ORIGINAL RESEARCH

EFFECT OF NANDA-I, NIC, AND NOC DOCUMENTATION SYSTEM TRAINING ON QUALITY OF NURSING CARE DOCUMENTATION IN THE PERINATAL WARD OF YOGYAKARTA REGIONAL PUBLIC HOSPITAL

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Abstract

Background: The existing standard of nursing language consists of NANDA-I for diagnostic language standard, Nursing Intervention Classification (NIC) for nursing intervention, and Nursing Outcome Classification (NOC) for nursing outcomes. One way to improve the quality of nursing care documentation is to provide training in the documentation system.
Objectives: To determine the effect of providing NANDA-I, NIC, and NOC (NNN) nursing care documentation systems training on the quality of nursing documentation.
Methods: This was a pre-experimental study with pretest posttest design without a control group. Twenty-one nurses and eighty-six Medical Records (MR) of patients who were treated in the perinatal ward of Yogyakarta Regional Public Hospital were used as samples selected using purposive sampling. Those nurses were trained in the nursing care documentation system. The quality of nursing care documentation was measured using modified Quality of Diagnoses, Interventions and Outcomes (Q-DIO) instrument. Data were analyzed using Independent samples t-test with a confidence level of 95%.
Results: The average of the scores of the quality of nursing documentation before training was lower (1.91) than the average after training (2.78). There was a significant difference in the quality of nursing documentation before and after training ($p < 0.001$).
Conclusion: Training of NNN nursing documentation system could improve the quality of nursing documentation in the perinatal ward of Yogyakarta Regional Public Hospital.

KEYWORDS
training; nursing documentation; documentation

INTRODUCTION

Good and detailed nursing documentation can describe the patient's condition, progress in the patient's condition, and contribute to the continuity of patient care, subsequent treatment plans, while providing information to evaluate the success of the actions given, and health indicator data (Linch et al., 2017). Nursing documentation also can provide many benefits as a means of quality assurance, accreditation, legal evidence, health planning, allocation of resources and development of nursing and research (Nursalam, 2011; Wang et al., 2011).

Nursing documentation is also important in nurses' communication with their fellow nurses and other health workers. Communication with other health teams needs to be supported by good and standardized nursing documentation so that it is easily

understood and perceptible by other health workers. Important aspects that should be written in the documentation include nursing diagnosis, intervention and outcome target. The use of standard nursing diagnoses, interventions and results that are widely used are NANDA International (NANDA-I) systems, Nursing Intervention Classification (NIC) and Nursing Outcomes Classification (NOC) or known as NNN (Müller-Staub et al., 2009).

Implementation of standardized language in establishing NNN nursing diagnoses will improve the quality of nursing care documentation. Various studies have been conducted to determine the effectiveness of the use of NNN and the results of one study indicated that the use of NNN can improve the quality of nursing care (Muller-Staub et al., 2007). A systematic review conducted by Wang et al. (2011) states that many studies have been done to develop the quality of nursing documentation. The quality of nursing documentation can be evaluated from the format and structure of the documentation, the process of documentation, the contents of nursing documentation and instruments to measure the quality of nursing documentation. Some of the instruments that can be used to measure the quality of nursing documentation are: The Cat-Ing instruments, Ehnfor's instruments and the Quality – Documentation, Intervention, Outcome (Q-DIO) instruments (Wang et al., 2011).

Nursing care quality is measured by assessing the quality of nursing care documentation. Assessment of the quality of documentation is a method to improve the quality of nursing care (Muller-Staub et al., 2009; Wilson et al., 2012). Activities that can be used to improve the quality of nursing documentation include electronic documentation systems, standardization of documentation systems, standardization of nursing languages, nursing process models, standardization of nursing documentation education, documentation education in specific nursing, using specific nursing theories or a combination of some of the above interventions (Wang et al., 2011). Nurses who work in special areas such as nurseries also have an important role to provide good quality nursing care and good documentation. Good and accurate documentation can strengthen the accountability of nurses in the nursery (Cartwright-Vanzant, 2010). Based on that information, this study aimed to determine the effect of providing a NNN documentation training system on the quality of nursing care documentation in the perinatal ward Yogyakarta Indonesia.

METHODS

Study Design
This quantitative research used a pre- experimental one group pre-test post-test design.

Setting
The study was conducted in the Perinatal Ward of Yogyakarta Regional Public Hospital. The number of nurses in the ward numbered 22 nurses. The research was conducted from July to October 2018.

Sample
The sample in this study were two groups, namely the Perinatal ward nurses, 21 nurses and the MR (Medical Record) of patients who were treated in the perinatal ward of Yogyakarta Regional Public Hospital. The number of infant patients treated in the Perinatal ward in one year in 2017 in 752 infants. Purposive sampling method was used in this study.

Samples of perinatal ward nurses were selected based on inclusion criteria: 1) Nurse in the perinatal ward of Yogyakarta Regional Public Hospital, 2) Taking a part in the documentation system training, 3) Willing to be a respondent. The exclusion criteria were nurses who were taking time off or preparing for retirement or being sick during data collection.

Sample of medical records were selected based on inclusion criteria: 1) The patient's Medical Record (MR) was filled out by nurses who attended in full for the NNN documentation system training, 2) MR documents of patients treated in the perinatal ward that have been documented in the nursing process in one cycle in one shift, namely assessment, planning, implementation, and evaluation, 3) The patient's MR document with the criteria: the baby is born with a pregnancy age <33 weeks, the baby is born with a weight of <1500 grams or> 2500 grams, the baby is born without medical devices, the baby is born with congenital abnormalities, the baby is born with a good score in APGAR measurement, infant with using Continuous Positive Airway Pressure (CPAP) or ventilator devices, infant born with no special monitor or attention (can be more than one criterion). The exclusion criteria included: 1) The patient's MR unclear document documenting the nursing process and not clear who sign it, 2) MR documents that are not yet complete.

The research samples were determined by using the formula of the sample estimated average proportion with the Isaac Michael approach (Noor, 2011). Based on calculations using the formula, it was found that 86 nursing care documents were recommended for each pre and post-test.

Instrument
The strength of Q-DIO is its ability to measure the quality of nursing diagnoses and related interventions and nursing-sensitive patient outcomes (Muller-Staub et al., 2009). The researchers used the Q-DIO that had been modified by Aprisunadi (2011) originating from Muller-Staub et al. (2009) to measure the quality of nursing care documentation. Permission was granted from Aprisunandi and Muller for the researchers to use this instrument. This Q-DIO from Aprisunadi has 29 item criteria by dividing the quality of diagnostic nursing care documentation by process consisting of 11 items, product-based diagnosis consisting of 8 items, nursing intervention documentation consisting of 3 items, and nursing outcomes consisting of 7 items. The researchers modified the assessment score of the instrument on each criterion by setting a score of 0-4 for all assessment criteria, where a score of 0 was used if the documented information is incomplete, score 1 if the documented information is half complete, score 2 if the documented information is complete, score 3 if the information is fully documented, and score 4 if the documented information is very complete.

The results of the assessment of the quality of nursing care documentation are obtained by summing all scores on each criterion then dividing it by the maximum number of items which is 29. If the value is obtained> 2, the quality of nursing care is rated good and if the value obtained is ≤ 2 then the quality of nursing care is considered less than good.

Validity Test and Reliability Test of Instrument Sheets
The researchers did not test the validity of the Q-DIO sourced from Aprisunadi (2011). The researchers modified the quality aspects in the part of the nursing documentation as a process. Modifications were made by making adjustments to the nursing care assessment document on the RM used in the Perinatal Ward of Yogyakarta Regional Public Hospital. The modifications made can be seen in the table below (**Table 1**).

Table 1 Modification of Q-DIO Instruments

No	Q-DIO (Aprisunadi, 2011)	Q-DIO Modified Research 1	Q-DIO Modified Research 2
1.	The actual situation, cause of undergoing hospital treatment	General information (main complaint)	General information (main complaint)
2.	Anxiety and worry due to undergoing treatment, hopes, and desires about treatment.	Psychological status (anxiety and worry)	Psychological status (anxiety and worry)
3.	Social situation and environment of the residence	Maternal history (social situation and living environment)	Maternal birth history (social situation and neighborhood)
4.	Coping the patient in facing his current condition	Coping mother of the patient/family is facing the current condition of the baby	Physical assessment: Head, respiratory system, cardiovascular system, gastrointestinal system, extremity, skin, nutrition, elimination
5.	Beliefs and behavior (related to hospital care)	Life beliefs and behaviors (values and beliefs)	Life beliefs and behaviors (values and beliefs)
6	Information on the situation of patients and families / related people	Recipient's education identity (Need translator to speak, sign language, level of education, religion, willingness to receive information)	Recipient's education identity (Need translator to speak, sign language, level of education, religion, willingness to receive information)
7.	Closeness to people in the environment	The closeness of infant to mother/caregiver	APGAR, NIPS, and VS
8.	Hobbies, leisure activities	Mother/caregiver leisure time	Language used
9.	People who can be contacted or responsible for patients	People who responsible for patients	Barriers assessment of education recipients
10.	Daily living activities	Information and education needs	Information and education needs
11.	Relevant nursing priorities related to assessment	Relevant nursing priorities related to assessment	Relevant nursing priorities related to assessment

The reliability test performed on the instrument is the inter-rater reliability test (Kohen's Kappa). Bujang and Baharum (2017) recommends using a minimum of 11 or 28 samples for interrater reliability measurements. Analysis with Kohen's Kappa has meaning: no agreement <0.00; low 0.00-0.20; Fair (0.21-0.40; moderate 0.41 to 0.60; substantially 0.61-0.80; very strong 0.81-1.00. The kappa coefficient value of 0.61 represents a fairly good overall agreement (McHugh, 2012).

Interrater reliability tests were done on three observations of medical records. Every time before the data collection activities, the researchers conducted the measurement of perception similarity with the two raters. The first inter-rater reliability data collection activity involved 7 samples. The results of the collection in the first stage resulted in the Kohen's Kappa value being 0.236 (fair). The result of this first step measurement shows that the value of the interrater reliability was still low, so the researcher made modifications to the instruments in items number 1-10.

After the researchers made modifications to the instrument as described above, they performed this activity again with the raters before re-measuring it in 10 medical record files. The results of this second measurement obtained the Kohen's Kappa value of 0.725 (substantial).

The researchers then modified the instrument by adding instructions in filling out the form, namely the preparation of the instruction sheet, using the observation sheet and by modifying the contents in items 4, 7.8 and 9 (see **Table 1**). After the modifications were done, the researchers again tested the reliability with two raters while observing 12 different medical record files. Kohen's Kappa value for this third measurement was 1.00, which is in the very good range.

Data Collection
The researchers used only one group design because there was only one perinatal room in this hospital. The researchers did not conduct data collection in another hospital as they had some difficulty in applying the instruments that had been adjusted to the medical records in this hospital. To control any bias, the

researchers were not included in the data collection and recruited two observers from nurses in the postpartum ward. Those two observers were raters in the process of the previous testing on the reliability of the instrument. There were 21 nurses attended the training series until it was finished, and there was only one nurse who could not attend the training due to being on annual leave outside of Java.

Pre-test research samples were measured from the medical record files of patients who had returned home 7 days before the training started. Samples were chosen with non-probability sampling techniques using consecutive sampling, namely all medical records of patients who arrived in sequence and met the inclusion criteria (Sastroasmoro, 2014). The pre-test data were obtained from the medical record files of patients who had been discharged from the hospital on or before 22 July 2018. This data collection activity was conducted until the researchers obtained as many as 86 medical record files by the criteria.

The training for nurses consisted of three stages. In the first stage of the NNN, the nursing care documentation system (stage/lecture and discussion) was explained on July 29, August 4, and August 5. After that, the researcher continued the training in the second stage, namely the mentoring stage. This assistance was done from 30 July to 3 August and 6 August to 12 August 2018. Evaluation of training to determine the quality of training and knowledge of nurses was done after the series of training in the three stages was completed. Evaluation of the training used the Kirkpatrick method.

Post-test data were collected 14 days after the training series was completed, by collecting medical records of patients treated within August 27, 2018, until October 20, 2018. Similar to the pre-test data, researchers stopped collecting data when the sample fulfilled the 86 medical records.

Ethical Considerations
The research was conducted after receiving a letter from the Ethics Committee Approval, with a Ref: KE / FK / 0660 / EC / 2018 number dated July 5, 2018, from the Ethics Committee for Biomedical Research, Faculty of Medicine, Universitas Gadjah Mada. Researchers recruited respondents by using the inclusion and exclusion criteria, then the candidate of respondents was explained the study and the researchers asked for informed consent forms to be signed if they were willing to participate in this study.

Data Analysis
The analysis in this study used univariate and bivariate analysis. Univariate analysis is a data analysis that analyzes one variable. This analysis was applied because the initial data collection process was still random and abstract, then the data was processed into relevant information (Donsu, 2017). Bivariate analysis is a data analysis that recognizes the dual sides of two variables. Bivariate analysis was conducted to determine the differences in the quality of nursing documentation before and after training.

The data used in the quality of nursing care documentation are numerical so the total number of 29 previous observation items

obtained a minimum of 0 and a maximum of 116. Before the data were analyzed normality was tested using the Kolmogorov-Smirnov test because the research respondents were more than 50 MR, with normal data distribution if $p > 0.05$. Next, normally distributed data were analyzed using unpaired t-tests or Independent sample t-tests to compare the results between the pretest and posttest. The results of the analysis were considered significant if the value of $p < 0.05$.

Intervention
The intervention of the training was divided into three stages, namely the first phase of the seminar/lecture, the second stage was mentoring with real cases in perinatal, and the third stage was the evaluation of completing NNN nursing documentation. The training was divided into three periods because some nurses had a different shift schedule which did not allow all nurses to attend the training at the same time (**Figure 1**). The speakers in this training were also still actively working from Monday to Saturday so that the training schedule was also adjusted for the schedule of the resource persons so that not all groups were present in the morning but only attended in the afternoon until the evening.

The training in each session included:
1) First stage Seminar
   Consisting of 3 sessions:
   a) Opening by moderator
      • Opening by moderator and prayer
      • Introducing the name of the researcher
      • Explain the aims and objectives of the training
      • Explain the training plan for 3 days
   b) The first session with lectures and discussion questions and answers for 100 minutes.
      • Introduction of the resource person
      • The resource person explored the participants' understanding of nursing care documentation
      • The resource person explained the material: nursing care documentation, nursing process, NNN standardization, and the quality of nursing care documentation by the training module using Power-point.
      • After the explanation was over, the participants were encouraged to discuss with the speakers.
      • Take a break
   c) Then the second session was held for 100 minutes which contained material about the form that must be filled in for the nursing care documentation using the form in the Yogyakarta Hospital.
   d) ISHOMA
   e) Session 3 was conducted for 100 minutes containing examples of cases.
      • Groups in the first class were divided into two groups given cases to be worked out in small groups and then they discussed together in one class with the resource person.
2) Second stage / mentoring stage
   Only nurses who participated in the first stage underwent the second stage, namely the nurse works as usual by the work schedule in the perinatal room accompanied by a facilitator. The nurse completes nursing documentation on the patient's RM sheet, as usual, using the knowledge obtained during the

first phase of training. The results of the practice of each nurse were documented by the researchers and became the subject of discussion in the third stage. This stage was done for 5 days and all nurses who took part in the training worked on documenting at least one patient's RM file.

3) Stage three / Stage of Discussion
The third day session lasted 100 minutes, and was done in three waves (three days) with the consideration that it did not interfere with the nurses' working time. In this discussion stage, researchers as facilitators delivered the results obtained when mentoring. The results of the mentoring were provided for 3 days so that they could cover all nurses who attended the training. This evaluation is conducted for 2 days, namely 14 and 15 August 2018. After all stages were completed, the participants completed an evaluation questionnaire for the implementation of the training, which was used to see whether the training had been run well.
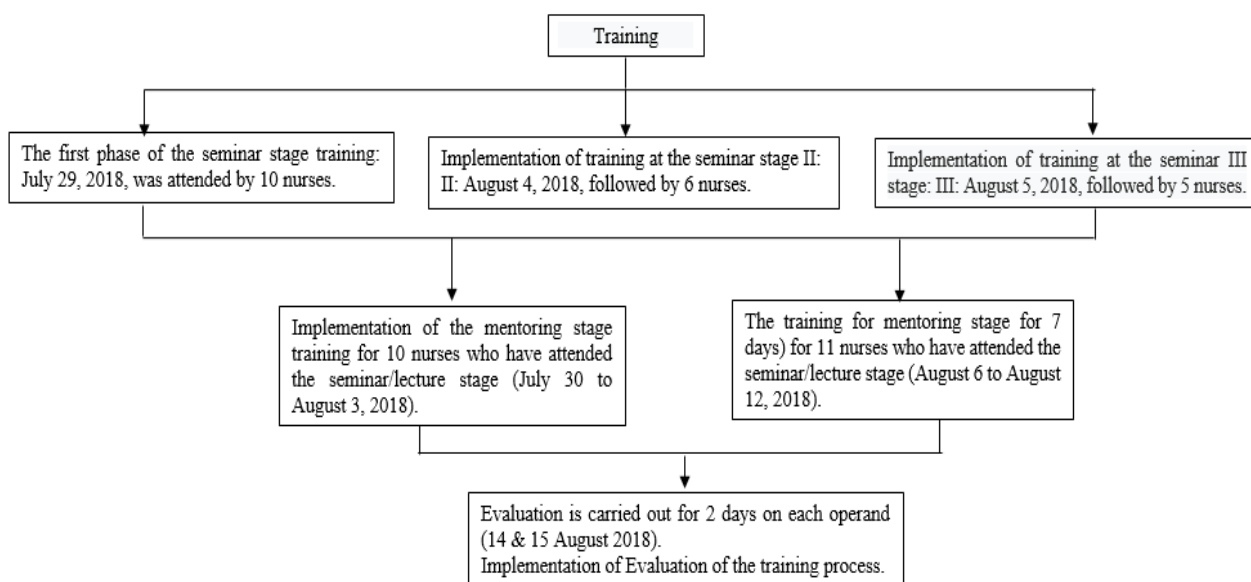

Figure 1 Three Phases of Training

RESULTS

The results of this study reflect three different aspects. The researchers described the characteristics of the respondents followed by an overview of the quality of nursing documentation, and the relationship of training to the quality of nursing documentation.

Characteristics of Research Respondents

Table 2 Characteristics of Perinatal Nurses in Yogyakarta Regional Public Hospital (n = 21)

Characteristic	Criteria	N	%
Age	20 – 40 years old	18	85.7%
	41 – 60 years old	3	14.3%
	>60 years old	0	0
Total		21	100%
Education	D3	11	52.4%
	D4	1	4.8%
	S1 Kep (Ners)	9	42.8%
Total		21	100%
Years of Service	<5 years	7	33.3%
	5-10 years	6	28.6%
	>10 years	8	38.1%
Total		21	100%

Quality Overview Nursing documentation

Table 3 Overview of the Quality of Nursing Documentation in General in the Perinatal Ward Before and After Training (n=86)

Variable	Criteria	Before f (%)	After f (%)
Nursing Documentation Quality	Good	30 (34.9%)	83 (96.5%)
	Poor	56 (65.1%)	3 (3.5%)

Table 3 shows that the quality of general nursing documentation from all aspects before training which has good quality has increased from 34.4% to 96.5%. Thus, the quality of nursing documentation already in good criteria improved.

Table 4 Overview of the Quality of Nursing Documentation at Each Q-DIO Aspect / Domain Before and After Training (n=86)

Variable	Criteria	Before		After	
		N	%	N	%
Nursing Documentation Quality as a Process	Good	73	84.9	69	80.2
	Poor	13	15.1	17	19.8
Nursing Documentation Quality as a Product	Good	1	1.2	72	83.7
	Poor	85	98.8	14	16.3
Nursing Intervention Documentation Quality	Good	1	1.2	78	90.7
	Poor	85	98.8	8	9.3
Nursing Outcomes Documentation Quality	Good	3	3.5	82	95.3
	Poor	83	96.5	4	4.7

The documentation of nursing as a product before the training had poor quality as much as 85 (98.8%) and good quality as much as 1 (1.25%) and after the training in this study, the researchers still found the poor quality as much as 14 (16.3%). As a result, from the **table 4** it can be seen that the quality of nursing documentation increased in overall nursing documentation, nursing documentation as products, nursing interventions and outcomes.

Before the bivariate analysis was done, first the data was assessed for its homogeneity or similarity. The data in this study included 86 (> 50) samples so the normality test used was the Kolmogorov-Smirnov test. The pre-test results had a *p* value of 0.036 or smaller than 0.05 while it can be said to be homogeneous if *p* > 0.05. The results of the post-test score had a *p* value of 0.89 or more than 0.05. This non-homogeneous post-test score was adjusted for normality and transformed with SPSS and the result was *p*-value = 0.020 or more than 0.05. From the results above, it can be concluded that the pre and post-test scores have a value of *p* > 0.05 so it can be concluded that the pre and post-test scores were homogeneous.

Relationship to Training with the Quality of Nursing Documentation

The results of this research data were homogeneous, so an unpaired t-test was performed on data before and after training with a confidence level of 95% ($\alpha < 0.05$). **Table 5** shows the data concerning the effect of training on the quality of nursing documentation. There were significant differences in the mean values before and after training.

Table 5 Differences in Quality Score of Nursing Care Documentation Before and After Nursing Documentation System Training CI 95% (n=86) using unpaired t-test

Aspect	Before Mean ± SD	After Mean ± SD	Mean Difference	*p*
Nursing Documentation Quality	1.91 ± 0.25	2.78 ± 0.41	0.86	<0.001

Table 6 Differences in Scores Before and After Training on Observation Items Quality of Nursing Documentation (n = 86)

No	Item	Before Mean ± SD	After Mean ± SD	Mean Difference	CI 95%	*p*
	Nursing Documentation as a Process	**2.68 ± 0.57**	**2.82 ± 0.65**	**0.13**	**-0.31 – (-0.42)**	**0.160**
1	General information	3.38 ± 0.56	3.41 ± 0.62	0.23	-0.201 – 0.15	0.796
2	Psychological status	4.00 ± 0. 00	3.91 ± 0.50	-0.93	-0.01 – 0.20	0.086
3	Maternal birth history	1.83 ± 0.81	2.63 ± 0.88	0.80	-1.06 – (-0.54)	<0.001*
4	Physical assessment	3.28 ± 0.60	3.50 ± 0.77	0.22	-0.42 – (-0.02)	0.028*
5	Life-beliefs and behaviors	1.05 ± 1.75	0.98 ± 1.73	-0.07	-0.45 – 0.59	0.793
6	Recipient's education identity	3.50 ± 1.29	3.33 ± 1.49	0.17	-0.24 – 0.60	0.413

Table 6 Differences in Scores Before and After Training on Observation Items Quality of Nursing Documentation (n = 86) (Cont.)

| No	Item	Before Mean ± SD	After Mean ± SD	Mean Difference	CI 95%	*p*
7	APGAR, NIPS dan VS	3.19 ± 1.12	2.58 ± 1.25	-0.60	0.23 – 0.98	0.001*
8	Language used	3.20 ± 1.60	2.94 ± 1.75	-0.26	-0.21 – 0.72	0.319
9	Barriers assessment of education recipients	2.84 ± 1.83	2.74 ± 1.87	-0.09	-0,40 – 0.58	0.742
10	Information and education needs	1.64 ± 1.24	1.71 ± 1.33	0.07	-0.45 – 0.31	0.722
11	Relevant nursing priorities related to assessment	1.66 ± 0.64	3.29 ± 0.81	1.63	-1.84 – (-1.41)	<0.001*
	Nursing Documentation as a Product	**1.10 ± 0.24**	**2.63 ± 0.60**	**1.53**	**-1.67 – (-1.39)**	**<0.001**
12	Nursing diagnoses documentation	2.22 ± 0.71	3.41 ± 0.76	1.18	-1.41 – (-0.96)	<0.001*
13	Nursing diagnoses built according to NANDA-I and arranged based on priority	2.09 ± 0.70	3.19 ± 0.83	1.09	-1.34 – (-0.85)	<0.001*
14	Documenting etiology (E)	0.12 ± 0.42	3.14 ± 0.87	3.02	-3.24 – (-2.80)	<0.001*
15	Right etiology, related to nursing diagnoses	0.12 ± 0.47	3.14 ± 0.81	3.02	-3.23 – (-2.82)	<0.001*
16	Documenting signs and symptoms	0.02 ± 0.22	0.77 ± 1.29	0.73	-1.03 – (-0.46)	<0.001*
17	Signs and symptoms (S) exactly related to nursing diagnoses	0.02 ± 0.22	0.76 ± 1.27	0.73	-1.30 – (-0.88)	<0.001*
18	Nursing objective related to nursing diagnoses	2.30 ± 0.60	3.37 ± 0.70	1.07	-1.16 – (-0.88)	<0.001*
19	Nursing objective can be obtained through nursing intervention	1.94 ± 0.58	3.29 ± 0.68	1.35	-1.54 – (-1.16)	<0.001*
	Nursing Intervention Documentation Quality	**1.40 ± 0.35**	**1.62 ± 0.24**	**1.63**	**-1.76 – (-1.50)**	**<0.001**
20	Concreate	1.97 ± 0.58	3.28 ± 0.64	1.31	-1.50 – (-1.14)	<0.001*
21	Nursing intervention affects E from nursing diagnoses	0.13 ± 0.48	3.12 ± 0.71	2.99	-3.18 – (-2.80)	<0.001*
22	Nursing intervention that has been done, clearly documented	2.10 ± 0.46	2.70 ± 0.70	0.59	-0.76 – (-0.42)	<0.001*
	Nursing Outcomes Documentation Quality	**1.62 ± 0.24**	**2.77 ± 0.49**	**1.15**	**-1.26 – (-1.04)**	**<0.001**
23	Diagnoses relevance assessed every day in accordance to patient's condition that change	2.93 ± 0.73	2.93 ± 0.73	1.35	-1.56 – (-1.14)	<0.001*
24	Nursing diagnosis rewritten when recording evaluation	2.47 ± 0.63	3.15 ± 0.73	0.69	-0.84 – (-0.53)	<0,001*
25	Documentation of patient's progress record (SOAP)	3.05 ± 0.40	3.91 ± 0.36	0.86	-0.98 – (-0.74)	<0.001*
26	Patient's progress observed according to outcomes criteria that has been built before	1.64 ± 0.67	2.79 ±0.78	1.15	-1.37 – (-0.93)	<0.001*
27	Patient's progress record	1.48 ± 0.55	2.20 ± 0.57	0.72	-0.89 – (-0,55)	<0.001*
28	Outcomes criteria related to nursing intervention	1.59 ± 0.66	2.29 ± 0.76	0.70	-0.92 – (-0.48)	<0.001*

Table 6 Differences in Scores Before and After Training on Observation Items Quality of Nursing Documentation (n = 86) (Cont.)

No	Item	Before Mean ± SD	After Mean ± SD	Mean Difference	CI 95%	*p*
29	Nursing outcomes criteria related to nursing diagnosis	1.13 ± 0.34	2.13 ± 0.97	1.00	-1.21 – (-0.79)	<0.001*

In **Table 6**, it can be seen that the quality of nursing documentation as a process has several items which actually decreased in the average after training, namely item number 2, 5, 6, 7, 8, and 9, but those items which have a *p*-value ≤ 0.05 are items number 7 which has a *p*-value = 0.001. While the quality of nursing documentation as a process experienced an increase in the average number of items 1, 3, 4, 6, 10 and 11, items that experienced an increase in the average and had a *p*-value ≤0.05 were only on item numbers 3, 4, and 11. Observation items 12-29

regarding the quality of nursing documentation as a product, the quality of nursing intervention documentation and the quality of documentation of nursing outcomes experienced a significant increase which was reflected in a *p*-value of <0.001.

After the training, the evaluation process of the training consisted of general evaluation, evaluation of sources and evaluation of training materials. Evaluation results can generally be seen in the **Figure 2**.
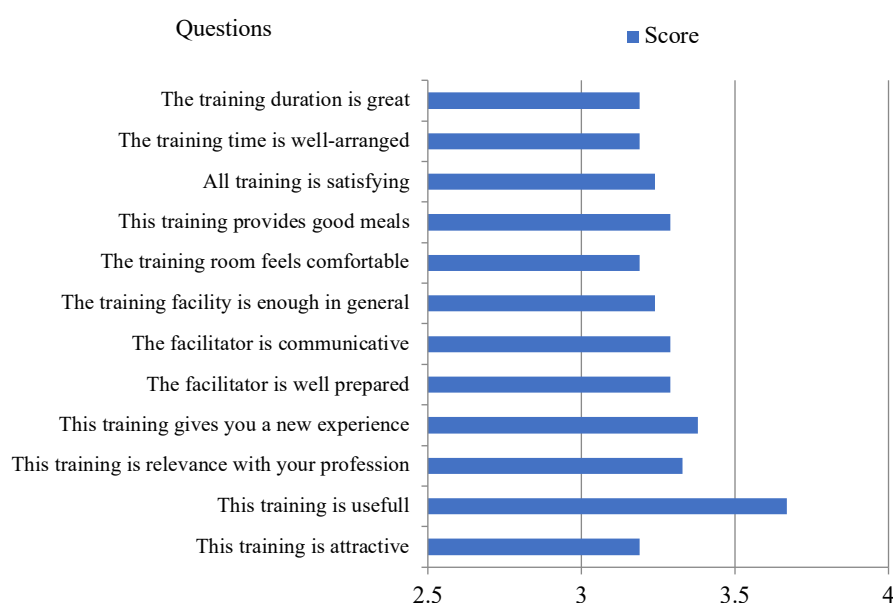
Figure 2 Evaluation of Training Implementation

In **Figure 2**, the highest score is for the question of whether this training is useful, and the value of 3.19 was reached by the question of duration, time, ward, and whether the training was interesting.
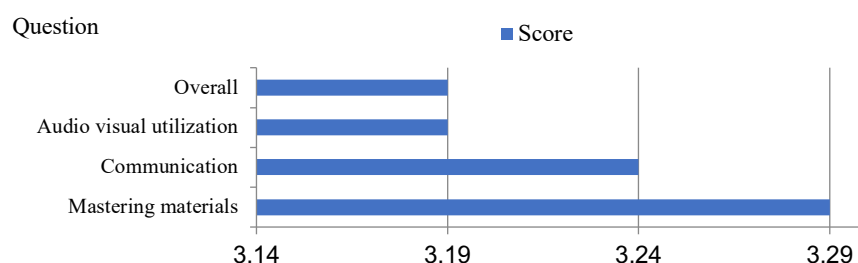
Figure 3 Resource Evaluation

The evaluation on the resource person also has a value above the mean 2, with a minimum value of 3.19 and a maximum value of 3.29. A minimum value of 3.19 was reached by the total and the value of audiovisual usage. The maximum value was reached by questions about the mastery of the resource material. Thus, the evaluation of the resource person reached a good judgment (**Figure 3**).

DISCUSSION

In this study, there was no significant increase in the quality of nursing documentation as a process. The quality of nursing documentation as a process is the nursing process at the stage of data collection or assessment, interpretation of data grouping data up to the preparation of problems.

After the training interventions, the results of this study indicate a decrease in scores in the quality of nursing documentation as a process, which is in line with the research conducted by Efendy and Purwandari (2012) that found the quality of 100% nursing documentation was in the moderate category, while after the application of NNN there was a decline to medium quality even some in poor quality. Decreasing the quality of documentation as a process is not affected by training interventions. This is possible because training materials are not only focused on assessment but focus on establishing nursing diagnoses, interventions and expected outcomes (Efendy & Purwandari, 2012).

Besides that, no significant increase in the quality of documentation as a process was possible because the assessment was not complete. This study found that there were some parts of the assessment that were often not completed by the nurses. The researcher found the APGAR score section was only filled out on the total score part, and the NIPS or pain scale assessment was also blank, while the assessment of values and beliefs was also often found incomplete or blank. This is in line with the research conducted by Fortney and Steward (2015) on nurse documentation in the final life service in the NICU. The results reflected the lack of pain assessment documentation conducted by nurses, even though the pain scale should be a mandatory scale such as other vital signs. Lack of documentation on this item is possible because of the lack of nurses' understanding of how to measure the pain scale or perhaps because of the responsibilities required to provide care for the babies in the Prenatal ward (Fortney & Steward, 2015). This is also in line with the Nøst et al. (2017) study where a decline in the quality of nursing documentation in the entry/assessment section occurred, although the comparison of pre and post scores was not significant.

Training on the standardization of nursing languages was assessed for improving the quality of nursing care documentation. Training on standardizing nursing languages such as NANDA-I, NIC and NOC can improve the quality of nursing documentation (Efendy & Purwandari, 2012). Nurses can be better able to identify nursing diagnoses and related factors, adopt new ideas and practices when gaining knowledge and develop appropriate attitudes. As a result, nurses are more ready to apply new concepts such as SNL if they are given knowledge and have good understanding (Adubi et al., 2017).

Nursing documentation that is properly and correctly completed requires sufficient intellectual, technical and interpersonal abilities. This capability can be obtained through formal and non-formal education such as in-house training. This formal and non-formal education has a significant influence in providing new ideas, broad ideas, and insights so that nurses can provide examples of behaviors documenting, good nursing care and

influencing others to participate in completing documentation correctly. Behavior that is based on good knowledge and understanding will have a more lasting nature and can function to advance the nurse and hospital profession (Chaghari et al., 2017).

This study does not measure the knowledge and attitudes of individual nurses, but many studies have shown that providing training interventions using several learning methods can significantly improve knowledge (Aris, 2014). As in the research conducted by Kaplan and Komurcu (2017) who conducted day training for health workers, it was proven that they could increase knowledge significantly. Besides, other studies related to training to improve the ability to document nursing care, showed that nurses' knowledge in nursing care documentation influences on the implementation of nursing care documentation (Siswanto et al., 2013). In addition to the training above, providing training to nurses regarding the nursing process has been shown to improve nurses' ability to complete nursing care documentation (Linch et al., 2017). This study uses training giving interventions where one of the materials provided is about the nursing process so that by giving the material it is expected to improve nurses' skills in conducting nursing documentation.

One of the results of a systematic review of providing education to patients with diabetes, shows that education in patients does not directly affect knowledge, attitudes, and practices but education is a medium in improving the knowledge, attitudes, and practices of patients in dealing with their diseases (Rav-Marathe et al., 2016). Although systematic reviews were carried out in different populations with this study, information from the results of the systematic review was by the results of this study, where there were significant differences in the quality of nursing care documentation before and after the training. It can be concluded that with a training series intervention which is one form of education for nurses, the training is a media for increasing knowledge, attitudes and practices in the implementation of nursing care documentation.

Knowledge and skills can be improved by intervening through education. Educational intervention has a significant impact on improving the quality of nursing documentation (Nøst et al., 2017). Knowledge and skills in establishing a nursing diagnosis are the main aspects in nursing documentation (Nøst et al., 2017). Nurses will be able to complete nursing documentation well if they can properly establish a nursing diagnosis. Enforcement of a correct nursing diagnosis must be supported by the ability to conduct studies, analyze data and formulate nursing diagnoses (Karaca & Aslan, 2018). The right way to be able to provide an overview of the correct sequence of nursing processes is by case studies and bedside teaching. In line with Nøst et al. (2017) research conducted by providing interventions through education that is proven to be able to improve nurses' abilities in critical thinking related to clinical and thought processes to establish nursing diagnoses that have continuity with assessment, setting goals, interventions and nursing outcomes.

One method of doing education that can be done to improve the quality of documentation is by mentoring. This mentoring technique can be used to build trusting relationships, share the

desire to learn new knowledge and skills. The success of the mentoring process can be measured by evaluations and feedback from the mentoring participants. Such mentoring techniques can encourage participants to actively acquire new skills (Jefferies et al., 2012).

The most important aspects in improving the quality of nursing care documentation are through education and continuous monitoring and evaluation of its implementation (Jefferies et al., 2012; Kamil et al., 2018). The training of this documentation system can improve knowledge/understanding so that it supports better documentation (Lees, 2010). This is in line with the research conducted by Siswanto et al. (2013) that showed the most dominant factors in increasing the completeness of nursing documentation are training and nurse workload.

Providing education to nurses in hospital settings is also effective if done by simulation methods. A study using a meta-analysis of simulation-based nursing education states that simulation-based nursing education is effective in various learning domains. The results of the study conducted by Kim et al. (2016) shows that simulation-based nursing education has a strong educational effect and its greatest effect is on the psychomotor domain, but in this study, it was also found that consistency in applying the acquired knowledge was low (Kim et al., 2016).

Simulation methods have been shown to increase knowledge, confidence and nursing documentation skills. The training process will be considered good if evaluation of the training process is held. This evaluation process for training providers has many benefits such as for quality improvement, including feedback on improving quality and continuing training. The most widely used training evaluation model is the Kirkpatrick's training model. Evaluation models can be in the form of short-term and long-term evaluations. Short-term or level 1 evaluations include evaluating learning reactions and level 2 involves evaluating learning outcomes such as knowledge, attitudes, and skills. Long-term evaluation refers to behavior change and service quality assessment (Grohmann & Kauffeld, 2013).

Training that works well can also be influenced by the characteristics of the trainees. The results of the study showed that the majority of the nurses of the Pioneer Hospital in Yogyakarta Regional Public Hospital who were the subjects of this study had the age of young adults (85.72%). Age at this has high morale and is a generation of learners. Education level that is reached by nurses is mostly diploma in nursing (52.38%) followed by an undergraduate in nursing (42.86%) which provides a good comparison between skilled nurses and expert nurses. The work period by the nurses included a balanced composition with some nurses who have a tenure of more than 10 years (38%) and a work period of fewer than 5 years (33.33%). This composition of nurses is expected to be able to make changes and improvements quickly.

Training can work well if the speaker can communicatively provide good knowledge transfer and share previous experiences. Resource persons were selected from hospitals that have the same characteristics as the Yogyakarta Regional Public Hospital and have work experience in the perinatal ward for more than 10 years. Communicative resource persons were selected and provided material with examples in good implementation. The resource persons are also experts in the preparation of instruction books and modules so that the resource persons provided appropriate materials in line with the contents of the module and training purposes. The process of implementing this training was as stated by Chaghari et al. (2017) that training can provide many benefits if it is implemented in five stages: planning, analysis, design, implementation, and development. Some experts also think that training is good if it uses interesting methods and material, so the most important component in training is the teaching method and how the material is delivered by the resource person which is easily understood and interesting according to its purpose (Chaghari et al., 2017).

Training can work well and must also be supported by the use of media and the right methods. The methods used were lecture and discussion, mentoring how to properly prepare nursing documentation in the perinatal ward, and evaluation of training programs, training also uses power point media, modules, and pocketbooks. This training is expected to increase knowledge and facilitate nurses in learning so that nurses can quickly understand and practice it. This is in line with research conducted by Jefferies et al. (2012) who conducted training on nurses by mentoring how to write nursing documentation in the clinical area with the method proven to improve the quality of nursing documentation. Good communication in nursing documentation can improve patient safety, advance the agendas nursing and other professions and hospitals (Chaghari et al., 2017). The training interventions were demonstrated to be able to improve nurses' ability to complete nursing documentation, even within 3 months after training the average documentation ability was still high (Yeni, 2014). Clinical simulation-based training can create conducive learning conditions and have a significant effect on learning experiences and strengthen nurses' clinical skills (Li, 2016; Sapyta & Eiger, 2017).

CONCLUSION

We demonstrated the positive influence of NANDA-I, NIC and NOC nursing documentation system training on the quality of nursing documentation in the Perinatal ward of Yogyakarta Regional Public Hospital. There was no effect of training on nursing documentation systems on the quality of nursing documentation as a process, but there was positive influence on nursing documentation as a product, nursing intervention documentation, nursing documentation outcomes.

The implications of this study for nursing practice, and future research follow the result of the study which shows that training can be applied to develop nursing documentation in the hospital. Each ward has a different characteristic and the way training was designed will influence the result of training. For future research, the design of the study can be improved using a control group for more accurate results with greater influence of training in improving nursing documentation in the hospital.

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