

# Nurse Satisfaction in Implementing Activities based on the N-ABC Mira System

Mira Asmirajanti<sup>1</sup>, Achir Yani S. Hamid<sup>2</sup>, Rr. Tutik Sri Hariyati<sup>2</sup> and Boy S. Sabarguna<sup>3</sup>

<sup>1</sup>Department of Nursing, Faculty of Health and Sciences, Universitas Esa Unggul, Jakarta 11510, Indonesia

<sup>2</sup>Faculty of Nursing, Universitas Indonesia, Depok, West Java 16424, Indonesia

<sup>3</sup>Faculty of Medicine, Universitas Indonesia, Jakarta 10430, Indonesia

**Keywords:** Nurses, Nursing Activities, Nurse Satisfaction.

**Abstract:** Background: Caring and recording nursing care are activities of every nurse. The main problem is that nursing activities at the hospital have not been used as a basis for awarding appreciation points. Even though, in daily lives, nurses are constantly on the patient's side to perform nursing care. The study's purpose was to evaluate nurse satisfaction in implementing activities based on the N-ABC Mira system. Methods: The study was conducted at RSDK Semarang, using a quasi-experimental design, repeated measurements before implementation; trial 1; 2 and 3. This study randomly sampled 226, 199, 161 and 92 practical nurses with a minimum work period of 1 year, also through nursing documentation on 10 most frequent diseases in July-December 2018, taken incidentally. Data was collected and analyzed using RM GLM, t-Test, ANOVA, Pearson's Correlation. Results: It showed significant differences between before and after the N-ABC Mira system to nurse satisfaction with nursing activities (6,657,  $p=0,0001$ ); decision making (2,999,  $p=0,0001$ ) and award points (6,585,  $p=0,0001$ ), which were influenced by nurse aspects, management, and technical support. Conclusions: The differences between before and after the implementation of the N-ABC Mira system can increase nurse and patient satisfaction, so N-ABC Mira is recommended at the hospital.

## 1 INTRODUCTION

Nurses as professional service providers in hospitals are important health workers. The nurse has the longest and most intense relationship with the client, from entering the hospital to being discharged. Nurse activities must focus on resolving issues and meeting client needs, both independently and collaboratively (1). Nurses must respect patients by working continuously and systematically (2) Nursing activities consist of assessment, determination of nursing diagnoses, determination of outcomes, planning, implementation and evaluation (3) by always paying attention to client safety according to service standards, (4) so as to provide satisfaction to nurse (5). Nurse job satisfaction is considered an important component so that nurses work according to their objectives. Financial remuneration is one of the important things that contribute to nursing satisfaction in the form of rewards (6).

A study of the implementation of the remuneration system and service performance stated that as many as 71.2% of respondents expressed dissatisfaction and were very dissatisfied with the implementation of the remuneration system (7). Nurses feel the amount of remuneration is not commensurate with their workload and performance. Improving the remuneration points needs to be sought to improve the job satisfaction of nurses (8) and appreciate their performance. Calculation of awards and professional payments can be made based on actual workload and nursing care (9). Calculation of reward points from nursing activities based on documentation of nursing care can increase nurse satisfaction (10).

Type A State Hospitals in Semarang and Jakarta are hospitals that have provided remuneration in Indonesia, but nursing activities have not yet become the basis for calculating remuneration. Both hospitals have used information management and electronic medical records, however, documentation of nursing activities is still carried out manually. The

results of observations and focus group discussions in September 2016 - January 2017 stated that nursing activities based on nursing documentation were not optimal. Less than 80% of nursing activities do not meet standards. Manual documentation requires a long filling time, thus reducing the time of patient visits by nurses. The incompleteness of nursing documentation results in difficulty in finding data and calculating nurse awards.

The information system is one solution to be able to increase nurse activity and nurse satisfaction in documentation (13), save time and can reduce the risk of data loss (14) and facilitate the calculation of financing. Funding in almost all hospitals in Indonesia has used hospital management information systems. A nursing management information system based on nursing activities has also been developed in Indonesia. Some nursing information systems that have been used are the Generic Open Hospital Management Information System (SIMRS GOS) prepared by the Directorate General of Health Business Development (Ditjen BUK) Ministry of Health of the Republic of Indonesia (kemkes.go.id, 2015) and the Nursing Management Information System that has been developed by Roro (SIMPRO) (15). One of the hospitals (RS) in Indonesia that has utilized the Generic Open Hospital Management Information System (SIMRS GOS) is the RSDK.

Referring to the previous introduction, it is necessary to reform and develop the award of nurses based on nursing activities. One of the information systems for financing based on nursing activities that have been developed is the Nursing Activity Based Costing Mira System (N-ABC Mira) which is suitable for nurses in Indonesia and hospital needs. The purpose of this study was to determine differences in nurse satisfaction before and after using the Nursing Activity Based Costing Mira System (N-ABC Mira).

## 2 RESEARCH METHODS

This research uses a quantitative method, a quasi-experimental study (pre-post without control). This study was tested before implementation and 3 times repeated testing after implementation, with documentation samples following the number of nurses. Documentation was taken incidentally from the 10 most diseases in Surgical Medical patients. Samples of nurses with a minimum of 1-year work experience criteria were randomly selected before

the study was conducted. There were 226 nurses in the sample before implementation, 199 in the first trial, 161 nurses in the second trial, and 92 nurses in the third trial. Data were collected in July - December 2018 at Semarang RSDK and analyzed using the GLM RM, t-Test, ANOVA, Pearson's Correlation. This research has also passed the ethical research review (ethical clearance) from the Faculty of Nursing, University of Indonesia number 2513 / UN2.F12. D / HKP.02.04 / 2016.

## 3 RESEARCH RESULT

The N-ABC Mira system is an information system that automatically calculates award points based on recording nursing activities. This system makes a calculation of nurse award points easier and more precise. Reward points will be recorded immediately if the nurse clicks on each activity carried out. Henderson's need theory, a theory of technological competence as part of caring in the Locsin nursing profession, Lewin's theory of change, clinical pathway theory, remuneration theory, and information systems theory are theories that underlie the development of N-ABC Mira system. The N-ABC Mira system is internet-based and comes with authorization for each user. The development of this system is tailored to the needs of users and can be transplanted easily to information systems that have been used by hospitals, for example, Hospitals that already utilize the Generic Open Hospital Management Information System (SIMRS GOS).

Nursing activities are the activities of nurses in providing nursing care, starting from the assessment of each patient who comes to the inpatient room, determines nursing diagnoses and interventions, provides information and education, conducts discharge planning, establishes nursing outcomes and evaluations and fills N-ABC Mira system applications. Nursing activities are implemented by modifying clinical pathways into nursing pathways that are applied to the N-ABC Mira system. Every activity that has been carried out will be automatically captured in the nursing records and becomes the basis for setting the nurse's award points.

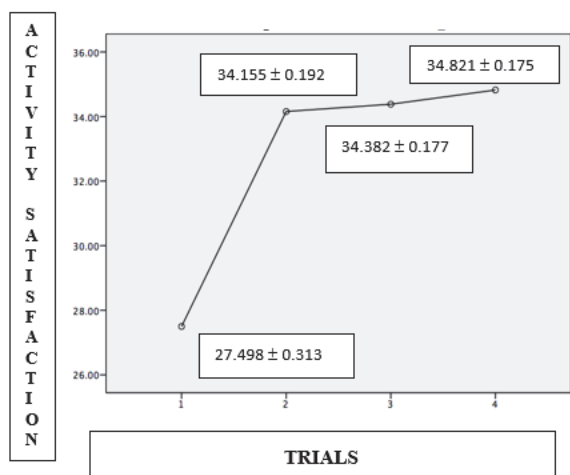


Figure 1: Differences in nurse satisfaction with nurse activity between before, the first trial; second and third after using the N-ABC Mira system in Semarang Hospital in 2019.

Figure 1. shows the differences in nurse satisfaction with nursing activities that illustrate nurses' perceptions regarding feelings when carrying out and recording nursing activities before and after using the N-ABC Mira system. ANOVA (post-hoc) test results were significant between before and the first try after using the Mira N-ABC system at 6.65761 ( $p = 0.0001$ ). In the first and second trials, trials 2 and 3 after using the N-ABC Mira system there was an increase but it was not significant. It can be interpreted that before using the N-ABC Mira system, nurses' satisfaction with the activities of nurses is not satisfied (range of values between 20-29) and after using the N-ABC Mira system, nurses' satisfaction can be interpreted as satisfied (range of values of 30-39).

Figure 2. shows the differences in nurse satisfaction with decision making. This illustrates nurses' perceptions regarding feelings when determining appropriate activities in inpatient care before and after using the N-ABC Mira system. ANOVA (post-hoc) test results were significant between before and the first trial, after using the N-ABC Mira system of 2.99924 ( $p = 0.0001$ ). An increase was found but was not significant in the first and second trials, as well as the second and third trials after using the N-ABC Mira system. It can be interpreted that there is nurses' dissatisfaction with decision making before using the N-ABC Mira system (range of values between 12-17) and there is satisfaction after using the N-ABC Mira system (range of values 18-23).

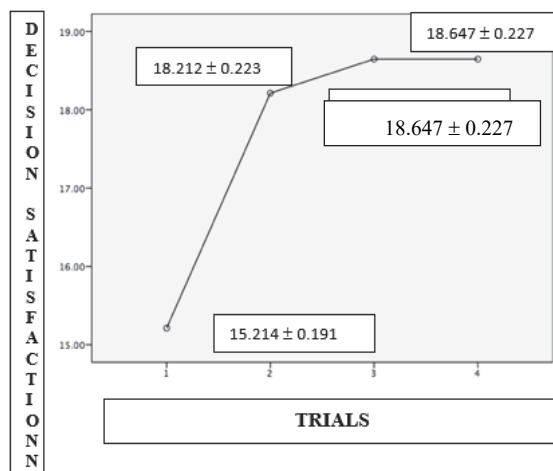


Figure 2: Differences in Nurse Satisfaction with Decision Making before, first trial; second and third after using the N-ABC Mira system in Semarang Hospital in 2019.

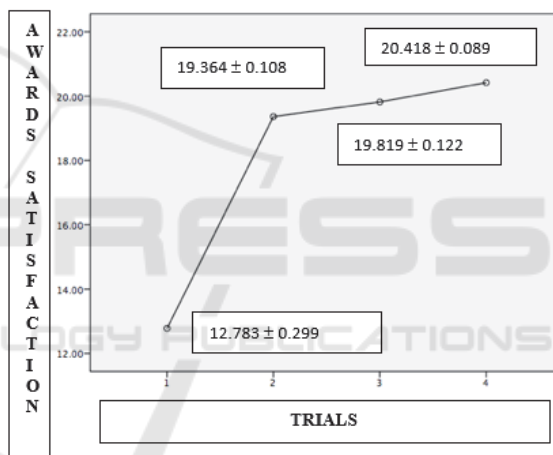


Figure 3: Differences in Nurse Satisfaction with Award Points before, first trial; second and third after using the N-ABC Mira system in Semarang Hospital in 2019.

Figure 3. shows the differences before and after using the N-ABC Mira system regarding nurse satisfaction with reward points, which illustrates nurses' perceptions regarding feelings when getting appropriate rewards. ANOVA (post-hoc) test results were very significant ( $p = 0.0001$ ) between before and after using the N-ABC Mira system in the first trial, with a score of 6.58554. There was no significant increase ( $p = 0.098$ ) in the first trial and after the second trial, as well as in the second trial and after the third trial using the N-ABC Mira system. This can be interpreted that there is a nurse's dissatisfaction with the award points, before using the N-ABC Mira system, (range of values between 12-17), while nurses were identified as satisfied after using the N-ABC Mira system (range of values 18-23).

## 4 DISCUSSION

N-ABC Mira system is a system for calculating nurse award points based on the recording of nursing care activities that have been carried out. N-ABC Mira system is a system that facilitates nurses in carrying out their activities. Nurse activities at the hospital are numerous, from the arrival of the patient to the hospital to being discharged (16). However, nurses still need time to adapt to changes, so, N-ABC Mira system training needs to be given. Nurses must understand how to use the system properly in order to record the activities of providing nursing care in the hospital. Training is conducted as an effort to reduce resistance and support change (17).

Good job satisfaction will improve performance and patient satisfaction with nursing services (18). The results showed differences in nurse satisfaction with nursing activities based on nursing care documentation between before and after using the N-ABC Mira system in the first trial, which was 27,498 (68.75%) and 34,155 (85.39%). The analysis showed a significant difference ( $p = 0.0001$ ) between before and after implementation in the first trial. There was no significant difference between before and after the implementation of the N-ABC Mira system in the first trial to the second trial, and in the second trial to the third trial. This shows that good planning needs to be done to make changes. Changes in an organization must be planned carefully. Central to change is behavior change so that good reward and punishment must be considered for successful change (19).

N-ABC Mira system is an information system that in addition can store nursing care data, it can also be used for nurses' assessments, through a complete system, easily and quickly applied, so nurses can visit patients more often. Computer-based documentation makes the nurse's work simpler, so nurses can focus on providing nursing actions (20). Caring as a major element in nursing care, and nurses must be able to apply it to patients (21). N-ABC Mira system can help nurses to nurse activities in providing nursing care, thereby increasing nurses' satisfaction.

Nurses' satisfaction with the decision to provide nursing care will increase if they can provide nursing care according to the patient's needs. N-ABC Mira system makes it easy for nurses to choose menus and items that are in accordance with the results of the assessment that has been done, making it easier for nurses in making decisions to determine appropriate nursing care. The results showed that the most significant differences in nurse satisfaction

with decision making were between before the first trial, using the N-ABC Mira system, amounting to 15,214 (63.38%) and after the first trial, amounting to 18,212 (75.88%). There is no significant difference after using the N-ABC Mira system, namely in the first trial to the second trial, as well as in the second trial to the third trial. These results illustrate that making nursing care decisions by nurses to patients requires management support.

This is consistent with the results of the study (22) that nurses need management support. Quick access to information enables decisions that are appropriate to the nursing activity program and evaluates results effectively and efficiently, thereby increasing patient safety and reducing risks to the patient (22). N-ABC Mira system can help nurses to make decisions in the provision of nursing care.

N-ABC Mira system is a system of recording every activity of nurses in the provision of nursing care that has been done and calculation of nurse award points. According to (6) that nurses have a high workload and are not comparable with the remuneration and professional awards received. Professional remuneration and appreciation must reflect the activities, education, and skills in providing daily nursing care. Appropriate appreciation will give satisfaction to the nurse. The results of this study indicate that there is a significant difference ( $p = 0.0001$ ) in nurse satisfaction with respect points between before and after using the N-ABC Mira system in the first trial, 12,783 (53.25%) and 19,364 (80.68%). This is consistent with what was stated (23) that the calculation of the financing of nurses' activities in providing nursing care would be more effective based on documenting patient nursing care. N-ABC Mira system as an information system that can store nursing care documentation data and can be used as a reference in calculating award points.

N-ABC Mira system was developed to facilitate better appreciation for nurses. The results showed there was a difference in mean nurse satisfaction with reward points of 6.58554, which was very significant ( $p = 0.0001$ ) between before intervention and after the N-ABC Mira system in the first trial, but in first trial to second trial and from second trial to third trial after using the N-ABC Mira system the difference in mean nurse satisfaction was not significant. Based on these results, nurses need to be encouraged to make changes. The results of this study are supported by satisfaction theory (24) which focuses on satisfaction on 3 relationships, including the relationship of motivation with performance; a relationship of performance with



appreciation and relationship of appreciation with personal goals. Many workers do work because of obligations, not because they are motivated at work. This is because there have not been many awards relating to nursing activities. That caused many nurses to decide to work abroad. In accordance with the results of research on the Policy Brief from (25) that in Indonesia 60% of health workers are nurses. Nursing has heavy workload, and it is not valued as a profession and professional staff by other professions, besides, the scope of work is unclear due to many non-nursing assignments, also added by exposure to work risks that are not matched by adequate work protection and the lack of a proper reward system to be a push factor for Indonesian nurses to migrate and meet more global markets.

N-ABC Mira system is expected to reduce Indonesian nurses from migrating and meet the global market because this system can help overcome problems in calculating nurse award points based on nursing activities. N-ABC Mira system needs to be properly socialized and informed in order to get support from PPNI and HPMI organizations and from policymakers such as BPJS and PERSI. Nurses are the largest group of professionals in hospital health services (26). Nurses' activities in providing nursing care will be of good quality if managed properly and nurses have good motivation to carry out so that they require clear policies related to the management of nursing care. The use of the N-ABC Mira system in hospitals will change the order of nursing services and require good encouragement. According to Lewin, drivers need to make 3 steps of change. The first step, analyzing the situation to find out the factors inhibiting and driving change. The second step, conduct training and actual changes in nursing practice. The third step is used to evaluate the stability and effectiveness of changes that occur in nursing practice (27). According to (28) that motivating nurses can be done by managers by increasing nurse knowledge through formal and informal education and training, as well as good career paths.

N-ABC Mira system is a system developed for nursing activities and calculation of reward points that requires validation of the head nurse before being established. The head nurse must assess the compatibility between the recording and the nursing care that has been given to the patient. According to (29) the supervision of the head nurse must be done regularly and continuously. Providing optimal nursing care to patients can increase patient satisfaction and reduce the length of stay in the

hospital (21). The results of N-ABC Mira system research showed that management support has a positive direction towards nursing activities based on nursing care documentation, nurse satisfaction with nursing activities, decision making, and award points. This means that the N-ABC Mira system requires management support in its implementation so that nursing activities can run better and faster.

## 5 CONCLUSIONS

N-ABC Mira system is an information system that is used to calculate award points based on internet-based nursing activities documentation. There is a significant difference in nurse satisfaction with nursing activities, decision making, and reward points between before and after trial 1 of the N-ABC Mira system. N-ABC Mira system is influenced by aspects of nurses, management support and technical support. Hospitals as an institution of service with nurses as the most personnel can use the N-ABC Mira system to support the calculation of reward points for nurses' activities in providing nursing care and hospitals that already have information systems that can transplant N-ABC Mira system. The N-ABC Mira system application needs to be socialized to PPNI, HPMI, PERSI, and BPJS as a health insurance agency to finance nurse activities in order to get support and be implemented as a basis for determining nurse award point policy.

## REFERENCES

- Asmirajanti, M. (2014). Pengaruh pelaksanaan caring perawat terhadap kepuasan pasien di ruang rawat inap rumah sakit umum daerah Bandung. *Journal Inohim*, 2(2), 140–144.
- Asmirajanti, M., Hamid, A. Y. S., Hariyati, R. T. S., & Sabarguna, B. S. (2018). *Aktivitas perawat berdasarkan dokumentasi asuhan keperawatan*.
- Ayudin, N., & Akansel, N. (2013). Determination of accuracy of nursing diagnoses used by nursing students in their nursing care plans. *International Journal of Caring Sciences*, 6(2).
- Bakari, H., Hunjra, A. I., Shabbir, G., & Niazi, K. (2017). How does authentic leadership influence planned organizational change? the role of employees' perceptions: integration of theory of planned behavior and lewin's three step model. *Journal of Change Management*, 0(0), 1–33. <https://doi.org/10.1080/14697017.2017.1299370>
- Bogossian, F., Winters-Chang, P., & Tuckett, A. (2014). "The pure hard slog that nursing is...": A qualitative

- analysis of nursing work. *Journal of Nursing Scholarship*, 46(5), 377–388. <https://doi.org/10.1111/jnu.12090>
- Brock, D., Abu-Rish, E., Chiu, C.-R., Hammer, D., Wilson, S., Vorvick, L., ... Zierler, B. (2013). Interprofessional education in team communication: working together to improve patient safety. *Postgraduate Medical Journal*, 89(1057), 642–651. <https://doi.org/10.1136/postgradmedj-2012-000952rep>
- Fang, Y., Li, C., & Wang, M. (2016). The development and evaluation of a nursing information system for caring clinical in-patient. *Technology and Health Care*, 24. <https://doi.org/10.3233/THC-151106>
- Gurung, T. B. (2018). *The Principles of Interdisciplinary research in small scale fisheries*. <https://doi.org/10.1007/978-3-319-94938-3>
- Hamid, A. Y. S., Chandra, Y. A., Prayetni, & Masfuri. (2018). Policy Brief: migrasi perawat dan pendayagunaan perawat returnee berbasis brain circulation design. In *Kebijakan*.
- Hariyati, Hamid, A. Y., Eryando, T., & Hasibuan, Z. (2012). *Optimalisasi kinerja sistem informasi manajemen keperawatan berbasis model simpro*. Universitas Indonesia.
- Hariyati, R., Delimayanti, M., & Widyatuti. (2011). Developing prototype of the nursing management information system in puskesmas and hospital, Depok Indonesia. *Business Management*, 5(22), 9051–9058. <https://doi.org/10.5897/AJBM11.2356>
- Hertog, A. Den, & Gliesche, K. (2012). Pathway-controlled fast-track rehabilitation after total knee arthroplasty: a randomized prospective clinical study evaluating the recovery pattern, drug consumption, and length of stay. *Arch Orthop Trauma Surg*, 132, 1153–1163. <https://doi.org/10.1007/s00402-012-1528-1>
- Heslop, L. (2012). Status of costing hospital nursing work within Australian casemix activity-based funding policy. *International Journal of Nursing Practice*, 2–6. <https://doi.org/10.1111/j.1440-172X.2011.01992.x>
- Jefferies, D., Johnson, M., Nicholls, D., & Lad, S. (2011). A ward-based writing coach program to improve the quality of nursing documentation. *International Journal of Medical Informatics*. <https://doi.org/10.1016/j.nedt.2011.08.017>
- Kitson, A., Marshall, A., Bassett, K., & Zeitz, K. (2012). What are the core elements of patient-centred care? A narrative review and synthesis of the. *Journal of Advance Nursing*, (May), 3–15. <https://doi.org/10.1111/j.1365-2648.2012.06064.x>
- Lake, E. T., Germack, H. D., & Viscardi, M. K. (2016). Missed nursing care is linked to patient satisfaction: A cross-sectional study of US hospitals Missed nursing care is linked to patient satisfaction: a cross-sectional study of US hospitals. *BMJ*, (August). <https://doi.org/10.1136/bmjqs-2015-003961>
- Lammintakanen, J., Saranto, K., & Kivinen, T. (2010). Use of electronic information systems in nursing management. *International Journal of Medical Informatics*, 79(5), 324–331. <https://doi.org/10.1016/j.ijmedinf.2010.01.015>
- Lee, N. J., Jang, H., & Park, S. Y. (2016). Patient safety education and baccalaureate nursing students' patient safety competency: A cross-sectional study. *Nursing and Health Sciences*, 18(2), 163–171. <https://doi.org/10.1111/nhs.12237>
- Mandagi, F. M., Umboh, J. M. L., & Rattu, J. A. M. (2015). Analisis faktor-faktor yang berhubungan dengan kinerja perawat dalam menerapkan asuhan keperawatan di RSU bathesda GMIM Tomohon. *Jurnal E-Biomedik*, 3(3).
- Mcneil, R., Guirguis-Younger, M., B Dilley, L., Turnbull, J., & Hwang, S. W. (2013). Learning to account for the social determinants of health affecting homeless persons. *Medical Education*, 47(5), 485–494. <https://doi.org/10.1111/medu.12132>
- Moon, M., & Moorhead, S. (2011). *Relationship of nursing diagnoses, nursing outcomes, and nursing interventions for patient care in intensive care units* (University of Iowa; Vol. 3526851). Retrieved from [http://search.proquest.com/docview/1081475100?accountid=13042%5Cnhttp://oxfordfx.hosted.exlibrisgroup.com/oxford?url\\_ver=Z39.88-2004&rft\\_val\\_fmt=info:ofi/fmt:kev:mtx:dissertation&genre=dissertations+&+theses&sid=ProQ:ProQuest+Dissertations+&+Theses+Global&](http://search.proquest.com/docview/1081475100?accountid=13042%5Cnhttp://oxfordfx.hosted.exlibrisgroup.com/oxford?url_ver=Z39.88-2004&rft_val_fmt=info:ofi/fmt:kev:mtx:dissertation&genre=dissertations+&+theses&sid=ProQ:ProQuest+Dissertations+&+Theses+Global&)
- Setyaningrum, I., Hariyati, S., & Novieastari, E. (2016). Peningkatan kelengkapan dokumentasi dan kepuasan perawat pada pengawasan hospital acquired infections (HAIs) berbasis komputer. *Keperawatan Indonesia*, 19(1), 33–40.
- Soetisna, T. W., Ayuningtyas, D., & Misnamiarti. (2013). Penerapan sistem remunerasi dan kinerja pelayanan implementation of remuneration system and service performance. 17–23.
- Winarsih, R., Nursalam, & Dian, N. (2015). Budaya organisasi dan quality of nursing work life terhadap kinerja dan kepuasan kerja perawat di RSUD dr. soetomo Surabaya. *Ners*, 10 No. 2.
- Windyastuti, Kristina, T., & Santoso, A. (2016). *Pelatihan preceptorship untuk meningkatkan adaptasi perawat baru di rumah sakit*.
- Wirawan, E. A., Novitasari, D., & Wijayanti, F. (2013). Hubungan antara supervisi kepala ruang dengan pendokumentasian asuhan keperawatan di rumah sakit umum daerah ambarawa. *Jurnal Manajemen Keperawatan*, 1, No. 1, 1–6. Retrieved from <https://jurnal.unimus.ac.id/index.php/JMK/article/view/943/995>