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The Effect of Electronic Discharge Planning with SBAR Approach to Optimize the Implementation of Patient Discharge

Putu Eka Asriyati

Master Nursing Program, Institute of Technology and Health, Bali, Indonesia | Sanjiwani Regional Hospital Gianyar, Bali, Indonesia

Email: ekaasriyati@gmail.com

I Ketut Swarjana

Master Nursing Program, Institute of Technology and Health, Bali, Indonesia

Corresponding author email: ktswarjana@gmail.com

Ni Luh Adi Sastriani

Master Nursing Program, Institute of Technology and Health, Bali, Indonesia

Email: adisatriani12@gmail.com

A. A. Istri Wulan Krisnandari

Master Nursing Program, Institute of Technology and Health, Bali, Indonesia

Email: wulankrisnandari.itekes@gmail.com

Abstract---Discharge Planning (DP) is a form of nursing service for continuity of care. Implementation of DP requires effective communication, structured implementation, and complete documentation. For this reason, it is necessary to optimize the implementation of DP by utilizing information technology. This study aims to determine the effect of Electronic Discharge Planning (EDP) with the SBAR approach for optimizing the implementation of DP. The design of this study was a pre-experimental one-group pre-posttest design. The research subjects were primary and associate nurses at the Sanjiwani Hospital, Gianyar, with 35 subjects. The sampling technique used purposive sampling. Data were collected using questionnaires and reviewing medical record documentation. Data analysis used the Wilcoxon test for the implementation of the DP and the McNemar test for the completeness of the DP documentation. The results showed that there was a significant effect of implementing EDP with the SBAR approach on the implementation of DP ($p < 0.001$) and completeness of documentation ($p < 0.001$). There is an effect of implementing EDP with the SBAR approach on the implementation of DP and completeness of DP documentation at the Sanjiwani Hospital, Gianyar. The application of EDP also affects the acceptance of EDP with the SBAR approach.

Keywords---electronic discharge planning, patient discharge, purposive sampling, SBAR, technology information

Introduction

DP is a learning process that starts when the patient is admitted to the hospital, involves the patient and family about home care and health problems they face, to speed healing, avoid possible complications by limiting activities, and creating a safe environment for patients at home (Rosya, 2020). Implementation of DP can increase patient satisfaction, reduce the length of stay in the hospital and reduce readmission (Lin et al., 2012). Delaying the implementation of DP will cause death, infection, depression, decreased patient mobility in carrying out daily activities, and can cause stress on staff and interpersonal relationships (Rojas-García et al., 2018).

According to [Tage \(2018\)](#), optimization of the implementation of DP needs a structured and integrated DP guide and format. The integrated DP model has a significant influence on the ability of nurses to implement DP ([Agustin, 2017](#)). [Lenert et al. \(2014\)](#), stated the discharge summary is the most important document in a medical care setting but is prone to deviations that jeopardize the continuity of care. To fix this problem, SBAR is proposed for the DP format. The SBAR format is concise and relevant, along with actionable guidance. The DP with SBAR application is a communication tool between health professionals to ensure continuity of care.

The current development of digitalization makes everything efficient. Technology information systems can be utilized in Electronic Medical Records (ERM). [Erawantini \(2013\)](#), revealed the main benefit of migrating paper medical records to electronic medical records is the completeness of patient medical records that strongly supports clinical decision enforcement and can improve patient safety. The EDP tool in conjunction with team member roles led to a 1.4-day decrease in LOS ([Meo et al., 2018](#)). The research conducted by [Wilberforce et al. \(2017\)](#), found that electronic referral systems can increase the efficiency and suitability of integrated care planning.

A preliminary study conducted at the Sanjiwani Hospital in Gianyar in October 2020 found that the implementation of DP had not been carried out optimally. The DP format used the conventional way (paper). Reports on the completeness of filling out medical records for DP obtained data on the incomplete filling of the discharge planning format in 2019 the first quarter of 1.92%, the second quarter of 0.20%, the third quarter of 1.26%, and the fourth quarter of 0.03%. Data for 2020 in the first quarter showed an increase in the percentage of incompleteness to 19.59% (the target for completeness of documentation is 100%). The results of interviews with 5 primary nurses and 3 associate nurses from 3 rooms stated that DP was carried out when the patient went home and only explained the care carried out at home but did not provide details, including the control schedule and medicines taken at home. Moreover, the nurse did not structure the explanation. From the observations, the implementation of DP at the Sanjiwani Hospital Gianyar cannot be carried out optimally because of the shortage of human resources, high workload, and lack of understanding of human resources regarding the implementation of DP. The explanation and communication are not structured, which makes the patient seems not satisfied with the explanation. Based on that description, it is important to develop and research the effect of EDP with the SBAR approach for optimizing the implementation of DP at the Sanjiwani Hospital, Gianyar ([Topp et al., 2004](#); [Smith et al., 2013](#)).

Methods

This study was a quantitative study with a pre-experimental one-group pre-posttest design. The population was 96 nurses in the inpatient room at the Sanjiwani Hospital, Gianyar. The sampling technique used purposive sampling with the research subjects being primary and associate nurses, totaling 35 subjects (calculation of the number of samples using the G Power application). Researchers gave a pre-test to the group that would get the treatment to determine the implementation of DP before treatment. Then the researchers carried out treatment with the application of EDP with the SBAR approach and socialization of the EDP guidelines. After completing the treatment, the researcher gave a post-test to determine the implementation of the DP ([Stevens et al., 2019](#); [Rhudy et al., 2010](#)).

Data were collected using a questionnaire on the implementation of DP with the SBAR approach to evaluate the implementation of the DP. It was developed by the researcher based on the DP procedure including patient identification, assessment, diagnosis, planning, implementation, and evaluation that consists of 29 statements (10 statements for situation, 6 statements for background, 6 statements for assessment, 7 statements for recommendation). The validity test was carried out with content validity with 3 experts with valid results. For the reliability test, the Cronbach Alpha value is 0.944 (reliable). The questionnaire was distributed using a google form and the link was distributed to the WhatsApp group. Data analysis in this study used unilabiate analysis for variables of respondent characteristics and implementation of DP before and after implementation. Bivariate analysis with Wilcoxon's test for the implementation of DP. To determine the magnitude of the difference (effect size) in the Wilcoxon test, it was done by calculating the value of Z divided by the square root of n times two. The effect size indicator uses [Cohen \(1988\)](#), criteria, namely 0.1 (small effect), 0.3 (medium effect) and 0.5 (large effect) ([Pallant, 2010](#)).

Ethical clearance

Ethical approval was from IRB of ITEKES Bali No. 04.0218/KEPITEKES-BALI/III/2021 and Hospital Review Board of Sanjiwani Regional Hospital Gianyar No. 22/PEPK/III/2021.

Results

Characteristics of respondents

Based on table 1 shows that most of the respondents were in the age range of 41-50 years (51.4%), female (80%), working experience 21-30 years (37.1%), bachelor's degree in nursing (51.4%), and as associate nurses (88.6%).

Table 1
Frequency distribution of respondents by age, gender, education, length of work and position (n=35)

Respondent Characteristics	f	(%)
Age (Years)		
21-30	5	(14,3)
31-40	7	(20,0)
41-50	18	(51,4)
51-60	5	(14,3)
Sex		
Male	7	(20,0)
Female	28	(80,0)
Length of work (Years)		
1-10	10	(28,6)
11-20	12	(34,3)
21-30	13	(37,1)
Level of Education		
Diploma	17	(48,6)
Bachelor	18	(51,4)
Position		
Primary nurse	4	(11,4)
Associate nurse	31	(88,6)

Source: Primary data

Implementation of discharge planning

Based on Figure 1, the implementation of DP before and after implementing EDP with the SBAR approach was mostly in the excellent category. There is an increase in the implementation of DP before and after implementing EDP from 71.4% to 94.3%.

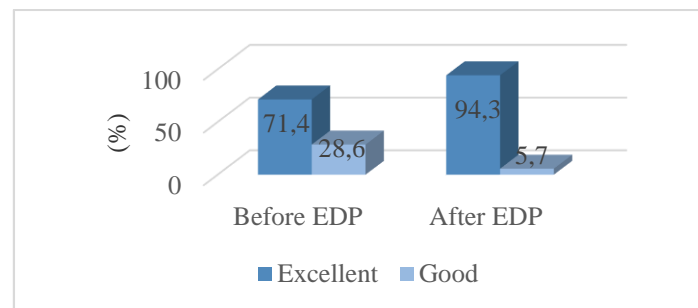


Figure 1. Implementation of discharge planning before and after implementation of electronic discharge planning (n = 35)

Source: Primary data

Completeness of discharge planning documentation

Based on Figure 2, the completeness of the documentation DP before the implementation of the EDP was mostly incomplete (71.4%). However, there was an increase after the implementation of EDP, where most of the results were fully documented (91.4%).

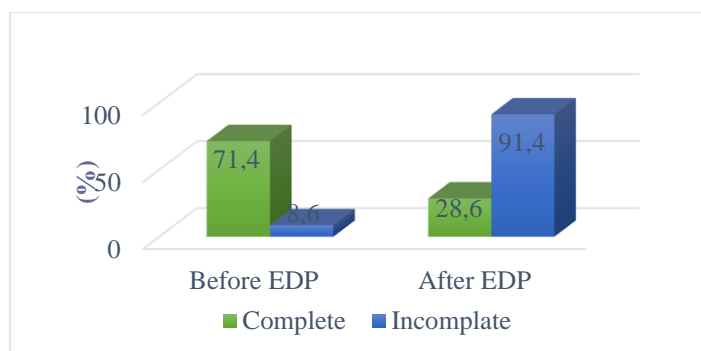


Figure 2. Completeness of discharge planning documentation before and after the implementation of electronic discharge planning (n= 35)

Differences in the implementation of discharge planning before and after implementation Electronic discharge planning with SBAR approach

Based on table 2, the median value of the implementation of DP has increased from before the application of EDP (median = 103.00) to after the application of EDP (median = 111.00), the value of $Z = -4.106$. We get the value of $r = 0.5$, so the results show a large effect. From the Wilcoxon test, $p = 0.001$, it means a significant effect on implementing EDP with the SBAR approach on the implementation of patient discharge planning (Garg et al., 2015; Stelfox et al., 2015).

Table 2

Results of analysis of differences in the implementation of discharge planning before and after the implementation of EDP (n=35)

	Implementation of Discharge Planning			P Value
	Min-Maks	Median	SD	
Before implementing EDP	82-116	103,00	9,39	0,001*
After implementing EDP	92-116	111,00	5,91	
Z	-4,106			

*Wilcoxon

Differences in completeness of discharge planning documentation before and after implementation of EDP with SBAR approach

Based on table 3, there are 65.7% of the documentation from incomplete to complete, 25.7% of the documentation remains complete, 5.7% of the documentation remains incomplete, 2.9% of the documentation from complete to incomplete. From the analysis results obtained p value <0.001 , which means there is a significant difference in the completeness of discharge planning documentation after the application of EDP.

Table 3
Results of analysis of differences in completeness of discharge planning documentation before and after the implementation of EDP with the SBAR approach (n= 35)

Completeness of Discharge Planning Documentation		After EDP				P Value
		Complete		Incomplete		
		f	%	f	%	
Before	Incomplete	2	5,7	23	65,7	< 0,001 *
EDP	Complete	1	2,9	9	25,7	

*McNemar test

Binomial distribution used

Discussions

EDP implementation with SBAR approach

The results of this study found that the implementation of the DP was in the excellent category. The implementation of the EDP with the SBAR approach increased from 71.4% to 94.3%. This occurred due to innovation in the implementation of DP by developing EDP with the SBAR approach. EDP with SBAR approach supports the concise, relevant, and structured information and communicates the patient's condition. This study is in line with research conducted by [Wilberforce et al. \(2017\)](#), in the UK, which stated that an electronic referral system at the time of discharge of patients could increase the efficiency and suitability of integrated care planning. Research conducted by [Meo et al. \(2018\)](#), in Washington found that the EDP tools concerning the role of team members and facilitated by a discussion led to a decrease in Length of Stay. Research conducted by [Rofi'i et al. \(2012\)](#), in Semarang got another thing. The implementation of DP was influenced by personnel involvement, participation, communication, time, and patient consensus agreements ([Haig et al., 2006](#); [De Meester et al., 2013](#)).

Before implementing EDP, researchers made guidelines, and socialization of the EDP guidelines with the SBAR approach was carried out through zoom and video tutorials, which aimed to increase nurses' understanding and ability and nurses' knowledge of DP. This research is in line with research conducted by [Agustin \(2017\)](#), in Surabaya, which stated that a discharge planning module causes an increase in the ability to carry out discharge planning. The discharge planning module is a stimulus that activates the cognitive regulatory process of nurses so that a learning process occurs and increases nurses' knowledge. Knowledge can be influenced by education, information, work experience, and age. [Saputra et al. \(2020\)](#), found that knowledge was influenced by education, effort in seeking information, work experience, age, socio-culture, and environment. The age of the respondents in this study was mostly 41-50 years (51.4%), the most working period was 21-30 years (37.1%), and most of them were Bachelor of Nursing (51.4%). The characteristics of these respondents are factors that support the improvement of DP implementation ([Jha et al., 2008](#); [Cresswell & Sheikh, 2013](#)).

This study also found that the application of EDP with the SBAR approach had a significant effect on the implementation of DP. Before the intervention, the implementation of the DP was only carried out at a few stages that were considered important. For this reason, an EDP was developed using the SBAR approach, which aimed to optimize the implementation of the DP. After an intervention, there was a significant improvement in the implementation of DP. This research is in line with research conducted by [Agustin \(2017\)](#), in Surabaya, which identified only important stages were carried out, and the nurse ignored small details. For this reason, an integrated discharge planning model was developed, which showed a significant change in the ability to implement nurses in implementing DP. [Wulandari & Hariyati \(2019\)](#), found that the implementation of DP was not optimal due to nurses' lack of knowledge about DP. The equipment used was not appropriate both in quality and quantity. For this reason, it is necessary to make improvements and additions for the implementation of DP. On the other hand, research conducted by [Rhaidatul \(2017\)](#), in West Sumatra found several nurse factors that influenced the implementation of discharge planning, as follows the motivation possessed by nurses and communication to deliver to the patients and families so that information would be clearer and understood by patients and their families.

Discharge Planning is a complex process that aims to prepare patients in the transition period in the hospital until the patient returns to his home ([Nordmark et al., 2016](#)). According to [Lenert et al. \(2014\)](#), the patient discharge summary is the most important document. Important in medical care settings but prone to deviations that jeopardize the continuity of care. To remedy this problem, SBAR is proposed for the discharge planning format. If the implementation of DP is not optimal, it will have implications for not achieving the goals of DP, including preparing

patients and their families physically and psychologically, providing written and verbal information to patients, and providing health services to meet the needs of patients in the discharge process.

Completeness of DP documentation

The study found an increase in the completeness of DP documentation after implementation, from incomplete (71.4%) to complete (91.4%). This happened because of the migration from conventional (paper) documentation to electronic. The existence of support in the form of policies from hospitals related to the migration of medical records is a supporting factor aimed at the accuracy of patient data and completeness of documentation. This study is in line with research conducted by [Erawantini \(2013\)](#), in Jember, Indonesia, which obtained the median value of completeness of paper medical records was 75%, while electronic medical records were 85.71%. The study found that the main benefit of migration to electronic medical records was the completeness of good patient medical records, especially social and more systematic data. It strongly supports clinical decision enforcement and can increase patient safety. According to [Handiwidjojo \(2015\)](#), electronic medical records are general benefits to improve hospital professionalism and performance. ERM helps produce auditable and accountable documentation. The operational benefits are the speed of completion of administrative work, data accuracy, efficiency, and ease of reporting. While the benefit of the organization is that ERM requires discipline in data entry, timeliness, and data correctness, so the work culture that previously suspended such things has changed. In contrast, research conducted by [Ekawati \(2012\)](#), in Nganjuk found that ERM did not guarantee the completeness of patient health data because clinical behavioral factors influence it.

The application of EDP with the SBAR approach has a significant effect on the completeness of DP documentation. This happens because, in EDP development, a command is added to the system. Data storage can be done if complete data is filled in. This causes the nurse to fill in the data completely. This is supported by research conducted by [Ekawati \(2012\)](#), in Nganjuk, which found a solution to the incompleteness of data in ERM is to add a command to the system that the officer must fill in each file completely. If it is not filled, automatically the computer will give a warning. The completeness of the patient's health data because there are clinical behavioral factors that influence it. Research conducted by [Dwisatyadini et al. \(2018\)](#), in Parung, West Java, showed an increase in the completeness of nursing documentation and a decrease in time efficiency in documentation after the implementation of computer-based documentation. Research conducted by [Rosyada et al. \(2016\)](#), in Yogyakarta found that the problem in terms of the process was the fear of system errors that interfered with the ongoing service process where data had to be done immediately. The study found 0.6% incomplete filling after the application of EDP. There was a disturbance in the medical record system during application until the patient was discharged.

Research conducted by [Rosyada et al. \(2016\)](#), in Yogyakarta found the opposite, namely that health workers had a positive perception of ERM output, but there were constraints on input and process. Officers acknowledged the difficulty of allocating time between providing services to patients and entering data into ERM. Constraints on service time and filling out electronic medical records lead to incomplete medical records and dissatisfaction of health workers in using ERM. The study found that most education staff implementing DP were Bachelor of Nursing (51.4%) and aged between 41-50 years (51.4%). According to [Bratajaya & Ernawati \(2020\)](#), education and age were very influential in the ability of nurses to use new documentation media. Nurses who are young and highly educated are, in fact, easier to learn and follow technological developments, especially the documentation system with the ERM method. Research conducted by [Rosyada et al. \(2016\)](#), in Yogyakarta found obstacles in filling out ERM, namely elderly officers who were not accustomed to using computers.

Indonesia's electronic medical records regulations are listed in PERMENKES No. 269/MENKES/PER/III/2008. That explains medical records must be complete and clearly in writing or electronically, and the administration of medical records using electronic information technology is further regulated by their own regulations. The implementation of DP is documented in DP format. The DP format aims to ensure continuous care after the patient returns home or is transferred to the next service institution ([Darnanik, 2018](#)). For this reason, the implementation of DP have to be fully documented because there is information related to the patient's health status while in the hospital, at the time of discharge, and recommendations for continued care. If it is not fully documented, it can have implications for information about the patient's condition and incomplete treatment so that the continuity of care is not optimal ([Astuti & Surya, 2020](#); [Muliarta, 2016](#)).

Limitations

This study uses the small sample from a study that reduce the power of the study and increase the margin of error and cannot represent the population. The research place used only a few inpatient rooms with varying characteristics. It is

necessary to consider the large sample size and homogeneous respondents. The occurrence of system errors that are not considered in the development of EDP makes the documentation incomplete.

Conclusion

Based on the study results, the implementation of DP after the implementation of EDP with the SBAR approach increased from 71.4% to 94.3%, with an excellent category. There is a significant effect of implementing EDP with the SBAR approach on implementing DP before and after implementation. There was an increase in the completeness of DP documentation after implementing the EDP with the SBAR approach from incomplete (71.4%) to complete (91.4%). The application of EDP with the SBAR approach has a significant effect on the completeness of DP documentation.

Nurses can apply EDP with the SBAR approach in hospitals to optimize the implementation of discharge planning and increase the completeness of DP documentation. It is necessary to develop an SOP on EDP with the SBAR approach and socialization, which is used as a guide in implementing the DP. It takes motivation from superiors and evaluation to obtain continuity of DP implementation. The role of nurses regarding discharge planning needs to be increased through socialization, in-house training, or training related to the implementation of discharge planning so that nurses can carry out DP according to procedures and ensure continuity of patient care. For further researchers, the development of EDP with the SBAR approach needs to be considered regarding system errors to find solutions so that there are no obstacles in the documentation. Further researchers need to consider the number of samples so that the research results are effective and able to describe or generalize the population.

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