

Computer use experience of nurses working in hospital

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Abstract

The purpose of this study was to examine the meaning and structure of nurses' computer using experience. To do this, we conducted a total of three interviews with 11 nurses working between the ages of 26 and 48. Interview data were interpreted using Giorgi method (1985) and Lincoln & Guba method (1985). As a result, 112 semantic units were derived, and then 18 sub-components were divided into 5 final components. As a result of the analysis, the computer experience that the nurses used in the hospital consisted of 'used for almost every task', 'usefulness', 'important', 'convenience', 'burden', 'anxiety', 'desire', 'simple work level', 'no problems', 'eye, muscle and movement discomfort', 'depends on task', 'more complex', 'accuracy', 'organize contents', 'simple', 'incomparable', and 'easy'. Based on the above conclusions, the nurses' experiences of using the computer in the hospital could be concluded as follows. Currently, almost all nursing jobs in hospitals are using computers. However, most of the tasks related to simple computer tasks related to the ability to use the computer was low, and because of this, the computer did not work properly, or when new programs were introduced to feel the burden and anxiety, want more systematic computer education Found. Especially, according to the career, the difference between computer and hand work was different, Nurses over 20 years said that computers can handle simple tasks that are a bit more complicated than manual tasks, whereas emotional tasks were handicapped, in the 10 to 20 years of experience, computer work was more accurate and appropriate to organize content, Nurses under 10 years were not only easy to work with computers but also have no experience in manual work, they could not compare the computer and the hand work. This study suggests that the use of computers in nurses' work is essential and that more systematic computer-based education should be provided. In addition, due to the nature of the nursing service, the professional opinions of the nurses should be reflected in the development of programs for the emotional nursing work.

Keywords: Computer using experience, Giorgi method, Lincoln & Guba method, Nurse, phenomenology.

1. Introduction

The use of information technology in the medical field is becoming common worldwide [1-2]. In particular, the development of information and communication technology has had a great impact on healthcare in Korea. In order to improve the quality of medical care and the safety of patients, it is necessary to computerized things that are easy for human beings to miss. Korea has legalized electronic medical records under the Medical Revision Act of 2002, and most hospitals use electronic records now [3].

The electronic medical record system implies information about health with the state of health being computerized. Therefore, the input data can help the medical staff to understand the condition of the patient

at any time and process the work quickly, and to help the clinical decision by the accumulated data. This has the effect of not only providing convenience in nursing the patient but also reducing the time it takes to retrieve the paper chart [4-5]. In this way, EMR (electronic medical recording) can be considered to have the effect of improving data accessibility, data quality, convenience of decision making, and cost reduction. In terms of patient safety, it is advantageous to minimize the medical errors by confirming the efficacy of the drug or the test results whenever necessary in electronic medical records [6]. Despite these many advantages, previous studies have shown a variety of problems experienced by nurses. One research has reported that the electronic medical record system is not linked to the nursing work and therefore there are many redundant tasks [7]. In addition, it has been reported that it takes a long time to review by electronic record mistakes, and the accuracy of nursing information is reported to be degraded due to formalized example sentences. Andrew (1995) suggested the following conditions for electronic medical records. In other words, In 1995, Andrew emphasized at the beginning of the use of electronic medical records that EMR are provided to provide problem lists, measure health status, document clinical reasoning, linkage between each data, protect from unauthorized access, supports continuous access, supports simultaneous multi-user view, supports other clinical resource, facilitate clinical problem solving, support data entry by physician, support management of patient care, provide flexibility and expansibility [8]. However, in Korea, nurses have been reported to be dispatched to wards without systematic identification of such jobs. Some hospitals do not even have a manual. If so, it can be predicted that the potential risk of errors in the medical records that are not actually found. In addition, performance evaluation of information systems is not only difficult to quantify but also is often intangible, so it is difficult to objectify, so it depends on qualitative effects. Recently, rapid changes in the healthcare services such as domestic certification evaluation and Joint Commission International (JCI) certification evaluation have been continuing. The evaluation of the medical institution is mainly related to the evaluation of the medical staff, and it is related to the nurse work which occupies a large part in the medical staff. Based on the evaluation criteria of medical institutions, nurses should perform prompt decision-making, treatment, and reporting, and educate patients and care about the patient's illness, treatment process, and nursing. The contents of the nurse's work must be completed with electronic medical records. In this situation, it can be predicted that it will be difficult to enter the field without understanding systematic EMR. However, what has been studied so far in Korea has focused on the need and satisfaction of EMR. Although the introduction of electronic medical records requires complicated and diverse roles and responsibilities for nurses, there was a lack of research on what nurse feel while using electronic medical records systems. It is also difficult to find that nurse practitioners who use EMR most directly participate in the development. Therefore, analyzing the opinions of the nurses who have used and experienced the developed EMR will be the basic data for effectively using the EMR. Based on the data thus far studied, the specific questions of this study were determined as follows: 1. How about the degree of computer use? 2. What are the attitudes and trends toward computers? 3. What is the relationship between computer attitudes and computer ability to use? 4. What does a computer do to work? 5. Were there physical changes in the use of computers? 6. What is the difference between handwritten nursing records and EMR?

2. Research Method

2.1 Research Design

The purpose of this study is to analyze the structure of experience of using electronic medical records for nurses working in current clinics. Specifically, it was a narrative qualitative study to analyze how the nurses are utilizing the electronic medical records system and how they feel.

2.2 Research Participants

All participants in this study were 11. The general characteristics of participants are as follows (Table 1) : Participant 1: 16 years of work experience, working in ICU, age 39 years, no religion, Participant 2: 11 years of work experience, working in general ward or Infection control room, age 36, Protestant, Participant 3: 25 years of experience, working in hemodialysis room, general ward or QI, age 48, no religion, Participant 4: 15 years of experience, working in general ward, age 39, no religion, Participant 5: 9 years of experience,

working in general ward, age 39, protestant, Participant 6: Two years of experience, general ward, age 26, no religion, Participant 7: career 3 years, working in general ward, age 28, protestant, Participant 8: 21 years of career, general ward, age 43, no religion, Participant 9: career 14 years, general ward or QI, age 37, no religion, Participant 10: career 5 years, general ward, age 27, no religion, and Participant 11: 18 years of experience, general ward or ICU, age 42, no religion. The participants were all aged between 26 and 48 years.

Table 1. Participants

No	Career	Work place	Age	Religion
1	16	ICU	39	No
2	11	General ward, Infection Control room	36	Protestant
3	25	Hemodialysis, General ward, QI	48	No
4	15	General ward	39	No
5	9	General ward	31	Protestant
6	2	General ward	26	No
7	3	General ward	28	Protestant
8	21	General ward	43	No
9	14	General ward, QI	37	No
10	5	General ward	27	No
11	18	General ward, ICU	42	Protestant

2.3 Data collection

The data of this study were collected from nurses who voluntarily participated in the study in Seoul and Gyeonggi - do from November 1, 2017 to November 20. In order to investigate the computer usage experience at the hospital, interviews were held in the conference rooms of the facilities where the participants were working. The researcher explained the purpose and process of the study to the participants, recorded it after obtaining consent. Until the data was saturated, the number of interviews per person was different, but the average was 3 times, and the interview time was about 1 hour. Questions that are not understood during the interview or are ambiguous are asked further questions. The atmosphere was designed to encourage participants to talk about their experiences in a relaxed atmosphere and not to limit time for sufficient story. In addition, if the participants were to leave the topic during the interview, the researcher was reminded to focus on the topic again. Before the conclusion of the interview, the contents of the interview were summarized to confirm that the participants' experience. At the conclusion of the interview, the participants concluded by asking if there were any stories they wanted to add besides the summarized interviews. After the interview, they gave thanks and greetings to the participants.

2.4 Ethical considerations

For the ethical consideration of the participants in this study, the purpose and process of the study was explained and the participants were informed of their consent and the participant could stop at any time.

The researchers informed participants that the recorded interviews were confidential and anonymous and would not be used for non-research purposes.

2.5 Data analysis

Data analysis was conducted at the same time as the data collection. After the interview, the researcher directly transferred the participants' expressions while listening to the recorded data repeatedly to organize the participants' experiences vividly. The researchers identified meaningful statements related to computer experience in the hospitals of the collected nurses and classified them by subject. The collected data were grouped into similar subjects and categorized according to the area through comparative analysis. The reliability of this study was analyzed according to the criteria of Lincoln and Guba (1985) and Giori (1985)

[9-10]. According to Lincoln and Guba (1985), credibility is the reliability of quantitative research, which means that the description of the participants' experience is reliability. The researcher verified that the responses were meaningful to the participants in order to confirm whether the responses were the same as the facts. The researcher re-asked questions that were not understandable or ambiguous during the analysis and repeatedly read the transcribed contents of the recordings to confirm their meaning.

3. Results

Phenomenological results of computer use experience of nurses working in hospitals are shown in Table 2. Category can be divided into computer usage level, attitudes to computers, ability to use the computer, computer use and physical symptoms, and comparing computer and manual tasks. The components according to category were used for almost every task, usefulness, important, convenience, burden, anxiety, desire, simple work level, no problems, eye/muscle/movement discomfort.

Table 2. Computer use experience of nurses working in hospital

Category	Constitute factor	Statement and Phenomenological interpretation
Computer Usage Level	1. Used for almost every task	Participants responded that they were using computers every day throughout hospital work.
Attitudes to computers	2. Usefulness 3. Important 4. Convenience 5. Burden 6. Anxiety, Desire	In computer attitudes, computers are very useful and important. The reason for this was the convenience of work, but participants were still feeling a lot of Burden about the new program. These burdens made them feel insecure. Therefore, they showed the desire to learn more systematic computer-related tasks in order to work.
Ability to use the computer	7. Simple work level 8. No problems	There are two levels of classification of computer literacy: a group that does not have any problems with computer work, and a group that can only do simple tasks.
Computer use and physical symptoms	9. Eye, Muscle 10. movement	Participants were instructed to use dry and snowy eye, shoulder, back, wrist, and pelvic pain and appealed to finger stiffness.
Comparing Computer and manual tasks	11. Depends on the task 12. More complex Accuracy 13. Organize contents 14. Simple 15. Incomparable 16. Easy	Participants with more than 20 years of experience responded that they had some advantages and disadvantages depending on the tasks of computer and manual work, and they said that working with a computer was a bit more complicated than doing by hand. It takes a long time to record the handwriting, and the hand is very sick and difficult to correct. The recording time is shortened in computer recording, and the efficiency of work increases. Participants with more than 10 years of experience responded that the handwriting was difficult to read and it took a long time to record. And while it was useful to organize contents in computer recording, but there was short of filling in the detailed prescription. Participants with a career of less than 10 years responded that the handwriting record was able to freely record my professional so that the flexibility for free thinking and patient evaluation was reduced.

3.1 Computer Usage Level

Used for almost every task. Used for almost every part of the business. Computerized screening program, Excel data preparation, Han way, preparation of meeting materials PPT, ward nursing management screen,

inspection result inquiry, drug information inquiry, internet (Google = data investigation). Almost all tasks are computerized (Except for ward rounding for patient's caring). I use my computer from time to time. I think all work starts with computer and ends with computer. I even use my computer because it is convenient to send texts or emails to my computer when I have a question or an inquiry. In the hospital, computers are available in the ward nursing screen and prescription programs. Frequent use. I often use it as computer transfer Very often used.

Ward nursing management, hospital computerization program use possibility degree I use my computer almost on duty. Most of your business is using a computer Most of my current work is computerized. Use during work hours, more than 8 hours a day. They mainly work in wards, use the Internet to find materials, and use e-mail. I communicate with employees through in-house SNS.

3.2 Attitudes to computers

Usefulness. Computers are essential for business and very useful for business. A large amount of data can be easily organized by a table or a graph, and a calculation result can be obtained at a glance with a few clicks when using a statistical program. Even when writing on paper, I feel it is much more convenient and comfortable to type on a computer. That's why computers have become so common that they are inseparable.

It feels so useful. In fact, I am writing a lot of documents, but these days, almost all the information I need for work is retrieved and used by the Internet. When I write a document to report, I think that it is very useful to refer to the basic design of the document frame, the image, and even the expression method, and it is a necessity of work and life. In addition, when buying or selling goods, people are searching for and using items that they have evaluated.

Important. Computers are a necessity of life. I think it is the most important thing for my business. So I think that computer function is important when choosing a computer. So when I see people using a computer or monitor with a better function than me, I would like to use it and tell the computer team to replace the computer with a good specification. Attitudes and trends toward computers are positive, and they are not unnecessary or difficult to function. Computers are fun to use. Usage trends of computers are a tool for business, so it is possible to do fast work, so there is little manual work by hand.

If you have a high level of computer literacy and you are confident, your work efficiency will increase. If you think positively about computers, it seems to be efficient and able to accept new programs without resistance. It can store and utilize large amounts of data with little bulk and can conveniently share it with others. You can immediately see the information you want to know.

Convenience. I feel that I am comfortable with my computer, but I feel confused and embarrassed when it comes to programs that I do not know about statistics programs. So I think that the program you use and the ability to use the computer can influence your attitude toward the computer. Even when using the SPSS statistics program, there is a feeling of burden on the computer, and sometimes there is a slight sadness or somnolence. I think it is very convenient, but I can not cope when there is a problem. I have a little fear.

If you have the ability to use a computer, you will be more confident about your ability to use the computer and work efficiency will increase. I am not at that level yet. It is better and preferable to work with a computer, except that you have to check it right away or record it.

Burden. Those who are fluent in the hardware or software of a computer seem to take advantage of many of the functions of the computer. But I do not. I feel the burden of using the computer, but I know I need to use it. The more positive the attitude toward the computer, the higher the ability to use, but I think the ability to use is low because there are fewer learning opportunities to use. Fear of unused programs. I think people who have good computer skills do well without the discomfort of working with computers. But I do not think

it's that way yet.

Anxiety. There are few fears and anxieties about computers, but there are fears about out of order of computer. I enjoy using the computer and think that it is essential to work. There is no pressure to use the computer. I rarely know the functions of creating documents or accessing the Internet. I have rarely learned a computer, but I learned about Excel, Word, and PPT while working almost at the beginning. Especially, I did not know how to use it even when I was working on paperwork. I was afraid because I did not know how to use it. However, after a certain amount of time and a lot of use, all of these documents became difficult to write and I was confident. I was also proud to be able to teach others in addition to my confidence. If anyone has a hard time making a paper job with a computer, I think I can teach you a little more. Decreased confidence in programs that were not heavily used. I'm not confident. I want to add to cyber education. Not happy at all. There is some fears about the computer. There is fear. I do not know how to solve the problem other than resetting the computer when I have a problem. Because most of the work is computer work, problems such as storage problems or data loss, or delays in repairs due to lack of experts, can cause delays.

Desire. I want to learn because I have a lot of fear and anxiety. If you are good at computers, I think you will enjoy working with your computer. There is a lack of confidence in ability because the level of computer use is basic level. I want to continue learning if I have a chance. I am expanding my ability to use the computer by using books and educational materials to broaden my use according to the needs of the document work. At present, the desired level is possible, but if necessary, it will be trained in the additional area.

3.3 Ability to use the computer

Simple work level. Simple document work possible, somewhat difficult No shortage in nursing work. I do not have much computer skills right now, but now I am interested in the process of getting to know the computer while searching for things I do not know about the computer. So it seems to be able to use. Hospital programs are almost confident. However, Excel is used in hospital work, but I have not learned formalities, so I am not confident. There is no fear or anxiety when you see the computer. However, in case of a blue screen or a computer error on my computer, I have to do everything with my computer. I feel embarrassed and anxious from the moment I feel that the time is delayed. Sometimes I can not do anything and sometimes I can't do anything. I sometimes imagine that the whole thing is paralyzed. In that case, there is always a bit of anxiety that "I will not get up" but I do not know when to stop.

No problems. No problems or difficulties in use. Use it freely and skillfully. I am confident that I can use computers as much as I do without much difficulty. And I do not know the part of the Internet is applied to search for reference. I am confident in using the computer and have no problem in obtaining reports, training materials and necessary information. There is no great fear or anxiety unless there is no power interruption that can not be controlled during operation. I enjoy using the computer and get immediate answers by using SNS or bulletin in the company, and it has advantages such as work process and shortening of time, and document work is also simple and neat

3.4 Computer use and physical symptoms.

Dry and snowy eye, shoulder, back, wrist, and pelvic pain, finger stiffness. When I watch a computer monitor for a long time, I have dry eye syndrome and eye fatigue, shoulder and back pain, and wrist pain. Sometimes I have a headache. I feel like shoulder and neck bend, wrist pain, dry eye syndrome, and shoulder pain. When I use my computer for a long time, my shoulder appears to be stiff and my eyes become tired. When I open my eyes in the morning, my eyes feel dry. And sometimes it is a symptom, but I feel that there

is an abnormality in the right fourth and fifth finger senses. I feel snowy and dry eye. Back and shoulder pain, pelvic pain and arm stiffness during long sitting.

3.5 Comparing computer and manual tasks

3.5.1 More than 20 years of experience

Depend on the task. I usually write my own diaries such as personal experiences, prayer essays, and show them by working with computer mainly for work or outside work. The reason is that my personal record is a memoir or diary that lasts for a long time, so I would like to have my handwriting. My personal record is written by hand, so I write it by hand. However, it does not need to show the emotions of the individual that are shown outside, so it is written in a document that makes it look easy and objective.

More complex. Records are more complex and diverse than number records, resulting in more forms of recording

3.5.2 Clinical experience between 10 and 20 years

Accuracy. It takes a long time to record the handwriting, and the hand is very sick and difficult to correct. The recording time is shortened in computer recording, and the efficiency of work increases. The handwriting was difficult to read according to handwriting, and it took a long time to record. There was a limit to the amount of information that could be written on one piece of paper, making it difficult to understand the whole flow, and there was a risk of chart loss. Computer recording saves time and allows you to see at a glance the data you want and the risk of loss is low. But there are also factors that can cause ethical / legal problems.

Organize contents. While it is difficult to organize contents in handwriting recording, it is useful to organize contents in computer recording, but there is a drawback in that contents are simplified because they have to conform to the prescribed format. The handwriting record was able to freely record my professional opinion on the patient evaluation, and the computer record had the necessary record for the specified category, so that the flexibility for free thinking and patient evaluation was reduced. Work delivery and work are efficient, but there are difficulties in recording according to individual ability.

3.5.3 Less than 10 years of clinical experience

Simple. Computer recording takes much less time and simplicity. Handwriting is very slow and inconvenient. Incomparable I have no experience using hand tools (5 years of experience).

Easy. Working with a computer is fast and easy. I look at the computer screen and it is easy to interpret because it is written systematically

4. Conclusion

The purpose of this study was to examine the meaning and structure of nurses' computer using experience. Participants were selected from 26 to 48 years of age in order to reveal the meaning of the contents of the study. The interviewed data was used by Giori method [10] and Lincoln & Guba method widely used as phenomenological analysis method.

As a result, 112 semantic units were derived, and then 18 sub-components were divided into 5 final components. As a result of the analysis, the computer experience that the nurses used in the hospital consisted of 'used for almost every task', 'usefulness', 'important', 'convenience', 'burden', 'anxiety', 'desire', 'simple work level', 'no problems', 'eye, muscle and movement discomfort', 'depends on task', 'more complex', 'accuracy', 'organize contents', 'simple', 'incomparable', and 'easy'.

Based on the above results, phenomenological writing is as follows. Nurses are currently doing almost

everything on the computer when they work. This result is the result as highlighted in [11]. Now the computer is absolutely necessary in many areas of the work area [12]. Currently, nursing-related computer programs are focused on quantitative. This is a convenient and convenient way to confirm the nursing performed. However, many parts of nursing are difficult to measure quantitatively [13]. In this sense, computer input should fully reflect the opinions of nursing professionals. In this study, nurses who have a long history of careers expressed the opinion that the emotional contents are hand-operated in detail. In other words, computers are functioning to provide information on a quantitative basis quickly, but there are still many problems in dealing with emotional problems. Through this study, it can be concluded that nursing work should be added when using computer. In this study, most nurses said that computer work was very necessary but did not receive formal education. So, when a computer breaks down or a problem arises, all work is stopped. Nursing is a field that deals with human health and it was difficult to stop work at a moment in the hospital. Nevertheless, nurses were not able to do anything on their own when there was a problem with the computer. Particularly, participants wanted to get a more detailed education on computers. Through this study, it was found that systematic computer education is essential for nurses. In previous studies, it was pointed out that communication problems are caused by the use of ununified medical terminology. There was also a point in this study that there were no terms to enter the details. These parts need to be continually improved. [14] reported that a total of 84% of the 9,063 records had diagnostic labels without defining characteristics, related factors, or risk factors. A computer program for complex nursing needs to be developed and detailed information about the patient needs to be described. Especially, according to the career, the difference between computer and hand work was different, Nurses over 20 years said that computers can handle simple tasks that are a bit more complicated than manual tasks, whereas emotional tasks were handicapped, in the 10 to 20 years of experience, computer work was more accurate and appropriate to organize content, Nurses under 10 years were not only easy to work with computers but also have no experience in manual work, they could not compare the computer and the hand work. These results are similar to those of [15]. Career nurses were aware of what was lacking due to nursing experience, and nurses with less experience were more likely to use computers. Nursing is a specialized field and can not proceed with simple technology [16]. Therefore, nurses with less experience point to problems in the use of technical computers and nurses with more experience need to analyze the details of nursing input. Through this process, a unified computer nursing record can be developed [17]. The uniformity of the records mentioned in the previous paper was not shown in this study, but the unity of the records is very important. [18-20] study emphasize the communication of nurses. Because nurse takeover is now computerized, detailed computer input is critical, and computer input must be unified.

This study suggests that the use of computers in nurses' work is essential and that more systematic computer-based education should be provided as emphasized in the [21] study. In addition, due to the nature of the nursing service, the professional opinions of the nurses should be reflected in the development of programs for the emotional nursing work.

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