

Volume: 11

Issue: 01

Years: 2021

Literature Review

Effectiveness Of eHealth Application In Community Nursing Settings

Kinantika Nur Dewanti¹, Sukihananto²

^{1,2}University of Indonesia Community Nursing, Indonesia

Email corespondent: kinantikanurd22@gmail.com



Editor: Agus Purnama
Received: 9 Nov 2020
Accepted: 10 Mar 2021
Published: 31 Mar 2021
Available Article :
10.33221/jiiki.v11i01.857

Copyright: ©2021 This article has open access and is distributable under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the name of the author and the original source are included. This work is licensed under a **Creative Commons Attribution-Share Alike 4.0 International License**

Conflict of interest statement: This research is independent of the conflict of interest of both individuals and organizations

Abstract

Introduction: Health promotion usually done by health professional as a community nursing to target group. However, the awareness about the importance of health promotion in society was lacked. Society that joined health promotion usually group that had an illness. This condition has caused the lack of knowledge, access, and community interest in this activity. The solution that can be done by health professional especially community nursing is develop a method by current technology. The technology is called electronic health (eHealth).

Objective: to determine the effectiveness of eHealth application in community nursing setting

Methods: this study uses a literature review from UT's online database about electronic health (e-health). The article search process are accessed through internet data base searches, namely ProQuest, Science Direct, PubMed, Ovid, Wiley Online Library and Sage. Based on the review journal found 10 journals that have correlation with electronic health (eHealth). The results of the literature review were start from 2015-2020.

Results: the results of the literature show that eHealth was current technology than can increase the health service and health status.

Conclusion: Electronic Health (eHealth) is a solution for health service which suitable with current technology and can be applied in community nursing setting.

Keywords: eHealth, technology, community, promotive intervention, nurses

Introduction

According to the Ministry of Health, health promotion is a process of community empowerment in an effort to create maintenance and improvement of health.¹ This empowerment process aims to increase awareness, willingness, and ability related to health problems.¹ The empowerment process is carried out, by and for the entire community.¹ Based on this description, this health promotion is also influenced by each individual as someone who is responsible for their health. One of them is by seeking health information. *eHealth* is a use of technology to improve health, welfare, and health services.² eHealth develops simultaneously with the use of the internet in human life through personal computers (PCs), tablets, and smartphones.² The use of the internet in this increasingly developing technology provides an opportunity for patients to be more active in terms of health and welfare management.² This then affects health services to develop services that are easily accessible and also affordable, anytime and anywhere.²

Survey results *Global Observatory for eHealth(GOe)* (2015), all 194 member countries of WHO were surveyed whether they have national policies related to eHealth.³ According to GOe (2015), 125 respondents indicated that having a strategy for implementing eHealth is currently a rule; more than half of WHO member countries (n = 73; 58%) have eHealth strategies in place.³ Research shows that there is an increase in knowledge about reproductive health after being given health education showing a p-value of 0.012 ($p \leq 0.05$) and there is an increase in attitudes about reproductive health after being given health education showing a p-value of 0.001 ($p \leq 0.05$). This study used an Android / IOS based nursing service application for adolescent reproductive health.⁴

According to a survey by the Indonesian Internet Service Providers Association (APJII) (2016), it shows that 132.7 million or 51.8% percent of Indonesia's population already has internet access.⁵ This is one of the supporters in the process of developing eHealth-based health services in Indonesia. However, the implementation of eHealth in Indonesia still needs to be developed, especially in community service settings related to health promotion activities.

The application of telehealth with digital media is not limited by places such as the Village Hall, Head Office, Sub-District Office, Open Space, Client's House, etc.⁵ This is one of the advantages of implementing eHealth by providing easy access and attractive innovations so that enthusiastic clients in health service activities, one of which is health promotion. The purpose of this literature review is to review research results related to the application of eHealth for people in community settings.

Methods

The method of this writing scientific papers is a literature review. Search for articles through the Online Database UI: ProQuest, Science Direct, PubMed, Ovid, Wiley Online Library, and Sage. Based on journal reviews found 10 journals related to eHealth. The discussion on this scientific paper covers the application of eHealth in Indonesia, eHealth in community nursing settings, benefits, barriers, and challenges to using eHealth. The following are the journals the researcher analyzed.

Table 1. Article Literature Review

No.	Title	Authors	Objektive	Methods	Result
1.	eHealth application based on smartphone technology to monitoring clients in community	(6)	Discuss the type of e-health that can be used for health monitoring using smartphone	Literature study	In community setting, eHealth applications that can be used is RMHM (Remote Mobile Health Monitoring) and PHR (Personal Health Record) which can improve accessibility services for clients and health workers
2.	Mobile App-Based Health Promotion Programset	(7)	Knowing the features and uses of mobile apps based health promotion program for the population	Systematic Review	Based on results, the health outcomes on mobile health users better than user that don't use the apps
3.	Effectiveness of Web-Based Education and Consultation on Health Promotion Behaviors of Adolescents	(8),	Testing the effectiveness of health education and health promotion consultation to adults and their health literature	Randomized controlled	There are significant differences in the intervention group rather than in the control study which is on the Adults Life Style Questionnaire Adults ($p=0,004$), eHealth literature ($p = 0.001$).
4.	Technology for Breastfeeding Support	(9)	Conduct a review on interventions based on technology to support a breastfeeding process that consists of: internet based intervention, mobile and social media as a tool for increase the initiative of duration and exclusivity in the breastfeeding process	Systematic Review	Internet-based interventions for breastfeeding process is more impactful, strong and general. Intervention based on web is also cheap, efficient, ready 24 hours and provide a consistent information. The intervention need to be combined and adjusted with the standard of care for the exclusive breastfeeding process
5.	The Use of Information and Communication Technologies to Promote Healthy Lifestyle Behavior	(10)	Doing an evidence mapping on the use of information technology and communication on behaviors lifestyle related to healthy adult.	Systematic scoping Review	Use of technology effectively affects health behavior that enhance physical and mental health.

6. Effect of Providing Nursing Care with Web-Based Program on Maternal Self-Efficacy and Infant Health	(11)	Knowing the effectiveness of the web based program on primiparous women related to growth and development, infant health and self-control efficacy levels.	Randomized Controlled	Ratio of the babies to get exclusive breastfeeding higher on the intervention group rather than control. LATCH instrumentt average value about breastfeeding status and the parental self efficacy scale on the intervention group $p < 0.05$. Woman who participate in the web based program had a higher score.
7. Controlled trial of an mHealth Intervention to Promote Healthy Behaviors in Adolence (TeenPower): Effectiveness Analysis	(12)	Evaluating the effectiveness of life style changing after mHealth intervention for health promotion behavior on adolescents (TeenPower) and analyze predictors on the effectiveness of mHealth Intervention	Non Randomized Controlled	Outcome on the intervention mHealth (TeenPower) shows a signigicant value on nutrition ($p=0,03$), positive perspective in life ($p=0,01$) and holictic life style ($p=0,05$). Predictor analysis mHealth on older adolescent one shows a related significant about stress management.
8. Use of Mobile-Stroke Risk Scale and Lifestyle Guidance Promote Healthy Lifestyle And Decrease Stroke Risk Factors	(13)	Knowing the effectiveness of the Mobile & Stroke Risk Scale and Life Style Guidance (M-SRSguide) for promote a healthy lifestyle and reduce risk factors for stroke on risk group	Clinical trial with pre-test	After using M-SRSguide, on the control group show improvement a helthy diet, activity pattern and stress control ($p < 0,01$). The use of M-SRSguide effective for promotion of healthy life style.
9. Can Mobile Technology Improve Weight Loss in Overweight Adults?	(14)	Identifying the evidence for the effectiveness of mobile based applications and other related devices to weight loss on adult with obesity.	Systematic Review	The evidence indicates that technology based on mobile can be used for an integral tool and for a weight loss strategy in primary care setting
10. Using e-Health to Support for COVID-19 Education, Self- COVID-19, Assessment, and self-Symptom Monitoring In the Netherlands: Observational Study	(15)	Provides the use of the application on community about COVID-19 knowledge, assessment, and self observation in 7 days and assess the community satisfication about the application.	Observational Study	Implementation about the use of application was successful for educational program about COVID-19, assessment and self observation in 7 days

Results

eHealth Concept and Theory

The development of science, technology, and art is currently growing.¹⁶ This can be seen from the availability of more up-to-date and innovative communication or learning media.¹⁶ This development also occurs in health development efforts, especially in the field of health promotion.¹⁶ The telemedicine and eHealth systems that have been implemented in Indonesia consist of telenursing, primary health care telemedicine systems, telemedicine systems for epidemic management, electronic prescription systems, eHealth systems for TB disease management, mHealth systems, image processing-based eHealth systems, mobile telemedicine systems, ePsychology systems and open HER, open MRS system.¹⁷

Based on this explanation, one type of eHealth is mHealth (mobile health). According to the GOe survey (2015), mHealth or mobile health is the use of mobile devices such as cellphones, patient monitoring devices, personal digital assistants, wireless devices for medical practice and public health.³ The mHealth program consists of telephone-based health service centers, free emergency telephone services, adherence to care, reminders to keep appointments related to health activities, health promotion campaigns, mobile-based telehealth, emergency management systems, health surveys, surveillance, patient monitoring, access to information; resource; databases and tools, clinical decision support systems, electronic patient information, and mLearning.³

Ethical Principles Related to eHealth

Principles related to ethics in the application of eHealth, namely 1. respect for the dignity, integrity, and autonomy of patients, 2. nurses provide patient-centered services, 3. the importance of guidelines related to the use of digital technology and social media so that there is clarity of professional and private roles, 4. The use of social media by nurses must be based on critical knowledge and mental attitudes.¹⁸

Discussion

Benefits and Impacts

The benefits of eHealth, especially in the area of nursing, are 1. providing the best and safe patient-centered services, 2. supporting patient-centered services, 3. supporting health services that prioritize quality, patient safety, and sustainable care.¹⁸ *eHealth* provides benefits for the development of health services. eHealth supports processes such as service providers, surveillance, literature, education, knowledge, and health research.³ This aims to improve the quality of health services for the community.

The benefits of eHealth in the era of the COVID-19 pandemic

The use of eHealth in the pandemic era is an effort and solution to support services and is expected to be able to control the spread of COVID-19.¹⁹ Efforts are made using the internet, mHealth, telehealth, telemedicine, and EHRs.¹⁹ The results of the research conducted show that based on 60 articles and 8 studies based on inclusion criteria, it was found that the use of eHealth facilitates clinical and treatment decisions.¹⁹ Patients can access health services from home using telehealth and mHealth.

Efforts to reduce the risk of COVID-19 transmission are carried out by health facilities, as an effort to minimize direct contact with the use of eHealth which is useful for the safety of patients, health workers, and the community.²⁰ Several countries implement virtual-based services in the COVID-19 pandemic situation.²⁰ In several regions in Indonesia, eHealth has also been implemented in the COVID-19 era, such as tracking applications, online booking systems, online pharmacies, delivery services, online health education and telehealth consultations.²⁰

Barriers and Challenges to Using E-Health in Indonesia

Indonesia is a country with the 4th most population in the world and one of the countries

with the largest archipelago in the world.²⁰ With regard to eHealth, eHealth implementation is of course based on various aspects including infrastructure, health system readiness, and adaptation from socio-cultural contexts.²⁰

Obstacles and challenges in using eHealth in Indonesia can be seen from various aspects including 1. the application of this eHealth technology depends on the electrical, internet, or cellular system where in some parts of Indonesia there are limitations related to this, 2. telemedicine or in this case, including eHealth has not been integrated on an ongoing basis and is carried out routinely in health service practices, this is due to the lack of acceptance from professional staff and the lack of benefits obtained by patients, 3. Telemedicine is considered less effective, especially in a therapeutic process such as direct contact between patients and health workers, but if it is associated with the COVID-19 pandemic situation this is a challenge and necessary. 4. There are several physical assessments that cannot be replaced or carried out through an eHealth-based service system.²⁰

Application of E-Health by Nurses and Community Nurses

The target area of eHealth based on a nursing perspective is 1. Information management: nurses need to have adequate access to information and support decisions when providing services 2. Communication and Collaboration: nurses must use the eHealth application for communication and collaboration critically to provide benefits and use 3. Principles of Ethical Value, eHealth is implemented in accordance with the principles of dignity, integrity, and patient autonomy 4. Learning and Competence, in this case, eHealth is part of all levels of nursing education 5. Leadership and Management, eHealth is integrated as part of operational development and support for patient-based services 6. Technical support, eHealth services must be flexible, easy to access, and safe to support nurses in the area of responsibility of nurses and nurses who also need to actively play a role in the development of eHealth-based technical support and services 7. Research and Development, nurses must carry out research and explore quality projects to support eHealth development, especially those related to implementation by nurses and for the patient individually.¹⁸

Community and public health nurses in nursing practice emphasize the principles of disease prevention and health promotion.²¹ Community health nursing practice is collaborative and based on research and theory to be applied to individuals, families, aggregates and communities. obtained, the application of eHealth has been applied to disease prevention and health promotion measures in accordance with the principles of community nursing.

Conclusion

eHealth technology is a technology that is an innovation in the process of developing the latest nursing services. eHealth provides a solution for technology-based health services, for example, mHealth (mobile health), where most people currently have mobile phones. This provides a solution to make it easier for people to access health services. However, there are several things that need to be reviewed regarding the application of eHealth, so that it can develop and become a sustainable system in health service practices in Indonesia.

Nurses, in this case, community nurses, are expected to play a more active role in efforts to develop eHealth-based health services. Community nurses can provide information to the public regarding the use of eHealth that is tailored to the condition of the patient/client. So it is expected that the morbidity rate from patients/clients can decrease because the community has used eHealth-based technology related to health promotion. In addition, it is also hoped that this eHealth-based health service will become a solution, in order to achieve independent, right-on-target, efficient services that are in accordance with the times.

Conflict of Interest Declaration

This research is independent of the conflict of interest of both individuals and organizations.

Acknowledge

Author would like to thanks to Faculty of Nursing University of Indonesia, lecturer of the course (Management Information System Facilitator), Sekolah Tinggi Ilmu Kesehatan Indonesia Maju (STIKIM) for the support on this Literature Review.

References

1. Agustini A. Promosi kesehatan. Deepublish; 2014.
2. van Gemert-Pijnen L, Kelders SM, Kip H, Sanderman R. eHealth research, theory and development: a multi-disciplinary approach. Routledge; 2018.
3. Organization WH. Global diffusion of eHealth: making universal health coverage achievable: report of the third global survey on eHealth. World Health Organization; 2017.
4. Mawardika T, Indriani D, Liyanovitasari L. PENINGKATAN PENGETAHUAN DAN SIKAP REMAJA TENTANG KESEHATAN REPRODUKSI MELALUI PENDIDIKAN KESEHATAN BERUPA APLIKASI LAYANAN KEPERAWATAN KESEHATAN REPRODUKSI REMAJA (LAWAN ROMA) DI SMP WILAYAH KERJA PUSKESMAS BAWEN KABUPATEN SEMARANG. *J Keperawatan dan Kesehat Masy Cendekia Utama*. 2019;8(2):99–110.
5. Sunjaya AP. Potensi, Aplikasi dan Perkembangan Digital Health di Indonesia. *J Indones Med Assoc*. 2019;69(4):167–9.
6. Rohayati R. Aplikasi e-Health Berbasis Teknologi Smartphone dalam Monitoring Klien di Komunitas: Studi Literatur. *J Penelit Kesehatan" SUARA FORIKES"(Journal Heal Res Forikes Voice)*. 2020;11(2):120–4.
7. Lee M, Lee H, Kim Y, Kim J, Cho M, Jang J, et al. Mobile app-based health promotion programs: A systematic review of the literature. *Int J Environ Res Public Health*. 2018;15(12).
8. Coşkun S, Güvenç G, Bebiş H. Effectiveness of web-based health education and consultation on health promotion behaviors of adolescents. *Gulhane Med J*. 2020;61(4):139–46.
9. McArthur L, Ottosen MJ, Picarella L. Technology for Breastfeeding Support: A Systematic Review. *J Informatics Nurs [Internet]*. 2018;3(1):21–26,32. Available from: <https://search.proquest.com/docview/2126783657?accountid=42404>
10. Joseph-Shehu EM, Ncama BP, Mooi N, Mashamba-Thompson TP. The use of information and communication technologies to promote healthy lifestyle behaviour: A systematic scoping review. *BMJ Open*. 2019;9(10).
11. Sari C, Altay N. Effects of providing nursing care with web-based program on maternal self-efficacy and infant health. *Public Health Nurs*. 2020;37(3):380–92.
12. Sousa P, Martinho R, Reis CI, Dias SS, Gaspar PJS, Dixe M dos A, et al. Controlled trial of an mHealth intervention to promote healthy behaviours in adolescence (TeenPower): Effectiveness analysis. *J Adv Nurs*. 2020;76(4):1057–68.
13. Dharma KK, Parellangi. Use of mobile-stroke risk scale and lifestyle guidance promote healthy lifestyles and decrease stroke risk factors. *Int J Nurs Sci [Internet]*. 2020;7(4):401–7. Available from: <https://doi.org/10.1016/j.ijnss.2020.08.001>
14. Wang E, Abrahamson K, Liu PJ, Ahmed A. Can Mobile Technology Improve Weight Loss in Overweight Adults? A Systematic Review. *West J Nurs Res*. 2020;42(9):747–59.
15. Timmers T, Janssen L, Stohr J, Murk JL, Berrevoets MAH. Using eHealth to support COVID-19 education, self-assessment, and symptom monitoring in the Netherlands: Observational study. *JMIR mHealth uHealth*. 2020;8(6):1–13.
16. GEJIR IN et al. Communication media in health education. Yogyakarta: ANDI; 2017.
17. Santoso BS, Rahmah M, Setiasari T, Puji S. Perkembangan dan masa depan telemedika di indonesia. *Res Gate [Internet]*. 2015;2(100):8. Available from: https://www.researchgate.net/profile/Budi_Santoso28/publication/281497363_PERKEMBANGAN_DAN_MASA_DEPAN_TELEMEDIKA_DI_INDONESIA/links/55eb90cf08ae3e1218469f85/PERKEMBANGAN-DAN-MASA-DEPAN-TELEMEDIKA-DI-INDONESIA.pdf
18. Swedish Society of Nursing. EHealth Strategy A Strategy for Nurses. Stockholm; 2013.
19. Tebeje TH, Klein J. Applications of e-Health to Support Person-Centered Health Care at the Time of COVID-19 Pandemic. *Telemed e-Health*. 2020;00(00):1–9.
20. Sutarsa N, Astuti AS, Choy M, Moore M. EDITORIAL COVID-19 Pandemic: Opportunity to Accelerate e-Health in Indonesia. *Public Heal Prev Med Arch [Internet]*. 2020;8(1):1–3. Available from:

<https://phpmajournal.org/index.php/phpma/issue/view/17>

21. Nies M. & MM. Community Public Health Nursing. Edisi Indonesia Edisi Indonesia oleh Junaiti S., Agus.S & Ni Made R. Singapore: Elsevier; 2019.