



Increased application of the 'six right' principle in the administration of drugs by nurses among the inpatient room through the supervision of the reflective model

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ABSTRACT

The Six Rights Of Medication Administration is a procedure and legality for nurses in the hospital. The results of previous study indicate that nurses' compliance in applying Six right Of Medication Administration is still low. Reflective model supervision is needed to improve the correct application of six right on medication administration in a very interactive and active way of learning. This study was aimed to evaluate the influence of reflective supervision model on the correct application of the six right of medication administration by nurses. The study was conducted with a Quasi experimental method pre-posttest control group design, intervention supervision of the reflective model was given to the intervention group for 2 weeks. Population of this study is all nurses at the inpatient room. The number of samples was 78 nurses, consisting of 39 nurses as an intervention group and 39 nurses as a control group. Sampling was done by purposive sampling technique (non probability sampling). Statistical analysis using Wilcoxon and Mann-Whitney. The results showed that there were differences in the application accuracy of the six rights principles medication by nurses after being given an intervention ($p = 0.001$ less than 0.05). The Spearman Correlation test results that the Rho value = 0.657 can be concluded that there is a strongly significant influence of reflective supervision model on the application accuracy of the six rights principles medication by nurses. It is recommended for the head room to provide a reflective supervision model routinely to maintain and improve the application accuracy of the six rights principles medication by nurses.

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Peningkatan ketepatan penerapan prinsip enam benar obat oleh perawat di ruang rawat inap melalui supervisi model reflektif

ABSTRAK

Prinsip enam benar obat merupakan prosedur dan legalitas bagi perawat di rumah sakit. Hasil riset sebelumnya perawat dalam menerapkan prinsip enam benar obat masih rendah. Supervisi model reflektif diperlukan untuk meningkatkan ketepatan penerapan prinsip enam benar obat dengan cara yang sangat interaktif dan aktif belajar. Tujuan penelitian ini adalah untuk mengetahui pengaruh supervisi model reflektif terhadap ketepatan penerapan prinsip enam benar obat oleh perawat. Penelitian dilakukan dengan metode Quasy experimental pre-post test control group design, intervensi supervisi model reflektif diberikan kepada kelompok intervensi selama 2 minggu. Populasi adalah perawat di ruang rawat inap. Jumlah sampel adalah 78 perawat terdiri atas kelompok intervensi 39 perawat dan kelompok kontrol 39 perawat. Pengambilan sampel dilakukan dengan

Kata kunci:

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teknik purposive sampling (non probability sampling). Analisa statistik menggunakan Wilcoxon dan Mann-Whitney. Hasil penelitian menunjukkan bahwa terdapat perbedaan ketepatan penerapan prinsip enam benar obat oleh perawat sesudah diberikan intervensi ($p = 0,001$ kurang dari 0,05). Hasil uji Korelasi Spearman bahwa nilai Rho = 0,657 dapat disimpulkan terdapat pengaruh yang signifikan kuat supervisi model reflektif terhadap ketepatan penerapan prinsip enam benar obat oleh perawat. Disarankan bagi kepala ruang untuk memberikan supervisi model reflektif secara rutin untuk mempertahankan dan meningkatkan ketepatan penerapan prinsip enam benar obat oleh perawat.

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Introduction

Wrong medication application must be zero error in the hospital because the impact will cause an increase in patient hospitalization time which is longer, the cost of treatment increases, and the worst effects can cause loss of patient life (Potter, 2009). *The Joint Commission International (JCI) & World Health Organization (WHO)* reports that in some countries, the incidence of errors in medication administration resulting in permanent disability in patients reaches a range of 70% ((Fatimah & Rosa, 2014). Medications can be toxic to the human body if they are not given according to the right procedure. However, if given according to the right procedure, the medication can cure the patient (Hardiyanti, 2016). The impact of giving medication to patients can also cause toxic effects on patient health such as medication poisoning, medication allergies, vomiting and even death (Hura, 2014)).

The results showed that errors in medication administration could be caused because nurses did not apply the six rights principles. Errors in medication administration are estimated at 1 in 10 patients worldwide, the types of errors that can cause death in patients include 40.9% incorrect doses, 16% incorrect medications, and 9.5% incorrect route of administration (Pranasari, 2016) the right application of time is only 15.09% (Agustina Sandra Mustika, Christantie effendy, 2008), 64.9% of right patients, 86.5% of right medications (Pratiwi Sthephani1, Aryo Dewanto2,2014) and right doses of 31.7% (Yeke, Nazari, Asghary JZareefarabadi, & Alinia, 2018). Another study mentioned that out of 5 participants, 2 people did not apply the principles of right documentation and 1 person did not apply the principles of right medications that *caused medication errors* (Vioneery, 2014). These incidences will increase if there is no nurses' awareness in applying the right medication administration. The application of the reflective model supervision is expected to explore deeply and provide education through the transfer of knowledge from supervisors, perform managerial functions in nursing in accordance with applicable regulations and supervisors are able to support implementing nurses in their nursing services.

Reflective model supervision is carried out in a very interactive and active way of learning referring to the process that supports nurses by empowering them to be more understand their nursing practice both individually and in groups (Lisa Lynch, Kerrie Hancox, 2008). Reflective model supervision has three stages in conducting supervision, namely the reflecting stage, the analysis stage and the change stage. Each stage of the reflective model is supported by using trigger questions. The supervisor helps the focused supervisee to be involved in the reflection

process by using several sample trigger questions that can be modified by the supervisor. Supervisi model reflektif bertujuan agar perawat yang disupervisi dapat memberikan input untuk meningkatkan pelayanan keperawatan lebih baik kedepannya. Reflective model supervision is intended to the supervised nurses can provide the input to improve nursing services in the future. Reflective model supervision developed by Lynch, Hancox, Happel and Parker (2008) said that the reflective model supervision is conducted by scientific guidance in-depth in providing nursing care of events, situations, conditions and actions in the workplace.

Method

The design of this research is a quantitative analysis using a *quasi-experimental* research design with a *pretest - posttest with control group design* approach. The population in this study were 86 nurses who worked in the adult inpatient room of internal disease and surgery at Kelet Regional Public Hospital Central Java Province. The samples taken were that met the inclusion criteria through the *purposive sampling* of 78 nurses, divided into 39 intervention groups in the Cendana room, Jasmin room, Bougenville Lotus room, Flamboyan room and 39 control groups in the Merpati room, Kepodang room, Cenderawasih room, Nuri room. The study was conducted for twenty-one weeks, from May 28 to October 19, 2019.

The independent variable in this study is the Effect of the Reflective Model Supervision and the dependent variable is the Application Accuracy of the Six rights Principles Medication Administration by Nurses. The instrument used in this study was to use an observation sheet for the correct application of the six rights principles of medication administration that includes the right patient, right medication, right dose, right route, right time, and right document. Then, observation sheet implementation of reflective model supervision by the head room which includes three stages, namely the reflecting stage, the analysis phase, the change stage. The data collected was analyzed univariately and bivariately with computer statistical applications.

Results and Discussion

The frequency distribution of nurse characteristics based on age, sex, education, years of service, and having attended *Patient Safety* training related to medication administration on the intervention and control groups can be seen in table 1.

Tabel 1
 Nurse Characteristic (N=78)

Variabel	Group				p
	Intervention (n=39)		Control (n=39)		
	f	%	f	%	
Age (year)	M±SD (Median) 28,41±3,87(27)		M±SD (Median) 28,13±3,87(28)		0,553
Gender					
Male	16	41,0	16	41,0	1,000
Female	23	59,0	23	59,0	
Education Level					
Ners	9	23,1	6	15,4	0,514
DIII Nursing	30	76,9	33	84,6	
Years of Service (year)	M±SD (Median) 4,10±3,58(4)		M±SD (Median) 3,97±3,70(4)		0,534
Attending Training					
Yes	23	59,0	21	53,8	0,482
No	16	41,0	18	46,2	

Table 1 using the *Levene Test* can be concluded that the variants of the age and years of service variables are evenly distributed in the intervention group and the control group ($p > 0.05$) and by using the *Chi-square Crosstab Test*. It can be concluded that the variants of gender, education level, and having attended training are evenly distributed in the intervention and control groups ($p > 0.05$).

Based on table 2 it can be explained that the average score of the reflective model supervision application by the head room is 26.41 with a score range of 25-27. The standard deviation value is 0.63, it means that the variation supervision score is homogenous because the standard deviation value is smaller than the mean value.

Table 3 shows that in the intervention group before the intervention was given, the application appropriateness of the six rights principles of medication administration as a whole showed that the nurses were in the poor category with a percentage of 100%. The accuracy after the intervention was given showed that the nurses in the not good category with a percentage of 30.77%.

Based on table 4 in the control group whether before and after the intervention, the correct application of six rights principle medication administration as a whole shows that the nurses were in the poor category with a percentage of 100%.

Based on table 5 using *Wilcoxon* it can be concluded that there are differences in the application accuracy of the six rights principles medication administration by nurses in the inpatient room on the intervention group before and after the intervention was given ($p < 0.05$).

Based on the table 6 by using *Wilcoxon* it can also be concluded that there was no difference in the application accuracy of the six rights principles medication administration by nurses in the ward on the control group before and after the intervention ($p > 0.05$).

Based on table 7 with the *Mann-Whitney* test, it can be concluded that there is a difference in the application accuracy of the six rights principles medication administration by nurses between the control group and the intervention group after being given an intervention ($p = 0,000 < 0.05$) which means that there is an Intervention influence of the reflective model supervision on the application accuracy of the six rights principles medication administration by nurses in the inpatient room.

Based on table 8 using the Spearman correlation, it can be concluded that there was a significant influence of the reflective model supervision on the application accuracy of the six rights principles medication administration by nurses in the inpatient room.

Table 2
 Implementation of Reflective Model Supervision in the Intervention Group

Intervention	Mean	Standard Deviation	Min-Max
Reflective Model Supervision	26,41	0,63	25-27

Table 3
 Accuracy in Applying the Six Rights Principle Before and After Intervention in the Intervention Group (n=39)

Variable and Dimension		Median Score	Good		Not Good	
			f	%	f	%
Before	Right Patient	1,00	5	12,3	34	87,2
	Right Medication	2,00	39	100	0	0
	Right Dose	2,00	39	100	0	0
	Right Route	2,00	39	100	0	0
	Right Time	2,00	39	100	0	0
	Right Documentation	4,00	0	0	39	100
After	Right Patient	4,00	39	100	0	0
	Right Medication	2,00	39	100	0	0
	Right Dose	2,00	39	100	0	0
	Right Route	2,00	39	100	0	0
	Right Time	2,00	39	100	0	0
	Right Documentation	7,00	27	69,2	12	30,8

Table 4.
 Accuracy in Applying the Six Rights Principle between Before and After Intervention in the Control Group (n=39)

	Variabel dan Dimensi	Median Skor	Baik		Kurang Baik	
			f	%	f	%
Before	Right Patient	2,00	1	2,6	38	97,4
	Right Medication	2,00	27	69,2	12	30,8
	Right Dose	2,00	39	100	0	0
	Right Route	2,00	37	94,9	2	5,1
	Right Time	2,00	25	64,1	14	35,9
	Right Documentation	4,00	36	92,3	3	7,7
After	Right Patient	2,00	8	20,5	31	79,5
	Right Medication	2,00	28	71,8	11	28,2
	Right Dose	2,00	39	100	0	0
	Right Route	2,00	37	94,9	2	5,1
	Right Time	2,00	28	71,8	11	28,2
	Right Documentation	4,00	36	92,3	3	7,67

Table 5
 Differences in accuracy of the six rights principles administration application between before and after intervention (n=78)

Variable and Dimension		Mean± SD		Z	p
		Pre Test	Post Test		
Intervention	Right Patient	1,67±1,04	4,00±0,00	-5,579	0,00
	Right Medication	2,00±0,00	2,00±0,00	0,000	1,00
	Right Dose	2,00±0,00	2,00±0,00	0,000	1,00
	Right Route	2,00±0,00	2,00±0,00	0,000	1,00
	Right Time	2,00±0,00	2,00±0,00	0,000	1,00
	Right Documentation	3,95±0,51	6,56±0,72	-5,706	0,00
Control	Right Patient	2,02±0,16	2,18±0,39	-2,828	0,00
	Right Medication	1,67±0,58	1,72±0,46	-1,200	0,12
	Right Dose	2,00±0,00	2,00±0,00	0,000	1,00
	Right Route	1,92±0,27	1,92±0,27	0,000	1,00
	Right Time	1,62±0,49	1,62±0,49	0,000	1,00
	Right Documentation	4,38±0,78	4,38±0,78	0,000	1,00

Table 6
 Differences in Accuracy of the Six Rights Principles Medication Administration Application Before Intervention in the Intervention and Control Groups (n=78)

Variable	Control		Intervention		p
	Mean Rank	Sum Rank	Mean Rank	Sum Rank	
Pretest of Right Patient	48,63	1896,50	30,37	1184,50	0,000
Pretest of Right Medication	33,50	1306,50	45,50	174,50	0,000
Pretest of Right Dose	39,50	1540,50	39,50	1540,50	1,000
Pretest of Right Route	38,00	1482,00	41,00	1599,00	0,079
Pretest of Right Time	32,00	1248,00	47,00	1833,00	0,000
Pretest of Right Documentation	46,36	1808,00	32,64	1273,00	0,001
Pretest of Six Rights Principles Accuracy	45,70	1905,50	39,63	1664,50	0,255

Table 7.
 Differences in Accuracy of the Six Rights Principles Medication Administration Application by Nurses After Intervention in the Intervention and Control Groups (n=78)

Variable	Control		Intervention		p
	Mean Rank	Sum Rank	Mean Rank	Sum Rank	
Pretest of Right Patient	20,00	780,00	59,00	2301,00	0,001
Pretest of Right Medication	33,50	1306,50	45,50	1774,50	0,001
Pretest of Right Dose	39,50	1540,50	39,50	1540,50	1,000
Pretest of Right Route	38,00	1482,00	41,00	1599,00	0,079
Pretest of Right Time	32,00	1248,00	47,00	1833,00	0,001
Pretest of Right Documentation	21,73	847,50	57,27	2233,50	0,001
Pretest of Six Rights Principles Accuracy	21,50	903,00	63,50	2667,00	0,001

Table 8

The Effect of Reflective Model Supervision on the Application Accuracy of the Six Rights Principles Medication Administration by Nurses between the Intervention and Control Groups (N=78)

	ρ	p	Note
The effect of reflective model supervision on the medication administration accuracy	0,657	0,000	Robust

Implementation of Reflective Model Supervision

The results showed the majority of the head room in the reflective model supervising with a good value of 36 nurses (92.31%) and deficient as many as 3 nurses (7.69%) which means that the overall head room was good in doing reflective model supervising from the training. The supervision stages that are not often implemented were in the reflection and analysis stage.

Improving the ability of supervisors is supported by the training provision, SPO supervision of reflective models implementation and assistance implementation. Supervisory skills in supervising the reflective model, shown the supervision score were greater than the median value. This research found that were in line with other studies that by conducting training can improve, develop, and maintain the staffs' skills in an organization so, training was considered very important which ultimately aims to increase employee productivity (Siagian, 2014).

Training can affect the *performance* of the head room but there are also other factors that can influence. Notoajmojo stated with the word "ACHIVE" which has the abbreviation: *Ability* is the personal ability who is able to be improved (by means of training), *Capacity* is a skill that is limited by the individual, *Help* is help to realize the desired appearance, *Incentive* in the form of material or non-material rewards, *Validity* is the basic foundation that contains job descriptions, and *Evaluation* in the form of *feedback* from the work. So that factors from within and outside the individual affect the increase in supervision *performance* of the room head (Soekidjo Notoatmojo, 2009).

Accuracy of Six Rights Principle Medication Administration Application by Nurses in the Inpatient Room between Before and After Intervention on the Intervention and Control Groups

The results of the pre-test statistical test in the intervention group before being given reflective model supervision for application accuracy of the six rights principle medication administration by nurses in the inpatient room have been correct for the right medication, right dose, right route, right time, right document of 39 nurses (100, 0%) and right patients as many as 5 nurses (12.82). Inaccurate nurses in right patients were 34 patients (87.18%).

The results of the post-test statistical test in the intervention group after being given the intervention of the reflective model supervision, the accuracy of the right patient, right medication, right dose, right route, right time as many as 39 nurses (100.0%) and right documents were 27 nurses (69.23%). Inaccurate nurses on right documents as many as 12 nurses (30.77%).

The pre-test statistic results in the inaccurate nurses' control group in applying the right patients and the right documents were 39 nurses (100.0%) and right medication were 28 nurses (71.79%). The nurses were right in applying the right dose was 39 nurses (100.0%), the right route was 36 nurses (92.31%), the right time was 24 nurses (61.54%).

Inaccuracies in the right patient found that the majority of nurses did not ask the patient's name and date of birth, whereas according to JCAHO states obliging when giving drugs by calling the name, if the patient is conscious (Kee, J. L, Hayes, E. R, and McCuistion, 2014). Inaccuracies are also seen in the right documentation where the majority of nurses did not write the names and initials of nurses, prescribers, initials of patients/families. Documentation is legal evidence of actions taken by nurses (Harmiadi, 2014).

Errors in the right medication application must be *zero errors* in hospitals, this means that the accuracy of medication administration based on the six rights principles must be 100% correct. The statistical results of the studies showed that the application accuracy of the six rights principle medication administration by nurses in the inpatient unit as a whole from the application of six rights principles has not reached a value of 100% precisely. The intervention group experienced an increase in the accuracy of the six rights principles medication administration application after being given the intervention of reflective model supervision, whereas in the control group the results between before and after the test remained the same.

Difference between Before and After Intervention on the Intervention and Control Groups in the Application Accuracy of the Six Rights Principles of Medication Administration by Nurses in the Inpatient Room

Public demands for health services continue to grow. Changes and innovations from various parties are needed to get the quality of health services according to community expectations. It is a challenge for management to make this happen. Efforts must be optimized including changing the supervision method so, it can improve both individuals and organizations performance. Reflective models supervision is a reflective practice where nurses will learn from their reflections, revise conceptual perspectives and act differently in the future as a result (Marquis, 2012).

The study result showed that in the intervention group there was a change in the application accuracy of the six rights principles medication administration from inaccurate to be right after being given the reflective model supervision, although there were still nurses (30.77%) who did not properly apply the right documentation. Statistical tests in the intervention group before and after the intervention were given to the right patient, right documentation with a value of $p = 0,000$, as well as the right medication, right dose, right route and right time with a value of $p = 1,000$. The application accuracy of the six rights principles medication administration by nurses as a whole with a p value = 0,000.

In the intervention group, there was a change in the accuracy of medication administration according to the six rights principles, from inaccurate to be right after being given the reflective model supervision. Statistical tests in the intervention group before and after the intervention with a p -value = 0,000 in the right patient and documentation, with a p -value = 1,000 in the right medication, route, dose, and time. The application accuracy of the six rights principles medication administration by nurses as a whole with a p -value = 0,000.

The study result of the nurse in a control group who administered the medication correctly between before and after the action that was still the same in the sense that it did not increase. Statistical test results on the control group before and after the intervention with a $p\text{-value} = 1,000$ on the right dose, drug, time, route, and right documents and with a $p\text{-value} = 0.115$ on the right medication. The accuracy of medication administration based on the six rights principle for nurses as a whole with a $p\text{-value} = 0.077$.

It can be seen that there are differences between the intervention and control groups after the supervision of the reflective model is given. The intervention group experienced an increase in application accuracy of the six rights principles medication administration compared to the control group that did not experience improvement. Interventions carried out by the reflective model supervising are activities in-depth, scientific ways for specific things (54) related to the stages of reflecting, analyzing, and changing (Lisa Lynch, Kerrie Hancox, 2008).

The difference between nurses who apply the accuracy of the six rights principles medication administration between the intervention and control groups can be seen from the interventions carried out where the intervention group with the reflective model supervision can improve the ability and performance of the implementing nurse especially in the application accuracy of the six rights principles medication administration. The belief that the reflective model supervision can increase the application accuracy of the six rights principles medication administration. The purpose of supervising the reflective model from the supervisor is to facilitate the supervisee (implementing nurse), better interpersonal and professional relationships, develop competencies, responsibilities, support and counselling.

Difference between Intervention and Control Groups Before and After Intervention in the Application Accuracy of the Six Rights Principles of Medication Administration by Nurses in the Inpatient Room

The study results showed that the accuracy of medication administration based on the six rights principle between the intervention group and the control group before the reflective model supervision was obtained, the $p\text{-value} 0,000$, it means there was an influence of the reflective model supervision intervention on the application accuracy of the six rights principles medication administration by nurses in the inpatient room.

The correlation test results also showed that the Rho value = 0.657, which means that there was a significant influence of the reflective model supervision on the application accuracy of the six rights principles medication administration by nurses in the inpatient room.

The difference in the application accuracy of medication administration with the six rights principles between the intervention group and the control group due to the intervention in the intervention group. The reflective model supervision was carried out in accordance with the SPO which includes three stages of the reflective model supervision, namely reflecting, analyzing and changing. Supervisors follow this stage where each stage is supported by trigger questions that can be developed by the supervisor (Lisa Lynch, Kerrie Hancox, 2008).

This study showed that the reflective model supervision can increase the application accuracy of medication administration with the six rights principles. Research which

confirms that with the reflective model supervision can increase nurse job satisfaction (Santoso, 2017).

The reflective supervision model used in the intervention group was a scientific activity that can have a positive impact on implementing nurses. In accordance with the statement that using a supervision model to understand the processes and phenomena for better service (Bernard, 2009). The implementation of reflective supervision was scientific supervision of events, situations, conditions and actions that occur in the workplace. There are important reasons for use. It was a key skill of nurse to evaluate nursing care provided, reflective can still be defined as a scientific process of an event, situation and event at work, the range of reflective supervision models is still used by nurses in clinical practice and can be used individually and in groups (Martin, 2014).

Interventions carried out in the intervention group were shown to increase the nurses' proportion in applying the accuracy of medication administration with the six rights principles for the better. Supervision was carried out related to the education function will increase knowledge, the development of better nursing practices for nurses implementing. Reflective learning was a guidance tool in increasing nurse knowledge which gives full responsibility to respond the patient needs.

Reflective learning can improve two categories, namely: 1) The nurses' ability related to direct care that focuses on the patient and provides comprehensive care. 2) Improve performance (TerMaten-Speksnijder, A., J., Grypdonck, M.H.F., Pool, A. & Streumer, 2012). Reflective learning can be applied in clinical supervision which also increases responsibility, good understanding ability, recognizes the limitations and development of nursing practice in accordance with organizational policies and procedures (Rowland & Sophie, J, 2006).

The reflective model supervision can improve reflection practices that require the nurses to learn from reflection, revise conceptual views appropriately and act differently in the future for maximum results (Daly, 2004).

The application accuracy of the six rights principle medical administration for the control group which did not get the intervention tend to be the same or there was no improvement. So it can be distinguished from the intervention group that the training and application of reflective model supervision can change the nurses' behaviour. The research which in lines with the statement that reflective model supervision head room can influence the nurses' compliance in carrying out *hand hygiene* (Munandar, 2018).

Good nurse behaviour should be maintained and improved so, it becomes better. One of these supervision functions can maintain good behaviour. Many positive things from the impact of clinical supervision on nursing practice in the form of providing support, maintaining and developing, improving and enriching nursing practice, challenging in facing new experiences.

Conclusions and Recommendations

There are differences in applying the accuracy of medication administration with the six rights principles by nurses in the intervention group and the control group between before and after the supervision of the reflective model supervision. The results of statistical calculations showed significant value, it means that the reflective model supervision was proven to affect the application accuracy of

the six rights principles medication administration by nurses.

Reflective model supervision is recommended to be the education curriculum part for improving the application accuracy of the six rights principles of medication administration ability.

The hospital made the reflective model supervision as SPO (Standard Operating Procedure) to improve nursing services especially in the application accuracy of the six rights principles medication administration by nurses. Inaccuracy in right documentation, especially on

prescription items and initial patient/family can be done by conducting an audit and providing motivation to the implementing nurse.

Further research needs to be done to optimize the nurses' ability in the application accuracy of the six rights principles medication administration, especially in the right patient, right medication, right time and right documentation using other interventions.

Further research also needs to be done by using other methods to improve the head room ability to conduct supervision analysis.

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