi.org/10.3390/ijerph15050954>
- Schimmer, R., Orre, C., Öberg, U., Danielsson, K., & Hörnsten, Å. (2019). Digital person-centered self-management support for people with type 2 diabetes: Qualitative study exploring design challenges. *JMIR Diabetes*, 4(3). <https://doi.org/10.2196/10702>
- WHO. (2020). *World health organization*.

# EFFECTIVENESS E-HEALTH TO SELF MANAGEMENT OF DIABETES MELLITUS TYPE 2 : LITERATURE REVIEW

---

## ORIGINALITY REPORT

---

18%

SIMILARITY INDEX

12%

INTERNET SOURCES

7%

PUBLICATIONS

9%

STUDENT PAPERS

---

## MATCH ALL SOURCES (ONLY SELECTED SOURCE PRINTED)

---

2%

★ Dawn Choo, Sathana Dushyanthen, Kathleen Gray, Daniel Capurro et al. "Designing a professional development online short course to foster Learning Healthcare Systems", International Journal of Medical Informatics, 2022

Publication

---

Exclude quotes Off

Exclude matches Off

Exclude bibliography Off