Information Technology Research Journal
ISSN 2026-6715
Enie Novieastari *et al*, Volume (7) Issue (1): 14 – 23 September - 2021. RESEARCH PAPER

Technology competency of CCTV use correlated with caring behavior of nurses according to the perception of COVID-19 patients in isolation room Hospital. X Jakarta, Indonesia

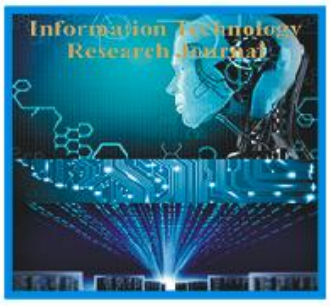
Elisabet Herlyani Bota Koten[1], *Enie Novieastari[2], Dewi Gayatri[3], Tuti Afriani[4] & Sarvita Dewi[5]

[1]Postgraduate Student, Specializing in Nursing Leadership and Management, Faculty of Nursing, University of Indonesia, Depok, Indonesia

[2, 3, 4] Fundamental of nursing and Basic Nursing, Faculty of Nursing, University of Indonesia, Depok, Indonesia

[5]Children's and Mother's Hospital of Harapan Kita, Jakarta, Indonesia

*Corresponding Author Email: enienovieastari@gmail.com[2]



***Corresponding Author**

Enie Novieastari

Fundamental of nursing and Basic Nursing, Faculty of Nursing, University of Indonesia, Depok, Indonesia

*Corresponding Author Email: enienovieastari@gmail.com[2]

Abstract

The global pandemic effect results in nursing services optimizing the utilization of CCTV technology in COVID-19 isolation rooms. Phenomena that impact make a difference patient perception of the competence of CCTV use technology and caring behavior of nurses. To know the relationship between the competence of CCTV technology and the caring behavior of nurses in isolation rooms according to the perception of COVID-19 patients in Hospitals. X Jakarta. Descriptive correlation, cross-sectional approach. Sample of 140 COVID-19 patients. Data collected by google form, purposive sampling method. Analysis using multivariate with multiple logistic regression test. The instruments used are the Technological Competency as Caring in Nursing Inventory and The Caring Nurse-Patient Interactions Scale-23. Technology competency of CCTV use is mostly perceived to be less competent 51.4%. Caring nurse behavior was largely perceived to be caring well 52.1%. There is a meaningful relationship between CCTV use's technological competence and nurses' caring behavior (p value=0.001). The technology competence of CCTV use 31 times affects the improvement of caring behavior of nurses compared to incompetent nurses, without being controlled by determinant factors. Make regulations on the use of CCTV technology in COVID-19 isolation rooms. Develop training programs for caring-based CCTV technology and conduct mixed-method research to measure technological competencies according to nurse perception.

Keywords: caring behavior of nurses; COVID-19 patients; technological competence

Introduction

In overcoming this pandemic situation, nursing services require a handling system to reduce their spread by implementing transmission-based isolation. Hospitals are also required to be able to utilize technology to assist nursing services. Advanced and automated technologies that are very useful in pandemic situations and help mitigate any pandemic in the present and the future are advanced equipment, Closed-Circuit Television/CCTV

(Sufian, Ghosh, Sadiq, Smarandache, 2020; Ming et al., 2020).

Technology in healthcare has a major impact on almost all professional processes and practices (Banova, 2019). The purpose of using CCTV, in general, is to observe, monitor/monitor, security/ security, but for the benefit of patient nursing services in hospitals/other health facilities, the goal is to improve control and monitor the condition of patients (Amin A. (2018) Technology makes healthcare workers' jobs easier, fun, faster and more productive (Aggarwal, 2017), improving quality, efficiency, supporting more integrated health services and improving health (Maguire, Evans, Honeyman & Omojomolo, 2018).

Utilization of technology in Indonesia, one of which is the use of hospital CCTV to monitor the condition of patients in the ICU, as a reminder media to improve nurse compliance to hand hygiene significantly increased by 57% (Ramadhanti, Dwiprahasto & Nirwati, 2020), significantly higher 37.3% treating contact isolation infection patients (Livshiz-Riven et al., 2020), improving the safety and comfort of patients and families while in the hospital environment when installed in each inpatient treatment, the patient is the most important concern for the safety of patients and families when measured based on importance (Rahmawati & Deharja, 2020), monitoring of patient identification and drug safety (high alert) (Sakinah, Wigati & Arso, 2017).

Closed-Circuit Television has become a popular technology. While it can improve health care outcomes, it is important to be aware of the impact of this technology on the relationship between patients and nurses. According to Sandelowski (2002), interactions with patients increase through computer technology and decrease with physical presence and touch, potentially jeopardizing the development of trust relationships and thus affecting patient quality outcomes. Technology affects the quality of service of a health worker to the individual/community he serves. Therefore, to ensure the safety of CCTV technology, its use is regulated to protect the privacy rights of patients/personal data. The effective use of CCTV will depend on the strategic placement of the camera, the observation of the output on the monitor, called the "closed-circuit," to show that access to the content is restricted only to those who are already set up to be able to see it.

Technology is an integrated presence between science and machinery (Locsin, 2016). In helping clients achieve their full health potential of nurses must have a comprehensive/holistic approach. Nurses must interact and provide nursing care directly by their nursing knowledge. This approach uses the concept and science of nursing, one of which is caring. Caring is the essence of nursing that distinguishes it from other professions and dominates, unites, and animates the actions of caring nursing as the core of nursing science known as "human science and human care" (Watson, 2008). Nurses as a caring profession must understand explicitly and implicitly what is contained in caring professionals.

In Indonesia, caring has become one of the assessments for users of health services. Based on the results of client satisfaction surveys at several hospitals in Jakarta showed 14% of clients are dissatisfied with the health services provided, caused by the poor caring behavior of the Ministry of Health (2015, in Abdul, 2015). Nevertheless, nurses still have caring behavior in providing nursing care and can sincerely apply caring behavior to COVID-19 patients even as individuals with a sense of concern (Yustisia, Utama & Aprilatutini, 2020).

This pandemic changes everything where caring closely related to direct touch/communication must now use the media, even limited to reduce close contact. The role of caring should be replaced by the implications of the use of technological advances through CCTV. In this frame of mind, packaged technology should constitute the actualization of caring behavior. In other words, explicitly, the quality of a civilization is to unite technological advances with caring behavior. This phenomenon also occurs in the world of nursing, where the implementation of technology is vital to respond to clinical policies tailored to the caring behavior of nurses. Caring and technology must go hand in hand to create a nursing culture that places caring at the core of nursing care to patients. Technology is not a barrier for nurses to care for patients.

Based on the phenomenon and results of journal literature studies, research related to the relationship of technology competency of CCTV use with caring behavior of nurses according to the perception of patients in the isolation room of COVID-19 in the pandemic period is fairly minimal even in Hospitals. X Jakarta, research with this title has never existed. Previous research by (Miller 2017) has to do with the patient's perception of the caring environment. The environment in question is mobile computer workstation/MCW technology for improved patient safety, with quasi-experimental methods in the surgical units of two hospitals. Qualitative research (Dahlia, 2020) also related to the competence of using high-tech equipment in the ICU based on the experience of 13 nurses in the ICU room of a special hospital for the brain and nerves. Variables that have been studied which are associated with caring behavior of nurses, among others: workload, work commitment, job satisfaction, critical thinking, emotional intelligence, supervision training for head of the room, caring behavior training, work environment, organizational culture, and others (Fitriani et al., 2019) (Ramadhiani & Siregar, 2019). Therefore, this study is interesting to review and consider necessary to be done considering that this study is very closely related to the current pandemic situation. Hence, the problem formulated in this study is whether there is a relationship between technology competency of CCTV use and caring behavior that patients perceive from nurses they receive in the COVID-19 isolation room.

Methods

Quantitative research, descriptive correlation design, and cross-sectional approach were applied in this study. One hundred forty samples of the total population of 218 COVID-19 patients treated in COVID-19 isolation rooms on the second and third floors of Orchid Building, X

Hospital Jakarta, which used CCTV from 10 – 24 June 2021 with purposive sampling method. Inclusion criteria: COVID-19 patients treated in COVID-19 isolation rooms using CCTV, minimum three-day care, general condition of mild and moderate, received direct care from nurses in COVID-19 isolation rooms, patients with compos mentis awareness, self-care dependency: minimal care and partial care, cooperative, not in severe and critical illness. Two instruments were the Technological Competency as Caring in Nursing Inventory (TCCNI) by Rozzano (2013) and The Caring Nurse-Patient Interactions Scale (CNPI-23P) by Cosette, Cara, Ricard, and Pepin (2006). The analysis used: univariate (frequency and proportion), bivariate (chi-square), and multivariate (multiple logistic regression). Previously, researchers obtained ethical clearance from the Ethics Committee of the Faculty of Nursing-University of Indonesia with SK-135/UN2.F12.D1.2.1/ETIK 2021.

Results

Univariate analysis was used to explain or describe the characteristics of each variable. Univariate analysis results in table 1 demonstrate that the technological competence of using CCTV in the COVID-19 isolation room is mostly perceived to be incompetent by 51.4%. Most of the caring behavior of nurses is good at 52.1% in the Isolation Room of COVID-19 according to the perception of COVID-19 patients.

Table 1: Distribution of technology competency of CCTV use and nurse caring behavior according to Covid-19 patient perception in Covid-19 isolation room

Characteristic	Category	Frequency	Percentage (%)
Technology Competency of CCTV Use	Competent	68	48,6
	Incompetent	72	51,4
Nurse Caring Behavior according to Covid-19 Patient Perception	Good	73	52,1
	Less Good	67	47,9

The bivariate analysis used the chi-square correlation test to determine the relationship or correlation between two or more variables. Results of bivariate analysis in table 2 shows that there is a significant relationship between the technological competence of the use of CCTV (p value=0.001), education (p value=0.003), frequency of patients hospitalized (p value=0.001) with caring behavior of nurses according to patient perception. But age (p value=0.067), gender (p value=0.666), length of stay (p value=0.937) do not have significant relationship with nurses caring behavior by patient perception.

Table 2: Relationship of independent variables, confounding variables with caring nurse behavior according to COVID-19 patient perception in the COVID-19 isolation room

Variables (Independent and Confounding)	Category	Nurse Caring Behavior according to Patient Perception		Total	OR (95% CI)	P-Value
		Less Good	Good			
		n (%)	n (%)	n (%)		
Technology Competency of CCTV Use *	Incompetent	58 (80,6)	14 (19,4)	72 (100)	27,159	0,001 *
	Competent	9 (13,2)	59 (86,8)	68 (100)	10,905 ; 67,636	
	Σ	67 (47,9)	73 (52,1)	140 (100)		
Age	≤ 45 years old	46 (54,8)	38 (45,2)	84 (100)	2,018	0,067
	> 45 years old	21 (37,5)	35 (62,5)	56 (100)	1,011 ; 4,026	
	Σ	67 (47,9)	73 (52,1)	140 (100)		
Gender	Male	26 (44,8)	32 (55,2)	58 (100)	0,813	0,666
	Woman	41 (50)	41 (50)	82 (100)	0,414 ; 1,595	
	Σ	67 (47,9)	73 (52,1)	140 (100)		
Education *	Elementary - Junior High School	4 (19)	17 (81)	21 (100)	6,630 (1,998 ; 21,999)	0,003 *
	High School	24 (43,6)	31 (56,4)	55 (100)	2,015 (0,969 ; 4,191)	
	College	39 (60,9)	25 (39,1)	64 (100)		
	Σ	67 (47,9)	73 (52,1)	140 (100)		
Length of Stay	≤ 6 day	50 (48,5)	53 (51,5)	103 (100)	1,110	0,937
	≥ 7 day	17 (45,9)	20 (54,1)	37 (100)	0,523 ; 2,357	
	Σ	67 (47,9)	73 (52,1)	140 (100)		
Frequency of Patients Hospitalized*	< 2 times	44 (64,7)	24 (35,3)	68 (100)	3,906	0,001 *
	≥ 2 times	23 (31,9)	49 (68,1)	72 (100)	1,936 ; 7,881	
	Σ	67 (47,9)	73 (52,1)	140 (100)		

OR: Odds Ratio, CI: Confidence Interval

Multivariate analysis connected several independent variables simultaneously with one dependent variable and determined the most dominantly related to the dependent variable. This study found out the most dominant confounding variables related to the caring behavior of nurses according to patient perception. Multivariate analysis with multiple logistic regression tests of determinant models. Starting with the bivariate selection stage. The results of the bivariate selection are as follows:

Table 3: Results of bivariate selection of independent variables and confounding variables with caring behavior according to COVID-19 patient perception

Variable	P Value
Technology Competency of CCTV Use *	0,001*
Age	0,675
Gender	0,278
Education (1) *	0,029*
Education (2)	0,190
Length of Stay	0,326
Frequency of Patients Hospitalized *	0,002*

* : Variables with p value < 0,25 (multivariate candidates).

In table 3 above shows that the results of bivariate selection, which shows only three variables that p-value < 0.25 (technological competence of CCTV use, education, and frequency of patients hospitalized). However, the three variables with a p-value > 0.25 remain analyzed multivariate because it is a substance-important variable related to the patient's perception of caring nurse behavior.

Furthermore, multivariate analysis of the six variables that have passed the bivariate selection stage is carried out jointly in the model. The modeling results are as follows:

Table 4: Logistics regression modeling first modeling of independent and confounding variables with caring behavior according to COVID-19 patient perception

Variable	B	P Value	OR	95%
Technology Competency of CCTV Use *	3,467	0,001*	32,046	10,902 ; 94,199
Age	0,220	0,675	1,246	0,446 ; 3,480
Gender	-0, 558	0,278	0,572	0,208 ; 1,570
Education (1) *	1,877	0,029*	6,535	1,210 ; 35,298
Education (2)	0,716	0,190	2,046	0,702 ; 5,968
Length of Stay	-0,565	0,326	0,568	0,184 ; 1,754
Frequency of Patients Hospitalized *	1,666	0,002*	5,290	1,871 ; 14,957

The next step was the elimination/selection of variables whose p-value > 0.05. From the first modeling, it could be seen that there were three variables with p-value > 0.05 called age, length of stay, and gender. First elimination, the variable with p-value > 0.05 and the largest was removed from the model called age (p-value = 0.675), then the variable length of stay (p-value = 0.326) and the last variable excluded was the gender variable (p-value = 0.278). After the gender variable was removed, it turned out that the OR of the education variable was > 10%. Thus, the gender variable was reinserted into the mode that the gender was a confounder. After the gender variable was re-entered into the model, it turned out that there were no more variables with a p-value > 0.05. Thus, the variable elimination process was complete.

Furthermore, interaction tests were conducted with the alleged substance of educational variables and technological competencies of CCTV interacting, but after the interaction test, these two variables turned out to produce p value= 0.998 > 0.05. It meant that the results of the interaction test of the two variables were not significant. There was no interaction between education and technological competence of CCTV use, so the model returned as before an interaction test. Thus, the modeling has been completed. The valid model was the model without any interaction, as in the following table (Table 5).

Table 5: Results of logistic regression modeling on independent and confounding variables with caring behavior according to COVID-19 patient perceptions

Variable	B	P Value	OR	95%
Technology Competency of CCTV Use *	3,423	0,001*	30,661	10,713 ; 87,747
Age	-	-	-	-
Gender	-0,508	0,314	0,602	0,224 ; 1,616
Education (1)*	1,795	0,032*	6,018	1,162 ; 31,179
Education (2)	0,613	0,242	1,845	0,661 ; 5,151
Length of Stay	-	-	-	-
Frequency of Patients Hospitalized *	1,649	0,002*	5,204	1,852 ; 14,626

The Odds Ratio (OR) analysis from variable competency technology use of CCTV was 30.6 (95% CI: 10,713; 87,747). There were two variable candidates of determinant factors that significantly affected the caring behavior of nurses according to the patient's perception, namely education variables and frequency variables of patients being treated/hospitalized. However, it does not change the OR of the main variable > 10% so that the two viable candidates are not variables confounders, but only affect as free variables to caring behavior of nurses and do not control the main variables (technology competency CCTV use).

Thus, it was concluded or decided that the technical competence of CCTV 31 times affected the improvement of caring behavior of nurses compared to less competent nurses. It was not influenced by determinant factors as confounder's variables, namely education and the frequency of patients being treated/hospitalized.

Discussion

Technological competence of using CCTV in the COVID-19 isolation room according to the perception of COVID-19 patients at Hospitals. X Jakarta

The era of digitalization 4.0 greatly affects all levels of society, including services and care in the field of health. Nursing care given to patients needs to be supported by one of them is the competence of nurses to produce professional performance. Competencies owned by each nurse must have standards to create quality human resources tailored to the demands of the job market/business world and industry. The basis of technical competence is in the Decree of the Minister of Health of the Republic of Indonesia No. HK.01.07/MENKES/425/2020 about the standards of the nursing profession. The standard of competence of nurses can be a reference/basis for nurses in carrying out their duties and responsibilities to provide standardized nursing services in all health care facilities. Competence is a basic characteristic of individuals who have causal relationships/causality with criteria used as a reference, effective/superior appearance in the workplace in certain situations obtained through formal and informal education recognized (Rustikayanti, 2017). In line with Berman et al. (2016), the primary competency of nurses should be considered to help patients regain their health through the healing process with interactions in it, focusing on the overall health care needs of patients, including efforts to restore emotional, spiritual and social health.

Competence is an important part that nurses must pay attention to in conducting care to patients to achieve patient satisfaction judging from the study results from Kartika (2018). The latter finds a moderate and positive relationship (in the direction), which means that the higher the competence, the higher the patient satisfaction will certainly be higher. The competence of nurses can explain patient satisfaction by 25%. This shows that the competence of nurses contributes enough to determining patient satisfaction in nursing services. In line with Yuliati & Widayanti (2020), there is a significant relationship between the ability to use technology (medical devices) and the ability to use technology (Information and Communication Technology) with caring students of the Ners profession (p=0.000). Reinforced by Koszalinski&Locsin (2015), using technology makes nurses understand patients as a whole/holistic human beings. If the nurse understands the patient holistically, then the nurse understands all aspects of the patient she is treating and views the patient as a unique person who should be appreciated as a form of caring in nursing. This form of caring can have an impact on improving patient satisfaction and the quality of health services.

Nurse competencies include knowledge, attitudes, and skills (soft and hard skills) related to patient satisfaction levels (Layuk, Tamsah & Kadir, 2017). In addition, one of the competency areas by the domains of the ASEAN Nursing Common Core Competencies is a personal and professional quality development. One of the competency items can follow the development of science and technology in nursing to support the quality of nursing services. The power of technology in supporting health care is strengthened by incorporating elements of clinical nurse experience and its technology innovation. As end-users, nurses have skills that are critical to the success of future technologies. Nurses ensure that the technology to help health care is properly adapted to the environment in which technology is implemented and meets the needs of patients and clinicians (Dykes & Chu, 2021). PAPA Principles (Privacy, Accuracy, Intellectual Property, and Access) are important to use CCTV technology. Effective use of CCTV will depend on strategic camera placement and observation of output on the monitor. CCTV is a "closed circuit," indicating that access to content is restricted to those set up to view it. In this case, the role and function of the manager nurse are also required to take strategic steps when CCTV technology is installed in the room it manages (interpersonal, informational, decisional and planning, organizing, power, directing, and controlling/supervision roles).

Caring behavior of nurses in COVID-19 isolation rooms according to the perception of COVID-19 patients in Hospitals. X Jakarta

Human behavior/actions are a very important factor for a person in dealing with others, which is reflected in the caring behavior of nurses in the COVID-19 isolation room. Caring behavior implemented by nurses in isolation rooms is perceived to vary considerably by COVID-19 patients. It can be seen from the statistical test results, which states that most nurses have good caring behavior in the isolation room of COVID-19 perceived by COVID-19 patients, namely 73 (52.1%). Statistically, there is a meaningful relationship between the technological competence of CCTV use and the caring behavior of nurses according to patient perception.

Caring behavior is a form of care for the client nurse as attention, appreciation, and meeting her needs. Caring behavior also demonstrates the professionalism of a nurse. Caring is the core and ideal of nursing morals that in its application required knowledge, skills, attitudes, and being open with the development of Science and Technology but still in the caring frame. Although caring is perceived mostly well by COVID-19 patients at 73 (52.1%), this figure is not very significant, with caring behavior perceived as poor by patients 67 (47.9%). The application of less optimal caring behavior can be influenced by several factors, namely individuals, technology, and the environment (Bagus et al., 2015). Individual factors influence nurses in implementing caring behaviors (age, working period, level of education, self-awareness in applying caring behavior, moral distress, and training experience) (Amilia, 2015). Constraints in applying caring behavior, one of which is a psychological condition in the form of a burden of mind that causes moral distress to affect the nurse in acting, impacting on the quality of interaction with patients resulting in a decrease

in the quality of nursing care given (Prompahakul, Nilmanat & Kongsuwan, 2011).

The role of nurses in inpatient care is crucial during pandemic times. Total isolation of the patient causes the real needs of the patient to be met by the nurse. Nurses provide therapy to patients and pay attention to survival, basic care, and psychosocial care. It becomes a big task for the nurse. During the COVID-19 pandemic, there was a worldwide shortage of nursing resources, making nurses do more than usual inpatient care (Jiang, Broome & Ning, 2020). Management of nursing resources is the role of a nurse manager to balance the needs of staff with the needs of patients, represent and provide information about the phenomena that occur in the service (Prestia, 2020).

In addition, with restrictions (minimal contact, physical distancing) and high duties and responsibilities of nurses, and problems faced during this pandemic, nurses, still demand that nurses maintain care for the COVID-19 patients they treat how caring stays alive in these difficult conditions. It is feared that with the pandemic condition and the use of this technology, the caring behavior of nurses becomes increasingly decreased/marginalized.

Therefore, the manager nurse's strategy of improving the caring behavior of nurses is to be able to perform interpersonal roles (being a role model for nursing staff in caring towards nurses and can be improved caring behavior to patients. For example, by applying touching time to COVID-19 patients in isolation rooms for approximately 5 - 10 minutes each patient, ensuring all patient needs are met, building good communication with his staff, and influencing his staff to behave caring). The informational role (monitoring the work of the implementing nurse, how effectively the nurse applies caring behavior to the patients she cares for). Decisional role (able to identify problems related to caring behavior and take action to address the problem) distribute human resources appropriately for nursing so as not to affect the implementation of caring behavior of nurses, as well as ensure the concept of caring is understood by all room nurses so that it does not become an obstacle in its implementation.

Caring-related training programs are recommended (Firmansyah, Noprianty & Karana, 2019). Proven by the research results (Susihar, 2011), there has been a significant improvement in the caring behavior of nurses after nurses get caring behavior training. In addition, according to Suwitri, Kio & Wirajaya, 2020), most respondents experienced improved caring behavior after the intervention. Next, Pokpalagon et al., 2012) argues that the self-awareness of nurses in applying caring behavior also influences the caring behavior of nurses. According to Kusmiran (2017), the soft skills caring training model proved effective in improving the nurse's self-assessment of soft skills caring meaningfully and improving patient assessment of nurse caring soft skills in nursing services provided. Technology factors that affect the caring behavior of nurses include available equipment that supports nurses in providing nursing care. According to Prompahakul (2011), technology can improve the care of nurses towards patients through safe and effective ways and can broaden the insight of nurses in decision-making related to patient welfare. Caring behavior remains cultivated through continuous education, supervision, and intensive direction (Dedi, Setyowati & Afiyanti, 2008).

As a profession with the characteristics of altruism, nurses will be very attached to soft skills (caring) in daily life. Altruism is the attitude of putting others first, a fundamental value in nursing practice that every nurse must own. By having four ethical foundations (Respect to other, Compassion, Advocacy, Intimacy), this nurse automatically cares for her. Although there are four main elements/pillars of nursing ethics above, beneficence, non-maleficence, justice, and autonomy are also inseparable elements in nursing ethics, ultimately affecting patient satisfaction. It is supported by the study results (Nirmalarumsari, 2020) that stated patient satisfaction is strongly influenced by the ethics of nurses in work. This can be seen from the p-value (0.000).

The relationship between the competence of CCTV technology and the caring behavior of nurses in COVID-19 isolation rooms according to the perception of COVID-19 patients in Hospitals. X Jakarta

The results of bivariate and multivariate analysis showed a link between CCTV use's technological competence and nurses' caring behavior in the isolation room of COVID-19 according to the perception of COVID-19 patients at Central General Hospital X. Jakarta. In line with the concept of Locsin (2005) that technological competence is caring in nursing, where when nurses as caregivers have competence in technology, the nurse has caring because the competence of technology as caring in nursing is a harmonious coexistence between technology and caring in nursing.

Harmonization of this concept puts the nursing practice in the context of modern care and recognizes that it can coexist. Technology can bring patients closer to nurses because, with this technology, CCTV technology can know the condition of patients who are treated continuously. In contrast, technology can also increase the distance between nurses and patients. The technology used must be combined between competency and caring technology as the basis/foundation of the nursing profession in providing nursing care to patients. A nurse's experience of technology-based caring in critical patients in ICU, where the competence of the use of technology becomes part of the caring that nurses must have, the balance of professional behavior of nurses with competencies in technology in the critical and maleficient and beneficient service rooms (Anggraeni & Ismail, 2018). Likewise (Limbu et al., 2019) also found relevant themes related to nursing competence as a form of caring for nurses in patients with technological dependence. Using technology makes nurses understand patients as whole/holistic human beings (Koszalinski & Locsin, 2015). Relevant to qualitative research results (Dahlia, 2019), the treatment of patients with dependence requires synergy between the competence of using technological

equipment and the competence of nursing care in patients. The researcher's opinion is that when the nurse has competence/competence to use technology, in this case, CCTV, the nurse cares for the patient.

The relationship between confounding variables: age, gender, education, length of stay, and Frequency of Patients Hospitalized with patient perceptions of the caring behavior of nurses in the COVID-19 isolation room at Hospitals. X Jakarta.

The results of the bivariate analysis showed no meaningful relationship between the age of the patient and the caring behavior of nurses in the isolation room according to the perception of COVID-19 patients (p value= 0.067). Patients with age categories ≤ 45 years old more 84 (60%), but the age category > 45 years old more perceive nurses to behave caringly (62, 5%). Patients with age category ≤ 45 years old tend to perceive the caring behavior of nurses as not good as much as 46 (54,8%). Patients with age > 45 years old have a 2.01 times higher chance of perceiving good caregiver caring behavior than patients with age categories ≤ 45 years old. Respondents who are adults can objectively assess the experience of obtaining services and caring behavior while the patient is in the hospital. In line with Karaca & Durna (2019), the patient is more satisfied with caring nurses, and the results of the analysis show a relationship between the age of the patient and the level of patient satisfaction to nursing care (p value= 0.001). Results differ from Aupia, Lee, Liu, Wu & Mills (2018) stated the patient's age is positively correlated with the domain respect.

The analysis results showed no meaningful relationship between the sex of the patient/gender and the caring behavior of nurses in the isolation room according to the perception of COVID-19 patients (p value= 0.666). Male patients viewed caring nurses as good at 32 (55.2%), slightly larger than the less caring nurses at 26 (44.8%). There is no meaningful difference between male and female genders in perceiving caring nurse behavior according to the perception of COVID-19 patients. COVID-19 patients who are female have a one times (smaller) chance of perceiving caring behavior of nurses than men. In line with the study results of Ernawati & Tumanggor (2020); Karaca & Durna (2019), there is no relationship between gender and patient satisfaction with nursing care in the inpatient room. Researchers argue that the percentage of men perceiving nurses to carry out caring behaviors is well-influenced. Male patients are more able to express satisfaction/are more able to receive the nursing services they receive during treatment in COVID-19 isolation treatment rooms than female patients. Opinion (Wolf, Miller & Devine, 2003) that the male and female genders do not have different perceptions of caring nurse behavior and client satisfaction.

The analysis results showed a meaningful relationship between patient education and caring behavior of nurses in isolation rooms according to the perception of COVID-19 patients (p value=0.003). COVID-19 patients who are elementary-junior high school educators have the opportunity to perceive nurses to behave well is 6.6 times higher than those who are highly educated. At the same time, the high school-educated only two times compared to higher education. Most of the respondents' education was higher education 64 people (45.7%), but more perceived poor caring behavior by 39 (60.9%). Looking at the results of this study, the researchers argue that the higher the level of education, the more critical in assessing something, the more demanding, criticizing, and the lower the patient COVID-19 has a perception of caring behavior of good nurses, so it is not easy to declare nurses behaved caringly.

On the contrary, a low education tends to receive more because he does not know what he needs, as long as he is recovering alone. Supported (Karaca & Durna, 2019) a relationship between educational background and patient satisfaction with nursing care (p value= 0.006). Strengthened research (Kurniawati, Karamy, Pradanie & Yuswanto, 2020), i.e., the patient's perception of creative behavior – caring is influenced by the level of education and self-acceptance. In addition to education, income that has a close relationship with work, and the level of health literacy, where the higher the level of education, the higher the literacy (p= 0.000), as well as work also influences the level of health literacy (p= 0.043) (Wahyuningsih, 2019).

The analysis results showed no meaningful relationship between the length of stay and caring behavior of nurses in the isolation room of COVID-19 according to the perception of COVID-19 patients (p value= 0.937). Most of the days' COVID-19 patients are treated ≤ 6 days 103 (73,6%), but patients with long periods of care ≥ 7 days higher view of nurses behaving caringly as much as 20 (56,7%), almost as much as ≤ 6 days. COVID-19 patients with long treatment ≥ 7 days have the opportunity to perceive caring behavior of nurses is one time greater than COVID-19 patients with long treatment ≤ 6 days. This can happen because the possibility of pain is already in the healing stage, the situation has started to improve, the patient has been able to adapt to the treatment environment. In the opinion of the researchers, the longer the patient is hospitalized, the period of contact and communication and the number of clients getting caring behavior during the treatment period will be easier for the patient to give his assessment of the caring behavior of the implementing nurse than the patient who is treated with a fairly short time of care. The results of this study are in line with Kurniawati et al. (2020), which states there is no relationship between the patient's perception of the creative, caring behavior of the nurse and the experience of the patient is hospitalized. In contrast to Wolf et al.'s opinion (2003) that the experience and length of time treated affects a patient's perception of the services provided by nurses.

The analysis results showed a meaningful relationship between the frequency of patients hospitalized and the caring behavior of nurses in the isolation room of COVID-19 according to the perception of COVID-19 patients (p value= 0.001). Most of the frequency of patients hospitalized is ≥ 2 times 72 (51,4%). The average frequency of COVID-19 patients is treated 2 - 3 times with

the shortest frequency one time and the longest 20 times hospitalized as 49 (68,1%) patients with a frequency of patients hospitalized ≥ 2 times perceive the caring behavior of good nurses. COVID-19 patients with a frequency of patients hospitalized ≥ 2 times have the opportunity to perceive caring behavior of nurses both four times greater than COVID-19 patients with the frequency of patients hospitalized < 2 times. It is likely due to the patient's experience of being treated and adaptation to their treatment environment. In the opinion of researchers, patients who have more than one experience of hospital treatment will be more able to feel the nursing services they receive during hospital treatment. The patient feels that the caring behavior he received during the treatment has been quite a lot, so it will be more likely to assess the caring behavior of the nurse well. Meeboon (2006) supported the researcher's opinion that clients with a history of hospital admission more often perceive nurses to be more caring and feel more satisfied, and the image of past experiences influences their perception. A pleasant experience will positively affect the client's assessment of the service he will receive.

Conclusions

There is a meaningful relationship between CCTV technology competence and nurses' caring behavior according to the perception of COVID-19 patients in the COVID-19 isolation room of Hospitals. X Jakarta. The competence of CCTV technology 31 times affects the improvement of caring behavior of nurses compared to incompetent nurses without being controlled by determinant factors.

Therefore, it is recommended to make regulations that overshadow CCTV technology in COVID-19 isolation rooms. Develop training programs for the use of CCTV technology based on caring. Make clear assignments to staff related to CCTV technology monitoring. Supervise/monitor the implementation continuously to assess and evaluate its effectiveness from various perspectives, efficiencies, and achievements of the program's objectives related to the use of CCTV technology in the COVID-19 isolation room.

References

Aggarwal LM. (2017). Advances in medical technology and its impact on health care in developing countries. International Journal of Radiology & Radiation Therapy. 2017; 2(2):55–6.

Amilia N. (2015). Hubungan kepuasan kerja dengan perilaku caring perawat pelaksana di rumah sakit. depok: Universitas Indonesia. 2015.

Amin A. (2018). Monitoring Kamera CCTV Melalui PC dan Smartphone. Jurnal EEICT (Electric, Electronic, Instrumentation, Control, Telecommunication). 2018; 1(2).

Anggraeni L. & Ismail S. (2018). Pengalaman Perawat Tentang Caring Berbasis Teknologi Pada Pasien Kritis di Intensive Care Unit. Jurnal Perawat Indonesia. 2018; 2(2):70-7.

Aupia A, Lee T-T, Liu C-Y, Wu S-FV & Mills ME. (2018). Caring behavior is perceived by nurses, patients, and nursing students in Indonesia. Journal of Professional Nursing. 2018; 34(4):314-9.

Bagus I, Dharmanegara A, Pradesa HA. (2015). The Influence of Self-Efficacy and emotional intelligence toward caring behavior among nurses in public hospital Denpasar Bali. IOSR Journal of Nursing and Health Science Ver III. 2015; 4(2):2320–1940.

Banova B. (2019). The Impact of Technology in Healthcare. 2019.

Dahlia AI. (2019). Pengalaman Perawat dalam Menangani Pasien dengan Ketergantungan pada Peralatan Teknologi Tinggi di Ruang ICU. Depok: Universitas Indonesia; 2020.

Dedi B, Setyowati S. & Afiyanti Y. (2008). Perilaku Caring Perawat Pelaksana di Sebuah Rumah Sakit di Bandung: Studi Grounded Theory. Jurnal Keperawatan Indonesia. 2008; 12(1):40-6.

Dykes S. & Chu CH. (2021). Now more than ever, nurses need to be involved in technology design: lessons from the COVID-19 pandemic. Journal of Clinical Nursing. 2021; 30(7-8):e25-e8.

Ernawati E & Tumanggor BE. (2020). Hubungan Karakteristik individu dan Perilaku Caring Perawat Dengan Kepuasan pasien di Ruang Rawat Inap RSUD Abdul Manap Jambi Tahun 2019. Jurnal Ilmiah Universitas Batanghari Jambi. 2020; 20(3):996-1002.

Fitriani, R., Yetti, K., & Kuntarti, K. (2019). Analysis of workload and occupational commitment: Their relationship to the caring behaviors of nurses in a hospital. Enfermería Clínica, 29, 634-639. https://doi.org/https://doi.org/10.1016/j.enfcli.2019.04.097

Firmansyah CS, Noprianty R, Karana I. (2019). Perilaku Caring Perawat Berdasarkan Teori Jean Watson di Ruang Rawat Inap. Jurnal Kesehatan Vokasional. 2019; 4(1):33-48.

Jiang L, Broome ME. & Ning C. (2020). The performance and professionalism of nurses in the fight against the new outbreak of the COVID-19 epidemic are laudable. International journal of nursing studies. 2020; 107:103578.

Karaca A. & Durna Z. (2019). Patient satisfaction with the quality of nursing care. Nursing Open. 2019; 6(2):535-45.

Kartika IR. (2018). Kompetensi Perawat Dan Kepuasan Pasien Terhadap Pelayanan Keperawatan di Rawat Jalan. NERS Jurnal Keperawatan. 2018; 14(1):46-54.

Koszalinski RS. & Locsin RC. (2015). Persons who Dependent upon Technologies for Care: Lived Experience of Being Cared for Following Lower Limb Amputation. International Journal of Human Caring. 2015; 19(4): pp. 38–43.

Kurniawati ND, Karamy E, Pradanie R, Yuswanto TJA. (2020). Factors affecting patient's perception on nurse's creative-caring behavior. Enfermería Clínica. 2020; 30:31-4.

Kusmiran E. (2017). Pelatihan Soft Skills Caring Meningkatkan Kualitas Pelayanan Keperawatan dan Kepuasan Pasien di Rumah Sakit Kota Bandung. Jurnal Penelitian dan Pengembangan Pelayanan Kesehatan. 2017; 72-81.

Layuk E, Tamsah H. & Kadir I. (2017). Pengaruh pengetahuan, sikap dan keterampilan perawat terhadap kepuasan pasien rawat inap di Rs Labuang Baji Makassar. Jurnal Mirai Management. 2017; 2(2):319-37.

Limbu S, Kongsuwan W. & Yodchai K. (2019). Lived experiences of intensive care nurses in caring for critically ill patients. Nursing in Critical Care. 2019; 24(1):9-14.

Livshiz-Riven, I., Koyfman, L., Nativ, R., Danziger, A., Shalman, A., Frank, D., & Brotfain, E. (2020). Efficacy of covert closed-circuit television monitoring of the hand hygiene compliance of health care workers caring for patients infected with multidrug-resistant organisms in an intensive care unit. American journal of infection control, 48(5), 517-521.

Maguire D, Evans H, Honeyman M. & Omojomolo D. (2018). Digital Change in Health and Social Care. London 2018.

Miller, K. M. (2017). Patient Perceptions of the Caring Environment. Journal of Healthcare Communications, Vol. 2 No. 4: 36. https://doi.org/10.4172/2472-1654.100076
Ming, D. K., Sangkaew, S., Chanh, H. Q., Nhat, P. T., Yacoub, S., Georgiou, P., & Holmes, A. H. (2020). Continuous physiological monitoring using wearable technology to inform individual management of infectious diseases, public health, and outbreak responses. International Journal of Infectious Diseases, 96, 648-654.
Nirmalarumsari C. (2020). Hubungan Kompetensi Perawat, Etika, dan Disiplin Kerja Perawat dengan Kepuasan Pasien Di Puskesmas Pontap Kota Palopo. Jurnal Kesehatan Luwu Raya. 2020; 7(1):1-6.
Pokpalagon P, Hanucharurnkul S, McCorkle R, Tongprateep T, Patoomwan A. & Viwatwongkasem C. (2012). Comparison of care strategies and quality of life of advanced cancer patients from four different palliative care settings. Pacific Rim International Journal of Nursing Research. 2012; 16(4):326-42.
Prestia AS (2020). The Moral Obligation of Nurse Leaders: COVID-19. Nurse Leader. 2020; 18(4):326-8.
Prompahakul C, Nilmanat K. & Kongsuwan W. (2011). Nurses' Caring Behaviors for Dying Patients in Southern Thailand. Nurse Media Journal of Nursing. 2011; 1(2):147-58.
Rahmawati MA. & Deharja A. (2020). Analisis Tingkat Kepuasan Pasien BPJS Unit Rawat Inap dengan Metode IPA di Rumah Sakit Baladhika Husada Jember Tahun 2019. J-REMI: Jurnal Rekam Medik dan Informasi Kesehatan. 2020; 1(3):337-46.
Ramadhanti A, Dwiprahasto I. & Nirwati H. (2020). Utilization of Closed Circuit Television in Improving Nurse's Compliance on Hand Hygiene in Budhi Asih Hospital Jakarta. Jurnal Keperawatan Soedirman. 2020; 15(2).
Ramadhiani, O. R., & Siregar, T. (2019). Hubungan Berpikir Kritis Dengan Kepedulian (Caring) Perawat Dalam Melaksanakan Asuhan Keperawatan Di RSUD Kota Depok. Jurnal Kedokteran dan Kesehatan, 15(2), 148-160. https://doi.org/https://doi.org/10.24853/jkk.15.2.148-160
Rustikayanti (2017). Kompetensi Perawat [Available from: https://docplayer.info/63873102-Kompetensi-perawat-r-nety-rustikayanti.html.
Sakinah S, Wigati PA. & Arso SP. (2017). Analisis Sasaran Keselamatan Pasien Dilihat Dari Aspek Pelaksanaan Identifikasi Pasien Dan Keamanan Obat Di RS Kepresidenan Rspad Gatot Soebroto Jakarta. Jurnal Kesehatan Masyarakat (e-Journal). 2017; 5(4):145-52.
Sufian A, Ghosh A, Sadiq AS. & Smarandache F. (2020). A Survey on Deep Transfer Learning to Edge Computing for Mitigating the COVID-19 Pandemic. Journal of Systems Architecture. 2020; 108:101830.
Susihar (2011). Pengaruh Pelatihan Perilaku Caring Terhadap Motivasi Perawat Dan Kepuasan Pasien Di Instalasi Rawat Inap Rumah Sakit Royal Progress Jakarta. Depok: Universitas Indonesia; 2011.
Suwitri AAAS, Kio AL. & Wirajaya IG. (2020). Pengaruh Pelatihan Komunikasi Efektif terhadap Caring Perawat di Ruang Rawat Inap Rumah Sakit Umum Bali Royal. Jurnal Kesehatan Terpadu (Integrated Health Journal). 2020; 1(1):14-21.
Wahyuningsih T. (2019). Faktor - Faktor yang Mempengaruhi Literasi Kesehatan masyarakat di Puskesmas Banguntapan I Bantul DIY. Jurnal Manajemen Informasi dan Administrasi Kesehatan (JMIAK). 2019; 2(1):26-31.
Wolf ZR, Miller PA & Devine M. (2003). Relationship between nurse caring and patient satisfaction in patients undergoing invasive cardiac procedures. MedSurg Nursing. 2003; 12(6):391-7.
Yuliati I. & Widayanti MR. (2020). Hubungan Kemampuan Menggunakan Teknologi Keperawatan dengan Caring Mahasiswa Profesi Ners di Sekolah Tinggi Ilmu Kesehatan Wilayah Surabaya: The Relationship between Technological Skill Competency and Caring of Nursing Profession Students in Surabaya Region. Jurnal Ilmiah Keperawatan (Scientific Journal of Nursing). 2020; 6(2):231-43.
Yustisia N, Utama TA. & Aprilatutini T. (2020). Adaptasi Perilaku Caring Perawat pada Pasien Covid-19 di Ruang Isolasi. Jurnal Keperawatan Muhammadiyah Bengkulu. 2020; 8(2):117-27.