

Confident or Confused: Nurses' Perception and Acceptability of Electronic Nursing Documentation

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ABSTRACT

Nurses for the longest time have maintained paper-based records pertaining to the rendered patient care. The past few decades, however, have witnessed the transition of nursing from a simple care to much more complex profession thus entailing accurate, complete, comprehensive and quality nursing records. To counter the potential risks of illegible, inaccurate, incomplete paper-based nursing documentation (to mention a few), electronic documentation is rapidly finding roots in the healthcare setting. Computerization is taking over as paper-based documentation is phasing out. Successful implementation of technology primarily depends on user perception and acceptance. It is thus critical to understand nurses' perception, readiness and willingness to adapt electronic documentation. The present study explores nurses' perception, acceptability and utility of electronic nursing documentation program using a quasi-experimental approach with pretest posttest design. Perception assessment scale and acceptability and utility opinionnaire was utilized to collect data from 44 nurses working in ICU, surgical ICU and emergency units in a rural teaching tertiary care hospital. Nurses' perception was assessed pre and post-implementation of electronic nursing documentation program, whereas nurses' acceptability and utility of was assessed on day 100 of implementation of program. Findings revealed a significant overall and unit wise enhancement in the perception of nurses' post-implementation of electronic nursing documentation program. A weak positive relationship was established between perception and acceptability of utility of nurses exposed to electronic nursing documentation program.

Keywords: Electronic nursing documentation (END), Nursing documentation, Perception, Patient records.

INTRODUCTION

The significance of nursing records was realized long ago when Florence Nightingale, the nursing pioneer realized the criticality of formal nursing documentation to facilitate clear and thorough nursing communication among care providers. [1] Appropriate legible documentation provides an accurate reflection of nursing assessments, alteration in conditions, care rendered and pertinent patient information to support the multidisciplinary team to deliver great care. Complete documentation

facilitates coordination advancement, continuity and consistent quality improvement. In addition to providing evidence of care, documentation is also a critical professional and medico legal requirement of nursing practice. [2]

Thorough nursing documentation is considered a precondition for quality patient care, efficient communication and cooperation among the members of healthcare team and should reflect nursing observation, assessments, decisions and interventions. [3] Deficiencies in nursing

documentation include but are not limited to; incomplete record, inaccurate patient representation, time consuming nature of recording. Failure to proficiently exchange and transfer information impacts the continuity and quality of rendered care, hence the motivation to enhance nursing documentation has come forth from several sources including hospital management, nurses and nursing researchers. Compliance with legal requirements, paperwork reduction drives, and meeting professional standards are also some of the common reasons for changing record keeping regimes. [4]

The use of health informatics to document patient data is at the forefront of healthcare discussions and has been touted as a way to promote free exchange of health information while protecting patients' privacy and improving the safety, efficacy and quality of care. [5] Opportunities to streamline communication and documentation, decrease the amount of duplicative data entry, add to evidence base of practice, influence policy making, and improve the standard of care are inherent in the electronic documentation. This system will meet and indeed improve the completeness of documentation of basic care, clarification of orders, quality and safety elements and nursing process charting requirements adequately. [6] Hence, the use of computers in healthcare is becoming a necessity for healthcare providers and organizations.

This move however, presents multiple foreseen and unforeseen challenges to healthcare providers and their employing institutions. The transition from narrative to electronic documentation demands a major change in mind set, knowledge, performance and skills. There is no doubt that such change will impact nurses as they function at the core of patient care coordination. Because change is often challenging, time consuming and a costly affair with potential unanticipated consequences, hence, positive attitude and acceptance of end user is an important

concern and a goal. Nurses as end users may take the challenge and transition smoothly without much chaos or they may perceive the change as a disruption in the routine performance thus causing fear, anxiety, anger, resentment, confusion, exhaustion, and irritability and resistance to change. In order to implement new information technology, it is critical to understand the readiness and willingness of hospital staff to efficiently integrate it into their practice. [7]

Takhti HK et al [8] reported that majority of the nurses (87.9%) expressed positive perceptions with regards to health information system implementation in their daily practice. A study by Kossman SP et al [9] showed that nurses believed computer use enabled them to provide safer care. Nurses also perceived that EHR use enhanced nursing work due to; better information access; improved organization and efficiency; alert screens, and hindered nursing work through; increased documentation time due to slow response of the system; numerous screens; reduced interdisciplinary communication and impaired critical thinking. Kahouei M et al [10] however reported that in general, nurses had negative attitudes towards the impact of the nursing computer program on patient care.

Because user attitude towards the whole phenomenon impacts their willingness to use and move towards paperless system, it is therefore vital to establish the existing perception and attitude of nurses to determine how computerization will be achieved. [11] Successful implementation of clinical information technology system primarily depends on user acceptance. Patient safety and quality can only be achieved when nurses are willing to use the clinical information technology. Aldosari B et al [12] reported a strong positive correlation between perceived usefulness and perceived ease of use resulting in a positive effect on nurses' acceptance. Irrespective of how excellent the electronic systems are, it is crucial to examine nurses' perception, usability and

acceptability of electronic nursing documentation as end users.

The purpose of this study was to explore the perception and ascertain the acceptability and utility of nurses regarding electronic nursing documentation (END) program. The specific research question addressed was as follows:

How does computerized documentation change the nurses' perception and acceptability of END program?

METHODOLOGY

A quasi-experimental approach with pretest posttest design was adopted for this study. Nurses' perception was assessed on day 1 before the implementation of electronic nursing documentation program. Nurses' perception, acceptability and utility were assessed on day 100 post implementation of electronic nursing documentation program.

Tools

1. **Perception Assessment Scale:** It comprised of declarative items pertaining to nurses' personal profile and 27 randomly scattered items (14 positive and 13 negative) pertaining to electronic nursing documentation. The responses varied from; strongly agree; agree; undecided; disagree to strongly disagree. Each positive item was assigned a score of five for strongly agree and a score of one for strongly disagree and were scored as 5, 4, 3, 2, 1. Each negative item was assigned a score of five for strongly disagree and a score of one for strongly agree and were scored as 1, 2, 3, 4, 5. The maximum and minimum possible scores of the perception assessment scale were 135 and 27 respectively.
2. **Acceptability and utility opinionnaire:** It comprised of 28 positively stated responses pertaining to; training; operation; flexibility and learnability; outcome of electronic nursing documentation. The responses were captured via a three point Likert scale ranging from; to great extent; to some

extent; to no extent and a score of 3, 2, 1 was assigned respectively. The maximum and minimum possible scores of the opinionnaire were 84 and 28 respectively.

The established reliability using test retest technique was found to be 0.89 and 0.86 respectively.

Setting

The setting was an 830 bedded teaching tertiary care hospital in rural area. Permission was granted to conduct study in the ICU (23 bedded), surgical ICU (12 bedded) and emergency unit (38 bedded) only.

Sample

Data was collected from November 2013 to February 2014. The sample comprised of forty-four nurses working ICU, surgical ICU and emergency unit selected by convenient sampling.

Ethical Consideration

Ethical approval for the study was obtained from institutional ethical committee of the Maharishi Markandeshwar University. Permission was obtained from the Medical Superintendent of Hospital to conduct the research study. As part of the approval process, the rights and confidentiality of the nurses were guaranteed. To protect the identity of the nurses, the research data was maintained through the use of pseudonyms for all the participating nurses.

Data Collection

Perception of nurses was assessed on day 1 and day 100 pre and post implementation of electronic nursing documentation program respectively. Nurses' acceptability and utility of electronic nursing documentation was assessed on day 100 of implementation of electronic nursing documentation.

RESULTS

Perception of nurses regarding electronic nursing documentation program

Findings revealed that the overall mean and standard deviation of pre and post

implementation perception scores of nurses were 84.30±10.44 and 93.95±7.33 respectively. The computed 't' value of 5.00 was found to be statistically significant at 0.05 level of significance thus suggesting

that the electronic nursing documentation program was effective in enhancing the perception of nurses regarding electronic nursing documentation program.(Table 1).

Table 1 Comparison of perception scores of nurses regarding electronic nursing documentation program N=44

Perception	Mean± SD	M _D	SE _{MD}	't' value	df	p value
Before implementation	84.30±10.44	9.65	1.93	5.00*	43	0.00
After implementation	93.95±7.33					

Comparison of unit wise perception of nurses regarding electronic nursing documentation program

The 't' value was computed unit wise to determine the significance of difference between perception scores of nurses pre and post implementation of electronic nursing documentation program in ICU, surgical ICU and emergency unit. Findings revealed that the mean and standard deviation of pre and post perception scores of nurses were; 83.87±12.37 and 93.47±8.50 (ICU);

85.54±11.4 and 97.31±7.42 (surgical ICU) and 83.69±7.96 and 91.69±5.07 (emergency unit) respectively. The computed 't' value of; 2.33 (ICU); 3.05 (surgical ICU) and 3.81 (emergency unit) were found to be statistically significant at 0.05 level of significance. It can be inferred that the electronic nursing documentation program was effective in enhancing the perception of nurses exposed to electronic nursing documentation program in all the units. (Table 2)

Table 2 Unit wise comparison of perception scores of nurses regarding electronic nursing documentation program N=44

Perception		Mean± SD	M _D	SE _{MD}	't' value	df	p value
ICU (n=15)	Pre implementation	83.87±12.37	9.6	4.12	2.33	14	0.03
	Post implementation	93.47±8.50					
Surgical ICU (n=13)	Pre implementation	85.54±11.4	11.8	3.87	3.05	12	0.01
	Post implementation	97.31±7.42					
Emergency unit (n=16)	Pre implementation	83.69±7.96	8.0	2.09	3.81	15	0.01
	Post implementation	91.69±5.07					

Nurses' perception

The five strongly agreed upon positive statement and five strongly disagreed upon negative statements by nurses before and after implementation of electronic nursing documentation were also analyzed.

- More than half of the nurses (59.1%) strongly agreed that electronic nursing documentation “improves the quality of clinical documents by preventing submission of incomplete information” as compared to 6.9% before implementation of electronic nursing documentation program
- Fifty percent of the nurses strongly agreed that electronic nursing documentation “prevents changes in the already entered patient data” as compared to 9.1% before implementation of electronic nursing documentation

- A little less than half of the nurses (47.7%) strongly agreed that electronic nursing documentation “is easier to maintain as compared to the paper records” whereas 18.2% strongly agreed before implementation of electronic nursing documentation program
- More than half of the nurses (56.8%) strongly agreed that electronic nursing documentation “prevents duplication of patient data entry” as compared to 27.4% before implementation of electronic nursing documentation program
- Nearly half of the nurses (45.6%) strongly agreed that electronic nursing documentation “will take time to be adapted by nurses in the clinical setting” as compared to 18.2% before implementation of electronic nursing documentation program

- More than one fourth of the nurses (31.8%) strongly disagreed that electronic nursing documentation is “difficult to operate” as compared to 2.3% before implementation of electronic nursing documentation program
- Nearly one fourth of the nurses (21.4%) strongly disagreed that electronic nursing documentation “is time consuming” as compared to 2.3% before implementation of electronic nursing documentation program
- Nearly one fifth of the nurses (18.2%) strongly disagreed that electronic nursing documentation “creates information overload by displaying all the information about the patient” as compared to 4.5% before implementation of electronic nursing documentation program
- One fifth of the nurses (20.5%) strongly disagreed that electronic nursing documentation “does not allow tracing of all patient data entered” as compared to 9.1%

before implementation of electronic nursing documentation program

- Less than one fourth of the nurses (13.5%) strongly disagreed that electronic nursing documentation “decreases communication between members of health care team and the various departments of the hospital” as compared to 2.2% before implementation of electronic nursing documentation program

Nurses' acceptability and utility of electronic nursing documentation program

The mean and standard deviation of acceptability and utility scores of nurses was 75.43 ± 6.67 with the obtained scores of nurses ranging from 58 and 84 thus indicating that electronic nursing documentation program was highly acceptable and useful among nurses. (see table 3)

Table 3 Mean, standard deviation and range of acceptability and utility scores of nurses

Variable	n	Minimum score	Maximum score	Mean±SD	Range of obtained scores
Acceptability and utility	44	28	84	75.43±6.67	58-84

For describing nurses' acceptability and utility of electronic nursing documentation program, frequency and percentage of each item on the opinionnaire was computed. Finding revealed that the overall percentage of acceptability and utility of electronic nursing documentation program was; 71.98% (to great extent); 25.49% (to some extent); 2.53% (to no extent) as expressed by nurses exposed to electronic nursing documentation program.

Relationship between nurses' perception and acceptability and utility of electronic nursing documentation program

The mean perception score was compared to the mean acceptability and utility score of nurses. The mean and standard deviation of perception and acceptability and utility scores of nurses exposed to electronic nursing documentation program were 93.95 ± 7.33 and 75.43 ± 6.67 respectively. The computed 'r' value of 0.24 was not found to be significant at 0.05 level of significance. This

indicated a weak positive relationship between perception and acceptability of utility of nurses exposed to electronic nursing documentation program.

DISCUSSION

Nursing documentation is one of the critical elements among other nursing activities. Perception of nurses regarding electronic nursing documentation was assessed before and after the implementation of electronic nursing documentation program. Data analysis of the current study revealed an overall enhancement in nurses' perception regarding electronic nursing documentation program. The improvement was found in all the three units viz. ICU, surgical ICU and emergency unit. In support of the present findings, Alquraini H et al [13] reported that respondents generally had positive attitudes toward computerized Health Information System. A study conducted by Harmon CS [14] et al also revealed nurses' favorable

attitude towards the use of Electronic Health Record five years post implementation. Raddaha AHA [15] reported that the change introduced in the system was important to their work and the retrieved information was updated to be more likely confident in using the system. Fargaly WAT [16] et al reported that majority of the nurses had a positive attitude towards using Electronic Information System.

Nurses' acceptability and utility of electronic nursing documentation program

Findings of the current study revealed that among nurses, the overall percentage of acceptability and utility of electronic nursing documentation program was; 71.98% (to great extent); 25.49% (to some extent) and 2.53% (to no extent). This suggested that majority of the nurses who were exposed to END program expressed it to be highly acceptable. Nurses in the present study, agreed "to great extent" that END program; "uses terms that I am familiar with" (84.1%); "after hands on experience, I became confident regarding how to document electronically" (84.1%); "hands on experience provided me opportunities to try out electronic documentation and clarify doubts before the implementation" (81.82%); "is easy to understand and use" (81.82%); "increases accuracy of documentation of nursing activities". Ifinedo P1 [17] et al reported the RNs perceived usefulness, favorable computer habits and behavioral intentions to use Health Information System have positive effects on their acceptance of such technology. These findings are supported in a study conducted by Myera JO [18] that examined the beliefs nurses undergoing change from paper based to computerized documentation. Results showed that nurses' assessment of EMR as user friendly increased over time. Four months after implementation of the EMR 39% nurses agreed or strongly agreed the EMR to be user friendly as compared to 67% by six months post implementation. At one-year post implementing, 56% of the nurses agreed or

strongly agreed the software to be user friendly. In addition, nurses also felt that they were provided enough support during the change process. Conflicting results were however reported in a study undertaken by Viitanen J et al [19] which revealed that the ENR systems shared several usability problems in common. Nurses mainly expressed negative experiences with electronic nursing records as; documentation required a lot of resources, patient information was hard to find, and procedures does not meet the contextual needs thus suggesting usability problems having significant effects on nurses' documentation practices and nursing work.

Relationship between nurses' perception and acceptability and utility of electronic nursing documentation program

Findings of the current study indicated a weak positive relationship between perception and acceptability of utility of nurses exposed to electronic nursing documentation program. On the contrary, Adosari B [12] et al reported a strong positive correlation between perceived usefulness and perceived ease of use resulting in a positive effect on nurses' acceptance.

CONCLUSION

Electronic nursing documentation program was effective in enhancing the overall as well as unit wise perception regarding electronic nursing documentation

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