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Implementation of Digital based Handover as an Effort to Improve Safety and Continuity of Patient Care

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ABSTRACT

Background: Digital-based handover systems have emerged as an innovative approach to standardize communication, support clinical decision-making, and enhance the integration of patient information across shifts and care units.

Purpose: this study was to evaluate the implementation of a digital weighing system as an effort to improve safety and continuity of service for patients.

Methods: This study used a non-experimental quantitative design with a cross-sectional approach. The sample for this study was the entire population, consisting of 220 respondents. Data collection was conducted using a standardized questionnaire with a Cronbach's alpha value of 0.88 and a Likert scale of 1–5. The data were then analyzed using descriptive statistics, normality tests, Pearson's correlation test, and simple/multiple linear regression to see the strength of the relationship and the contribution of independent variables to the dependent variable.

Results: Base on result the implementation of digital weighing, the higher the safety and continuity of patient care. The r value is in the strong relationship category, indicating that the variables in this study have a strong relationship.

Conclusion: The implementation of a digital-based handover system is not only a technological innovation, but also a strategic intervention in efforts to improve patient safety and continuity of service.

Keywords: continuity of care, digital base handover, safety patient

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BACKGROUND

The COVID-19 pandemic has accelerated digital investment in healthcare services; increased workloads and infection control requirements have made electronic solutions increasingly relevant. In the context of modern, complex hospitals, ensuring secure, complete, and rapid information transfer is essential to guarantee patient safety and service continuity (Tataei et al., 2023). Patient safety is the cornerstone of quality healthcare delivery. One important element in improving patient safety is the handover process, which involves the transfer of information, responsibility, and accountability in patient care between healthcare professionals, especially during shift changes. This process greatly affects the continuity of care, accuracy in decision-making, and effectiveness in team coordination. Various studies show that inadequate handover processes can lead to medical errors, inefficient communication, missing information, and even incidents that are detrimental to patients (Desmedt et al., 2021).

In practice, traditional weighing methods conducted verbally or through paper documents often cause various issues, such as illegible handwriting, lost information, and the absence of auditable records. Complications in healthcare services today, especially in busy hospitals, make it increasingly urgent to have a system that can ensure comprehensive, accurate, and fast information transfer. Therefore, digitizing the handover process is a strategic solution to reduce the risk of human error and strengthen collaboration among healthcare workers. Electronic handover systems (EHS) offer an organized format, store historical records, reduce reliance on memory, and allow direct access to patient data (such as vital signs, medications, laboratory test results, and treatment plans). Quasi-experimental research shows an improvement in the quality of handover, efficiency, reduction in the possibility of errors, and an increase in patient safety scores after the implementation of EHS in the ICU (Till et al., 2014).

A review of the literature shows that poor handover processes are associated with a number of risks: missed information, errors in diagnosis or therapy, delays in treatment, and reduced teamwork. A systematic review concluded that the quality of handover has a direct impact on patient safety and that there is no single most effective tool, but many successful interventions involve standardizing procedures and electronic support (Delardes et al., 2020). The SBAR method is one of the handover methods used to address misinformation in healthcare services, but its implementation in combination with digitalization systems is still very limited (Saraswasta & Hariyati, 2021).

In Indonesia, although a number of studies have explored SBAR communication or EMR-based nursing documentation, the application of digital systems for admission management that combine structures such as SBAR and technology has not been studied in depth, either technically or in terms of its clinical impact. For example, a pilot study in Indonesia that implemented SBAR in electronic format in the Emergency Department showed that patient information became more organized and clearer, and communication became more efficient, which had an impact on improving patient safety. However, the study did not evaluate clinical outcomes such as reduction in errors, deficiencies in continuity, or assessment of digital footprints in the long term (Yetti & Afriani, 2024).

OBJECTIVE

The purpose of this study was to evaluate the implementation of a digital weighing system as an effort to improve safety and continuity of service for patients at regional hospitals in Badung Regency.

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METHODS

This study used a non-experimental quantitative design with a cross-sectional approach, aiming to analyze the effect of implementing a digital-based weighing system on patient safety and service continuity. This study was conducted at a hospital in Badung Regency, Bali, from May to July 2025. This study has received ethical approval from the Research Ethics Committee with number 000.10.5/1296/RSUD/2025.

The indicators measured in the digital based handover implementation variable are ease of use, completeness of information, and consistency of documentation between shifts. Patient safety and continuity of service are measured based on the dimensions of effective communication, availability of information, coordination, and continuity between health workers. The population in this study was 220 nurses working at Badung District Hospital. The sample for this study was the entire population, consisting of 220 respondents. Data collection was conducted using a standardized questionnaire with a Cronbach's alpha value of 0.88 and a Likert scale of 1–5. The questionnaire was administered to respondents via Google Forms. To control for non-response bias, Google Forms were sent directly to all participants via email and/or WhatsApp with periodic reminders.

The data were then analyzed using descriptive statistics, normality tests, Pearson's correlation test, and simple/multiple linear regression to see the strength of the relationship and the contribution of independent variables to the dependent variable.

RESULTS

Table 1. Variable frequency distribution

Variable	Mean	SD	Category
Digital based handover	4.21	0.44	Very good
Patient safety	4.18	0.47	Very good
continuity of service	4.25	0.42	Very good

Table 1 shows that the overall variable scores are in the excellent category (mean > 4). The implementation of digital-based handover shows that the majority of nurses feel that the digital system is easy to use, comprehensive, and improves the smoothness of the handover. The patient safety variable also illustrates a positive perception of increased accuracy of information, communication between shifts, and a reduction in potential clinical errors. Similarly, digitization greatly contributes to the continuity of patient care plans.

Table 2. The relationship between digital based handover implementation and patient safety and continuity of care

Variable	Digital based handover	Patient safety	Continuity of service
Digital based handover	1	0.642	0.711
Patient safety	0.642	1	0.688
continuity of service	0.711	0.688	1

Table 2 shows that the better the implementation of digital weighing, the higher the safety and continuity of patient care. The r value is in the strong relationship category, indicating that the variables in this study have a strong relationship.

Table 3. Multiple Linear Regression Test

Variable	B	SE	R^2	Adj. R^2	p
Digital based handover → Patient safety	0.553	0.072	0,412	0.407	<0.001
Digital based handover → continuity of service	0.611	0.068	0,505	0.501	<0.001
Constant	1.03	0.21	–	-	<0.001

Table 3 shows that digital-based handover significantly improves patient safety and continuity of care. The implementation of digital-based handover contributes 41.2% to improving patient safety and contributes 50.5% to improving continuity of care.

DISCUSSION

Implementation of Digital Base Handover

The results of the study show that the high average score for digital system implementation (M = 4.21) indicates that nursing staff consider this system easy to use, comprehensive, and conducive to improving work efficiency. These findings are in line with the Technology Acceptance Model (TAM) concept, which states that usefulness and ease of use are the two main predictors of technology adoption (Barzekar et al., 2019). A digital-based handover communication application for future handovers will be needed by nurses in order to maximize health services and assist nurses in documenting complete and accountable nursing care (Siauta et al., 2024).

According to research conducted by Zhou et al., (2022), digital-based handovers have great potential to ensure the completeness of information in a timely manner and improve patient safety. The results of this study are in line with research conducted by Naxakis et al., (2025), which also states that digital-based handover improves the completeness, accuracy, and consistency of patient information compared to manual or verbal methods. Digital systems ensure that important elements of handover, such as patient identity, diagnosis, latest clinical condition, treatment plan, clinical risks, and monitoring needs, are not overlooked because they are available in a structured format.

The Effect of Digital-Based Handover Implementation on Patient Safety

Handover is the stage at which responsibilities and clinical information are transferred between healthcare providers during shift changes, interdepartmental referrals, or when patients are transferred a crucial moment when information can be lost, risking medical errors and problems for patients. Various studies and analyses show that disconnected communication during the handover process contributes significantly to the percentage of clinical errors and incidents that endanger patient safety. As such, initiatives to regulate standards and/or utilize digital technology in the handover process have become a major concern in patient safety (Lazzari, 2024).

The results of the study show a strong relationship between digital-based handover and patient safety. These results are also supported by research conducted by Tataei et al., (2023), which states that the Electronic Nursing Handover System scores higher for handover quality, efficiency, reduction of clinical errors, and patient safety scores compared to paper/traditional methods (a statistically significant improvement). These results also show nurses' positive perceptions of Electronic Nursing Handover.

Evidence shows that digital information transfer and/or consistent integration of structured frameworks improve the completeness, efficiency, and quality of communication during handoffs, which in turn can reduce communication errors that are an important factor in patient safety. However, evidence showing that these measures directly reduce key clinical outcomes such as mortality rates is still inconclusive and requires large-scale RCT or quasi-experimental studies. Successful implementation depends on user-focused system design, integration with EHRs, staff training, and regular monitoring (Verholen et al., 2021).

The Effect of Digital-Based Handover Implementation on Continuity of service

Service continuity indicates that patients receive a stable, organized series of healthcare services without any disruption of information during the service transition process (for example, during shift changes, transfers between units, or referrals between facilities). This transition process often leads to loss of information, delays in treatment, and neglected tasks, all of which have a negative impact on continuity of care. Digital-based solutions have been created to address these issues by offering structured, easily accessible, and traceable records (Cellura et al., 2025).

Digital-based handover strengthens service continuity, particularly through process improvements: standardization of information, direct access to data, and task visibility. These improvements reduce the possibility of information being overlooked and delays in taking action. However, the ultimate benefits to clinical outcomes remain dependent on context and quality of implementation. Without user-centered design, electronic handover record integration, training, and accountability mechanisms, the benefits of continuity may be limited. Therefore, the implementation of digital handover needs to be accompanied by a comprehensive organizational strategy to truly strengthen continuity of care for patients (Burgess et al., 2020).

Based on research conducted by van Minde et al., (2019), it was found that a complete and systematic handover can ensure continuity of care and patient safety in the ICU. The results of this study are in line with the results of previous studies, which found a strong influence between handover and continuity of care.

CONCLUSION

The implementation of a digital-based handover system is not only a technological innovation, but also a strategic intervention in efforts to improve patient safety and continuity of service. Furthermore, the adoption of this system will bring a new paradigm in nurse communication, information management, and safety culture. The proposed recommendations, ranging from policy and operations to research, are expected to serve as a roadmap for hospitals and stakeholders to achieve safer and more efficient handovers.

REFERENCES

Barzekar, H., Ebrahimzadeh, F., Luo, J., Karami, M., Robati, Z., & Goodarzi, P. (2019). Adoption of hospital information system among nurses: a technology acceptance model approach. *Acta Informatica Medica*, *27*(5), 305. https://doi.org/10.5455/aim.2019.27.305-310.

Burgess, A., van Diggele, C., Roberts, C., & Mellis, C. (2020). Teaching clinical handover with ISBAR. *BMC Medical Education*, *20*(2), 459. https://doi.org/10.1186/s12909-020-02285-0.

Cellura, L., Scaglia, S. G., Longo, S., Arioli, R., Pastore, B., Bertolino, A., Meda, G., Grugnetti, A. M., & Grugnetti, G. (2025). Improve continuity of care through the use of a checklist for Nurse-To-Nurse Handover with SBAR method in Intensive Care. A single-center observational study. *SCENARIO: Official Italian Journal of ANIARTI*, *42*(2).

https://doi.org/10.4081/scenario.2025.615.

Delardes, B., McLeod, L., Chakraborty, S., & Bowles, K.-A. (2020). What is the effect of electronic clinical handovers on patient outcomes? A systematic review. *Health Informatics Journal*, *26*(4), 2422–2434.

Desmedt, M., Ulenaers, D., Grosemans, J., Hellings, J., & Bergs, J. (2021). Clinical handover and handoff in healthcare: a systematic review of systematic reviews. *International Journal for Quality in Health Care*, *33*(1), mzaa170.

Lazzari, C. (2024). Implementing the verbal and electronic handover in general and psychiatric nursing using the introduction, situation, background, assessment, and recommendation framework: a systematic review. *Iranian Journal of Nursing and Midwifery Research*, *29*(1), 23–32. https://doi.org/10.4103/ijnmr.ijnmr_24_23.

Naxakis, S., Wafer, M., Gardezi, S., Sadia, A., Mujahid, R., & O'Connor, K. (2025). NCHD handover in the acute mental health setting: a quality improvement initiative implementing an electronic handover tool. *BMJ Open Quality*, *14*(1), e002978. https://doi.org/https://doi.org/10.1136/bmjoq-2024-002978.

Saraswasta, I. W. G., & Hariyati, R. T. S. (2021). A systematic review of the implementation of electronic nursing documentation toward patient safety. *Enfermería Clínica*, *31*, S205–S209. https://doi.org/https://doi.org/10.1016/j.enfcli.2020.12.023 G.

Siauta, V. A., Imansari, A., & Lilipaly, O. I. (2024). Design of Digital-Based SBAR Communication Application in Handover Implementation at Undata Hospital, Central Sulawesi Province. *Media Publikasi Promosi Kesehatan Indonesia (MPPKI)*, *7*(12), 2944–2951. https://doi.org/10.56338/mppki.v7i12.6316.

Tataei, A., Rahimi, B., Afshar, H. L., Alinejad, V., Jafarizadeh, H., & Parizad, N. (2023). The effects of electronic nursing handover on patient safety in the general (non-COVID-19) and COVID-19 intensive care units: a quasi-experimental study. *BMC Health Services Research*, *23*(1), 527. https://doi.org/10.1186/s12913-023-09502-8.

Till, A., Sall, H., & Wilkinson, J. (2014). Safe handover: safe patients-the electronic handover system. *BMJ Quality Improvement Reports*, *2*(2). https://doi.org/10.1136/bmjquality.u202926.w1359.

van Minde, M. R. C., van Veen-Belle, D. W., Ernst-Smelt, H. E., Rosman, A. N., Raat, H., Steegers, E. A. P., & de Kroon, M. L. A. (2019). Handover of care and of information by community midwives, maternity care assistants and Preventive Child Healthcare professionals, a qualitative study. *Midwifery*, *78*, 25–31.

Verholen, N., Vogt, L., Klasen, M., Schmidt, M., Beckers, S., Marx, G., & Sopka, S. (2021). Do Digital Handover Checklists Influence the Clinical Outcome Parameters of Intensive Care Unit Patients? A Randomized Controlled Pilot Study. *Frontiers in Medicine*, *Volume 8-2021*. https://www.frontiersin.org/journals/medicine/articles/10.3389/fmed.2021.661343.

Yetti, K., & Afriani, T. (2024). Optimalisasi Handover Perawat dengan Komunikasi SBAR Berbasis Elektronik. *Journal of Telenursing (Joting)*, *6*(2). https://doi.org/https://doi.org/10.31539/joting.v6i2.12446.

Zhou, J., Zhang, F., Wang, H., Yin, Y., Wang, Q., Yang, L., Dong, B., Yuan, J., Liu, S., & Zhao, L. (2022). Quality and efficiency of a standardized e-handover system for pediatric nursing: A prospective interventional study. *Journal of Nursing Management*, *30*(8), 3714–3725. https://doi.org/https://doi.org/10.1111/jonm.13549.