

Design of SBAR Communication Application Based on National Hospital Accreditation Standards and Imogene King's Theory in a Digital-Based Handover at Advent Bandung Hospital

Viere Allanled Siauta^{1*)}, Iin Inayah², Lilis Rohayani³

^{1*)} Nursing study program, Faculty of Health, Universitas Widya Nusantara, Palu, Central Sulawesi, Indonesia

^{2,3} Master's Program in Nursing Science, Sekolah Tinggi Ilmu Kesehatan Jenderal Achmad Yani, Cimahi, Indonesia

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ABSTRACT

Nurses face challenges in developing skills and adaptability in line with technological advancements. Their primary focus is patient safety, emphasizing effective communication, particularly in the patient handover process. Communication errors can have serious consequences, impacting patient safety. The implementation of digital technology, such as SBAR applications, is considered a positive step to enhance collaboration and patient safety, reflecting a shift in communication paradigms in the era of the 4.0 industrial revolution. This research aims to develop a Digital SBAR Communication Application for Patient Handover in Hospital Nursing Services. The research method used is qualitative with a research and development approach. The study is conducted at Advent Hospital Bandung, West Java Province, involving research subjects from various stakeholders, including experts in Information System, Nursing Management, Hospital Director, Head of Nursing Department, Nursing Committee, and Head of Hospital Ward. Data analysis is carried out through stages of research and information collection, planning, and developing the preliminary form of the product, focusing on information gathering, research planning, and SBAR application design development. The researcher takes a series of steps, including interviews through FGD with participants. The initial application design is revised after receiving input, and development is carried out by IT professionals. The application is tested by experts according to their competencies, with expert feedback used for improvement. After testing and refinement stages, the application is introduced to participants. The research results indicate that the prototype product successfully addresses issues related to data and information in the patient handover process at Advent Hospital Bandung. Expert testing by professionals in the field validates the application design developed by the researcher to address hospital issues. The product receives positive feedback from participants.

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*) corresponding author

Viere Allanled Siauta,
S.Kep.,Ns.,M.Kep
Nursing study program, Faculty of
Health, Universitas Widya
Nusantara
JL. Untad I Kelurahan Tondo Kec.
Mantikulore Kota Palu 9499
Telepon: 0451-4016803

Email: siauta.viere@gmail.com

ABSTRAK

Perawat menghadapi tantangan dalam mengembangkan keterampilan dan adaptabilitas sesuai dengan kemajuan teknologi. Fokus utama mereka adalah keselamatan pasien, dengan penekanan pada komunikasi efektif, terutama dalam proses serah terima pasien. Kesalahan dalam komunikasi dapat memiliki konsekuensi serius, termasuk dampak pada keselamatan pasien. Penerapan teknologi digital, seperti aplikasi SBAR, dianggap sebagai langkah positif untuk meningkatkan kolaborasi dan keselamatan pasien, mencerminkan perubahan paradigma komunikasi di era revolusi industri 4.0. Penelitian ini bertujuan untuk melakukan pengembangan Aplikasi Komunikasi SBAR Berbasis Digital dalam Melakukan Handover di Pelayanan Keperawatan Rumah Sakit. Metode penelitian yang digunakan adalah kualitatif dengan pendekatan penelitian dan pengembangan (Research and Development). Lokasi penelitian dilakukan di Rumah Sakit Advent Bandung, Provinsi Jawa Barat, melibatkan subjek penelitian dari berbagai pihak, termasuk ahli media Sistem Informasi, pakar Manajemen Keperawatan, Direktur Rumah Sakit, Kepala Bidang Keperawatan, Komite Keperawatan, dan Kepala Ruangan Rumah Sakit. Analisis data dilakukan melalui

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tahapan research and information collection, planning, dan develop preliminary form of product, dengan fokus pada pengumpulan informasi, perencanaan penelitian, dan pengembangan desain aplikasi SBAR. Peneliti melakukan serangkaian langkah, termasuk wawancara melalui FGD dengan partisipan. Desain awal aplikasi direvisi setelah mendapatkan masukan, dan pengembangan dilakukan oleh tenaga IT. Aplikasi diuji oleh pakar sesuai kompetensi, dengan masukan pakar digunakan untuk perbaikan. Setelah tahap pengujian dan perbaikan, aplikasi tersebut disosialisasikan kepada partisipan. Hasil penelitian menunjukkan bahwa prototipe produk berhasil mengatasi permasalahan terkait data dan informasi dalam proses handover pasien di Rumah Sakit Advent Bandung. Uji pakar oleh para ahli dalam bidangnya memvalidasi rancangan aplikasi yang dikembangkan oleh peneliti untuk menjawab permasalahan di rumah sakit tersebut. Produk tersebut mendapatkan tanggapan positif dari partisipan.

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INTRODUCTION

At present, the world is entering the era of digital technology implementation, which significantly expands the scope of communication media usage. The rise of digital technology is not only part of the fourth industrial revolution; it also influences how people communicate with each other in various ways. Public communication becomes simplified. The application of digital technology extends the use of communication media across various industries, including government, marketing, healthcare services, and communication itself (Ngafifi, 2012).

The healthcare sector employs skilled nurses who must be ready to work in rapidly evolving fields due to technological advancements. In the era of the fourth industrial revolution, nurses face challenges related to skills, flexibility, and dynamic mentality. Nurses need to build competitive, inventive, and adaptive knowledge and technology as the core ideas of competitiveness and national development. Technological breakthroughs are expected to result in increased industrial productivity and the emergence of technology-based startup businesses (Sabri, 2020).

Nurses must address challenges posed by technological advancements and competitiveness in the globalized workplace. A country's performance in facing the fourth industrial revolution depends heavily on the innovation undertaken by high-quality resources (Putra, Yudha Manggala, Wahyu, 2018).

Responsive attitudes toward the industrial revolution need to be reconstructed, such as improving nursing performance using human digital approaches and digital-based skills. Additionally, making healthcare institutions more attractive and competitive compared to their counterparts is crucial. Nurses must be prepared to face new issues emerging in the era of the fourth industrial revolution (Ngafifi, 2012).

In the midst of globalization and Industry 4.0, nurses are facing unique difficulties. The ability to balance and adapt in today's technologically advanced world is crucial for nurses. To enhance the level of service provided to patients, nurses must be proficient in information technology and prioritize patient safety. Among medical professionals, especially nurses, nurses play the longest role in accompanying patients (Ngafifi, 2012).

Nurses today are not only required to be providers of quality nursing care. In facing various situations, including patients and other medical professionals, nurses must also

possess critical thinking skills. Critical thinking is essential to enable nurses to provide competent nursing care and enhance patient safety (HS, 2018).

Patient safety is the foundation of nursing care and must be integrated into actual treatment and care. Patient safety is a system implemented in hospitals to make nursing care provided to patients safer (Kemenristek, 2018). Patient safety has been established by the Institute of Medicine as one of the indicators of healthcare quality. Therefore, hospitals must manage patient safety effectively to provide high-quality services (IOM, 2004).

Patient safety is a fundamental principle of service provision and an essential element in management (WHO, 2005). Patient safety is not just a moral obligation for nurses as key players in providing patient services; it is also a necessity for all hospital stakeholders, including management, to deliver safe patient services (Cook, 2004).

The increase in patient safety incidents has led to the emergence and development of patient safety. Reducing the number of preventable patient safety incidents is the primary goal of patient safety (Raleigh, 2009). According to the Minister of Health Regulation No. 1691 Year 2011, any event that does not fall into the category of patient safety is considered an incident. Accidents and conditions that cause or potentially cause preventable patient injuries, including unexpected events, near misses, injury-free situations, and situations potentially causing injury, are included (Ngafifi, 2012).

Patient safety in hospitals is where patient care becomes safer. By performing or not performing actions that should be done, this approach eliminates losses caused by errors. All parties connected to healthcare providers are responsible for patient safety. The responsibility to prevent activities that endanger patients lies with stakeholders. Patient safety initiatives fall under the joint jurisdiction of the government, the community, patients, doctors, nurses, researchers, and other professions (Ballard, 2003).

One goal of patient safety is to improve effective communication. Events that negatively impact patients, whether directly or indirectly, are known as patient safety incidents. Patient safety accidents can directly result in damage, danger, and even death. Indirect patient safety issues increase the length of hospitalization, leading to higher treatment costs. Improving handover communication is one method to enhance patient safety (Rachmah, 2018).

One type of nurse communication is handover. Handover can be done directly or with recording tools, for example.

Patient care is greatly assisted by nurse communication during shift exchanges or when patients are transferred from inpatient to outpatient care. Weak communication frameworks, hierarchy, language, cultural barriers, and attitude gaps among healthcare teams hinder communication. Lack of nurse preparation in conveying messages, perception errors, and doctors' ability to receive messages from nurses all contribute to telephone communication failures between nurses and doctors (Ngafifi, 2012).

Maintaining patient safety and preventing unforeseen events requires effective patient handover (Din, Ghaderi, O'Connell & Johnson, 2012). Effective handover promotes continuity of care and treatment. In contrast, inadequate handover can lead to errors and violations in patient care safety, including medication errors, wrong surgeries, and patient deaths. Given Institute of Medicine (IOM) data, it is found that poor patient handover often results in patient safety failures (Hughes, 2008).

Patient handover is intended as a practical guide to communicating information about the current patient's condition, treatment goals, treatment plans, and timely prioritization of services to the nursing team at each hospital shift change. An easily understood method reduces errors and improves patient safety (Santoso, 2018).

Inappropriate communication resulting in misunderstandings, long durations, unfocused communication content on patient issues, and frequent incomplete handover information are phenomena seen in hospital nursing services. This is particularly true during handover activities. Therefore, nurses have an earlier duty. This situation leads to delayed services and impacts patient safety (Suprpta, 2012).

Nursing care errors may be caused by ineffective communication. SBAR communication is a recent and efficient type of communication often used in hospitals. The World Health Organization (WHO) demands that hospitals use the SBAR communication strategy as a strategic norm (The Joint Commission International, 2010). In interprofessional collaborative programs, improving SBAR communication is key to staff achieving comprehensive services and safety (Leonardo et al, 2013).

According to the Joint Commission International (JCI) & World Health Organizations, some countries experience a 70% incidence of medication errors. JCI & WHO report as many as 25,000 – 30,000 cases of permanent patient disabilities in Australia, with 11% caused by communication failures (WHO, 2007). Miscommunication is the cause of 67% of 2,900 sentinel events in the United States between 1995 and 2005 (Karen, 2007). In 2004-2005, 25-41% of sentinel events in Australia were caused by communication failures (Australian Institute of Health and Welfare & The Australian Commission on Safety and Quality in Health Care, 2007). According to Kusumapradja (2012), poor communication, especially during handover, accounts for 66% of reported sentinel events.

Healthcare service errors can be found locally or globally. Based on the KKP-RS paper in 2010, Indonesia experienced unexpected events (KTD) at 21.58% and near-miss events (KNC) at 11.31%. According to Utarini (2011), a Professor at the Faculty of Medicine, Gadjah Mada University, his research involved inpatients in 15 hospitals. His study of 4,500 medical records revealed various adverse events, ranging from 8.0% to 98.2% due to diagnostic errors and 4.1% to 91.6% due to prescription errors.

Most patient safety incidents occur due to communication problems. A communication framework is offered and referred to as successful communication based on SBAR.

Communication helps medical professionals describe the patient's situation. The SBAR communication model can improve patient safety by reducing the likelihood of unwanted events. Four components make up the SBAR communication, including S (Situation), providing a description of the current situation, patient identification, and medical diagnosis outcomes. B (Background) is something that underlies the current situation. A (Assessment) is an assessment of a problem. R (Recommendation) is a plan or proposal to address the issue (Permanente, 2011).

The use of SBAR communication tools can facilitate interpersonal and team communication, improve patient safety culture, and enhance incident reporting. The fact is that many nurses still perform handoff without using the SBAR communication framework, resulting in lengthy handovers and message reception errors. This negatively influences nursing performance and causes harm to patients (Suardana, Rasdini, Hartati, 2018). Alvaro's research (2006) has proven that providing false information to patients can have very negative consequences. Poor communication is a factor in about 70% of sentinel events, or incidents that result in death or serious injury in hospitals. This research statement aligns with Angwood's (2007) statement that communication problems are the main cause of adverse events, near-miss events, and sentinel events in hospitals, according to study data findings.

Information technology (IT) in healthcare supports clinical nurse handover through the development of tools that facilitate structured information communication. By providing relevant patient information, this communication technology can help nursing teams perform fundamental handover tasks and contribute to competent and quality handover practices, continually updated (Vinu & Kane, 2016). The lack of a structured format and the diversity of practice backgrounds make the handover process inconsistent (Karmila & Hananto, 2017). Although some nurses can provide important information quickly and accurately, others may do so while wasting time with unclear or unnecessary facts that can mislead patients (Vinu & Kane, 2016).

To ensure consistency and completeness of documentation, aimed at improving treatment continuity, service quality, and patient safety, digitalized health recording is applied. (Alghenaimi, 2012). The digitalization of SBAR with a computerized structured format for shift handover must be done following the National Clinical Communication Guidelines (Clinical Handover) for patient safety improvement (National Clinical Effectiveness Committee, 2015). Based on the Joint Commission on Accreditation of Healthcare Organization (JCAHO) report in Ismainar, Dahesihdewi & Dwiprahasto (2012), from the evaluation of 2,840 cases, sentinel event cases (unexpected and fatal events) determined that communication problems contributed 65% as the main cause of this issue, and in 75% of these cases, patients died. Failure in communication has a significant impact on the occurrence of adverse events and the quality of service.

Digitalized SBAR is created as a tool to improve collaborative communication between healthcare professionals and organize information in a clear and concise manner. (Panesar, Albert, Messina & Parker, 2016). Verbal handover is supported by a digitalized SBAR paradigm to enhance its effectiveness. This format is presented succinctly, effectively emphasizing information, and is straightforward (Vinu & Kane, 2016).

Based on the above description, researchers are interested in conducting a study and recommendations on the Development of Digital-Based SBAR Communication

Application in Conducting Handover in Hospital Nursing Services.

METHOD

The research employed a qualitative research method using the Research and Development (R&D) approach, a method used to produce a specific product. The study took place at Advent Hospital in Bandung, West Java Province. The subjects included: (1) Information System Media Experts, (2) Nursing Management Material Experts, (3) Hospital Director, (4) Head of Nursing Department, (5) Nursing Committee, and (6) Head of Hospital Ward. The research instruments used were interviews and observations. Before designing the SBAR communication application, the researcher observed the handover implementation in the inpatient ward of Advent Hospital. Based on the observations, the researcher then searched for relevant journals related to handover practices. Subsequently, the researcher designed the SBAR communication application. In the next phase, the researcher conducted interviews regarding the SBAR communication application design in a Focus Group Discussion (FGD) with five heads of wards, nursing department, and nursing committee. The steps taken by the researcher involved conducting interviews through FGD at Advent Hospital with participants to assess and identify the needs required to support nursing services. The researcher designed the SBAR communication design as the initial draft and discussed it again through FGD to evaluate the initial design. Discussions took place, and the researcher incorporated inputs from participants to improve the initial SBAR communication design. After discussion and receiving input, the researcher collaborated with IT professionals to develop the application according to the design. The designed SBAR communication application underwent testing by experts in the field, including nursing management and hospital management experts. The suggestions provided by experts were then implemented by the researcher.

Data analysis comprised systematic examination, systematic grouping, interpretation, and data verification to give social, academic, and scientific value to the phenomenon. The three stages of analysis conducted by the researcher were: (1) Research and information collection, involving information gathering from various literature sources, analyzing the obtained information, and aligning it with the nursing service needs at Advent Hospital. (2) Planning, where the researcher planned the necessary steps to achieve the research objectives, starting with identifying application needs and designing the SBAR communication application, followed by expert testing. (3) Developing a preliminary form of the product, where it was found that Advent Hospital used an SBAR communication form during handover. The researcher then redesigned the SBAR communication in the form of an application.

RESULTS OF STUDY

The qualitative stage of the research analysis is to explore the SBAR form as the initial part of designing a web-based management information system in order to increase the effectiveness in communicating during the handover process, through data information on input, process and output

activities in the handover process at Advent Hospital Bandung through the design of digital-based SBAR, as follows:

Identify and collect information related to the application of digital-based SBAR communication in conducting handovers.

Researchers collected information from various sources of literature then researchers analyzed the information obtained and adjusted it to the needs of nursing services at the Bandung Adventist Hospital. SBAR communication used in hospitals is still in the form of SBAR communication in the form of forms. For this reason, the researcher made an SBAR communication design with literature references.

After that, based on the identification of the handover process obtained and interviews using the focus group discussion (FGD) method, the results are generally concluded, as in the following explanation:

Handover implementation so far

In interviews conducted with ten participants, two participants gave the following responses:

"Handover is sometimes ineffective because it is not time efficient" (P1)

"Often colleagues do not arrive on time so they have to wait and handover becomes longer" (P4).

Obstacles faced

According to the responses given by two participants, namely:

"Unable to see SBAR data that has been documented previously because after completing the handover, the data is deleted and started with new data" (P1).

"For example, in the isolation room, the inside and outside data are often found to be out of sync" (P2).

"Doing handover is inefficient and takes a lot of time" (P3)

Do you already have an SBAR form?

"We already have an SBAR form which we have to write manually, and sometimes it is not documented" (P2).

Expectations on applications that can support services

"We hope to have an application that when we speak, it can be documented immediately" (P3)

"We want an application that can be accessed easily so that we can work efficiently" (P1)

"We want an application with a format that is easy to input so that it can help our work process" (P2)

Making research plans related to the design of digital-based SBAR communication applications in conducting handovers

After making the initial design, the researcher conducted a focus group discussion (FGD) to discuss the initial design that had been designed. Discussions conducted by researchers with several participants resulted in several updates so that researchers made changes to make the design better. The updated design was then tested by several experts in their fields. The following is the appearance of the application design after conducting a focus group discussion (FGD):

Application design after FGD

FGDs that have been conducted by researchers and several participants, resulted in several changes to support the design of the SBAR communication application that has been designed, with changes to the : Main page, Dashboard, Patient data, SBAR format, and SBAR Recap.

Expert Test Results

Expert examiner Dr. Blacius Dedi, SKM, M.Kep:

- The design and substance of the research are quite good and current
- In the background, add the latest order / new advisor
- Nursing Theory Imogene King is elaborated again about the role of nurses in relationships with patients
- The research design is action research: try intra method triangulation. The first stage is descriptive phenomenology with an in-depth interview, the second stage is action research with SBAR application training with a digital smartphone. The third stage of explorative phenomenology with FGDs to evaluate the implementation of the SBAR application with smartphones. If the research stages are carried out correctly: already a bonus exceeds Master of Nursing Kepmankep
- In terms of specialization: very kepmankep

Expert examiner Dr. Mira Asmirajanti, Skp.,M.Kep:

- The initial view is replaced with the nuances of Health
- Dashboard, determine whether for the total number of nurses or the number of patients
- In the situation: add date, month, year of birth, nurse in charge and date of patient admission
- In background: add the infusion fluid used, move awareness and O2 saturation to assessment
- In assessment: add awareness and saturation
- Recommendation: what activities should be done to solve the patient's problem.

Expert examiner Dr. Dyan Kunthi N, SKM, MKM:

- Running Input
 - Available forms for data input include: patient data, morning, afternoon and night service forms
 - Available buttons add data, reset data and delete data
 - SBAR form data input is available:
 - Situation: contains reporting nurse, room, DPJP patient data
 - Background: patient history and medical data
 - Assessment
 - Recommendation
 - Save button available
- Running Output
 - available output through the SBAR recap master form: Morning, afternoon and evening service data for each room.
- User Interface
 - The prototype display is easy to understand and easy to use by users (user friendly)
- Instrument Feasibility
 - Expediency: Good
 - Information quality: Very good
 - Operation: Good

The product prototype "SBAR Communication Application Design Based on the National Standard of Hospital Accreditation and Digital-Based Imogene King Theory in Conducting Handovers at Advent Hospital Bandung" has been able to solve problems related to data and information in conducting patient handovers in hospitals.

The results of the expert test that has been carried out by experts who are experts in their respective fields, then create an application design designed by researchers to answer the problems that exist in the Bandung Advent Hospital.

Designing digital-based SBAR communication applications in conducting handovers

The results of the tests carried out by experts in their fields and the inputs given were then revised by the researchers.

Researchers carried out the process from input to the pre planning process stage, the implementation process was not carried out because the researchers had several obstacles, namely:

- Input The first stage of the researcher only reached the IT expert test stage and the nursing IT expert test and carried out design revisions according to the results of the IT expert correction.
- No agreement has been made with the hospital for the use of applications for hospital information systems.
- Researchers need a long time to implement the 10 stages of the RND method.

The results of this study are in the form of a preplanning process for developing SBAR communication applications based on the National Standard of Hospital Accreditation and digital-based Imogene King theory that will be carried out at handover.

Planning

- The results of the analysis of the planning of digital-based SBAR communication applications in conducting handover include:

- The results of software program system planning are in line with organizational goals which are focused on supporting the quality of nursing services at Advent Bandung hospital.
- Identifying SBAR communication in the handover process

The results of identifying SBAR communication in the handover process have been carried out manually at the Bandung Adventist Hospital, as a basis for thinking about developing a digital-based SBAR communication application.

- Setting the target of digital-based SBAR communication application program

Communication between nurses can be more effective in reporting the patient's condition during handover.

- Defining the software program application system

Conducting feasibility studies through expert tests intended to determine web-based information systems in the implementation of handover using digital-based SBAR communication for further development or discontinuation

Modeling (system design formulation)

- System process model analysis results

From the chart 1 there are five entities, namely system administration, nursing staff, the person in charge of the shift, the head of the room and the nursing field. The context diagram is to explain the overall data flow in detail in carrying out the handover process using digital-based SBAR communication. In this study, those who can enter documents into the SBAR communication application are system administration and nursing staff. While the head of the room and the nursing field can see the handover report using SBAR communication.

b) Analysis of operational policies for digital-based SBAR communication Operational policies for digital-based SBAR communication, in this study there are processes

that can be carried out by users according to their authority. The following is an explanation of the operational policies of digital-based SBAR communication:

- 1) Administrator, as a system admin who has the authority to manage the system, and user registration into the application.
- 2) Nursing staff and the person in charge of the shift, have the authority to input any data in the SBAR communication application.

The head of the room and the head of the nursing field, before using the application requests access to the application to the system admin and can control the handover process using digital-based SBAR communication.

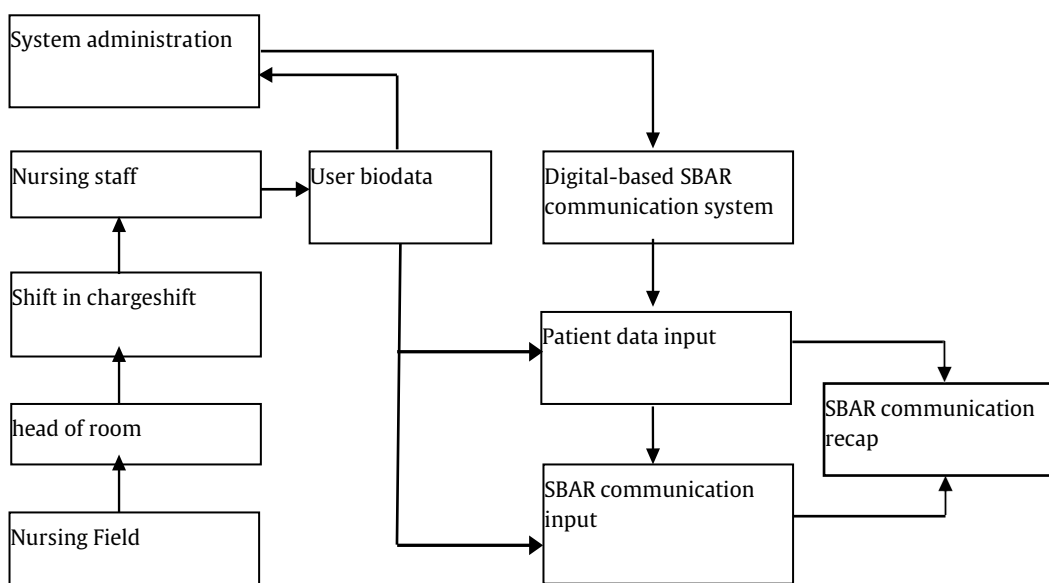


Chart 1. Context diagram of digital-based SBAR communication management information system

DISCUSSION

This study discusses interpretation and discussion, research limitations, implications for nursing services, nursing education and nursing research. In the interpretation and discussion of the results in discussing SBAR communication applied at Advent Hospital Bandung. Research limitations discuss the limitations and shortcomings during the research process. Research implications discuss the effect of research results on nursing services and nursing research.

The results of the discussion conducted before the focus group discussion (FGD) found that the SBAR communication applied at the Bandung Adventist Hospital was still manual. Nurses revealed that SBAR communication which is still manual is not very effective and efficient. Nurses revealed that manual SBAR communication takes a lot of time, sometimes the data is not documented so that the handover is not maximized. Another response was also conveyed by nurses that previously documented SBAR could not be seen because after the handover the data was deleted and started with new data.

Nurses expressed that in the future it is hoped to have an application that when speaking can be directly documented so that it can more quickly document patient data and handover can also run well. The expected

application can also minimize the occurrence of errors due to human error.

The results of interviews conducted after the focus group discussion (FGD) and after listening to input and responses from nurses, the researchers designed communication applications as expected by nurses. The design of the application designed, the application is easily accessible and also inputted. The design of the SBAR communication application designed also has a SBAR recap so that it can see the data that has been recapitulated. The design of SBAR communication has also been tested by three experts who are experts in their respective fields.

The results of the nursing management expert test, after seeing the draft SBAR communication application that has been made, reveal that the design and substance of the research are quite good and up to date. In the background section of SBAR, add the latest order/new advisor. Nursing Theory Imogene King is elaborated again about the role of nurses in relationships with patients. The research design is in the form of action research, namely try intra-method angulation, in the first stage descriptive phenomenology with indepth interviews (phenomenon found). The second stage of action research (action study) with SBAR application training with digital smartphones. The third stage of explorative phenomenology with FGDs to evaluate the implementation of SBAR communication applications with smartphones. If the research stages are carried out correctly, it exceeds the master

of nursing management. In terms of specialization, it is very *kepmankep*.

The results of the nursing expert test, after seeing the draft SBAR communication application designed, gave feedback so that the initial view was replaced with health nuances. On the dashboard, determine whether for the total number of nurses or the number of patients. In the situation in the SBAR format, add the date, month and year of birth, the nurse in charge and the date of admission. In background, add the IV fluids used, move awareness and O2 saturation to assessment. In assessment add awareness and saturation. In the recommendation section, what activities should be done to solve the patient's problem.

In the hospital management expert test, the SBAR communication application design that has been designed is divided into four parts. First running input, available forms for data input include patient data, morning service form, afternoon service, night service. There are buttons to add data, reset data and delete data. Available SBAR form data input, situation contains reporting nurse, room, DPJP patient data; background contains patient history and medical data; assessment; recommendation. Save button is available. Second running output, available output through SBAR recap master form; morning service, afternoon service and night service data for each room. Third user interface, prototype display is easy to understand and easy to use by users (user friendly). Fourth instrument feasibility, good ability, excellent information quality, good operation. From the results of the analysis, it is concluded that the product prototype "SBAR Communication Application Design Based on the National Standard of Hospital Accreditation and Digital-Based Imogene King Theory in Performing Handover at Advent Hospital Bandung" is a good choice.

Handover at Adventist Hospital Bandung" has been able to solve problems related to data and information in conducting patient handovers in hospitals. Introduction, Situation, Background, Recommendation stands for ISBAR and SBAR. Communication is the flow of information using logical methods to organize it so that it can be understood by others accurately, effectively, and efficiently to develop critical thinking skills, save time, and improve patient safety. Ineffective communication will have a negative impact on patients. Nearly 70% of sentinel incidents in hospitals are caused by communication failures, and 75% of them result in death. The nursing process can be stopped, the performance of nursing care will also decrease, and even the goals of nursing care can be hampered. (Lisbeth Blom et al, 2015; Tamsuri, 2016).

Nursing theory related to the application of SBAR communication to nurses in carrying out handovers to achieve the goal of implementing effective communication between nurses is the Theory of Imogene King, Myra Esterine Levine and Sister Calista Roy which explains that humans interact, communicate and bond with each other to adapt to changes that occur in the environment (Alligood, 2014).

The discussion of this research process begins by discussing the design of digital-based SBAR communication in conducting handovers with the aim of supporting nursing services. Interpretation and research results at Adventist Hospital Bandung are carried out by comparing the results of research that has been conducted with a literature review with related studies that have been described previously. In this study, the researcher describes in a structured manner based on the research objectives.

Discussion of qualitative methods in this study, namely identifying the need for digital-based SBAR communication applications in conducting handovers. Researchers identified

the results of interviews and discussions with the focus group discussion (FGD) method where nursing staff as participants obtained from the research results to answer the objectives of the study. The results obtained from the research at Advent Hospital Bandung are as follows: Identifying the implementation of the handover process using SBAR communication is still done manually.

The concept of manual documentation towards digital concepts in nursing practice is a change in health services that requires professionalism in work (Aiyedun, Chukwu & Musa, 2014). SBAR is a communication tool recommended by the World Health Organization (WHO) to communicate important information that requires immediate attention and action. SBAR communication not only improves the quality of care, but can also improve the quality of handover which will reduce the number of medical errors (Raymond & Harrison, 2014).

The SBAR communication framework contains patient information about Situation, Background, Assessment and Recommendation. SBAR communication in the health world was developed by patient safety experts from California to help communication between doctors and nurses. SBAR communication is designed for communication in high-risk situations between nurses and doctors to solve patient problems.

Digital-based SBAR is SBAR that has been developed into a handover tool in electronic form. This is done so that the handover is expected to be more effective and accurate. According to Viveiros (2016).

Based on the results of research conducted, related to identifying the needs of digital-based SBAR communication applications in conducting handovers at Adventist Hospital Bandung. It was found that most participants in conducting handovers sometimes did not use SBAR communication and some used SBAR manually. The obstacle that occurs during the handover process is that it takes a lot of time and data is often found to be out of sync. This condition occurs because of the unavailability of information technology or digital-based SBAR communication applications, as stated by participants as follows:

"Unable to see SBAR data that has been documented previously because after completing a handover, the data is deleted and starts with new data" (P1)

"For example in the isolation room, inside and outside are often found to be out of sync" (P2).

"Handover is inefficient and takes a lot of time" (P3).

"Performing handover is inefficient and takes a lot of time" (P3).

In the researcher's opinion, the implementation of the handover process using SBAR communication manually is an activity that will be very time-consuming considering the workload of many nurses and also data discrepancies can occur so that it can also have an impact on patient safety. This activity is felt to be less effective and efficient.

Discussion related to making a digital-based SBAR communication design design in conducting handovers. Researchers conducted interviews and discussions using the focus group discussion (FGD) method where nursing staff were the participants. From the results of interviews and discussions conducted, it was found that nurses wanted an application that was easy to access and input so that it could help nurses' work.

"We hope to have an application that when we speak, can be documented immediately" (P3)

"We want an application that can be accessed easily so that we can work efficiently" (P1)

"We want an application with a format that is easy to input so that it can help our work process" (P2).

In the researchers' opinion, the implementation of the handover process using the SBAR communication format in the form of a digital-based application that is easily accessible and easy to input data can support nursing services.

LIMITATION OF THE STUDY

In the study when conducting interviews participants were during service hours so that it could have an impact on participants when the interview was conducted.

CONCLUSIONS AND RECOMMENDATION

The results of the research that has been done can be concluded that the design of SBAR communication applications based on the National Standard of Hospital Accreditation and digital-based Imogene King theory using the Research and Development (RND) method reaches the third stage of the ten stages and is at level one of the four RND levels. Researchers identify needs, make research plans and design digital-based SBAR communication applications in conducting handovers. At the stage of identifying the needs of digital-based SBAR communication applications in conducting handovers, the researcher concluded that the needs of nursing services at the Bandung Adventist Hospital in implementing SBAR communication used in hospitals are still in the form of SBAR communication in the form of forms. For this reason, the researcher made an SBAR communication design with literature references. In the planning stage, the initial design that has been made by the researcher will be discussed again with the participants using the focus group discussion (FGD) method to introduce the initial design. With the FGD conducted, input from participants will be accommodated and the initial design will be updated as needed. The design that has been made will then be tested by experts to find out the weaknesses and strengths of the SBAR communication application design.

It is hoped that the development of this application can be continued to the next stage, so that it can be applied in hospitals and it is hoped that the effect of digital-based SBAR communication on quality to improve the quality of hospital services can be known.

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Conflict of Interest Statement

The author declares that there is no involvement with any external parties, and this paper is solely derived from the sources listed in the bibliography. It is confirmed that there is no plagiarism from any journal article. All sources of writing have been appropriately documented in the bibliography.

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