Conference Paper

Work Load Analysis of Implementing Nurses at Room Medical Surgery Rsud Cibabat Cimahi

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Abstract

The quality of nursing services which is provided to patients is influenced by the quality of care. Nurse workload is part of the quality of care. Several studies of workloads using different methods have been done and each of them has advantages and disadvantages. Work sampling technique as well as time and motion study technique from several previous studies were only used in the room with treatment cases for one of the cases of internal medicine or surgery. The research method used descriptive method. The research sample of 96 observational activities was done by nurses for 24 hours. The instrument that was used was an observation sheet to obtain quantitative data using a work sampling form as well as time and motion study. The workload calculation done by analyzing the comparison of the percentage of productive activity implementation time and non productive activity implementation time. High workload > 80%, optimum = 80%, light <80% of the total time done by nurses. The results showed that the workload of nurses included in the mild category (58.75%), with the tendency of nurses to be in the category of personal activities especially during the night shift. In nursing care wound care requires the most time with an average time of 23 minutes 14 seconds, while the least amount of time is in the act of replacing intravenous fluids for 1 minute 8 seconds. Research implications nurses need to increase productive activities, especially in the night shift by monitoring each patient's room scheduled alternately.

Keywords: Nurse workload, Work sampling, Time and motion study

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1. Introduction

The hospital is a place of health management, to fulfill the demands of the community for quality health services. Government hospitals and private hospitals must be able to provide quality one-step service, which means that all health services for patients are carried out quickly, accurately, and with quality [1]. According to Syaer [2] Hospitals successfully carry out their duties when achieving excellent service quality. The hospital's excellent service quality is influenced by Human Resources (HR). Nurses are the most

human resources in hospitals, so nurses have an important role for hospitals. Nurses provide 24-hour health services on an ongoing basis.

Nursing Care is a series of interactions between nurses and patients and their environment to achieve the goal of meeting the needs and independence of patients in caring for themselves [3]. The quality of nursing services which are provided to patients is influenced by the quality of care. The quality of care is an effort to improve and develop nurses. The nurse workload is part of the quality of care. The nurse workload is all activities performed by nurses during their work, both directly and indirectly (productive activities) in providing services to patients. The workload of implementing nurses can be known by comparing productive activities with non-productive activities (personal activities or other activities that have nothing to do with the duties of nurses). Meanwhile, according to Yoder-wise [4] that the nurse's work volume is the time needed to provide services to patients every day multiplied by the number of patients per day.

Therefore, according to the researchers it is important to do a nurse workload analysis. Some recent researches on the concept of workload emphasize that it is so complex that reliable steps are needed and appropriate with regard to the nurses' workload. Where it can assist nurse managers in making or preparing staffing policies according to available evidence (evidence base) [5]. The nurse workloads are activities which are carried out directly or indirectly by nurses while serving in the nursing service unit. The nurse workload is important to be known, in evaluating the needs of nurses in inpatient hospitals, as well as the basis for determining the nurse's work capacity so that there is a balance between the nurses and the workloads [6].

The research by Holden, R. J., et al. [7] showed that excessive workload can cause job dissatisfaction and burnout tendencies, the number of tasks and mental burdens, the presence of disturbances results in attention being divided, in a hurry to take action and possibly can lead to medication errors. The results of research by Ball, J. E., et al. (2013) showed 86% of nurses reported one or more treatment activities had been left or canceled due to lack of time at the turn of their last shift. The research by [8] showed that if the nurses workload is excessive, nurses are less caring in providing services to patients, the actions that should be given, but the implementation is inappropriate with what was planned. This means that workload will affect the quality of the nursing services that are provided to the patients.

Several studies of workloads using different methods have been done, each having advantages and disadvantages in the research. As Noprianty [9] used observational research with cross sectional design to observe the activities of implementing nurses using the work sampling method. It was found that the nursing activities directly and

indirectly in hospitalized internal medicine requires the most of the time in the morning shift. While for non-nursing activities inpatient internal medicine requires the most of the time on the night shift. The study results of the Aini [10] with gauges using a daily log study for workload found that the nurses' workload was largely high (93.1%). While the research of Hendrich, Chow, Skierczynski, and Lu [11] with the method of time and motion studies in 36 medical surgical units in America. The results found more than three-quarters of the total time spent on indirect nursing practice; documentation (35.3), drug administration (17.2), and care coordination (20.6%). While patient care activities are only 19.3% and only 7.2% of the time nursing practice is used for assessment and measuring Vital Signs (TTV).

Some of these studies indicate that research using daily log results is less reliable because this technique depends on the cooperation and honesty of the personnel being studied so that it is very likely to be subjective [1]. Researchers have not found these two techniques used to examine treatment rooms with cases of internal medicine and surgical treatment that are combined in one treatment room.

This study uses a sampling technique work sampling as well as time and motion study. Workload analysis is done by comparing the percentage of time spent implementing productive activities and the time of carrying out the non-productive activities. While for the time and motion study technique is used to find out the competencies or the work quality. Therefore, in this study the time and motion study technique is used to determine the time which are required for nursing actions in ten nursing actions that are often done in the room.Some hospitals in Indonesia still combine internal and surgical patients (Medical Surgery) in one treatment room. One of them is the Medical Inpatient Room of Rumah Sakit Umum Daerah (RSUD) Cibabat Cimahi. RSUD Cibabat Cimahi is a type B hospital. Where the nursing department has made a strategic design in order to improve nursing performance. Therefore, it must continuously evaluate and analyze studies based on the quantitative data and the performance for the formulation of future development strategies based on the customer service needs (customer oriented). So it needs an analysis of the workload of nurses who carry out nurses to patients for 24 hours every day, especially in the Inpatient Medical Surgical Hospital Cibabat Cimahi. The data in previous studies researchers have not found how the workload of nurses implemented the room with the characteristics of patients with internal medicine and surgery that are united in one treatment room. In addition, the method that was used in the room according to the previous research suggestions in different hospitals where to promote the task of nurses need to do a team method. However, in the previous studies only in the room with the same patient characteristics which is internal medicine or

surgery. Based on these problems, it is necessary to conduct a research on the Workload Analysis of Executing Nurses in the Surgical Medical Inpatient Room of Cibabat Cimahi Regional Hospital.

2. Methods

The purpose of this study was to analyze the Workload of Implementing Nurses in the Surgical Inpatient Medical Room in Cibabat Cimahi Regional Hospital. The research design that was used in this research is descriptive research. The population of this study was the executive nurses in the Surgical Medical Inpatient Room at Ciababat Cimahi Regional Hospital. This study uses systematic sampling of implementing nurses, where the sample in this study is the activity of implementing nurses, which is calculated by multiplying the duration of observation every 15 minutes for 24 hours with work sampling techniques. Then the results were obtained 96 times a sample of observation activities for 24 hours in the Room Medical Inpatient Surgery Cibabat Cimahi Hospital. While the time and motion study technique is to find out the nursing actions towards the time needed for the ten nursing actions that are often carried out in the productive activities of the implementing nurse. Observations were made during three observations on implementing nurses who had been predetermined and met the requirements as objects of observation with a purposive sampling technique. Then you will get ten types of actions most often done with an average time on each action in minutes and seconds.

The instrument used was an observation sheet to obtain the quantitative data using the work sampling techniques. The observation sheet for the activities of implementing nurses was taken from the work sampling form sheet that was compiled by Ilyas (2013) which has been modified the type of activity is adjusted to the needs of research divided into Productive activities (direct, and indirect care), and Non-productive (personal and other activities). Workload calculation is done by analyzing the comparison of the percentage of productive activity implementation time and non productive activity implementation time which is categorized into three categories, namely: 1) Workload is high if the percentage of productive activity implementation time exceeds the optimum productive work time which is more than 80% of all time of activities carried out by nurses, 2) Optimum workload if the percentage of time for implementing productive activities is 80% of the total time of activities carried out by nurses, and 3) Light workload if the percentage of time for carrying out productive activities is less than 80% of the total time of activities performed nurses (Ilyas, 2013).

3. Results

This research was done in the Surgical Medical Inpatient Room of Cibabat Cimahi Regional Hospital in May to June 2017 and was carried out on implementing nurses with 96 observations as a sample of observation activities for 24 hours. The analysis that was used in this research is descriptive research. The following are the results of the analysis of the research:

TABLE 1: Distribution of Usage Time of Implementation of Nursing Activities.

No	Activity Type Category	Shift and Time of Activity (Hours: minutes)			Total	%
		Morning	Afternoon	Night		
1	Direct Nursing	1:36	1:39	2:16	5:31	22,99
2	Direct Nursing Indirect Nursing	3:07	2:51	2:37	8:35	35,76
3	Personal	1:47	2:20	4:58	9:05	37,85
4	Other activities	0:30	0:10	0:09	0:49	3,40
	Total	7	7	10	24	100
	%	29,17	29,17	41,66	100	

Table 1 is the distribution of the time spent implementing nursing activities by type of activity as a whole. The most of the time distribution is in the category of personal activities, especially in the night shift which is for 4 hours 58 minutes.

TABLE 2: Distribution of Time for Productive and Non-productive Nurse Activities.

Productivity		Productive	Non Productive	Amount(Hours) Percentage
Morning *Shift*	Amount (Hours: minutes)	4:43	2:17	7
	Percentage	67,38	32,62	100
Afternoon *Shift*	Amount (Hours: minutes)	4:30	2:30	7
	Percentage	64,29	35,71	100
Night *Shift*	Amount (Hours: minutes)	4:53	5:07	10
	Percentage	48,83	51,17	100
Total (Hours: minutes)		14:06	9:54	24
Percentage		58,75	41,25	100

Table 2 is a time distribution of productive and non-productive nurse activities. The use of productive time in the morning shift was 67.38%, the afternoon shift was 64.29%, while during the night shift the time spent implementing productive nurse activities was 48.83%. The average percentage for productive nurse activities is greater than the percentage of non-productive nurse activities that is equal to 58.75% or for 14 hours

6 per day. The percentage of non-productive nurse activities is 41.25% or for 9 hours 54 minutes per day. The percentage for nurses' productive activities is 58.75% smaller than the optimum productive work time. This shows that the workload of nurses in the Surgical Medical Inpatient Room of Cibabat Cimahi Regional Hospital is in the mild category.

TABLE 3: Distribution of Ten Nursing Actions that Are Often Performed in the Medical Inpatient Room of the Cibabat Cimahi Hospital.

No	Nursing actions	Observation time (minutes: seconds)			Average time (minutes: seconds)
		1	2	3	
1	Injury cure	26:44	19:52	23:45	23:14
2	Documentation	15:10	16:45	20:15	17:23
3	Take or pick up patients to / from the operating room	13:20	13:40	12:30	13:30
4	Installing NGT	11:20	12:45	10:45	11:37
5	Take off the infusion	3:30	3:10	2:45	3:58
6	Motivate & interact with patients	2:30	3:10	2:15	2:52
7	Blood collection	2:30	2:30	2:20	2:27
8	Giving injections for IM, SC, IV, IC	1:25	1:30	1:20	1:25
9	TTV observation	1:30	1:20	1:15	1:22
10	Replace infusion fluid	1:00	1:10	1:15	1:8

Table 3 is the ten nursing actions that are often performed in the Surgical Medical Inpatient Room of Cibabat Cimahi Regional Hospital. Where in the nursing care wound care requires the longest time with an average time of 23 minutes 14 seconds, while the least amount of time is the act of replacing intravenous fluids for 1 minute 8 seconds.

4. Discussion

The results of the study on the workload patterns of implementing nurses in medical inpatient rooms showed that the time spent implementing the productive activities of morning shift nurses was 4 hours 43 minutes. During the afternoon shift, the nurses use productive time for 4 hours 30 minutes. While during the night shift nurses use productive time for 4 hours 53 minutes. When the night shift time is longer, which is 10 hours compared to the morning and evening shift which is only 7 hours. The percentage results show that each shift uses more time in the morning shift, and the afternoon shift compared to the night shift. The time spent implementing the productive activities of

nurses during the morning shift reached 67.38% and the afternoon shift reached 64.29%. Whereas during the night shift, the time spent implementing nurse productive activities was 48.83%.

The analyst results on nurse activity related to the number of patients and their classification. An illustration was obtained that the number of patients based on the data obtained has decreased by 30%. A data was obtained before the study was conducted on average number of patients 30-35 people per day, whereas when the study was conducted the average number of patients was only 25 people per day. So that it can have an impact on productive activities that must be done by nurses, both direct nursing activities and indirect nursing activities.

The results of the analysis of the workload patterns of implementing nurses in the Surgical Medical Inpatient Room the number of patients treated did not change much in number either during the morning shift, afternoon shift and night shift. Direct nursing activities during morning and evening shifts are more oriented towards providing direct nursing services in the form of meeting the needs of the patient's procedure procedures, giving medication, taking blood, replacing intravenous fluids, observing vital signs, releasing infusion, wound care, motivating and interacting with patients and family, taking the patient to the operating room or picking up the patient from the operating room, giving oxygenation. While the category of indirect nursing activities in the form of documentation activities is the most frequently performed activities by nurses in the room. The distribution of many types of nurses' activities both in the morning, evening and night shifts, is more oriented to the implementation of direct nursing activities and indirect nursing activities. In addition, the nurses take more action on the basis of a delegation from a doctor. Nurses in the room tend to carry out routine activities carried out, for example at certain hours nurses take the action of taking blood, giving injection drugs, or observing vital signs. Basic human needs such as bathing, personal hygiene, or other needs rarely concern nurses. In the cumulative morning shift documentation of the four nurses who were observed in turn, the time was 2 hours 12 minutes. Whereas the cumulative afternoon shifts of the four nurses who were observed alternately were given 2 hours and 6 minutes. This happened because nurses lacked focus in documenting, the nurses' observations wrote documentation while chatting. Non-productive activities in other activities during the morning shift nurses are required by the employee rally in advance which requires more or less time for 30 minutes. So that it will have an impact on nursing activities.

The use of nurse work time, the most time distribution is in the category of personal activities, especially in the night shift that is for 4 hours 58 minutes. This happens

because during the night shift direct nursing action is reduced with a long shift time of 10 hours. The observations when doing research during the night shift nurses tend to do more documentation activities in the nurse station room. In addition, nurses rarely monitor patients in the room, sit at the nurse station or chat with other nurses on general topics, or watch TV. The nursing actions are mostly done by nurses to prepare injection drugs in the action room. Furthermore, the nurses rarely monitor the patient's condition. The nurses will come to the patient's place when giving injection drugs or when a family member asks for help because the IV fluids do not flow or run out so it needs to be replaced. This is important considering that when the patient is at rest, undesirable things might happen due to the patient's nervous condition or other things that could be dangerous. In the inpatient room there is no patient assistance button integrated into the nurse station room, it can affect the service time. The observations showed the patient's family when he needed help went directly to the nurse station, so as to reduce the quality of service especially when the patient was not being awaited by family members. Therefore, when a patient needs a nurse there is a missed time lag given by the nurse.

The results of research on the activities of productive and non-productive nurses obtained an average percentage for productive nurse activities greater than the percentage of non-productive nurse activities which amounted to 58.75% or for 14 hours 6 minutes per day. The percentage of non-productive nurse activities is 41.25% or 9 hours 54 minutes per day. The percentage for nurses' productive activities is 58.75%, this indicates that the workload of nurses in the Medical Inpatient Room of the Cibabat Cimahi Hospital is in the mild category. Where from the data obtained for the use of nurse's work time, the distribution of time is mostly in the category of personal activities, especially on the night shift, which is for 4 hours 58 minutes.

The results of the analysis of the time for productive and non-productive nurses' workloads for nurses in the Surgical Medical Inpatient Room of Cibabat Cimahi Regional Hospital are in the mild category. This happens because the nurses tend to carry out routine activities, where these routines take more action on the basis of a delegation from a doctor. Nurses have not performed their main duties and functions in providing care to patients. In performing nursing actions, the nurses sometimes have not fully complied with Standard Operating Procedures (SOPs) in the room. In addition there are several actions or facilities and supporting infrastructure that are not yet available in the room. During the afternoon shift when there is a patient who has to do a CT scan, which is done outside the hospital which takes several hours. Not to mention when the traffic jams occurs on the highway, so there are some nursing actions that must be

delayed, or some actions that are ultimately carried out by other nurses in the room. The research results of Robot, A., Kumaat, L., & Mulyadi, N. [8] that there are actions that should have been given, but the implementation was not in accordance with what was planned. Factors other than the clinical condition of the patient, incomplete supply of equipment can significantly influence the nurses' workload. Situation-level workloads are multidimensional, that is, various types of performance barriers and facilitators affect different types of workloads. While the distance between patient rooms assigned to nurses affects the physical workload, work environment conditions affect the overall effort spent by nurses to do their work. In line with the research of Hendrich, Chow, Skierczynski, and Lu [11] who mentioned from their research results that more than three-quarters of the total time spent on indirect nursing practice. An exciting thing was also conveyed by Holden, R. J., et al. [7] the results of his study showed the number of tasks and mental burdens, the disturbance caused attention to be divided, the rush in taking action and possibly could result in medication errors.

During the night shift, the nurses rarely monitor the condition of the patients. Sometimes there is only one of the nurses who is in the nurse station while some others are in the nurse's room. In the inpatient room there is no patient assistance button integrated into the nurse station room, this can reduce service. Observation results can be seen when the patient's family needs help coming directly to the nurse station, this will reduce the quality of service, especially when patients are not being awaited by family members. So when a patient needs a nurse there is a missed time lag given by the nurse. In line with research that has been done by Robot [8] which states that the time spent implementing nurse activities is more in the category of other activities or personal activities.

The results of a study of ten nursing actions that are often performed in the Surgical Medical Inpatient Room of Cibabat Cimahi Regional Hospital. Where in the nursing care of wound care requires the most time each time the action with an average time of 23 minutes 14 seconds, while the least amount of time is the act of replacing the intravenous fluids for 1 minute 8 seconds. The results of the analysis show that direct nursing action in patients with surgical cases requires more time than patients with cases of internal medicine as evidenced by nursing actions in wound care that require an average time of 23 minutes 14 seconds. It was in line with the results of Sari's research [12], it is stated that the productive time spent by nurses in inpatient wards is greater than in inpatients in internal medicine.

Based on the observations of the researchers during the research nurses who deal with patients with surgical cases that require more time on direct nursing action on

wound care. So if the number of patients treated is increasing, the amount of time will be even greater. In addition, to direct nursing actions on nursing actions not directly documenting requires time for 17 minutes 23 seconds. Where the productive activities of nurses in nursing is not directly the activity of documenting nursing care most often done by nurses compared to other activities. Besides delivering or picking up patients to the operating room or from the operating room takes 13 minutes 30 seconds. The results of the analysis found that the nurse's access to pick up or transport the patient to the operating room was only via an elevator, because it happened that the operating room was still in the same building as a medical inpatient room. It's just that the interest in using the elevator is very high at the hospital, so sometimes they have to queue. This will also take a lot of time, so that it affects the other nurses' activities. The needs of nurses must consider the time needed for direct or indirect nursing actions (productive activities).

5. Conclusion

The results of the study using work sampling techniques showed that the percentage for productive activities was 58.75% smaller than the optimum productive work time. This shows that the workload of implementing nurses in the Surgical Medical Inpatient Room Cibabat Cimahi Hospital is in the mild category with the tendency of nurses to be in the category of personal activities especially during the night shift.

The results of research using time and motion study techniques in wound care nursing actions require the most time with an average time of 23 minutes 14 seconds, while the least amount of time is the act of replacing intravenous fluids for 1 minute 8 seconds. This shows that direct nursing action in patients with surgical cases requires more time than patients with cases of internal medicine.

References

[1] Ilyas. (2013). Hospital HR Planning: Theory, Methods and Formulas. Depok. FKM-UI

[2] Syaer (2011). Emergency Work Unit Nurses Workload in Lasinrang General Hospital Pinrang Regency 2010. Accessed May 19, 2015

[3] Republic of Indonesia Law No. 38 of 2014 concerning Nursing.

[4] Yoder-wise. (2014). Leading Managing in Nursing. Third edition. Missouri. Mosby

[5] De Cordova, P. B., Lucero, R. J., Hyun, S., Quinlan, P., Price, K., & Stone, P. W. (2010). Using the nursing interventions classification as a potential measure of nurse

workload. Journal of nursing care quality, 25 (1), 39.

[6] Robot, F. J. (2009). Analysis of the workload of implementing nurses in evaluating the needs of nurses in the inpatient room of Prof. General Hospital dr. RD Kandau Manado (Doctoral dissertation, University of Indonesia. Faculty of Nursing).

[7] Holden, R. J., Scanlon, M. C., Patel, N. R., Kaushal, R., Escoto, K. H., Brown, R. L., & Karsh, B. T. (2011). A human factors framework and study of the effects of nursing workload on patient safety and employee quality of working life. Quality and Safety in Health Care, 20 (1), 15-24.

[8] Robot, A., Kumaat, L., & Mulyadi, N. (2015). The Relationship between Nurse Workload and Nurse Caring in Prof. Emergency Medical Installation Dr. RD Kandou Manado. Journal of Nursing, 3 (2).

[9] Noprianty, R., & Haryani, F. (2013). Analysis of the workload of implementing nurses based on service unit characteristics at RSUD Dr. H. Muhammad rabain (Doctoral dissertation, Gadjah Mada University).

[10] Aini, F., & Purwaningsih, P. (2013). The Relationship Between Workload and Nurse Stress in Emergency Department Hospital Semarang Regency. Journal of Nursing Management

[11] Hendrich, A., Chow, M. P., Skierczynski, B. A., & Lu, Z. (2008). A 36-hospital time and motion study: how do medical-surgical nurses spend their time? The Permanente Journal, 12 (3), 25.

[12] Sari, N. (2012). Productivity of Nurse's Working Time in Internal Medicine and Surgical Care Room Arifin Achmad in Riau Province. Indonesian Nurse Journal, 1 (02).