

Melati Jafung 2022 KnE

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Submission date: 05-Aug-2022 08:34PM (UTC+0700)

Submission ID: 1879139111

File name: 2090286-2076405-29.-Melati-Fajarini_LAYOUT_turnitin.docx (78.13K)

Word count: 1948

Character count: 10840

Knowledge Transfer Through Mobile Application Needs: A Survey of Nurses as End Users

Abstract

Dissemination of evidence through a mobile application in the nursing area is a promising area of development. The effectiveness of this method of knowledge transfer encourages the development of a user-friendly mobile application responding to the needs of the nurses. However, nurses' needs have yet to be identified. This study aims to understand the needs for knowledge transfer through the mobile application of nurses. An online survey was conducted at two public and private hospitals in Depok City in August and September 2019. A questionnaire with four items of needs assessment and 12 items of application features importance was completed by 110 nurses. Descriptive analysis showed the majority of nurses reported the need for best evidence with an average of 5.41 for research summary, 5.49 for systematic review, 5.87 for clinical guidelines, and need for knowledge transfer through mobile application with an average of 5.65 on 7 ranged Likert scale. Most nurses rated 11 out of 12 features are important with a score of more than four out of five on the Likert scale. The highest mean is the feature search with keywords (4.68 ± 0.06) and the lowest in the quiz/games feature (3.82 ± 0.10). The study noted that knowledge transfer through a mobile application is needed by nurses. Future design of the mobile application based on the needs of nurses as end-users is feasible.

Keywords: evidence-based practice, evidence-based nursing, knowledge translation, mobile applications, need analysis

1. Introduction

Barriers to evidence-based practice (EBP) of nurses in low and middle-income countries were identified. Limited resources, access to information, institutional support, time, knowledge of EBP, and the gap between academic and clinical practice are some of the barriers reported [1]. This study still confirms EBP hindrance for more than a decade in previous studies in the South-East Asia region [2-4]. Adding, they are lack of ability in extracting and understanding evidence. It is unfortunate, considering EBP is beneficial for better patient outcomes [5-7], job satisfaction [6], financial expenditure [8], and clinical guidelines establishment [9].

Measures need to be taken to overcome these barriers. Evidence transfer as a part of knowledge translation focusing on conveying evidence [10] should be established. The World Health Organization (WHO) and the United Nations (UN) advise EBP strengthened by improved access to information [11, 12]. Specifically, mobile Health (m-Health) is encouraged [13]. Active dissemination of best evidence as a part of evidence transfer [14] utilizing ICT is necessary. ICT offers evidence transfer in a timely manner and cost-effective.

EBP implementation is potential in urban areas [15, 16]. Providers were equipped with information and communication technology (ICT) and made accessible for nurses. The internet was also available. This is in line with a survey that shows most people in the urban area using the internet [17]. The stakeholders also expressed their willingness to support EBP. Most nurses have used ICT for clinical and educational purposes. As well, they have expressed interest in using ICT to obtain and read the evidence in the future. Their perception of EBP was positive. This report was in line with the WHO's and UN's endorsement of ICT to improve EBP. As ICT and the internet are available at most healthcare providers, ICT for EBP is feasible. Optimizing ICT especially mobile application to transfer knowledge is necessary to overcome EBP barriers and to obtain EBP advantages. Therefore, further assessment of the nurses' needs should be examined. This study aims to analyze the nurses' needs for knowledge transfer delivered by mobile application.

2. Methods and Equipment

2.1. Methods

A quantitative descriptive approach was assigned to this study. It was conducted between August and September 2019 at one public and one private hospital in Depok City. The hospitals were purposely chosen based on their capacity in EBP and ICT identified from previous studies [15, 16].

The participants included were 110 nurses out of the total population of 282 nurses with inclusion criteria the nurses working at the hospitals. They were randomly chosen proportioned to each ward. Most of the survey was completed with the attendance of the researchers. Explanation about systematic review and research summary was given and examples were shown to ascertain the nurses' comprehension of the items in the questionnaire. The hospitals have clinical guidelines, but their evidence-based development requires further investigation. Therefore, the researchers referred to the clinical guidelines with the ones they have at their hospitals. Prior to the study, ethical approval was acquired from the Faculty of Nursing, Universitas Indonesia, and informed consents were obtained from the nurses who participated in the study.

2.2. Equipment

An online survey was undergone using a questionnaire with 16 items. It consisted of four items about the needs assessment and 12 items about the application features. The needs assessments included knowledge types (3 items) and method needs (1 item). The nurses were asked about the items' importance to contribute to the success of their work and their ability to evaluate (to understand) the items using 7 ranged Likert scale. Features needs in the mobile application were also asked (12 items) of their importance with a 5 ranged Likert scale. Nurses' suggestions were also noted at the end of the survey. The questionnaire were content valid (I-CVI=0.96-0.98 and S-CVI=0.69-0.88) and reliable (Chronbach's alpha=0.87) [18]. The needs were categorized into four quadrants based on the average of the scores which are high priority needs, low priority needs, and two incomprehensible evidence need quadrants. High scores (≥ 4) at the importance and evaluation ability, fall in the high priority need quadrant. A high score on the importance but low (< 4) on the evaluation ability, considered fall in the low priority need quadrant. While items judged low on importance but high on evaluation ability or both judged low were placed in the no needs quadrants. The features' importance was measured by mean.

3. Results

The participants' average age is 32.94 ± 6.07 years old, mostly female (82.7%), work in inpatient ward (41.8%), as nurse associate (80.9%), holding diploma degree (69.1%), graduated 8.53 ± 5.61 years ago, with 9.61 ± 6.32 years of experience. Their areas of interest in evidence are Medical Surgical Nursing (47.3%), Nursing Management (24.5%), Child Health Nursing (11.8%), and Emergency Nursing (10.9%) [19].

In terms of ICT, the majority of the participants have internet browsers (93.6%), used android (89.1%), and broadband 3G/4G (75.5%). Most of their mobile phone has more than 15 application installed, able to download 1-5 PDF, and more than 15 PDF (31.8% and 27.3%, respectively).

The majority of participants reported the need for the best evidence. More than 70% of participants scored the scale five to seven at the evidence importance in the success of their work and their ability to evaluate them. The average needs are 5.41 for research summary, 5.49 for systematic review, and 5.87 for clinical guidelines. They fell in the high priority need quadrant (diagram 1-3).

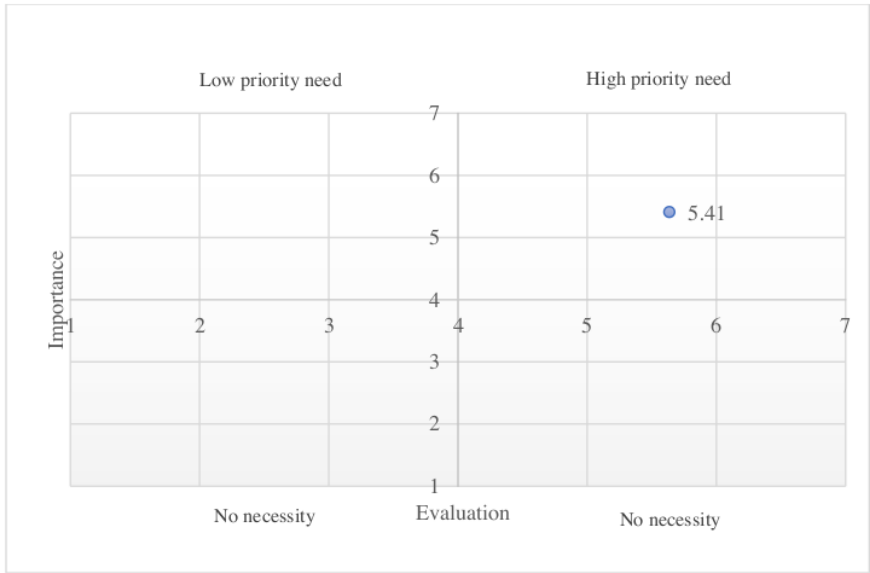


Figure 1: Research Summary Need.

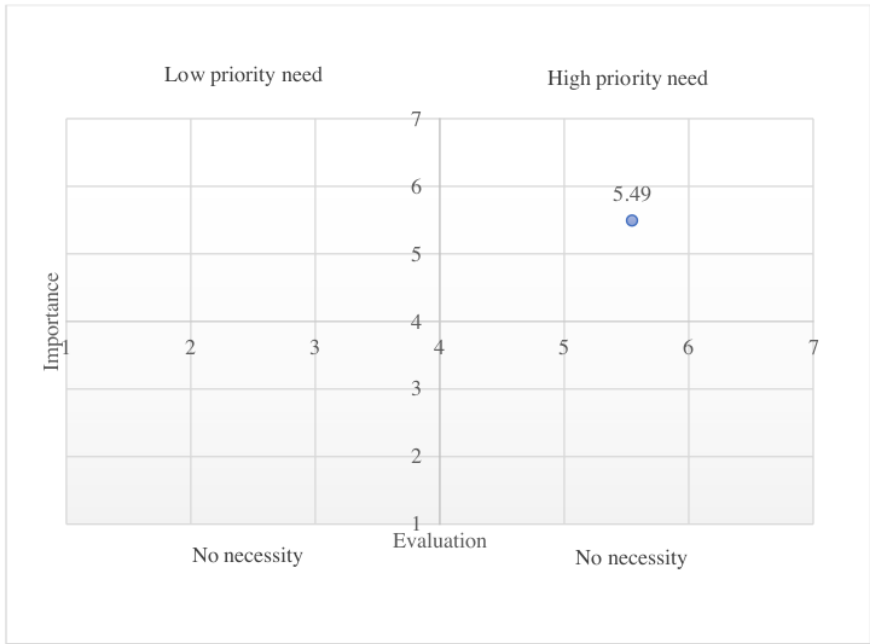


Figure 2: Systematic Review Need.

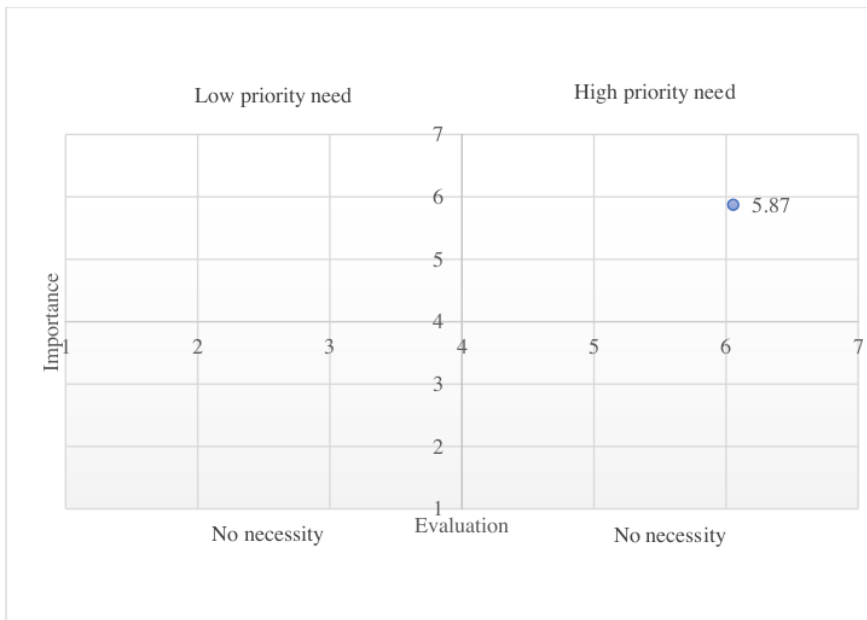


Figure 3: Clinical Guideline Need

As well, more than 80% participants reported the need in knowledge transfer through mobile application with the average of 5.65.

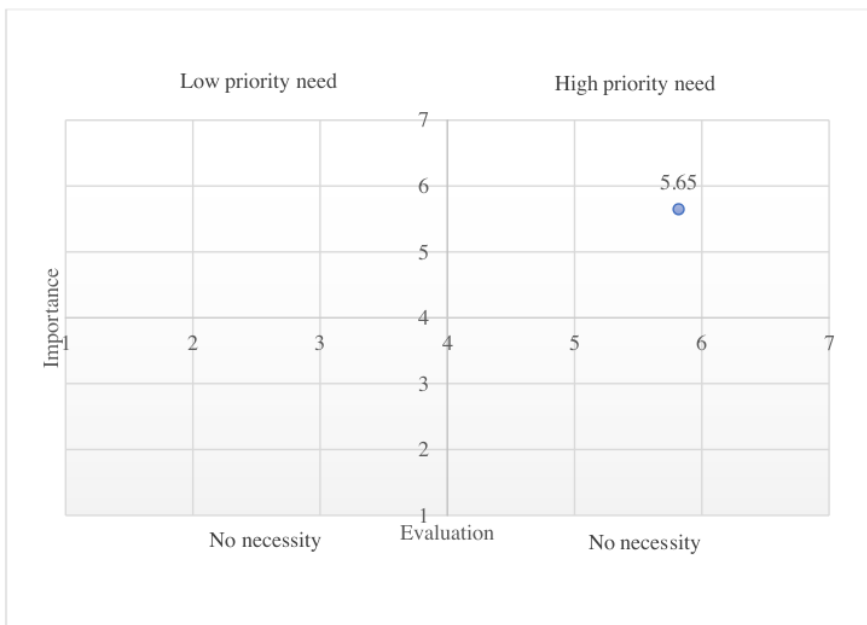


Figure 4: Knowledge Transfer through Mobile Application Need

Features favored in the application were surveyed. Most participants rate 11 out of 12 features are important with score more than four out of five in the Likert scale. The highest mean is the feature search with keywords (4.68±0.06) and the lowest is the quiz/games feature (3.82±0.10).

Table 1: Mobile Application Features.

No	Item	M ± SD
1	Information in text format	4.22±0.07
2	Information in diagram format	4.29±0.07
3	Best evidence recommendation	4.49±0.06
4	Interactive discussion forum	4.51±0.06
5	Access/link to evidence resource	4.63±0.06
6	Search with keywords e.g. wound care, etc.	4.68±0.06
7	Search with catalogue e.g. Medical Surgical Nursing, Child Health Nursing, etc.	4.65±0.06
8	Evidence request (you can inquire evidence you need)	4.66±0.06
9	Share (share information obtained from the app)	4.58±0.05
10	Save (save evidence from the app)	4.61±0.06
11	Quiz/games	3.82±0.10
12	Notification (on the latest evidence or features)	4.45±0.06

The nurses were also asked for suggestions. They requested that the evidence in Bahasa Indonesia, should be brief, easy to digest, up to date, and with pictures. Some participants suggested case studies and nursing diagnoses are presented, as well. The application should also user friendly and takes up low memory or storage space, free of charge, and to be released soon.

4. Discussion

The participants in this study have sufficient capacity in mobile technology. Most participants used smartphones with apps with adequate features. In the previous study, most nurses have the ability and access to use ICT available at their workplace especially computers or laptops for evidence purposes [15, 16]. Most nurses have also expressed their willingness to obtain evidence. Combined with internet availability, the provision of a mobile health app for knowledge transfer is feasible.

This study shows the majority of nurses need practical evidence. They viewed this evidence as important in the success of their work and they will be able to evaluate them. The clinical guideline is the most needed type of evidence, followed by systematic review and research summary. Studies [2-4, 20] found that nurses perceived evidence is not gathered in one place, unreadable and difficult to understand. Overwhelming research information was also noted. Research summary, systematic reviews, and clinical guidelines are the best evidence that are informative and brief. They are pragmatic [14]. Therefore, it will take a shorter time to read them compared to other types of articles. This will overcome the barriers that the nurses' experience and synthesis of evidence will be likely to occur.

Furthermore, the nurses accounted for needs in knowledge transfer through mobile technology. The nurses reported high priority knowledge needs through a mobile application,. Fagerström, C., et al. [21] explained the complication of incorporating ICT into nursing practice, although it is improving the nurses' knowledge. However, this study has showed the needs in knowledge transfer through mobile application, emphasizing the global recommendations to improve EBP through ICT [11, 12]. As well, mobile health [13]. and mobile applications were encouraged to overcome EBP barriers [22].

Mobile technology benefits may solve EBP barriers. Barriers of EBP which is time constrain are reported by nurses [2-4] in South East Asia, also confirmed in a hospital in Padang [23]. As well the research articles are not readily available. These barriers imply the need of real-time evidence. The transfer of knowledge delivery through ICT is embraced [14]. Mobile technology can answer its availability in a timely manner.

In relation to the value of knowledge transfer, evidence should be understandable, meet the context and needs, as well as the cost. Mobile applications can also answer information needs in a cost-efficient manner. Convenience is also an important point to be expected from this application. The nurses expect information that is easily accessible, easily understood, and in Bahasa Indonesia. Information initiative regarding evidence-based practice can be derived from mobile technology as promoted by WHO [13]. Therefore, the accomplishment of knowledge transfer through mobile applications should further proceed.

5. Conclusion

Utilization of ICT offers solution in overcoming EBP barriers among nurses. Its availability and access is promising, especially through mobile applications. However, its demand is unidentified. This study showed the need of best evidence, the method and features favored. Thus, designing a mobile application based on these needs should be proceeded.

Funding

This study is funded by the Indonesian Ministry of Research, Technology and Higher Education in the 2018 research scheme under Grant No. [67/AKM/MONOPNT/2019].

Acknowledgement

We would like to express our gratitude to the hospitals, nurse managers, clinical instructors and nurses involved in this study. Special thank for enumerators who helped in the data collection. Also for the reviewers, for their advice in this article completion.

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