Description and Validation of Nursing Diagnosis Using Electronic Documentation: Study Cases in Mother and Child Hospital Indonesia

Rr.Tutik Sri Hariyati1,*, Hanny Handiyani1, Laode Abdul Rahman1 and Tuti Afriani1

1 Basic and Fundamental Nursing Department, Faculty of Nursing, Universitas Indonesia, Indonesia

Abstract:

Background: A nursing diagnosis is a clinical judgment concerning a human response to a health condition, vulnerability for that response, by an individual, family, group, or community. For the determination of the right nursing diagnosis, a system that guides nurses in implementing care professionally is needed.

Objective: To describe the nursing diagnosis in mother and child cases validated by using a management nursing information system.

Methods: This case study used secondary data from 5,294 medical records. Medical records were retrieved from the server, analyzed, and validated by using the mapping model in accordance with the most frequent cases in mothers and children in the hospital. Approximately ten million (10.021) nursing diagnoses were performed by nurses and validated by using a mapping model of medical cases and nursing assessment. The selected medical cases were the five most frequent cases, namely normal delivery, cesarean delivery, healthy newborn, fever, and dengue in children.

Results: This study yielded the five most frequent nursing diagnoses, namely risk for infection (20.1%), pain (13.37%), anxiety (9.37%), the risk for imbalanced fluid volume (9.36%), and risk for bleeding (9.27%).

Conclusion: The electronic nursing documentation could help to determine a nursing diagnosis and had been validated for its appropriateness with assessment and the most common cases in mothers and children. Information and system training development are required to carry out the nursing process comprehensively.

Keyword: Nursing Diagnosis, Standard Nursing Language, Medical record, Validation, Nursing information system, Electronic nursing documentation.

1. INTRODUCTION

Nursing care is a cycle of activity comprising assessment, nursing diagnosis, intervention, implementation, and evaluation. Excellent nursing care will guarantee the continuity of care and improve patient safety, inter-professional collaboration, and also patient continuity. Patient safety becomes the purpose of nursing care, and formulating accurate nursing diagnoses will lead to appropriate nursing interventions and guarantee patient safety.

The nursing diagnosis is a clinical judgment concerning a human response to health conditions/life processes, or vulnerability for that response, by an individual, family, group, or community. It is the process of determining a patient's problem preceded by a comprehensive assessment comprising biological, psychological, social, spiritual, and cultural. As a result of the critical thinking process, determining nursing diagnosis should be based on a correct and accurate assessment [1]. Formulating diagnosis refers to a problem and appropriate etiology to perform safe interventions for the patient. A nursing care plan is crucial to guide nursing care and patient care continuity. The nursing care plan should be documented and becomes a communication means among the healthcare team.
Implementation of nursing care is the translation of knowledge into practice. Translating diagnosis theory into practice still becomes a problem for nurses in Indonesia, considering diverse education in Indonesia. The previous study revealed that most nursing education has a vocational education background [3], it caused a lack of critical thinking in the continuity of care. Most of the vocational education in Indonesia also inhibited the process of determining accurate diagnosis and providing quality care [4]. Such a condition is similar to previous research explaining that the knowledge factor in 10 hospitals in Ethiopia influenced nursing care implementation and documentation [5].

Indonesia has established a national standard for formulating a nursing diagnosis, outcome, and intervention in 2018, but the implementation still required some improvement and evaluation. The previous research stated that the establishment of standard in nursing language could help and facilitate the nurses in performing nursing care [6, 7]. The use of language terminologies like The North America Nursing Diagnosis Association (NANDA), Nursing Intervention Classification (NIC), and Nursing outcome (NOC) helped nurses to think critically and improve their continuity [8].

Several studies found some discontinuity between assessment and nursing diagnosis, and also patient progress notes [9]. A similar condition also happened in Indonesia that the quality and the continuity of nursing care were still not optimal [10]. Being trapped in a routine and performing collaboration work also became a problem in implementing nursing care in Indonesia. The unavailability of an integrated clinical pathway guidebook in a hospital also contributed to the poor implementation of nursing care in Indonesia. Unstandardized diagnosis would contribute to errors in determining the nursing diagnosis [11].

Integrated Clinical Pathway (ICP) is a guidebook developed by the hospital to provide direction for multi-discipline healthcare providers. ICP also assists the nursing care following the patient’s progress, which consists of daily target and nursing target to achieve. The implementation of ICP in Indonesia still requires more improvement. A study conducted in a hospital in Indonesia stated that the development of ICP modules, staff training, and developing an electronic system for nursing documentation could improve the implementation of nursing care and the completeness of nursing care documentation. Technology is capable of facilitating the implementation of nursing care [12].

Translation of nursing care theory into practice has also developed along with the advancement of science and technology. The use of electronic nursing documentation enabled nurses to perform more effective and efficient nursing care [13, 14]. The implementation of computer-based care also improved nurses’ continuity, and the use of standardized nursing language also increased critical thinking and facilitated the continuity among items in the nursing process [15, 16].

2. METHODS

This study is a case study that described nursing diagnosis formulation and its validity using the electronic nursing documentation system. This study also described the use of nursing language standards in facilitating the nurse to determine nursing diagnosis and intervention. This case study used secondary data from the electronic nursing documentation in a mother and child hospital.

The samples selected from medical diagnosis were the five most frequent cases, namely normal labor, cesarean delivery, healthy newborn, fever, and dengue in children. Five million two hundred ninety-four (5,294) patient medical records were chosen by the computer. Medical records (MR) were retrieved from the server, analyzed, and described by using the mapping model following the most frequent cases in mothers and children in the hospital. Approximately ten million (10,021) nursing diagnoses were performed by nurses, with each patient having an average of two nursing diagnoses. The nursing diagnosis was determined and validated by using a mapping model of medical cases and assessments.

Ethical clearance got approval from The Faculty of Nursing, Universitas Indonesia. Researchers ensure the confidentiality of the patient’s medical records anonymously, and all data is coded and stored using a password and username. Researchers also guarantee data only used for research and scientific purposes. The patients’ data were kept in strict confidence and only used for research and learning purposes.

3. RESULTS

Nursing Management Information system provides a number of nursing diagnosis options and the nurses are required to use their clinical judgement to determine the nursing diagnosis. The following chart explains the process of nursing care plans in the nursing management information system (Fig. 1). Nursing care plan flowchart in nursing management information system.

Fig. (1) shows the flowchart of the nursing management information system. Nurses would have to complete the nursing assessment at first. The compound results of the assessment would suggest the recommended nursing diagnosis. This system uses the North American Nursing Diagnosis Association (NANDA), Nursing Intervention Classification (NIC), and Nursing Out Come (NOC) language [14]. Once the nursing diagnosis is confirmed by the nurse, a set of nursing outcomes referring to the nursing diagnosis would appear. Nurses need to decide suitable outcomes based on the patient’s condition. This process would be applied to nursing interventions. A number of interventions pertinent to diagnosis and outcomes would appear to guide the nurses in selecting the appropriate intervention. Nursing notes would be made in accordance with the complete electronic-based nursing documentation.
Table 1. The most thirteen of nursing diagnoses in maternity and child hospital, jakarta.

| No. | Diagnosis                                | Domain               | Frequency | Percentage |
|-----|------------------------------------------|----------------------|-----------|------------|
| 1   | Risk for infection                       | Safety/protection    | 1,709     | 20.1       |
| 2   | Acute pain/Postpartum pain               | Comfort              | 1,137     | 13.37      |
| 3   | Anxiety                                  | Coping/stress tolerance | 797     | 9.37       |
| 4   | Risk for imbalanced fluid volume         | Nutrition            | 796       | 9.36       |
| 5   | Risk for bleeding                         | Safety/protection    | 788       | 9.27       |
| 6   | Self-care deficit                         | Activity/rest        | 734       | 8.63       |
| 7   | Hypothermia                               | Safety/protection    | 433       | 5.09       |
| 8   | Insufficient breast milk                  | Nutrition            | 352       | 4.14       |
| 9   | Hyperthermia                              | Safety/protection    | 259       | 3.05       |
| 10  | Risk for imbalanced body temperature      | Safety/protection    | 211       | 2.48       |
| 11  | Ineffective infant feeding pattern        | Nutrition            | 203       | 2.39       |
| 12  | Impaired physical mobility                | Activity/rest        | 138       | 1.62       |
| 13  | Other                                    | Other                | 2,464     | 11.13      |

Table 1 shows the thirteen-most frequent nursing diagnoses. Nutrition and safety/protection are the most common domains that have been set by the nurse, followed by domain activity and rest, comfort, and stress tolerance. This study also validated the nursing diagnosis from 5,294 medical records under five most frequent cases, namely normal parturition, section cesarean labor, healthy newborn, fever, and dengue in children. Meanwhile, the order of five most frequent nursing diagnosis in mother and child was a risk for infection (20.1%), postpartum pain (13.37%), anxiety (9.37%), the risk for imbalanced fluid volume (9.36%), and risk for bleeding (9.27%).

Fig. (2a-e) shows the mapping of five nursing diagnoses most stated in this study. The result of the nursing diagnosis develops from some symptoms. After the assessment, the nurse documented in the system, after that, the system will recommend choosing a nursing diagnosis. The statement of diagnosis described was relevant to previous research.

4. DISCUSSION

A nursing diagnosis is a judgement based on a comprehensive nursing assessment. The medical diagnosis provides an essential set of data, but it did not automatically require to make an accurate nursing diagnosis. Therefore, before the nurses state the problem, they have to conduct a patient assessment. The patient assessed first to determine the nursing diagnosis, which then followed by the outcome criteria and interventions.
Fig. (2a). Description diagnosis mapping of normal parturition recommended by nursing assessment.

Fig. (2b). Description diagnosis mapping of secarea parturition recommended by nursing assessment.
Fig. (2c). Description mapping of healthy newborn recommended by nursing assessment.

Fig. (2d). Description diagnosis mapping of children with fever recommended by the assessment.
Data of initial assessment in the system, reassessment, nursing care plan, and its implementation documented medical records. In the era of 4.0 technology, hospitals need a management information system. Information is required to give, coordinate, and also integrate the hospital service. Hospital plans and designs the management information process to meet the internal and external information needs (Standard Information and Medical Record Management /MIRM). The hospital management information system prepared the collection, provided data and information regularly, collected based on the needs of the professional caregiver, head of a division, head of a service unit, and other parties outside the hospital (SNARS; MIRM Standard.4). The use of an information system will help to present the data fast and accurately.

A nurse competence stated nurse diagnosis based on comprehensive assessment comprising physical, health history, allergy history, nutrition screening, pain, functional status, psychological, social, economic, spiritual, cultural, and discharge planning assessment [17].

The five most frequent cases in this study were normal parturition, section cesarean, healthy newborn, fever, and dengue in children, and the most frequent nursing diagnosis was a risk for infection (20.1%). Risk diagnosis referred to clinical judgment concerning the susceptibility of an individual, family, group, or community for developing an undesirable human response to health condition/life processes. The risk for infection might refer to the neonates who need special treatment for their umbilicus and also for normal and cesarean parturition. This result relevant to the previous studies that presented the final set of validated nursing diagnoses in ICU was a risk for infection [18, 19].

The second most frequent nursing diagnosis retrieved from the electronic system was pain (13.37%). The mother felt perineal pain after normal or cesarean parturition. This condition followed the previous research that explained postpartum commonly felt in the injury perineal area and might last for three (3) months, six (6) months, up to a year. Such pain might affect daily life, emotion, and also well-being. Pain assessment could be conducted using a visual analogic scale/VAS [20], or numerical scale, and completed with provocation, quality, radius, severity, and time of pain. The correct pain assessment would determine pain interventions, education of pain-relieving through recommended “kegel” and pelvic exercise (week, 2019). Another study found individual approaches could reduce pain pre-, ante- and post-natal [21].

Anxiety is the third most frequent nursing diagnosis in mother and child hospital. Previous research examined the correlation between anxiety and pain experiences [22]. In this study, anxiety could happen before Caesarea surgery, during neonate treatment and interaction, or when treating a child who suffered from fever or dengue. Nurses play an essential role in relapse anxiety because anxiety could inhibit recovery. Nurses could give information related to the care plan, what to do, treatment steps, and prepare the family to be able to take care of the patient after discharge. This statement is relevant to the Communication and Education Management Standard in SNARS, and nurses should play their roles based on this standard [17].

The risks for imbalanced fluid volume and bleeding are the fourth and fifth most frequent nursing diagnoses in mother and child hospital. Many children hospitalise because of fever...
CONCLUSION AND RECOMMENDATION

A case study described that the nursing system helps a nurse to state diagnosis. There were five most frequent nursing diagnoses in Mother and Child Hospital, namely risk for infection, pain, anxiety, the risk for imbalanced fluid volume, and risk for bleeding. This system helped the nurses to formulate nursing diagnoses that the result of the nursing diagnosis develops from some symptoms assessment. The statement of diagnosis described was validated by the system and relevant to previous research. Improvement in education and skills is required to conduct an assessment, determine diagnosis, and interventions. The research recommended that a management information system is used in the hospital to facilitate the nurses in determining diagnosis and making the decision for the nursing care plan.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study has been approved by the The Faculty of Nursing, Universitas Indonesia, Indonesia with approval number 169/H2.F12.D/HiKp.02/04/2013.

HUMAN AND ANIMAL RIGHTS

Not applicable.

CONSENT FOR PUBLICATION

Not applicable.

AVAILABILITY OF DATA AND MATERIALS

Not applicable.

FUNDING

This study is funded by Grant International Collaboration from UI DRPM, Indonesia (Number NKB 1913/2019).

CONFLICT OF INTEREST

The authors declare no conflict of interest, financial or otherwise.

ACKNOWLEDGEMENTS

Thanks to FoN UI, UI DRPM, and team member: Ariesta, Yusnita, Shanty, Dhika, Iin, Difa, Tika, Dita, Usi, Widi, Windi, Fizo, Furqan, Ridwan, Marjiui, Kinta.

REFERENCES

[1] Molla M, Azeratize M, Murugan R, Molla M. Assessment of factors affecting implementation of nursing process among nurses in selected governmental hospitals, addis ababa, ethiopia; Cross sectional study. J Nurs Care 2014; 03(03): 1-8. [http://dx.doi.org/10.4172/2167-1168.1000170]

[2] Johnson L, Edward KL, Giandinoto JA. A systematic literature review of accuracy in nursing care plans and using standardised nursing language. Collegian 2014; 25(3): 355-61. [http://dx.doi.org/10.1016/j.colegn.2017.09.006]

[3] Hariyati RTS, Fujinami Y, et al. Correlation between career ladder, continuing professional development and nurse satisfaction: A case study in indonesia. Int J Caring Sci 2017; 10(3): 1490-7.

[4] Siswanto L M H, Hariyati R T S. 2013. https://doi.org/pISSN

[5] Hagos F, Almessegad F, Balcha F, Berhe S. Application of Nursing Process and Its Affecting Factors among Nurses Working in Mekelle
Description and Validation of Nursing Diagnosis Using Electronic Documentation

The Open Nursing Journal, 2020, Volume 14

[6] Häyrien K, Lammintakanen J, Saranto K. Evaluation of electronic nursing documentation--nursing process model and standardized terminologies as keys to visible and transparent nursing. Int J Med Inform 2010; 79(8): 554-64.

[7] John SK, Bhattacharya PC. Documentation guidelines based on expectation of documentation helps accurate documentation among nurses in psychiatric settings. Asian J Nurs Educ Res 2016; 260-5.

[8] Larjani T. T. & S.B Training_of_NANDA_I Nuring_Di.pdf. Nurs Open 2019; 6: 612-9.

[9] Paans W, Sermeus W, Nieweg RMB, van der Schans CP. Prevalence of accurate nursing documentation in patient records. J Adv Nurs 2010; 66(11): 2481-9.

[10] Zendrato MV, Hariyati RTS, Affafh E. Outpatient nursing care implementations in Indonesian regional public hospitals. Enferm Clin 2019; 29(Suppl. 2): 449-54.

[11] Hagos F, Alemseged F, Balcha F, Berhe S, Aregay A. Application of nursing process and its affecting factors among nurses working in mekelle zone hospitals, northern ethiopia. Nurs Res Pract 2014; 2014675212.

[12] Asmirzajani M, Syuhaimie Hamid AY, Hariyati RTS, Hariyati RTS. Clinical care pathway strengthens interprofessional collaboration and quality of health service: a literature review. Enferm Clin 2018; 28(Suppl. 1): 240-4.

[13] Amanwenre F, Rauchegger F, Ehlers F, Hirsch B, Schaubmayer C. Effect of a nursing information system on the quality of information processing in nursing: An evaluation study using the HIS-monitor instrument. Int J Med Inform 2011; 80(1): 25-38.

[14] Hariyati RTS, Yani A, Eryando T, Hasibuan Z, Milanti A. The effectiveness and efficiency of nursing care documentation using the SIMPRO model. Int J Nurs Knowl 2016; 27(3): 136-42.

[15] Kehr J, Hafner J, Spelz LM, Steen S, Weaver K. Implementation of standardized nomenclature in the electronic medical record. Int J Nurs Terminol Classif 2009; 20(4): 169-80.

[16] Dwisatayadin M, Hariyati RTS, Affafh E. The effects of the application of SIMPRO on the completeness and time efficiency of nursing documentation in the outpatient installation at Dompet Dhuafa Hospital Parung. IOP Conf Series Mater Sci Eng 2018; 332(1).

[17] Hospital Accreditation Commission. 2018.Available at: https://www.jointcommissioninternational.org/about-jcahi/accredited-organizations/

[18] Šerková D, Marečková J. Validation of NANDA international diagnoses at an intensive care unit. Cent Eur J Nurs Midwifery 2019; 10(2): 1041-51.

[19] Otávio R, Gusmão M, Estadual U, Claros D M. Nursing diagnoses in a home-based program: cross-mapping and NANDA-I Taxonomy 2019; 72(3): 584-92.

[20] Fed US, Service N, Us I, News S, Washington DC. Clinical Trial: Post-partum Non-pharmacologic Pain Manage 2019-2020.

[21] Berfit S, Lis S, Hafner K, et al. Changes in birth-related pain perception impact of neurobiological and psycho-social factors. Arch Gynecol Obstet 2018; 297(3): 591-9.

[22] Roberts S, Moore LC, Jack B. Improving discharge planning using the re-engineered discharge programme. J Nurs Manag 2019; 27(3): 609-15.

[23] Gunawan NPIN, Hariyati RTS, Gayatri D. Motivation as a factor affecting nurse performance in Regional General Hospitals: A factors analysis. Enferm Clin 2019; 29(Suppl. 2): 515-20.

[24] Hariyati RTS, Hamid AY, Eryando T, Hasibuan ZA. Usability and satisfaction of using electronic nursing documentation, lesson-learned from new system implementation at a hospital in Indonesia. Int J Healthc Manag 2020; 13(1): 45-52.

[25] Kelley TF, Brandon DH, Docherty SL. Electronic nursing documentation as a strategy to improve quality of patient care. J Nurs Scholarsh 2011; 43(2): 154-62. Available at: http://www.scopus.com/inward/record.url?eid=2-s2.0-79956274390&partnerID=40 &md5=6acb50573eb404621462f78805f52ee9

[26] Nguyen L, Bellucci E, Nguyen LT. Electronic health records implementation: an evaluation of information system impact and contingency factors. Int J Med Inform 2014; 83(11): 779-96.

[27] Ammenwerth E, Rauchegger F, Ehlers F, Hirsch B, Schaubmayer C. Effect of a nursing information system on the quality of information processing in nursing: an evaluation study using the HIS-monitor instrument. Int J Med Inform 2011; 80(1): 25-38.

[28] Gunawan NPIN, Hariyati RTS, Gayatri D. Motivation as a factor affecting nurse performance in Regional General Hospitals: A factors analysis. Enferm Clin 2019; 29(Suppl. 2): 515-20.

[29] Spring S. ANA’s Principles for Nursing Documentation Guidance for Registered Nurses 2010.

[30] Hessecink G, Zegers M, Vernooij-Dassen M, et al. Improving patient discharge and reducing hospital readmissions by using Intervention Mapping. BMC Health Serv Res 2014; 14: 389.

[31] Williams F, Boren SA. The role of the electronic medical record (EMR) in care delivery development in developing countries: a systematic review. Inform Prim Care 2008; 16(2): 139-45.

© 2020 Hariyati et al.

This is an open access article distributed under the terms of the Creative Commons Attribution 4.0 International Public License (CC-BY 4.0), a copy of which is available at: https://creativecommons.org/licenses/by/4.0/legalcode. This license permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.