

## The Effectiveness of Implementation Telenursing in Health Education Intervention in Children with DM: Literature Review

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### Abstract

*Introduction: Global technological advances occur in the development of health service information and communication systems, one of which is a nursing service information system. Telenursing is one of the information and communication system technologies for remote nursing services that is carried out virtually in providing nursing care practices. Based on data from the Indonesian Pediatrician Association (IDAI) that the incidence of DM has increased in children aged 0-18 years over a period of 10 years. However, in some countries that diabetic patients do not receive health education in conducting self-monitoring and control of complications. Objective: Generate descriptions and ideas from the selection of several literature reviews on the application of a communication system for nursing services, namely telenursing to facilitate the provision of health education interventions for DM children. Methodology: Analyze and select nursing journals related to telenursing and Health Education in DM children. Results: On the results of the analysis and review of several selected journals, a conclusion is obtained that telenursing communication technology can improve and facilitate nursing care services, namely Health Education in DM children. Conclusion: nurses can use technology to improve nursing care services in conducting health education interventions that are easily accessible quickly and affordable by the community.*

**Keywords: Telenursing; children; health education;**

## **Introduction**

Global technological advances occur in the development of health service information and communication systems, one of which is a nursing service information system. Telenursing is one of the information and communication system technologies for remote nursing services that are carried out virtually in providing nursing care practices. The network telenursing was launched in 2009 with the aim of finding, educating, and collaborating with nurses in supporting the improvement of nursing care services (Nelson and Staggers 2014).

The development of information technology plays an important role in improving nursing care services. Nurses in providing nursing care through telenursing continue to carry out the nursing process, namely reviewing, enforcing nursing problems and diagnoses, making treatment plans, implementing nursing actions, evaluating and documenting nursing care. Telenursing is also a process in providing health education to clients and families as well as providing referral system services.

The application of Therapeutic communication through telenursing aims to foster and establish a trusting relationship between nurses and clients, families. Through communication telenursing, the relationship between nurses and patients can be done using telephone, internet or other communication tools.

In Indonesia, the first case of type-1 DM was diagnosed, most of the cases were in the age group 10 to 14 years, amounting to 403 cases, in the age group 5 years to 9 years the number of cases was 275 cases, in the age group less than 5 years. with a total of 146 cases, and the least occurred in the age group above 15 years which amounted to 25 cases.

Based on data from the Indonesian Pediatrician Association (IDAI) that the incidence of DM has increased in children aged 0-18 years over a period of 10 years. In the new cases that occur in type-1 and type-2 diabetes, the numbers differ between populations because their distribution varies by age and ethnicity.

The cause of type-1 DM is due to the interaction of many factors including the tendency to occur in genetics, environmental factors, the immune system, and pancreatic cells where the role of each of these causative factors results in the occurrence of type-1 DM, whose process is unknown. Type 1 diabetes cannot be prevented and can happen to anyone.

In type 2 DM, the causative factors are closely related to unhealthy patterns or lifestyles such as excess body weight, obesity, lack of physical activity or activity, hypertension, dyslipidemia, unhealthy or unbalanced diet patterns, and smoking habits.

Based on data from the Basic Health Research (Riskesmas) in 2013 showed that the incidence of risk factors for type 2 DM was 18.8%, which occurred in children aged 5 to 12 years because they were overweight and 10.8% experienced condition obesity. In children with type 2 diabetes, it is usually diagnosed at puberty or older.

Diabetes self-management support includes the use of diabetes medication, adoption of a healthy lifestyle, and patient education about self-care and routine screening (Powers and Marrero 2016). It was reported that self-management support can reduce the incidence and occurrence of diabetes complications (Kent et al. 2013), to improve quality of life and lifestyle behaviors, such as having a healthier diet and engaging in regular physical activity (Koetsenruijter et al. 2015) and to reduce diabetes-related stress and depression (Kent et al. 2013). However, in some countries diabetic patients do not receive health education when they leave health care facilities, leading to a lack of knowledge and skills in self-monitoring and complication control.

### **Method**

The method used in this study is a literature review. Literature review is a study conducted by analyzing selected literatures, in the form of journals or articles from various sources to come to a conclusion from new ideas or ideas. The literature reviews used in this study are journals that discuss topics with keywords, namely telenursing, pediatrics, and diabetes mellitus. The searches literature review for these journals were carried out through the Online Database including: Wiley, Sage, ProQuest, Scopus, Garuda and Oxford journals with a period of 5 years, from 2016 to 2021.

**Result**

The following is a search of the journals selected for analysis in the study literature review:

Table 1. Details of the results of the journals selected for the literature review

No	Author/Year	Title Research	Name of Journal	Objectives Research	Research Method	Research Result
1	(Yang, Jiang, and Li 2019)	The role of telenursing in the management of diabetes : A systematic review and meta-analysis	Public Health Nurs	To determine the effectiveness of telenursing in diabetes control.	Randomized controlled trial (RCT).	Telenursing is useful for patient education and behavioral interventions for diabetic patients.
2	Mustika, et. al. (2017)	Effect Telenursing Against Management of Nutrition in Patients With Chronic Illness Ever Treated In Space Roses And Space Ratna Sanglah Hospital in Denpasar.	Community of Publishing in Nursing (COPING)	To know the effect Telenursing against Management Nutrition Patient Chronic Disease After Out of Hospital	A quasi-experimental design with pre-test and post-test control group	There is an effect of telenursing on nutritional management of chronic disease patients.
3	(Royani n.d.)	Implementasi of Telenursing In Quality Improvement Services Nursing Homecare: Study Literature	Indonesian Journal of Nursing Health Science	to identify the application telenursing in improving service quality of nursing home care	Literature Review	The application of telenursing can improve the quality of home nursing services and telenursing services are used for monitoring, consultation, education and assessment.
4	(Fadhila and Afriani 2020)	Home Visit Based Management Information System of Telenursing	<i>Jurnal Keperawatan Silampari</i>	Analyzing picture information systems nursing home visit with telenursing	Modifying research theory (R) and development (D).	The ability of the patient program system and connected to the health service center.
5	(Wahyuni 2019)	Effect of Education with Telenursing Assistance on Behavioral Activities and Treatment of TB Patients in Pulmonary Polyclinic RSUD DR. Soedarso Pontianak West Kalimantan	<i>Jurnal Keperawatan dan Kesehatan</i>	to determine the effect of educational assistance to telenursing to the activity of the treatment of tuberculosis patients	Quasi-Experimental pre-test post-test with the control group	Mentoring education with telenursing changes the treatment activities of TB patients.

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6	(Ramadhani, Situngkir, and Exposto 2021)	The Effect of Telenursing Method Education on Compliance with Taking Fe Supplements in Pregnant Women	Keperawatan Florence Nightingale (JKFN)	to analyze the influence telenursing education on adherence to pregnant women.	Pre-experimental with group comparison design	There is an effect of telenursing education on compliance in pregnant women.
7	(Andriani, Maidaliza, and Alvaensi 2020)	Providing Health Education Through Telenursing on Increased Knowledge and Prevention of Pathological Leucorrhoea in Adolescents	Kesmas Asclepius Journal	To determine the effect of health education through telenursing with increased knowledge.	Quasi-experimental with group pre-post test	An increase in the level of knowledge before and after being given health education
8	Anggana, et. al. (2019)	Development of N-SMSI (Ners - Short Message Service Intervention) telenursing in the care of post-hospitalized TB (Tuberculosis) patients in Hospital	<i>Jurnal Ilmiah Ilmu Keperawatan Indonesia</i>	To analyze the development of N-SMSI telenursing in treating TB patients effectively and efficiently. To	study literature	N-SMSI has benefits in monitoring OAT consumption compliance.
9	(Fadhila and Afriani 2020)	Application of Telenursing in Health Services: Literature Review	<i>Keperawatan Abdurrah Journal</i>	determine the application of telenursing in health services.	Literature review	The application of telenursing has a positive impact on public health.
10	(Rahmawati, Idriansari, and Muharyani 2018)	Efforts to Increase Family Support for Type 2 Diabetes Mellitus Patients in Running Therapy Through Telenursing	<i>Keperawatan Sriwijaya Journal</i>	To analyze family support in increasing adherence to type 2 DM therapy	Quasi-experimental pre-test post-test control group	There are differences in family support in the intervention group and the control group

## **Discussion**

Literature search shows that the importance of developing nursing service information in the application of telenursing to perform nursing care. With the application of telenursing, it is easier for patients and their families to obtain information or health education that is useful in monitoring and self-care of patients.

Research by Mustika (2017) regarding the effect of telenursing on nutritional management in patients with chronic disease found that there is an effect of using telenursing on the nutritional management of chronic disease patients.

Research conducted by (Rahmawati, Idriansari, and Muharyani 2018), Efforts to increase family support for people with Type 2 Diabetes Mellitus in carrying out therapy through telenursing, there is family support in caring for patients with Diabetes Mellitus.

Research conducted by (Andriani, Moidaliza, and Alvaensi 2020), regarding the provision of health education through telenursing to increase knowledge in adolescents, it was found that there was an increase in the average level of knowledge and prevention of vaginal discharge in adolescents, before and after being given health education.

Research conducted by (Fadhila and Afriani 2020) regarding the application of telenursing in health services, it was found that the use of telenursing has a positive impact on providing health services to the community.

Research conducted by (Royani n.d.), regarding the application of telenursing in improving the quality of nursing services, showed that the application of telenursing can improve the quality of home care nursing services for monitoring, assessment, consultation, and education.

Based on a review or review of the literature of selected journals in this study, it was found that the application of telenursing carried out by nurses in providing nursing care, namely health education interventions were carried out effectively for monitoring and supervising the care of children with DM.

## **Conclusion**

The progress of developing information and communication systems in nursing services plays an important role in providing nursing care to children with DM. With technological advances that are useful to assist in improving health services, especially providing health education interventions for DM children. The implementation of the information system through telenursing is done by using telephone, internet or other virtual means. The application of health education with telenursing aims so that nursing services are carried out in an efficient, accessible and accessible time, thus facilitating and accelerating the provision of nursing care services to children with DM.

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