

## IMPROVEMENT OF KNOWLEDGE AND CARING BEHAVIOR THROUGH E-LEARNING: A LITERATURE REVIEW

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### Abstract

The incoming of 4.0 industrial revolution causes new various challenges to nurses to be always up to date with knowledge, and utilize it with technology and information advances. Science becomes the main basis for the nurse to provide the best nursing care to clients. E-learning can be an option for nurses to gain more knowledge through the electronic system. Some researches prove the use of e-learning in educating nurses can enhance knowledge of caring behavior in providing nursing care. In a study is also found that the use of e-learning in a course can help nurses acquire information to then become caring behavior up to 1 to 3 months. Therefore, this can be a good reference for hospitals in Indonesia which already uses e-learning to implement this method continuously. Moreover, it is not only for the nurses from those hospitals who can get the benefits from it but also nurses in any health care outside the hospital. Even though in some hospitals, the human resources, facilities, and infrastructures are still inadequate, nurses need to cleverly utilize e-learning or webinar as their instruments to gain knowledge from it.

**Keywords:** *e-learning*, knowledge, caring, webinar

### 1. Introduction

The nurse is someone who has passed the nursing higher education institutions, either from local or foreign institutions which are acknowledged by the government by the provisions of the legislation (1). Meanwhile, nursing practice is a service conducted by nurses to provide nursing care to the client. Nurses must provide nursing care to patients or clients according to a scientific basis. The objective of this applied science is to give proper nursing care to patients because without it; the nursing care cannot be implemented well (2). Eslamian, Moeini, and Soleimani (2015) state to be able to give proper nursing care, it is recommended for nurses to invest more in education which provides most updated knowledge and skill (3). The updated knowledge may help nurses in developing their skills in conducting nursing care (4).

However, the recent phenomenon shows that the nurses in healthcare facilities tend to fail to catch up with nurses in the education field in which nurses from education field are always exposed to updated knowledge about effective and efficient nursing care. If this continuously keeps happening, then the provision of nursing care will be merely based on habit or custom or instruction from a doctor without autonomous intervention (5). This phenomenon is caused by many factors, Renolen et al., states on their research that the overload nurses can affect to their will to update their knowledge and skill (6). Another study also showed that due to busy work, nurses do not have time to find literature on the latest operational standard procedures (7).

Then the arrival of the industrial revolution 4.0 posed a new challenge for nurses to keep up to date with knowledge by utilizing the advances in information technology. This is because the industrial revolution era 4.0 makes the integration of the use of technology and the internet so sophisticated and massive. Based on research conducted by the 2016 Alvares Research Center, in 2015 internet users in Indonesia reached 93.4 million users and will continue to grow until 2019 which will reach 133.5 million users. In 2020 Indonesia will reach 140 million internet users, Indonesia will become the most significant digital market in Southeast Asia by 2020 (8).

The development of internet technology is felt by all parties both in the personal environment, government to education. This is because internet technology can be a necessity to be applied as a medium of communication and interaction that can overcome the problems of distance and time. So e-learning is one way to answer the challenges of knowledge of nurses in the era of industrial revolution 4.0. Even though some hospitals have developed e-learning programs in the form of webinars. But so far the learning methods in e-learning have expanded rapidly in the area of education, but not otherwise in nurses in hospitals. Then it is necessary to study further whether if e-learning is implemented to nurses at the hospital, it will increase nurses' knowledge and caring behavior and the time needed to internalize it.

## **2. Objective**

Purpose of this literature review is to find out the implementation e-learning to the improvement of knowledge and caring behavior

## **3. Method**

The literature review has used PRISMA to describe the implementation e-learning to the improvement of knowledge and caring behavior

### **3.1 Eligibility Criteria**

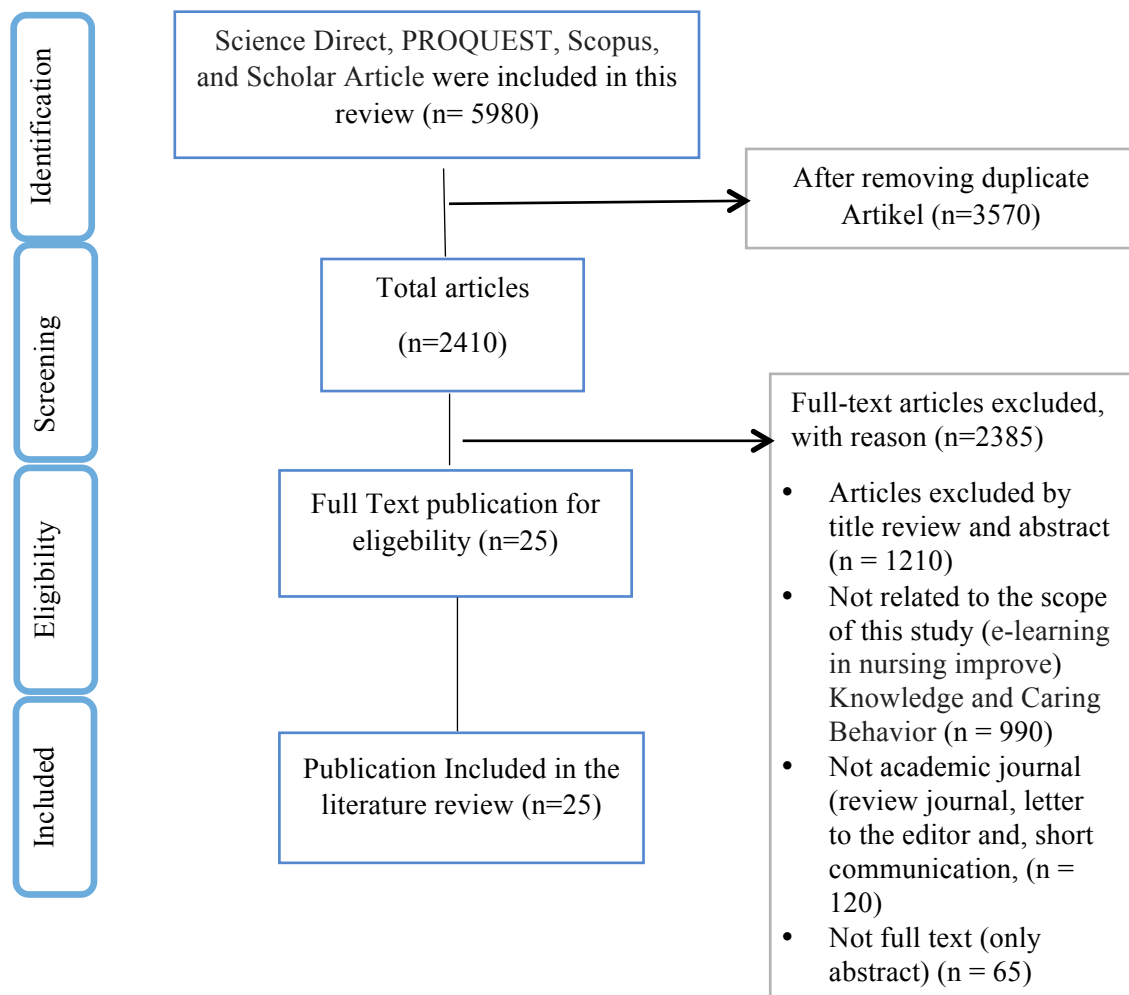
The study includes quantitative and qualitative research to explain the implementation of e-learning to the development of knowledge and caring behavior, with general criteria such as e-learning method, implementation of e-learning, and time needed to implement e-learning.

### **3.2 Search Strategy**

The author also uses several search keywords, "e-learning in nursing," "e-learning programs on nurse's knowledge and caring behavior," "webinars."

### **3.3 Study Selection**

To collect data in the form of an article, the author uses several databases including Science Direct, PROQUEST, Scopus, and Scholar Article.



#### 4. Result

E-learning is composed of two parts, namely "e" which stands for "electronica" and "learning" which means "learning" (9). E-learning means learning by using electronic device assistance services. In its implementation, e-learning uses audio, video or computer devices or a combination of the three. Bezhovski and Poorani (2016) stated that e-learning is learning that is arranged with the aim of using an electronic or computer system so that it can support the learning process (10). E-Learning is an effective learning process that is produced by combining digital material delivery consisting of support and service in learning (11). Teaching can be delivered at the same time (synchronously) or at different times (asynchronously) (12).

Xing *et al.*, (2018) states that e-learning is considered one of the right alternatives for learning while working (13). Arkorful (2014) shows there are several benefits of using e-learning which is low-cost, promoting independent learning, flexible as participants can learn anytime and anywhere, increasing knowledge through interactive learning, effectively motivating participants to discuss the materials with other participants as well as lecturers, accessible as participants can download materials and learn the material again (14). Peterson *et al.* showed the e-learning program about blood transfusions. In the program there are case studies, videos and tips to be able to practice it (15). Researchers say 89.3% of respondents said that the e-learning program provided increased knowledge about the practice of transfusion,

61.7% said the impact of this knowledge made them change behavior according to the latest knowledge, and 87.6% said increased knowledge improved the quality of care for patients. Dalhem and Saleh's (2014) study of the impact of e-learning on nurses by 70 nurses stated that 47.1% of nurses expressed satisfaction and e-learning had a positive effect on improving nurses' performance in conducting nursing care (16).

Padalino (2014) states several factors that cause nurses to prefer e-learning, which is more flexible regarding time, does not need to be present in activities but still gets knowledge (17). E-learning or "Internet-based education" has a positive relationship with the knowledge, skills, and behavior of nurses, and it ultimately can affect the patient's satisfaction (18). Morente, Morales, Veredas (2014) state that e-learning programs are very effective, and it helps nurses in influencing the provision of nursing care (19). Lahti, Hätönen, and Välimäki (2014) state that e-learning can improve knowledge and skills and satisfaction among nurses (20).

A study conducted by Bahrambeygi et al., showed the effectivity of the e-learning program shows the level of understanding and caring behavior on nurses are improving (21). Another study also stated that e-learning nurses in developing and broadening nurses' knowledge and skill. E-learning offers many options and positive benefits, such as flexibility, especially to nurses who work in shift (16). Moreover, a study argues that the broader the nurses' knowledge, the better the caring behavior of nurses have which will affect to patients' satisfaction (22). Vahdat, Hamzehgardeshi, and Hessam (2014) state that nurses' knowledge helps in collaborating with other health workers so that they can provide the best care for patients (23).

In Indonesia, the utilization of e-learning in hospitals is through a webinar, and the hospitals which conduct this program are including RSCM, RSAB, Kariadi, and Sarjito. According to the observation of each hospital, the webinars are held at different times depending on their schedules, and they provide various materials as well. Also, these hospitals set their criteria in which who can attend their webinars. The webinars can participate through a computer or mobile phone. However, this program does not include evaluation of nurses' knowledge since it is only conducted in one day.

## 5. Discussion

Tubaishat's (2014) research on the effectivity of e-learning about pressure ulcer on nurses which involves 119 nurses of an experimental group that acquires e-learning and 119 other nurses of the control group that receive materials from regular class shows the effectivity of e-learning program (24). The materials given are similar, and both groups have poor knowledge of classifying pressure ulcer during pre-test. This shows that e-learning can be effective media for nurses to learn.

Previous study confirmed that e-learning effect on nurses' knowledge on delirium involves 1196 nurses for three months (25). The training is conducted through e-learning which is sent via email to participants. The result is found that 978 nurses show improvement after the e-learning.

Another study described the effect of e-learning program toward the study of pressure ulcer in three months (26). The study on 44 nurses including pre and post-tests on 23 nurses of the intervention group and 21 nurses of the control group. However, only 13 nurses within the intervention group and 13 nurses from control group can be assessed through post-test. The result shows that there are no significant differences between the two groups. The researchers argue that their samples size are

too small, and the materials do not include a picture or case study to support the materials.

A study was conducted by Shin et al. also explained that the effect of e-learning in studying the neurological patients with samples of 24 nurses on the experimental group and 26 nurses on the control group (27). Moreover, these two groups learn autonomously, but with different methods in which the experimental group learn their material through e-learning while control group learns the material through handouts. Pre and post tests are conducted beforehand to measure their understanding of handling neurological patients. In the end, it is found that e-learning can effectively enhance nurses' skill in studying neurological problems.

Xing *et al.*, (2018) in his research stated that e-learning improves the accessibility and flexibility of nurses, making nurses helpful to keep studying. This is because during this time lack of nurses such as high workloads and lack of time prevented nurses from learning (13).

In addition, a study from Bahrambeygi et al. conducted a study which involving 106 nurses divided into two groups which are 53 nurses is exposed to e-learning, and the 53 others only get a regular class (21). Before the e-learning is conducted, nurses are required to do a pre-test to assess their knowledge. In a day, the e-learning group gets email on training materials and audiovisual explanation while the control group gets lectured for four hours by experts, then a post-test is given on the next day. This is continuously conducted within four weeks. To evaluate the nurse's behavior after getting lectures for a month, observation is performed to assess their quality of caring practice. The result shows that the e-learning group receives a higher score in caring behavior than classroom group. The researchers state that there are some definite factors in e-learning, such as flexible time, flexible place in which participants can choose the location to fit their learning style, and flexible materials in which participant can re-watch the whole lecture if they need to.

Even though this e-learning program has many benefits, there are also a few obstacles behind it. Muresan and Gogu, (2013) explain that e-learning needs competent human resources in establishing it (28). Moreover, facilities and infrastructure also need to support the program to achieve the learning objectives adequately. The main facilities and infrastructures include a computer, specific software, and the internet may become obstacles. Therefore, it is necessary for hospitals around to support each other in implementing this program. This is in line with research conducted by Lawn, Zhi, and Morello (2017) explains that since nurses have inconsistent working time which is three working shifts, and have a load of works, e-learning becomes the best option. Hence, it is expected that hospitals can develop a seminar, training, or workshop through e-learning (29). A strategy can be done by the seminar provider as well as e-learning developer through a webinar. The webinar is a kind of seminar which is conducted online or via the internet, so many people can access and watch the online lecture without attending to the venue where the seminar is held (30). There are a lot of hospitals, which already conduct webinar program, such as RSCM, Sarjito, RSAB, Kariadi. Through webinar, nurses can actively search for themes and seminar schedule from week to week. Hence, through this program, nurses can update their knowledge which later can be applied to patients in providing nursing care. Also, even hospitals cannot offer this program; nurses can take benefit from a webinar held by other hospitals.

## 6. Limitations

The limitation of this study is the implementation of e-learning in which the website interface of e-learning itself is not shown and strategies to motivate nurses to participate in e-learning

## 7. Conclusion and Recommendation

Nurses are supposed to provide nursing care to patients based on knowledge and science as nurses can give their best in providing nursing care to patients. However, nurses in hospitals find it hard to be able to catch up with updated knowledge and information on nursing care since they are too overloaded with work and changing working shift makes the nurses feel burdened. Therefore, the fourth industrial revolution becomes a challenge for nurses to be updated with recent knowledge and science through technology. The developing technology leads to internet utilization and innovation in various aspects, one of the aspects is education transformation. E-learning uses an electronic system to support any informal learning activities, including seminar, training, or workshop. Learning through e-learning can be efficient since the time is flexible, and can be accessed anywhere; also, the course can be replayed anytime. This study shows that e-learning program can improve nurses' knowledge as well as their caring behavior to patients. Each research is set to a certain duration to make it effectively enhance nurses' knowledge in 1 to 3 months.

In Indonesia, e-learning is used through a webinar. This program is adopted by some hospitals which attempt to provide updated information to nurses, for nurses can gain information efficiently and effectively.

This research suggests to strengthen and support the available e-learning program by providing information massively about this program through a webinar so that all nurses can take benefit from the program. Although in some certain hospitals the human resources, facilities, and infrastructures may inadequately support the nurses, it cannot be obstacles for nurses to utilize webinar as the instrument to educate themselves cleverly.

## 8. Acknowledgments

We would like to thank the *Universitas Indonesia* for facilitating a search database and to Indonesia Endowment Fund for Education (LPDP Scholarship) for supporting this study

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