THE PERCEPTION OF NURSES CONCERNING COMPUTERISED HAN.DOVER AND ITS INFLUENCE ON THE QUALITY OF PATIENT CARE

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ABSTRACT

Background: Nursing handover communications play an important role in ensuring the quality of care of patients.

Aim: To understand the perception of Malaysian nurses concerning computerised handover and its influence on the quality of patient care.

Materials and Methods: Focus group discussions (FGDs) were formed to elicit multiple opinions on topics related to computerised nursing handover. Twelve registered nurses from a public hospital in Malaysia were recruited for three groups of FGD. Conventional qualitative content analysis was used to derive the codes and themes directly from the data. The NVivo 10 software package was used to assist in coding, categorising, and constructing themes.

Result: Four main themes were identified: (1) decreased nursing workload, (2) increased nursing workload, (3) technical problems related to computer that reduced work efficiency, (4) unpleasant effect from computerised nursing handover that jeopardised patient safety.

Conclusion: Computerised nursing handover decreased the workload of nurses in some aspects, but also increased it due to duplicate charting. Technical problems related to computer hindered the smoothness of running a computerised nursing handover. The computerised nursing handover compromised the quality of care of patients when nurses copy and pasted patient clinical information carelessly, which exposed nurses to legal and/or ethical risk. Additionally, the prolonged use of computerised structured contents reduced nurses’ critical thinking skills in constructing and planning patient care. Nursing leadership is required to supervise the administrative process of the computerised nursing handover. Nursing continual education on patient care should be designed periodically on the ward to improve the critical thinking of nurses.

Keywords: qualitative research, perception, handover, quality of patient care.
1.0 Introduction

Similar to others industries, nowadays, healthcare is becoming increasingly digital. Health care professionals are now using electronic health record (EHR) software rather than a paper-based format to document patient care. The implementation of the EHR system is in tandem with the vision of the World Health Organisation (WHO, 2007) to improve handover communication. Currently, Malaysia has implemented an EHR or paperless health care record in certain hospitals situated in the state capitals. Under the EHR system, nurses use a computerised format to record and handover patient care, which consists of electronic care plans, nursing classification, and all other aspects of patient care. Nursing handover is a ritualistic procedure for nurses in every shift to pass over their accountability and responsibility of patient care to the nurses on the next shift. The computerised nursing handover (CNH) is a process in which nurses document all the patient clinical information and pass it to the staff on the next shift using a PC or laptop.

Studies have shown that CNH saves nursing time when documenting the assessment with the help of a drop-down menu (Lee, 2006; Robles, 2009; Timmons, 2004). Moreover, Moody, Slocumb, Berg, and Jackson (2004) found that nurses perceived that CNH usage potentially improved patient care and safety. The computerised structured content uses standardised language for nurses to have a common understanding of given and planned care (Meum, Wangensteen Soleng & Wynn, 2011). Thus, CNH could improve the communication during handover (Matic, Davidson, & Salamonson, 2010). Conversely, CNH has been shown to increase workload and task complexity (Asaro & Boxerman, 2008; Callen et al., 2013; Timmons, 2003). Hence, nurses are unable to give individualised patient care (Darbyshire, 2004; Timmons, 2003). Kossman and Scheidenhelm (2008) added that the quality of patient care was reduced because nurses spent time away from patients due to computerised documentation. Additionally, the use of the copy and paste function when charting a nursing care plan does not represent the patient’s current condition, and, therefore, the data are regarded as invalid (Kelley et al., 2011).

Nursing handover communications play an important role in ensuring the quality of care of patients. The WHO (2007) suggested that EHR would improve handover effectiveness if health care professionals ensured that electronic technology use is applied in an interactive and effective manner. Furthermore, studies have shown that applying qualitative methods to evaluate clinical information systems can facilitate a detailed understanding of the complexities of use in clinical environments (Ammenwerth, Graber, Herrmann, Bürkle, & König, 2003, Callen et al., 2013). However, as there is a lack of studies investigating CNH in local settings, this qualitative research aims to examine the perception of Malaysian nurses of computerised handover, and its influence on the quality of patient care. Understanding the perception of nurses could identify the benefits and burdens of CNH, as well as ameliorate the quality of patient care based on the new development of the CNH structure and process in a manner that fits the local nursing workflow.

1.1 Research question

Do nurses perceive that CNH influences the quality of care of patients? If yes, how?
2.0 Materials and Methods

2.1 Research design

Focus group discussions (FGDs) were formed to elicit multiple opinions on topics related to CNH and its influence on the quality of care of patients. FGDs were used in this study due to the synergistic potential from group dynamics and their ability to provide powerful interpretive sight (Denzin & Lincoln, 2005).

2.2 Study location

This research was carried out at two orthopaedic wards at a 600 bedded public hospital situated in a semi-urban area in Malaysia. The selected hospital provides secondary and tertiary care, and has implemented EHR and CNH since 2006. Twenty-five registered nurses work in the two orthopaedic wards.

2.3 Participants

Twelve registered nurses from two orthopaedic wards were recruited through advertised recruitment on the wards. The recruitment was opened to all age groups of registered nurses irrespective of their qualification and years of working experience. The purposive recruitment criteria were nurses who had worked in a CNH environment for at least six months. This was because six months’ experience in CNH was deemed sufficient for them to go through the process of CNH and enable them to give their opinion. Three male nurses and nine female nurses were involved in this study. Four nurses form a FGD. The age range of the participants was between 26 and 40 years. All registered nurses were from the Malay ethnic group, which constitutes the major ethnicity in Malaysia. Only one male nurse possessed a nursing degree qualification with the others having a diploma qualification. Also, five nurses had post basic education in orthopaedics. Information sheets and consent forms were distributed at the end of the first meeting.

2.4 Data collection

A semi-structured interview guide was formulated by the researchers based on a literature review and discussion with nurse managers and nursing academicians. A ‘funnel’ approach was used to build up the route of questioning (Morgan, 1997). Hence, the focus group discussions started with triggering questions that directed the thoughts of the participants to CNH. Some examples of the questions include:

1. What is the usability of CNH?
2. What are the technical and system features (e.g. performance, software quality) of the CNH that affect its use?
3. How does CNH affect the structural or process quality (time saving, data quality, clinical workflow, patient administration)?
4. What are the effects of CNH on the quality of care?

The duration of data collection was about six months starting from March 2015-Sept 2015. Three FGDs were carried out. Each group interview lasted about one to two hours. An appointment for the interview was given to the participants two weeks before the interview.
date. The interview session was conducted after the morning shift duty in a ward seminar room. The author acted as the facilitator and the role of assistant was a non-participant note-taker. The interview was conducted in Malay. Each participant received a token of appreciation after the group interview.

2.5 Data analyses

The interview data were transcribed verbatim and translated into English. The data were analysed concurrently after each interview to determine the theoretical shape and recognise saturation. All audio-recorded data were transcribed and arranged in a grid to facilitate a comparison of data between groups (Miles & Huberman, 1994). Conventional qualitative content analysis was used to derive the codes and themes directly from the data (Hsieh & Shannon, 2005). The NVivo 10 software package was used to assist in coding, categorising, and constructing themes. The first step of the analysis commenced with reading all the data repeatedly to obtain an overall understanding. The line-by-line open coding of the text was followed by arranging the codes into categories. Then, the relationship between categories was identified. Finally, all categories were arranged into themes.

2.6 Ethical considerations

The researcher obtained ethical approval from the National Medical Research Registry and the university ethical committee. The participants were informed that the interview would be tape-recorded and transcribed verbatim, and about their right to withdraw from the study at any time. In addition, they were assured that the information gained from the interviews would be treated confidentially and that their anonymity would be guaranteed.

2.7 Trustworthiness

Three steps were implemented to improve credibility, which can be justified in terms of prolonged engagement, member debriefing, and member checking ([Lincoln & Guba, 1985). The researcher spent approximately six months interacting with the participants. This included the first meeting, interviews, and meeting for data validation. Member debriefing was conducted with co-researchers periodically. Member checking was achieved with participant validation conducted in an informal interview environment. To enhance dependability, an audit trail was used to maintain detailed records of how data were collected.

3.0 Result

Four main themes were formed from the data analysis: (1) decreased nursing workload, (2) increased nursing workload, (3) technical problems related to computer that reduced work efficiency, (4) unpleasant effect from computerised nursing handover that jeopardised patient safety.
3.1 Decreased nursing workload

3.1.1 Improve retrieval and referral work efficiency

Some senior nurses who had worked under conventional written documentation and handover found that the computerised handover eased their workload. In past years, some of the tasks, such as tracing patient’s old notes, lab investigation results and calling other department support services, took longer to do and needed more manpower. With CNH, the nurses said: It is easy to trace old notes by just clicking on the PC. For instance, a surprise call from a patient who was discharged from hospital two months ago, but lost their appointment card and relevant documents asked to trace his appointment date. We had no problem in tracing the patient notes from the PC. (G3-b) I don’t need to call the relevant department for referral and tracing diagnostic investigation results anymore… I can send the patient as soon as possible before the end of office hours. (G2-a) All patient investigation results can be traced online, we don’t need to wait for an attendant to collect the results from the lab anymore. (G2-d)

3.1.2 Save time in charting nursing notes

Nurses viewed that the drop-down menu with a structured predefined patient assessment, such as patient diagnosis and nursing care plan, helped in the organization of data entry. Thus, they could glean and select the necessary items in charting nursing notes.

We can chart nursing notes faster than a written and manual search for patient information. CNH methods provide a comprehensive account of the patient’s condition and care. Also, it allows us to assess patient information from the patient’s particular, medical history, present diagnosis and treatment, nursing care plan and discharge plan. (G1-b)

3.2 Increased workload

3.2.1 Duplicate record of patient clinical information

Duplicating recording for vital signs and medication was a cumbersome procedure for nurses. Due to the preference of certain specialists and an outdated system, they also wanted to view a patient’s vital-signs progress on a flowchart as well as on a PC. This meant twice the amount of work for nurses.

Some of the specialists want to see a patient’s observation chart in both written form and on a PC. Some specialists want to see the vital sign observations on a flowchart, such as a patient observation chart, for the past few days, which our laptop can’t provide. The laptop system only provides daily temperature readings but not the temperature flow. Thus, we have to prepare a paper chart as well as the record on the laptop. (G2-d)

… we need to record on the PC and sign the medication chart also. They want to see both. (G1-b)
3.3 Technical problems related to computer that reduced work efficiency

CNH was not as smooth as what nurses wished because of the technical problems arising from the use of a computer, such as insufficiency and functionality, which reduced the work efficiency. For example, nurses could not use the laptop for documentation and nursing handover but used written handover.

We don’t have enough PCs or laptops to use, we have about six, but only three can be used. Some keyboards do not work… we have to chart on a book first then record in a PC when our turn comes. (G1-c)

Laptop battery is not charged when we need to use it! We feel too tired to charge the laptop from bed-to-bed when passing over the report; what we do is pass over with a record book. (G2-a)

3.4 Unpleasant effects from CNH that jeopardised patient safety

3.4.1 Copy and paste practice

…Some of them do not copy from the same patient’s notes but from other patient’s notes… the mistake continues to the next day… (G3-d)

…The problem is they copy and paste but never edit. You can see the medication list, but sometimes they don’t delete what has already been stopped. (G1-a)

3.4.2 Structured computerised content compromised nurses’ critical thinking skills

Nursing documentation work has become stereotyped and nurses are reluctant to exercise intellectual judgement and decision making in constructing a patient’s care plan.

What else do I need to consider? Everything is pre-written and can be selected from the predetermined structured drop-down menus and checkboxes. From nursing diagnosis to nursing care plan; all we need to do is select the one that is suitable and click; for example, in ortho’ wards, pain, mobility, infection is the usual click. Like, for all pre-op patients, we click anxiety as one of the nursing diagnoses… (G2-a)

4.0 Discussion

This study provides an understanding of the process of CNH. Computer technology facilitates health care documentation work, but human errors reduce the work efficiency. CNH decreases the nursing workload (Raptis, Fernandes, Chua, & Boulos, 2016, Moody et al., 2004) and allows nurses to focus on patient care. Also, the referral work is easier because nurses have instant access to any terminal connected to the hospital intranet (Raptis et al., 2016). Furthermore, the design aids their memory and does not require them to recall what
nursing components need to be included in the care plan (Kelly 2010, Lee, 2006). Electronic nursing documentation is seen as a time saver for nurses (Robles, 2009).

Conversely, CNH increases the workload of nurses by double entering patient’s clinical information on the computer and paper. Kossman and Scheidenhelm (2008), and Callen et al. (2013) agreed that the duplicate charting of progress notes and nursing observations led to a longer time for nurses to finish their job. Moreover, the WHO (2007) cautioned that reducing the steps in the documentation process would help reduce opportunities for error. Similarly, Campbell, Sittig, Ash, Guappone, and Dykstra (2006), and Callen et al. (2013) emphasised a completely electronic information system to remove duplicate documentation and prevent incongruency in the quality of clinical information recorded on paper and via computer. Insufficient computers and laptops not being charged are common problems on the ward. Without sufficient computers, nurses have to chart on paper first before transferring to a computer (Moody et al., 2004). The waiting time to use a computer detracts from a nurse’s ability to provide individual care (Kossman & Scheidenhelm, 2008; Timmons, 2003).

Kelley et al. (2011) argued that nurses who copy outdated and irrelevant patient information put patients at risk of medical error. Unfortunately, when copy and paste becomes the norm, the iterative process of this practice can lead to accumulated errors (Siegler & Adelman, 2009). Thus, copying and pasting the wrong patient’s notes could expose nurses to significant legal and/or ethical risks. Furthermore, the use of computer technology has advanced to a stage where it has become irreversible. Nelson (2011) asserted that the copy and paste function is here to stay but mechanisms to monitor and audit CNH must be in place to maintain its integrity. Nurses are responsible to verify every single data point being copied to avoid patient safety being violated (American Sentinel University, 2014). Lee (2006) proposed that a narrative form of writing enables nurses to explain the complexities of a patient’s illness and nursing care as well as provide a pathway for training in critical thinking skills. Timmons (2003) claimed that nurses gradually lose their skills in planning patient care when they become too dependent on a computer system. The prolonged use of computerised structured content compromises nurses’ critical thinking and they tend to forget the skills learned during training (Harris, 1990), which indirectly impedes the quality of patient care (Kelley et al., 2011; Kossman & Scheidenhelm, 2008).

4.1 Clinical implications

The limitations of the local CNH system will be discussed from two perspectives. The first is the CNH administrative problem, which produces duplicate charting that adds to the nurses’ workload, not enough computers, and computer malfunction. The second is nurses’ attitude in terms of the misuse of the copy and paste function in charting patient care plans that compromise patient safety. The effect of the prolonged use of computerised structured content inevitably reduces the critical thinking of nurses, and leads to a loss of skills in planning patient care.

To improve the CNH system administrative problems, a total electronic information system would remove duplicate charting. IT round (Timothy, 2016) is suggested instead of relying on a reactive model. IT round means assigning technology specialists to undertake a weekly visit to all CNH system units to identify tech problems and proactively prevent tech issues that can disrupt the job of nurses. Furthermore, financial support to address computer shortages is laudable. Nursing leaders must remind all staff on the ward to be responsible for computer
functionality before passing to the next user. Nursing supervision is required in terms of the copy and paste practice to avoid nurses copying blindly from another patient’s records. Nurses are to be educated to copy selectively and follow by smart editing on content to represent a patient’s actual condition. Finally, continual education for nurses on patient care should be designed periodically on the ward to improve their critical thinking.

5.0 Conclusion and recommendation

CNH decreased the workload of nurses in some respects but increased their workload due to duplicate charting. However, technical problems like insufficient computers and computer malfunction hindered the smoothness of running CNH. The nurses in this study considered that CNH compromised the quality of care of patients when nurses copied and pasted patient clinical information carelessly that exposed them to risk through legal and ethical errors. Additionally, prolonged use of computerised structured contents reduced the critical thinking skills of nurses in constructing a patient care plan. This study does not represent the overall scenario of Malaysia’s paperless hospital CNH due to its limited sample size. In addition, the majority of the hospitals in Malaysia still use paper documentation. To maximize the effective use of CNH in future, it is suggested that similar studies be conducted in the different states of Malaysia to understand the shortfall of CNH and improve nursing handover. In addition, the input obtained from this study could assist in developing a quantitative research in future to reach a larger sample size.

References


