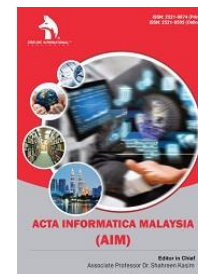


ZIBELINE INTERNATIONAL  
PUBLISHINGISSN: 2521-0874 (Print)  
ISSN: 2590-4043 (Online)  
CODEN: AEMCDV

## RESEARCH ARTICLE

**INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) LITERACY IN HEALTH CARE SERVICES AMONG THAI NURSES DURING THE COVID-19 PANDEMIC**

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## ARTICLE DETAILS

## Article History:

Received 18 November 2024  
Revised 22 December 2024  
Accepted 27 December 2024  
Available online 29 January 2025

## ABSTRACT

The qualitative study aims to describe Information and Communication Technologies (ICT) Literacy in Health Care Services among Thai Nurses during the COVID-19 Pandemic. The informants were Thai Nurses focused only on the nurses born between 1946 to 1964 "Baby Boomers" who work at QSNICH, a Public Hospital under the COVID-19 pandemic by using in-depth interviews with voice records and found saturated after 14 informants. Data were transcribed verbatim and analyzed using narration. The findings revealed that ICT Literacy in Health Care Services among Thai Nurses during the COVID-19 Pandemic 7 major themes as follows: 1) Baby Boomers nurses were proficient in using information and communication technology through the HIS Operations program but were not familiar with Computer Base System (CBS), Management System (MS), and Information System (IS). 2) Baby Boomers nurses gained confidence in using ICT for their tasks after receiving one-on-one training, and they often used their personal phones to communicate through the LINE application. 3) Baby Boomers nurses had a positive attitude towards ICT, believing it could improve their work systems. 4) Although most nurses had basic ICT skills, they were not fully knowledgeable about systems like Computer Base Systems (CBS), Management Systems (MS), and Information Systems (IS). 5) Baby Boomers nurses faced emotional and experiential barriers, primarily due to their limited ICT skills and some of them were concerned about adopting new technologies as they neared retirement age. 6) Baby Boomers nurses were comfortable using Microsoft Office, with a focus on Microsoft Word. However, they needed assistance with less familiar tools like Excel and PowerPoint. 7) Some Baby Boomers nurses actively sought to enhance their ICT knowledge and skills through online resources like Google, but others were hesitant to further develop their expertise.

## KEYWORDS

ICT, ICT Literacy, Health Care Services, Thai Nurses, during the COVID-19 Pandemic

## 1. INTRODUCTION

The current COVID-19 pandemic has tangible effects on all health-relevant careers including nursing. Digitalization and technologies are considered a response to the rising demand for Health Care Services, but all demands and changes are quite limited and confronted with various kinds of challenges (Bokolo, 2020). The holistic healthcare system is growing increasingly reliant on information and communication technology (ICT); as a result, nurses are required to improve their competency in ICT (Glasgow et al., 2018). Because ICT has been widely used in healthcare services and operations starting from the Western countries. ICT offers an enormous range of possibilities, and applications in all loops of healthcare services (Koivunen and Saranto, 2018). Most Health Care Services and the team must work integrated with multi-functions, multi-generations, and tools to maximize all levels of productivity both personally and in the whole healthcare system (Hisel, 2019).

The Ministry of Public Health is conducting a digital transformation operation to transform government hospitals into a smart hospital. So, most of the current medical policy has been changing its policy to be more on "Smart hospital" under all new emerging demands in this "New Normal" phenomenal, therefore ICT performances have kept it more

demanding among all health staff including nurses (Ministry of Public Health, 2020). Anyhow, even nurses are most of the healthcare team, the review found that their access to all kinds of relevant ICT in the healthcare system is very limited, especially in all kinds of advanced ICT (Kuek and Hakkennes, 2020; Van et al., 2016).

Thailand has entered a new wave of infections, with new cases expected to rise, and due to the policy of the Department of Medical Services, The Ministry of Public Health has made it mandatory for nurses to use nursing service information technology and management in accordance with the changes. This is related to the reasons; that nurses could develop skills and perform efficiently in order to achieve the organization's goals. To gain knowledge, one must be enthusiastic about learning and have powerful ICT literacy skills. In addition to having an environment that facilitates access to ICT that needs to be learned. According to the researchers, this study will serve as a guideline for executives and those involved in planning and promoting the development of nursing staff to be able to use ICT for personal and professional development, as well as management of information resources and organizing an environment conducive to the use of ICT.

## 2. OBJECTIVES

## Quick Response Code



## Access this article online

Website:  
[www.actainformaticamalaysia.com](http://www.actainformaticamalaysia.com)DOI:  
10.26480/aim.01.2025.01.06

- To study the current scenario of ICT demands and challenges in Health Care Services relevant to Thai Nurses during the COVID-19 pandemic.
- To study the current ICT literacy relevant to Health Care Services among Thai nurses during the COVID-19 pandemic.
- To propose ICT literacy empowerment among Thai nurses for Health Care Services during & post-COVID-19 pandemic.

### 3. RESEARCH METHODOLOGY

The study "Information and Communication Technologies (ICT) Literacy in Health Care Services among Thai Nurses during the COVID-19 Pandemic" used the qualitative method,

#### 3.1 Key informant

The primary data were collected through an in-depth interview of relevant 14 Key informants through the purposive sampling method. The key informants in this study were Thai Nurses focused only among the nurses born between 1946 to 1964 "Baby Boomers" who have had experience in using ICT through HIS, CBS, MS and IS operating systems and any kind of ICT-related uses in the organization at QSNICH, Public Hospital during the COVID-19 pandemic, in 2022.

#### 3.2 Research Tools

Research tools were the interview forms with semi-structured form composed of 3 main parts as follows.

- Part 1: To study Thai Nurses' knowledge and skills in using Information and Communication Technologies (ICT).
- Part 2: To study the current ICT literacy relevant to Health Care Services among Thai nurses during the COVID-19 pandemic.
- Part 3: To propose ICT literacy empowerment among Thai nurses for Health Care services & post-COVID-19 pandemic.

The interviewees were allowed to express their opinions in any way they saw fit as it is conveyed from direct experience in terms of events, opinions, and feelings. The questions were therefore focused on allowing Baby Boomers nurses to share their experience, knowledge and skills in using Information and Communication Technologies (ICT), ICT demands and challenges, current ICT literacy, ICT literacy empowerment consisting of main questions, as follow; "Do you have the knowledge and understanding of Information and Communication Technologies (ICT) including operating systems, Hospital Information System (HIS), CBS (Computer-Based Systems), MS (Management System), or IS (Information Systems) to provide health care services during the COVID-19 pandemic?" "Do you believe you have the skills to use Information and Communication Technologies (ICT) to provide healthcare services including operating systems Hospital Information System (HIS), CBS (Computer-Based Systems), MS (Management System) and IS (Information Systems) during the COVID-19 pandemic?" "Are you confident in using Information and Communication Technologies (ICT) to provide health care services with operating systems including Hospital Information System (HIS), CBS (Computer-Based Systems), MS (Management System) and IS (Information Systems) during the COVID-19 pandemic?" "How do you gain access to Information and Communication Technologies (ICT) during the COVID-19 pandemic? Are there enough readily available tools?" "Can you use ICT and any of these operating systems, including Hospital Information Systems (HIS), Computer-Based Systems (CBS), Management Systems (MS), and Information Systems (IS)?" "Do you require training in the effective use of Information and Communication Technologies (ICT) including operating system Hospital Information Systems (HIS), CBS (Computer-Based Systems), MS (Management Systems), or IS (Information Systems) in Health Care Services under and post COVID-19 pandemic?" The researcher transcribed all the participants' words as they were speaking. The transcription notes of the researcher were used as the basis of the analysis.

#### 3.3 Research tool test

The Colaizzi method was used to analyze data obtained in the form of content analysis. The main aims were to investigate associated Information and Communication Technologies (ICT) Literacy in Health Care Services among Thai Nurses during the COVID-19 pandemic. The research questions addressed all three primary objectives comprehensively, the current scenario of ICT demands and challenges, ICT literacy and ICT literacy empowerment among Thai nurses for Health Care Service during & post COVID-19 pandemic. Colaizzi's data analysis, which

was used in the research consists of 7 steps:

- Read the paraphrased interview several times to fully comprehend the informants' emotions.
- Analyze each statement on each page carefully to determine the text's significance.
- Determine the significance of the content and its significance.
- Determine the meaning of the keyword group.
- Gather the research findings and thoroughly describe them.
- Explain the unclear phenomenon as clearly as possible.
- Return the study's findings to the informants for validation.

The researcher used the process of phenomenological data analysis and transcribed the interviews developed by Colaizzi because it is consistent with the philosophy of phenomenological study, which believes that the informant gives their own meaning. This is because, in this method of data analysis, there was continuous checking of the data with the informants.

#### 3.4 Data Collection

This study adopted the qualitative research method to test the proposed model and conducted a semi-structural questionnaire survey from All the processes of data collection implemented from 01 July 2022 to 28 August 2022. Interviews should be conducted in a private room, quiet, and suitable. The interview time was 20-30 minutes. The data were recorded by a voice recorder.

#### 3.5 Data Analysis

The obtained data was analyzed and separated into issues while collecting data until it was found that there were repeated issues. The number of informants was saturated at 14 in total. Data analysis for this study and the empirical study to test its findings will be conducted using content analysis. This means that the data collected and transcribed would be scrutinized to identify keywords and phrases that were associated with ICT Literacy in Health Care Services among Thai Nurses during the COVID-19 pandemic. The researcher transcribed all the participants' words as they were speaking. The transcription notes of the researcher were used as the basis of the analysis. These words and phrases would be organized into major themes, which were interpreted for meaning by the originator or originators, and could then be discussed, and summarized. Data was analyzed by using content analysis as of the research design and ICT literacy's criteria for health services among nurses as follows these frameworks.

ICT in Health Care Services at QSNICH, a Public Hospital during the COVID-19 pandemic as follows:

- HIS (Hospital Information Systems)
- CBS (Computer-Based systems)
- MS (Management systems) and
- IS (Information Systems)

Baby Boomers nurses utilized information and communication technology in their workplaces, primarily through the HIS Operations program. HIS, but did not recognize Computer Base System (CBS), Management System (MS), and Information System (IS).

ICT literacy's criteria for healthcare services among nurses in performing their health services at QSNICH, Public Hospital during the COVID-19 pandemic are as follows.

Access: Baby Boomers nurses were assured of using ICT on regular tasks just before they had more confidence afterward being trained one-on-one to rely on Information and Communication Technologies (ICT), in addition to utilizing computers for work, they mostly use their personal phones to communicate through the LINE application.

Aware: Baby Boomers nurses had a positive attitude reliant on information and communication technology (ICT). They believed that it could facilitate a working system.

Knowledge: Most of the Baby Boomers nurses had only the fundamental

ICT knowledge and skills, which were not fully understood but could be used HIS, but did not recognize Computer Base System (CBS), Management System (MS) and Information System (IS), Baby Boomers Nurses actively engaged ICT by enhancing their knowledge through online resources such as Google, although portion of their reluctance to acquire further expertise.

**Skill:** Baby Boomers nurses encountered a range of emotional and experiential barriers, with the main issue being their limited ICT skills and their adoption of ICT, some of them were concerned as they approached retirement age, Baby Boomers nurses were familiar with Microsoft Office and use it when necessary. Most of them could use Microsoft Word, but Excel and PowerPoint were rarely used and required assistance if they needed to use it.

**Apply:** Baby Boomers nurses still could adapt and utilize ICT for their healthcare services.

#### 4. RESEARCH RESULTS

The results about the current scenario of ICT demands and challenges in Health Care Services relevant to Thai Nurses during the COVID-19 Pandemic are categorized into 12 main issues as follows (from 1.1-1.12).

##### 4.1 Part 1: Thai Nurses' knowledge and skills in using Information and Communication Technologies (ICT).

The overall Knowledge and understanding of (ICT) relevant to HIS, CBS, MS, and IS among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, Public Hospital during the COVID-19 pandemic found most of the nurses had only the fundamental ICT knowledge and skills which were not fully understood but could be used HIS but did not recognize Computer Base System (CBS), Management System (MS) and Information System (IS).

The overall ICT skills among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, a Public Hospital during the COVID-19 pandemic found Baby Boomers nurses had limited ICT skills, they need to be taught how to use Information and Communication Technologies (ICT) confidently because it must be used on a daily basis.

The overall confidence in using ICT among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, a Public Hospital during the COVID-19 pandemic found Baby Boomers nurses were assured using ICT on regular tasks just before they had more confidence afterward being trained one-on-one to rely on Information and Communication Technologies (ICT).

The overall accessible Information and Communication Technologies (ICT) tool among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, a Public Hospital during the COVID-19 pandemic found that in addition to utilizing computers for work, they mostly use their personal phones to communicate through the LINE application.

The overall attitude among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, Public Hospital during the COVID-19 pandemic The overall attitude found all the Baby Boomers nurses had a positive attitude reliant on information and communication technology (ICT). They believed that it could facilitate working system.

The overall ICT-related issues among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, Public Hospital during the COVID-19 pandemic found Baby Boomers nurses stated there were inadequacy and incompleteness of ICT infrastructure, such as insufficient and old computers including unstable internet signals, this issue led to numerous barriers in the completion of work.

The overall experiences with ICT among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, Public Hospital during the COVID-19 pandemic found Baby Boomers nurses encountered a range of emotional and experiential barriers, with the main issue was their limited ICT skills and their adoption of ICT, some of them concerned as they approached retirement age.

The overall concerns regarding the use of ICT among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, Public Hospital during the COVID-19 pandemic found the use of ICT was cause concern among Baby Boomers nurses. Even though they were confident in their ICT skills, their efforts were falling short of their goals due to a lack of effective equipment and internet access.

The overall concerns regarding an ICT tool among nurses under the "Baby

Boomers" generation to provide Health Care Services at QSNICH, Public Hospital during the COVID-19 pandemic found Baby Boomers nurses were concerned about the increasing workload during the COVID-19 pandemic as well as the lack of ready-made Information and Communication Technologies (ICT) equipment, which delayed the completion of work, causing stress.

The overall required training to use Information and Communication Technologies (ICT) among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, Public Hospital during the COVID-19 pandemic found Baby Boomers nurses were both interested in and opposed to Information and Communication Technologies (ICT) training, but if they might be trained, they prefer one-on-one instruction that begins with the fundamentals. They were opposed to taking online training. Furthermore, they frequently used Google to find additional information and knowledge.

The overall strengthened ICT skills among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, Public Hospital during the COVID-19 pandemic found Baby Boomers Nurses actively engaged in ICT by enhancing their knowledge through online resources such as Google, although a portion of their reluctance to acquire further expertise.

The overall ICT equipment accessibility and sufficiency among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, Public Hospital during the COVID-19 pandemic found some departments had sufficient computer resources, but many others lacked sufficient ICT equipment with an unstable HIS operation system, making it challenge to use. Additionally, the internet connection frequently experienced disruptions.

The results about current ICT literacy relevant to Health Care Services among Thai nurses during the COVID-19 Pandemic are categorized into 7 main issues as follows (from 2.1-2.8).

##### 4.2 Part 2: The current ICT literacy relevant to Health Care Services among Thai nurses during the COVID-19 pandemic.

The overall Access to Information and Communication Technologies (ICT) among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, Public Hospital during the COVID-19 pandemic found Baby Boomers nurses prefer to use the internet on their cell phones. This could be due to a lack of available computers and unreliable internet signals at the workplace, possibly caused by high usage rates leading to connectivity issues.

The overall ICT proficiency among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, a Public Hospital during the COVID-19 pandemic, found Baby Boomers nurses could leverage their previous experience with ICT to become more skilled at using it. However, some might be concerned about a slower learning pace due to age. They were worried that they may not learn as well as the younger nurses.

The overall employ ICT among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, Public Hospital during the COVID-19 pandemic, found Baby Boomers nurses were increasingly utilizing technology to request SAT codes for COVID-19 testing, and report results on the Ministry of Public Health website. They were also incorporating computers into their everyday tasks via the HIS program and utilizing the LINE application to communicate with various professionals.

The overall ICT in the workplace among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, Public Hospital during the COVID-19 pandemic, found Baby Boomers nurses utilized information and communication technology in their workplaces, primarily through the HIS Operations program. The LINE application was also commonly used on personal phones for communication among multidisciplinary teams. They accessed the Ministry of Public Health website on computers to report information and communicate effectively.

The overall frequency of using ICT among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, a Public Hospital during the COVID-19 pandemic, found Baby Boomers nurses use ICT in their main routine work through the hospital HIS operating system every day.

The overall concern about using ICT among nurses under the "Baby Boomers" generation to provide Health Care Services at QSNICH, Public Hospital during the COVID-19 pandemic, the study found that Baby Boomers nurses were concerned about their limited ICT skills and

upcoming retirement, which hinders their ability to embrace technology. While some nurses were less concerned about using ICT, they faced challenges due to the limited of ICT equipment.

The overall uses of ICT or Computer-based systems among nurses under the “Baby Boomers” generation to provide Health Care Services at QSNICH, Public Hospital during COVID-19 pandemic, the study found that most Baby Boomers nurses were proficient in Microsoft Word and had some knowledge of Microsoft Excel. However, when faced with complex tasks in Excel, they often need assistance from someone with more expertise. This also applied to their proficiency in PowerPoint.

The overall views or opinions about Using ICTs among nurses under the “Baby Boomers” generation to provide Health Care Services at QSNICH, Public Hospital under COVID-19 pandemic found Baby Boomers nurses believed that learning and adapting to using ICT at work was not difficult for them, although a few struggles due to concerns about their memory as they age.

The results of all the relevant recommendations for ICT literacy empowerment among Thai nurses for Health Care Services during and post-COVID-19 Pandemic are categorized into 8 main issues as follows (from 3.1-3.8).

#### 4.3 Part 3: The purpose of ICT literacy empowerment among Thai nurses for Health Care services & post-COVID-19 pandemic.

The overall relevant recommendations for ICT literacy empowerment among nurses under the “Baby Boomers” generation for Health Care Services under & post COVID-19 pandemic found Baby Boomers nurses suggest that personalized ICT training with a focus on fundamental computer skills would be beneficial for Baby Boomers nurses who may need additional training.

The overall learning to improve ICT skills relevant recommendations for ICT literacy empowerment among nurses under the “Baby Boomers” generation for Health Care Services under & post COVID-19 pandemic, found Baby Boomers nurses could enhance their ICT skills through consistent practice until they became adept. They can also expand their knowledge in various subjects by utilizing Google. Only a few individuals refrain from sharing their opinions.

The overall apply ICT in Health Services works relevant recommendations for ICT literacy empowerment among nurses under the “Baby Boomers” generation for Health Care Services under & the COVID-19 pandemic, found Baby Boomers nurses were not hesitant to apply their ICT knowledge and skills in their daily work assignments. They believed that consistent practice would improve their proficiency in using technology.

The overall broadened ICT skill into all the current tasks relevant recommendations for ICT literacy empowerment among nurses under the “Baby Boomers” generation for Health Care Services under & post COVID-19 pandemic, found Baby Boomers nurses did not pursue knowledge in using ICT because they thought that frequent use would make them more proficient.

The overall attitude to ICT training relevant recommendations for ICT literacy empowerment among nurses under the “Baby Boomers” generation for Health Care Services during and the post-COVID-19 pandemic, found Baby Boomers nurses were enthusiastic about ICT training. They believed that training would bring them more benefits, but there might be other personal factors that prevent them from training.

The overall ICT training experiences relevant recommendations for ICT literacy empowerment among nurses under the “Baby Boomers” generation for Health Care Services during and the COVID-19 pandemic, found Baby Boomers nurses who received online training stated that the training provided them with less insight.

The overall suitable ICT training program for nurses Under the “Baby Boomers” generation for Health Care Services during and the post-COVID-19 pandemic to gain more effective ICT skills relevant recommendations for ICT literacy empowerment found that Baby Boomers nurses stated that suitable training for them should start with fundamental’s knowledge and might be learned slowly to be fully understood.

The overall ICT training emphasis for Baby Boomers nurses relevant recommendations for ICT literacy empowerment among Thai nurses for Health Care Services during and the COVID-19 pandemic, found suitable training for them should be one-on-one hands-on training.

## 5. DISCUSSION

The TAM (Technology Acceptance Model) main theoretical back-up has

been proven that if technology can increase efficiency and not increase much effort. Thai technology considered to be useful and easy to use would be more likely to adopt that technology (Wallace and Sheetz, 2014). So, among many of the technology adoption models available, TAM was used to explore factors influencing Baby Boomers nurses’ adoption of ICT in healthcare services during the COVID-19 pandemic. The COVID-19 pandemic created an emergency where nurses and medical staff had to work tirelessly and take on additional responsibilities alongside their usual workload. They also faced the heightened risk of infection from the virus, as they were frontline workers who were more susceptible than other professions to getting infected.

The Ministry of Public Health has implemented measures for social distancing and increased the utilization of ICT, recognizing that nurses, particularly those from the Baby Boomers generation, may have limited ICT skills. Therefore, Baby Boomers nurses needed to adjust their working styles to be more ICT-embedded according to their existing abilities and skills while working amidst the risk of infection. The researcher, who has been experienced working with this group of Baby Boomers nurses, acknowledged their different ICT knowledge and skills compared to the younger nurses. Despite having to rely on their junior colleagues for technology-related tasks, Baby Boomers nurses did not give up when faced with pressure and stress. Through this study, it was discovered that the relevant external factors together with the organization’s support were truly demands among Baby Boomers nurses about their ICT knowledge and skills. Emphasizing the importance of fundamental computer knowledge and skills for this group was very crucial. The researcher found that Baby Boomers nurses did not have enough ICT knowledge and skills to adapt to the current working environment, especially during the epidemic situation which aligned with Mariann E, Candice M. and Ojelanki Ng., studies show that most of the Baby Boomers nurses were adjusting themselves and becoming more receptive to any relevant new technologies, especially the digital technologies those could assist them in upholding and enhancing their professional standing within the new digital context organization.

## 6. CONCLUSIONS

### 6.1 Part 1: Thai Nurses' knowledge and skills in using Information and Communication Technologies (ICT):

While nurses in the Baby Boomers generation did not possess extensive ICT knowledge and skills, they played an important role in the context of the COVID-19 pandemic. As a result, nurses in the Baby Boomers generation needed to adapt themselves to this new working environment. While they were not aware of the significance and origins of various operating systems, they were aware that the HIS program was currently being used, and that the remaining operating systems were unknown as a part of the ICT services.

Knowledge and skills of ICT were not yet enough to be applied to their workplace. There were some recognitions and uses in the HIS (Hospital Information Systems), but still not recognized in some other main parts of their health services such as the Computer Base System (CBS), and the Management System (MS). Baby Boomers nurses were able to use their regular HIS systems with modifications, but they could also work with other operating systems. They could explain their understanding of ICT based on their existing knowledge, showcasing their adaptability and willingness to embrace technology. These nurses, who had accumulated years of work experience, continuously adapted to technological advancements over the years.

### 6.2 Part 2: The current ICT literacy relevant to Health Care Services among Thai nurses during the COVID-19 Pandemic:

Baby Boomers nurses still tangibly lack of confidence in their ICT knowledge and skills, anyhow it did not preclude them from their health services work if they could adapt themselves to the digital working environments and tools. They needed to be trained, then it could help them to be more confident and able to use ICT, which was crucial in hospital health care services. Even though the computer equipment was inadequate, they could work on their personal devices. Baby Boomers nurses still could adapt and utilize ICT for their health care services.

They also accepted that ICT plays a beneficial role in their work and could also support any further development of their work. In addition, they could respond to the policy of the Ministry of Public Health to be the Smart hospitals with ICT embedded into all the working systems of the hospital. They were absolutely delighted to be a part of this digital transformation. However, they still encountered some main challenges i.e. the effective devices, and all relevant ICT empowerment activities.

Currently, they tried to use, to adapt ICT into their working system, internet signal, the insufficient ICT but with the increased workloads during the COVID-19 pandemic, ICT systems and equipment still confronting various challenges. Some solutions were as follows.

- Baby Boomers nurses needed to be trained in all kinds of “How to” ICT programs because it could help their working loads from all kinds of fundamental work to any more complicated and high-risk work. However, the ICT devices were insufficient, so they had to use their personal devices.
- Baby Boomers nurses believed that ICT could improve all the relevant working systems. They were comfortable with ICT, but the ICT system was still not enough to support all the operational work.
- Baby Boomers nurses are concerned about the increasing workload during the COVID-19 pandemic as well as the lack of in-time friendly and ready-made ICT equipment. Not enough relevant training, caused all delays and ineffective working among all the relevant stakeholders.

During the COVID-19 pandemic, Baby Boomers nurses, who had experience in ICT-related tasks, performed effectively in their roles and contributed positively to the organization’s missions.

### 6.3 Part 3: The purpose of ICT literacy empowerment among Thai nurses for Health Care Services under & post-COVID-19 Pandemic.

Due to most of the delayed work under the pandemic situation, all nurses were very stressed, especially among the Baby Boomers nurses. Some of them were very stressed due to their learning adjustment and skills with all the ICT tools and communication. Besides, they were also entering retirement age, and some of them did not want any new learn especially about ICT, they just let the junior nurses to assist with ICT-related work, but that did not mean they did not accept ICT. Anyhow, some of the Baby Boomers are open to learning about ICT and aim to use it in their work services. They started by seeking information and knowledge, self-trained by using Google Search Engine as well as various online trainings. Overall, they hoped to be trained in ICT more on-site and even online.

## RECOMMENDATIONS

### Recommendation 1: Improve ICT knowledge and understanding.

The study showed that Baby Boomers nurses are not fully understood but can use ICT daily tasks based on the experience and knowledge of each individual. A suitable education and training for Baby Boomers nurses is required. Because Baby Boomers nurses are both interested in and opposed to Information and Communication Technologies (ICT) training, but if they must be trained, they prefer one-on-one instruction that begins with the fundamentals.

### Recommendation 2: Improve ICT literacy and skills.

The study showed that before Baby Boomers nurses can be confident, they must be taught how to use Information and Communication Technologies (ICT) because they must be used daily. However, the devices are insufficient for accessing ICT; Therefore, it is important that the hospital management in collaboration with The Ministry of Public Health adequate skill training and technical support throughout the implementation in smart hospital projects. Therefore, Improving ICT literacy will assist Baby Boomers nurses in acquiring the skills required to perform effectively in today’s ICT-dependent tasks.

### Recommendation 3: Promote ICT Training with all the relevant fundamental “How to Trainings.”

The study showed Baby Boomers nurses are familiar with Microsoft Office and use it when necessary. The study showed Baby Boomers nurses are familiar with Microsoft Office and use it when necessary. The majority of Baby Boomers nurses can use Microsoft Word, but Excel and PowerPoint are rarely used. A suitable education and training for Baby Boomers nurses is required.

### Recommendation 4: Expand more accessible and effective ICT infrastructure.

The study showed Baby Boomers nurses believe that information and communication technology (ICT) can improve systems. They are comfortable with Information and Communication Technologies (ICT), but the internet and system are insufficient. ICT development based on the Ministry of Public Health’s smart hospital policy can be successful if the

organization has an adequate ICT infrastructure.

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