

The Application of Electronic-based Nursing Care Documentation, Ethics and Nurse Performance on the Quality of Services in Ibu Dan Anak Hospital in Banda Aceh

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Keywords: Documentation, Electronic, Ethics, Performance, Service.

Abstract: The use of computers and internet in nursing service is the latest issue. It can overcome service problems and improve patient satisfaction. This research was a correlation study aimed to identify the effect of electronic-based nursing care documentation, ethics and nurse performance on nursing services quality in Ibu dan Anak Hospital Banda Aceh. The research design was a cross-sectional study. The samples were 200 post-surgical inpatients. Consecutive sampling was used (special criteria; conscious patient and post-surgery day 3). The Pearson product-moment coefficient correlation (significance <5%) used to test instrument validity and Cronbach Alpha (> 0.60) to measure instrument reliability. Data collection was conducted from 6th August to 20th September 2018. The SEM test shown the Goodness of Fit Index 0.954, the feasibility test of full SEM model using Chisquare (399.5), Significance probability 0.00, RMSEA 0.056, AGFI 0.954, CMIN / DF 1.624, TLI, 0.946, CFI 0.952. Those values were within Cut of Value. The results of this study are meaningful; the hypothesis is accepted. Electronic application and nurse professional ethics influence on nurse performance. The nurse performance also influence service quality. Electronic nursing care documentation has effect on service quality. It is expected nurses can improve services quality by using electronic-based nursing care documentation, ethics, good performance.

1 INTRODUCTION

The quality of services in hospitals is currently getting more attention from the hospital management team (Mitropoulos, Vasileiou & Mitropoulos 2006). Patients who are hospitalized need quality services because of their demands as users of higher values in service (Kamaldeep, Warfa, Edonya, Mc Kenzie, Bhugra, 2007). Patients who are cared for not only experience physical problems but also psychological and social complaints which requires care services professionally (Hernández, et al., 2015).

The quality of nursing services is determined by several factors, including nurse performance, nurse ethics and professional documentation (Hernández, et al., 2015). Service quality is a crucial component of hospital organization performance and also become one of the indicators of the success of hospital programs. Service documentation performed by nurses to patients is currently being

developed using electronic or computer-based media. The use of computers aims to improve performance, control and evaluate the quality of services for patients in hospitals continually (Koné & Wodchis, 2013).

The documentation must be standard and reliable in order it can be applied for ethical aspects and also to measure performance in every service. The leadership performance survey on the health system (Hospital Consumer Assessment of Health Care Providers and Systems / HCAHPS) on 314 hospitals in the United States shows that 82.2% respondents agree that service quality is the main promotor of hospital organization (Hayes, Banner, & Pryor, 2006).

Explicitly patients express that good service is the result of good performance from nurses. Contrary, some hospitals in the United States that perform inefficient services require special efforts to increase the number of outpatient visits by (18%) and inpatients (13%) and to achieve efficiency they reduce labor by transferring 264 clinical staff and 39

beds to the nearest health clinic (Tlotlego, Nonvingnon, Sambu, Azbu & Kirigia, 2010).

The development of quality nursing services is the latest issue with the use of computers. The computer application can overcome the problem of services (Bouamrane & Mair, 2014). The use of technology is greatly needed because consumers are increasingly different from the aspects of education, demands, law and the increase of critical thought on services (Chaturvedi, Upadhyay & De Costa, 2014). The documentation on health data using the internet has been done by 74% to 85% in developed countries and 80% of users are looking for information about health. In general, patients seek information through the internet related to the decisions that will be taken against the disease. The documented data is almost 80% done by nurses. It is because 80% of the total professions in the hospital are nurses. In addition, nurses provide services for almost 90% of all services for 24 hours (Cunha & Cunha, 2004).

A review of the literature from 1999-2017 found that there were 164 papers which 137 were telemedicine services. Most of the telemedicine services based in the United States (n = 61, 44.5%), 2/3 of services (n = 86, 62.7%) are in the form of real time telemedicine. From the study, 50% (n = 81, 49.3%) assessed services from three different evaluation perspectives: clinical, economic and satisfaction outcomes (Aldossary, Melinda & Khana, 2017). Statistically some of the causes of inefficiencies in care services are finance, technology, time and autonomy change (Koovakada, 2013). The United States Department of Health and humanitarian services can save up to \$ 140 billion per year with the use of Electronic Health Record Systems (HER) technology (Campos & Gillard, 2010).

In Indonesia, hospitals that apply a computerized nursing information system are still limited. This is due to various management factors such as hospital type, ownership status, sufficient budget and hospital management awareness to develop the hospital. Some hospitals in Aceh want to develop services according to patient needs. However, there are some problems faced by hospitals such as lack of budget support, management problems, and limited human resources.

In general, documentation of services carried out in Ibu dan Anak Hospital in Banda Aceh is still using manual documentation (handwriting). In other words, the use of computer-assisted documentation is still lacking. The results of observations of researchers at Ibu dan Anak hospital, the

administration staff carried out computer-assisted documentation for registration, recording patient data, medical check-up, diagnosis, medical treatment, and length of day care, and also finance. While nursing care is written manually in the medical record book.

2 METHOD

This research was a correlation research. It aimed to identify the effect of the application of electronic documentation, on patient satisfaction by involving nurse ethics and nurse performance. Exogenous variables included the use of electronic documentation (accessibility, efficiency and standardization), nurse ethics (patient safety, competence and caring culture), and nurse performance (nursing assessment, nursing diagnosis, implementation and evaluation). While the endogenous variable was patient satisfaction (tangible, empathetic, reliability, responsiveness, awareness). The instrument used was designed by researchers who had tested reliability and validity. Before the research was conducted, the results of the ethics test from the Aceh Health polytechnic were conducted.

This study was designed based on the non-equivalent post-test approach. The study location in the post-surgical inpatient ward. The study involved 200 people as sample. Sampling technique used was consecutive sampling with criteria (conscious patient and post-surgery day 3). The statistical analyses used for validity test was Pearson product-moment coefficient correlation (significance < 5%) and reliability test was measured by Cronbach Alpha (> 0.60). Data collection was taken from August 6 to September 20, 2018. Data were analysed by Structural Equation modeling (SEM) using the AMOS 22 program which aimed to form and to test models. (Hair, Black, Babin, Anderson & Tatham, 2006; Ferdinand, 2006).

3 RESULTS

The research respondents were 200 people who were treated in the post-surgical room, the level of awareness was good, the third day of care, aged 17-57 years. The results of the study were found mostly between 30-39 years old (40%). The respondents were all women (100%) because of the location in the post-surgical care room of the Ibu dan Anak

hospital. The majority of respondents education is high school (37.5%), and the marital status of respondents mostly is married (82%) and the average income per month is 1.350.000 – 2.999.999 rupiah (39.5%).

3.1 Confirmatory Factor Analysis

Latent variables or constructs used in this research model consist of 2 exogenous variables and 2 endogenous variables with a total of 24 dimensions. The purpose of confirmatory factor analysis was to test the unidimensionality of the dimensions formed each latent variable. The results of data processing for confirmatory factor analysis constructs for electronic documentation application variable, nurse professional ethics, nurse performance and service quality are shown in figure 1.

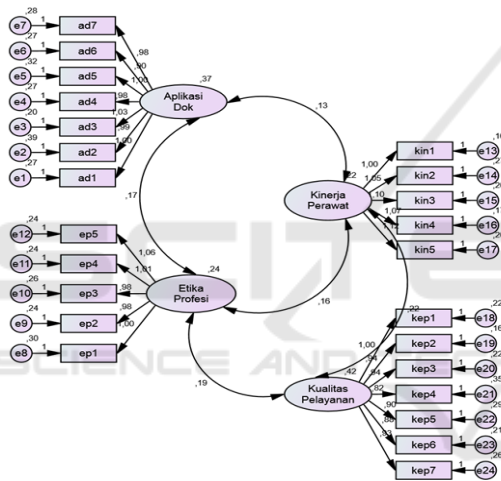


Figure 1: Measurement model with loading factor.

Based on Figure 1, all indicators have a good number of loading factors which was greater than 0.5. The formation of these variables already has an adequate contribution from all relevant indicators so that it does not need to be eliminated from the model.

Table 1: Criteria of goodness of fit measurement models.

Size	Cut-off Value	Result Analysis	Evaluation Model
CMIN	CMIN/DF >2	2,150	Good
Baseline Comparisons	approtimate 1	up 0,5 for NFI, IFI, TLI and CFI	Relative good
Parsymony Adjusted Measure	0-1	Pration, PNFI, PDCFI between 0-1	Good

RMSEA	> 0,05	0,076	Good
AIC	Default Model less than Saturated	636,958 < 600,000	Good
ECVI	Default Model between Saturated & Independence	3,201 < 3,015 < 17,603	Good

3.2 Analysis of Structural Equation Modelling (SEM)

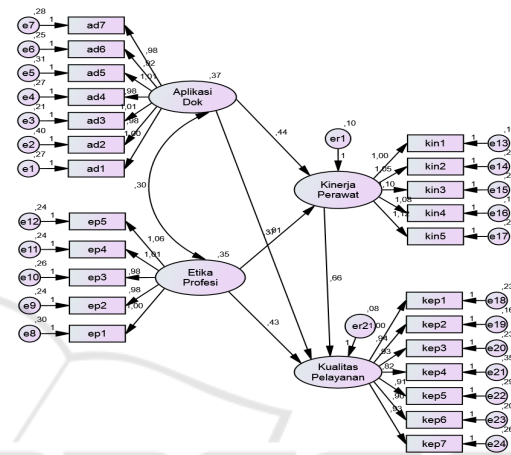


Figure 2: Test results of Structural Equation Model (SEM).

The next analysis is the analysis of the Structural Equation Model (SEM) in full model. The analysis of the level of uni dimensionality of the indicators forming latent variables was tested by confirmatory factor analysis. Analysis of the results of data processing at the full stage of the SEM model is carried out by conducting suitability tests and statistical tests.

Based on figure 2, it can be explained that each variable, the application of electronic health documentation and nurse professional ethics, has influence on nurse performance and also has indirect effect on service quality through nurse performance.

3.3 Hypothesis Testing

The 5 research hypotheses above are based on the Critical Ratio (CR) value of a causality relationship from the results of SEM processing as in table 2.

Table 2: Regression weight structural equational model 4.

			Estimate	S.E.	C.R.	P
Nurse_ Performance	<--	Doc_ Application	0,442	0,110	4,000	***
Nurse- Performance	<--	Profession_ Ethics	0,374	0,1133	3,313	***
Service_ Quality	<--	Doc_ Application	0,115	0,0254	4,000	***
Service_ Quality	<--	Profession_ Ethics	0,425	0,1213	3,519	***
Service_ Quality	<--	Nurse_ Performance	0,659	0,1165	5,683	***

4 DISCUSSION

4.1 The Influence of the Electronics Application of Nursing Care Documentation on Nurse Performance

The electronics application of nursing care documentation has an effect on the performance in Ibu dan Anak Hospital Banda Aceh.

Research on the use of technology in nursing or the use of the Internet of Things (IoT) which connects objects to the internet and its networks is still not maximized in hospital services. The use of this sophisticated application in nursing aims to improve data obtained from patients and service providers (nurses). This technology can be used to improve the quality of patient care and safety services. The concept of the Internet of Things and the use of nursing services is the science and art of using technology for nursing care in hospitals. The survey of 265 papers where 62 papers related to Internet of Things-based innovations found that Internet of Things technology provided innovation for basic maintenance use even though existing innovations were still in the early stages (Mieronkoskia, et al. 2017).

Other related research is about the comparison of manual documentation with electronic documentation of trauma resuscitation patients in the emergency unit. This study conducted toward respondents (n = 200) trauma resuscitation groups were electronically documented and respondents (n = 200) used manual documentation. The results showed that electronic documentation more often recorded 5 data elements, those are: team activation time (100% vs 85%, P b .00), primary assessment (94% vs 88%, P b .036), doctors' arrival time (98% vs 93.5%, Pb. 026), intravenous fluid volume in the emergency unit (94% vs 88%, Pb. 036), and disposition (100% vs 89.5%, Pb .00). In general, the

electronic documentation is better in recording trauma resuscitation compared to the documentation on paper or manual documentation (Coffey, et al., 2015).

Performance is the core of organizational functions. Good performance is one way to improve quality services. The care performance measurement report carried out by the Institute of Medicine (IOM) found that there is a significant gap between the level of patient care desired and the quality of services reported. The quality of care services is consistently correct where it is given to right people in the right way at the right time. The characteristics of good care are packaged in six goals for improvement: safe care, effective, patient centered, on time, efficient, and fair (Fosson, Jones & Yoder, 2016).

The results of hypothesis testing on this variable can be stated that if nurses can use electronic nursing care documentation in conducting nursing services to patients according to patient expectations, then the nurse's performance can be increased by 0.442 or 44.2%. The electronic documentation on nursing service is a nursing facility that is based on the SOP (Standard Operational Procedure) and can affect the performance of nurses. This is shown when nurses conduct studies, enforce nursing diagnoses, to intervene, or implement and also to do evaluation. The actions of nurses in providing nursing care are carried out systematically and professionally and can be accessed by the head of the management room, nursing staff and also finance staff.

4.2 The Influence of Nurse Professional Ethics on Nurse Performance

Nurse professional ethics influences the performance of nurses in providing nursing services to patients. The results of other studies on 33 articles in the journal Pubmed since 1990 which relate to patient safety, ethics, audit and quality of care, found that there are some factors that influence the quality of care services such as ethics, individual profiles, administrative structures and team-based services. The survey results found that influencing team work on nurses included; self-awareness, work environment, leadership, ethics, cooperation, communication and competition. Monitoring the leadership and management of the work team is very important to achieve efficient team work. The results of the study explain that manager's responsibility is the main factor in creating and maintaining a work climate in the team (Kossaif, Hleihel & Lahoud,

2017).

Team work is related to individual workloads and is greatly influenced by the process of maintaining risks to the consequences of nursing services. The workload varies among nurses can put patient safety on risks. This is because nurses also carry out other tasks besides caring for patients. Nurses apply strategies to manage procedures based on patient safety oriented (Ross, Rogers & King, 2018).

The results of hypothesis testing can be explained that if nurses at Ibu dan Anak Hospital can improve their ethics in working and in performing nursing services to patients according to the SOP, then the nurse's performance can be increased by 42.5%. The good performance of nurses can be demonstrated with the most basic things such as being on time, being friendly with patients, responsive to patient needs and being able to work together on a team.

4.3 The Influence of Nurse Performance on Service Quality

The results of the research on nurse performance were found to influence the quality of care to patients in Ibu dan Anak Hospital Banda Aceh.

The OECD (Organization for Economic Corporation and Development) 2013, the Organization for Economic Co-operation and Development, explains that health care has now begun to develop itself and focus on regulating services with communication, disease prevention and improvement in the quality of life and well-being of patients. This is because current hospital services require an approach that requires patience dealing with patients who are curious about health services for individuals, families and communities. Experts argue that health services that use the internet (e-health) are technological developments that aim not only at program development, but also on attention, thought, attitude and communication become issues of health services both locally, regionally and globally (Chen, Wenn, & Yang, 2014).

From hypothesis testing, it can be explained that the performance performed by nurses with the use of electronic Nursing Documentation (e-ND) nursing documentation can improve the performance of nurses in carrying out nursing care documentation in inpatients. The results of this test explain that if nurses at Ibu dan Anak Hospital are able to do service with computer-based nursing documentation, then it can improve nurse performance by 65.9%.

Services carried out by nurse for 3 shifts were recorded by a system that can be used to see various aspects of the nurse including discipline, performance, calculation of medical service, career services and at the same time malpractice that may occur in patients. In addition, the performance record that was recorded on the e-ND system can be used for guidance, such as knowledge, skills and attitudes.

4.4 The Influence of Electronic Nursing Care Documentation on Service Quality

The electronic nursing care documentation application has an effect on the quality of services at Ibu dan Anak Hospital in Banda Aceh. The results of a similar study conducted in the capital city of Australian towards empowerment and satisfaction of patients who received nursing care from September 2013 to March 2014 on 678 nurses and patients at the nurse's practice site, found that patients who consulted with nurses longer were more satisfied (OR = 2.50, 95% CI: 1.43-4.35) and more active (OR = 2.55, 95% CI: 1.45-4.50) than those with shorter time. Patients who had continuity of care with the same nurses were more satisfied (OR = 2.31, 95% CI: 1.33-4.00) than those who consulted nurses whom they had never met before. It also found that patients who consulted in practices where nurses worked with a wide range of practice and high levels of autonomy felt more satisfied (OR = 1.76, 95% CI: 1.09-2.82) and more active (OR = 2.56, 95% CI: 1.40-4.68) compared to patients attending a practice where nurses worked with a small scope of practice and low levels of autonomy (Desborougha, Bagheria, Banfield, Mills, Phillips & Kordae, 2016).

A holistic perspective on harmony and evaluation of interactions between computers and humans has been carried out in Taiwan. This study aims to evaluate the implementation of effective information systems and their positive impact on nurses' performance and also to examine the impact of harmony between nurses' perceptions of Nursing Information System (NIS) and technological capabilities of NIS to achieve success and performance in nursing care and data storage. The study was conducted on 531 registered nurses. The result shows that the performance of nurses using NIS and NIS technology capabilities can achieve success and have a positive impact on nurse satisfaction. As a result, nurse satisfaction will increase. The use of Nursing Information System

(NIS) can help nurses work and meet the patient's needs in service optimally (Lin, Chiou, Chen & Yang, 2016).

In this time, computer-based information technology is a device to improve efficiency and effectiveness in care organizations. Previous studies have shown about success factors in health care information systems. The majority of these studies adapted well-known theories about the information systems success model (ISSM), developed by DeLone and McLean in 1992. The success factors using technology information systems adopted by nurses in clinical practice have six dimensions: system quality, information quality, service quality, intention to use, user satisfaction and benefits. System quality, information quality and service quality are three antecedent variables that are important and affect individuals in the use of information system (Lin, Chiou, Chen & Yang, 2016).

The results of this hypothesis test indicate that the better the electronic nursing care documentation application will have better effect on improving service quality by 11.5%. Nurses work using tools to achieve the goal of quality service on patients. Standard documentation tools have important value because they can affect the performance of nurses as a whole.

4.5 The Influence of Nursing Ethic on Service Quality

The results of this study indicate that professional ethics nurses have an influence on improving service quality.

The results of other studies on the priority of nursing care and intensification of the work of nurses found that nurses can cause emotional fatigue and emotional dissonance to experience physical and emotional fatigue. Ethical regulation in nursing is an important problem because it has an impact on professional development, quality of care and patient satisfaction. In addition, working in a state of fatigue creates feelings of guilt, inability to act, frustration and helplessness, illness, retention and lack of service due to retention or illness (Suhonen et al. 2018).

International consensus on professional ethics, nurses need support to manage ethical issues in daily practice. One type of service in the form of clinical ethics support in the form of Moral Case Deliberation (MCD). The MCD is led by a facilitator from a group of health care workers who discusses ethics in difficult situations that are found in daily

patient care (Heidenreich, Bremer, Materstvedt, Tidefelt & Svantesson, 2017).

Nurses must be able to adapt to different patients, different problems and different needs. Lack of time in the act of meeting the needs of patients and the demands of the organization to provide better services can cause problem. Thus, the treatment need to be intensified (compacted) because the number of nurses is not comparable to the needs of patients. In the code of ethics of nurses, nurses are always expected to serve patients in good manner, do not differentiate patient status, nurses speak politely, show professional attitude, are responsible with values respecting culture and trust. However, this condition is sometimes not fully implemented because nurses experience fatigue and disproportionate in doing work and it can put a risk on creating ethical dilemmas.

5 CONCLUSION

This study concluded that there is correlation between the use of electronic documentation, nurse ethics and also nurse performance on the service quality of Ibu dan Anak Hospital Banda Aceh. The use of electronic documentation has influence on service quality. There is the influence of nurse ethics on service quality. Nurse ethics has direct influence on professional development, quality of care and patient satisfaction. Nurse performance also has influence on service quality. In addition, there is also influence of computer use, professional ethics, through nurses' performance on service quality partially and simultaneously (although simultaneous values are smaller than partial).

The results of this study imply that the application of electronic documentation and the ethics of nurses have an influence in improving nurse performance and have an impact on improving the quality of care for patients. The direct effect of the value is greater compared to the indirect influence. There are some factors needed to obtain service quality, those are electronic nursing care documentation, professional ethics and nurse performance are needed in providing services. The results of the study show that the influence of these variables has directly and indirect influence on nursing performance. Post-surgery patient satisfaction treated in an inpatient ward requires services that include in each dimension and indicator. The biggest influence is the nurse's performance 65.9%, professional ethics 42.5%, and for applications 44.2%.

Nurses should use mechanisms related to the indicators in carrying out care for patients including standardization, accessibility, efficiency and quality. Furthermore, the facilities that are used properly can improve nurse performance and service quality. Several dimensions can be carried out to improve nurse ethics in hospitals such as applying a culture of caring, prioritizing patient safety and working with competence.

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