

Conference Paper

A Time-Motion Study Description of Nursing Staff in Medical Unit a Hospital in Indonesia

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Abstract

Background: The quality managerial system in a hospital can be proved from efficiency, and staffs 'productivity. In the hospital service management was included nursing care management. **Objectives:** This study aims to find out the description of the work performance using time-motion study of nurses in the medical hospital room. **Design:** This study was quantitative by using descriptive analytic method. A number of 31 nurses was observed when applied nursing care to the 38 patients. Five investigators stayed every day for 30 days to observe each nursing care that applied by the nurses. Time calculation was using a stopwatch and recorded on paper containing a list of nursing actions. **Results:** Most of the patients treated in the internal medicine room were dependent on intermediate care (86.6%). There were 30 types of direct nursing care actions that was carried out by the nurses. One of the nursing care actions is preparing diagnostic examinations that need the most average time was 21 minutes; on the other hand, the mean of shortest time is preparing oral medicine that need 1.5 minutes. **Conclusion:** The average time in one working day in the medical room spend around 426.70 minutes or the equivalent of 7.11 hours.

Keywords: medical room, nursing actions, time-motion study

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1. Introduction

Health services in hospitals are so broad, the obligations of health workers today must be able to follow based on professionalism, science, legal and ethical aspects as well as dynamic health technology to add completeness in carrying out a quality health service in accordance with regulatory standards. In this health service standard is to determine the type, and quality in providing basic services. This is a government affair that must be obtained by every citizen at a minimum. The benefits that can be obtained from a good and quality managerial system at the hospital are able to realize a management system and be able to create increased efficiency and productivity of the workforce at the hospital [1].

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Patient satisfaction is not only from improving physical environmental facilities, but there are efforts to provide satisfaction to patients, especially in the process of interaction between patients and staff in providing health services. Patient satisfaction is the patient's expectation arising from the actions of health workers as a result of the performance of health services during the process of interacting in an effort to provide services. [2]. Health nursing services at hospitals is one of the most important and goal-oriented services that focus on the application of quality nursing care [3]. In terms of nursing management has the responsibility to be faced in improving service standards and quality in order to be able to benefit patients, nurses and parts of the hospital as a provider or provider of health services, one of which is to minimize costs in implementation and continue to provide quality services [4].

Nursing as a profession and nurses as professionals and also responsible for providing nursing services according to competence and authority independently owned or in collaboration with other health members. The nursing profession is an integral part of the health care system and is a key factor in the success of health services [5]. Nurses are a very important proportion in terms of providing nursing services in hospitals, an estimated 40-75% of personnel in hospitals are nurses [6]. With a large enough percentage, it can be said that nurses are the main asset in the hospital in improving the quality of health services. In addition, nursing staff also provide 24-hour services in this case the nurse becomes the host who must be prepared to serve the needs of patients. Therefore, nursing services are an integral part of health care clearly having a very significant contribution in determining the quality of services in hospitals.

Nurses who are "the caring profession" have an important position in producing quality health services in hospitals, because the services they provide are based on a bio-psycho-social-spiritual approach, a unique service that is carried out 24 hours a day and is also an advantage over its own. other services [7].

Nursing management knows the scope of work of nurses and supports it to run according to standards. according to Juliyanto (2014) that the scope of nursing management is divided into two. The first is operational management which usually consists of three managerial levels, namely top management, middle management and lower management, and the second is management of nursing care. Nursing care service is a form of professional service that is an integral part of health services based on Nursing that is aimed at patients, families, groups, or the community, both healthy and sick. According to [8], Activities in nursing services or actions are providing nursing services independently or in collaboration with patients, families, communities or with other health workers in all settings of a situation and in setting conditions including

providing health education, disease prevention, care sick people who have disabilities and prepare for death, and participate in developing health policies. The quality of nursing care can achieve optimal results if the workload and resources of nurses have a proportion that is equal to the amount of energy available [2].

The types of models in providing nursing care must be based on the role of direct care and indirect care [9] states that the role of direct nursing care services is that which is facilitated and dependent on management. The role of direct care is, monitoring, prioritizing goals, care coordination, therapeutic intervention, evaluation, communication, patient education. [9]. Direct care is care given by nurses who have a special relationship with physical, psychological, and spiritual needs [10]. Based on the level of patient dependence on nurses, it can be classified into four groups, namely: self care, partial care, total care and intensive care [11]. In nursing care services, almost all health services in hospitals are carried out by nurses. All nursing actions are performed routinely within 24 hours a day. According to Ilyas (2012), the responsibility held by nurses is very large, so the workload given to nurses determines whether or not nurses are able to perform good nursing care, but the facts are in the field, many nursing staff have a burden work than it should, it means doing other work outside of nursing work.

Job assessment is an evaluation action in comparing the appearance of the work process by the workforce against the standard work performance standards. The results of the job appraisal can be used to assist labor retention, as well as a description of the work process can be used as a measurement standard [13] Actual Performance is the appearance of work results quantitatively and the quality achieved by a nurse in carrying out their duties in accordance with the responsibilities and tasks given [6].

Performance appraisal is the process of evaluating how good or bad an employee is in carrying out work with some predetermined standards [14]. Performance appraisal instruments can be used to review performance, work tools, performance appraisal, employee appraisal and at the same time employee evaluation so that they can see the ability of employees who work well, effectively, efficiently and productively in accordance with company goals [14].

The work performance has a purpose which is to assess the ability of the health workforce which is the main objective of the work assessment, the results of the work assessment can be used as basic information in assessing the effectiveness of Human Resources management, and the work assessment can also improve the quality of implementation the process works. This can be done by recognizing nurses and in evaluating work performance can improve nurse performance [9]. The decline in nurse performance can be attributed to work productivity. It also has the risk of a decrease in

the performance of a nurse, one of which is that it can affect the workload that is not in accordance with the number of health workers available, especially nurses.

2. Method

2.1. Design Study

This type of research is quantitative research with the method used is descriptive analytic. Descriptive analytic method is a research method with the aim to describe various events that will occur in the present that will prioritize factual data rather than inference. Descriptive analytic research design is a research design that has the intention to describe a research object that will be examined through samples or data that have been collected and concluded in general [15]. This study uses a cross sectional approach.

2.2. Sample

Research conducted using accidental sampling. This study takes the available sample at the time the research will be conducted in accordance with the research context (Notoatmodjo, 2012). The sample of this study was nurses in the inpatient ward of internal medicine Dr. Moewardi Surakarta obtained during 1 month of research who worked non-structurally or worked in 3 shifts, namely morning, noon and night. With a total of 31 implementing nurses.

Sample criteria used in the study are; Nurses who have a work period of ≥ 1 year; Nurses who have a minimum of D3 nursing education; Implementing nurses who are on duty in the internal medicine room of Dr. Moewardi Surakarta; Someone who is willing to be a respondent in research.

2.3. Instrument

Measuring instruments in research referred to as research instruments, so the research instrument is a measuring instrument used to measure natural and social phenomena observed (Sugiyono, 2012). The researcher uses the time motion study formula, patient classification sheet and questionnaire sheet, which are sheets used to calculate respondent characteristics and demographic data such as age, sex, last education, etc. While the time motion study observation sheet is an observation sheet that is used to

document nursing activities in the form of types of activities carried out, patient activities and the time needed to carry out these activities.

The patient classification sheet includes six components, namely 1) Observation and monitoring which contained nine statements. 2) Treatment of which consists of four statements. 4) medicines consisting of five statements. 5) somatic therapy consisting of three components. 6) health education which consists of three statements. How to use it is to provide a checklist according to the patient's condition in the column provided, then add up the scores obtained to determine the patient's dependency level.

The third observation sheet is the Time Motion Study observation sheet. This observation sheet is used to document the time and activities undertaken for direct nursing actions. This sheet contains the types of time activities (start, stop and duration), the quality of actions whether or not according to the SOP. How to use it is to document the implementation of actions in the column provided.

2.4. Data collection procedure

In the preparation phase the researcher meets with the supervisor to consult and discuss issues related to the research title. Then the researcher then makes a composition of the research proposal which is then tested and approved. Then the researchers make revisions and prepare to conduct validity tests.

The researcher submitted a permit in conjunction with the research permit and submitted a letter for making ethical clearance in January. After the ethical clearance certificate comes out with number: 194 / il / HREC / 2019 the researcher then gets a letter of introduction for the study. Before conducting a validity test, the researcher will meet with the head of the internal medicine room to express the intentions and objectives and seek approval from the head of the room and the nurses in the room. Then after getting the approval of the researchers then conducted a validity test. After conducting a validity test the researcher will meet the head of the room to request permission to collect data from nurses on duty in the internal medicine room, after obtaining the nurse's data, then the researcher will begin observing direct nursing actions to be carried out by nurses and will document the Time Motion Study observation sheet

2.5 Data analysis

Data analysis is an attempt to manage data that has been collected using statistics and will be used to answer the problem formulation in research (Hidayat, 2014). Data analysis in this study uses quantitative descriptive analysis with the test used by Central Tendency to be able to find the median, mean, mode, standard deviation, as well as minimum and maximum values. This test is intended to see the average total

time required for direct nursing action, as well as variations of the total time spent. Furthermore, the data analysis will display the patient's direct nursing hours statistically further confirmed using the number of direct nursing hours.

3. Result

TABLE 1: Nurse Characteristics.

Characteristics	Frequency	%	N
1. Age			31
a. 18 - 40 Year (early adult)	25	80.6	
b. 41 - 60 Year (young adult)	6	19.4	
c. > 60 year (advanced adult)	-	-	
2. Gender			31
a. Male	15	48.4	
b. Female	16	51.6	
3. Last Education			31
a. D III	19	61.3	
b. S1	1	3.2	
c. Profesi Ners	11	35.5	
4. Work Experience			31
a. 4 - 7 Year	11	35.5	
b. 8 - 15 Year	20	64.5	
c. > 15 Year	-	-	
5. Training History			31
a. < 4	14	42.5	
b. 4 - 7 Times	17	54.8	
c. 8 - 15 Times	-	-	

In the internal medicine ward Dr. Moewardi Surakarta, there are 31 room nurses with karristristik aged 18-40 as many as 25 nurses (80.6%). Furthermore the distribution with gender characteristics from the data is not much different where there are 15 male nurses (48.4%) while female nurses consist of 16 nurses (51.6%), then it can be seen from the level of education of nurses in the room having 19 nurses (61.3%) with DIII and S1 education level there were 1 nurse (3.2%) and last education up to the nurses profession 11 nurses (35.5%), according to the characteristics of work experience most nurses in the internal medicine room were 20 nurses (64.5 %) have work experience for 8-15 years and the remaining 11 nurses (35.5%) have experience as nurses 4 - 7 years, of all nurse respondents in this room having attended <4 training as many as 14 nurses (42.5%) and the remaining 17 nurses (54.8) have participated in training 4-7 times.

TABLE 2: Patient Demographics Internal disease room.

Characteristics	Frequency	%	N
1. Age			38
a. 18 – 30 Year	7	18.4	
b. 31 - 40 Year	12	31.6	
c. 41 - 50 Year	10	26.3	
d. > 50 Year	9	23.7	
2. Gender			38
a. Male	15	39.5	
b. Female	23	60.5	

Based on the patient characteristic data above, the highest age data are patients aged 31-40 years (31.6%) with 12 patients, while patients with the lowest age are 18-30 years as many as 7 people (18.4%). For the sex of female patients more than men with the number of female patients as much as 23 (60%) and 15 men (39.5%).

TABLE 3: Frequency Distribution of Patient Classification in the internal medicine room.

No	Category	Category Value	Frequency	Percentase (%)
1	<i>Self care</i>	1-10	5	12.2
2	<i>Intermediate care</i>	11-25	33	86.8
	Total		38	100

Characteristics of patients based on the level of dependence mostly indicate that patients need Intermediate care with 33 patients (86.6%) and the rest are patients with self care category of 5 patients (12.2).

Based on the results from the table above, it can be seen how the average time in nursing actions along with the standard devisias, deliver patients have a mean of 21.00 and the results of the standard deviation 2.13 then the patient’s observation activities have a mean of 4.31 and a standard deviation of 0.70 and the installation of infusion with an average of 4.75 with an average of 4.75 with results of the standard division 0.55. Based on the results of the statistical tendency values, it can be seen that the results of the statistical tendencies of total direct care time are as follows

The value of the central tendency based on the total time needed to perform direct nursing to patients in one day shows the lowest time is 325 minutes or equivalent to 5.41 hours and the value of the highest time in performing direct nursing actions is 521 or equivalent to 8.68 hours, the average time direct care per day ranges from 426.70 minutes or equivalent to 7.11 hours per day

TABLE 4: Distribution of Direct Nursing Measures for Internal Medicine.

No	Forms of activity	Mean	CI 95%	SD	Min	Max
1	Check vital sign	3.5	3.12 – 3.87	0.52	3	4
2	Patient Observation	4.31	3.93 – 4.68	0.7	3	5
3	Oksigenation	2.85	2.60 – 3.90	0	2	3
4	Nebulizer Treatment	1.36	1.01 - 1.71	0.45	1	2
5	Injection Treatment	1.87	1.75 – 1.98	0.21	1	2
6	Oral Treatment	1	-	-	1	1
7	Check Allergy	1.33	-	1.02	1	2
8	Position Improvement	1.77	1.31 – 2.23	0.59	1	2.7
9	Wound Care	2.64	1.59 – 2.00	1.12	1.8	5
10	Infusion Treatment	4.75	4.23 – 5.27	0.55	3.5	5
11	Up infusion	2	1.30 – 2.60	0.63	1	3
12	Install Catheter	2.7	2.08 – 3.34	0.6	2	3
13	Up Catheter	1.38	0.96 – 1.80	0.4	1	2
14	Replace Infusion Flabot	1.16	0.44 – 1.83	0.28	1	1
15	Health Education	3.83	1.93 – 5.73	0.76	3	4
16	Tranfusion Treatment	2	1.75 – 2.24	1.37	1	4
17	Blood Drow	1.98	1.88 – 2.08	0.98	1.8	2.1
18	ECG Action	3	-	-	3	3
19	Drop off the Patient to check (USG, CT Scan, endoscopy ,dll)	21	16.5-21.0	2.13	15	21
	Accept Patient					
	Check Blood Sugar At time					
20	Insulin Treatment	2	-	-	2	2
21	Replace Bandages	3.73	3.48 – 3.95	0.34	3	4
22		2.21	1.7 – 2.68	0.44	2	3
23		1.5	1.02 – 1.97	0.45	1	2

TABLE 5: Tendency of Statistics Total Time of Direct Care.

No	Statistical Tendencies	Score
1	Minimal Time	325
2	Maximum Time	521
3	Average	426.70
4	CI 95%	402 – 42
5	Standard Deviation	63.55

4. Discussion

The age characteristics of nurses in the internal medicine room indicate that the age with the highest distribution of nurse age ranges from 18-40 years (early adulthood). According to Woyanti (2014) that biologically early adulthood is the peak period of

excellent physical growth. At this time it can be seen from the emotional aspect, namely early adulthood is where the motivation to achieve something very large that can be supported by excellent physical strength.

Increased age is expected to increase motor ability in accordance with growth and development, therefore growth and development of a person at a certain point will occur setback due to degenerative factors. Veithzal (2004), that an easier age for an individual person is more productive than an older age [16].

The distribution of nurses' characteristics on the gender can be seen in the differences between men (48.4%) and women (51.6%). Based on the results of research by Rika Rusnawati (2012) there is no result of the influence of sex on the implementation of nursing tasks performed in hospital, but the presence of male nurses is really needed in certain circumstances when in need of physical strength it is also in line with Akhyar (2008) where nursing workers are women's work because of the assumption that women have a nurturing, diligent and more responsible nature [17].

Furthermore, nurses' characteristics in education show that most nurses took DII's last education (61.3%), then it can also be seen with education above DIII or equivalent to S1 as well as nurses having a percentage ranging (3.2%) for S1 and nurses (35.5%).

The level of education according to the research of Nursalam & Effendi (2008) education is very influential on fostering attitudes, views and professional abilities, possessing extensive insights, as well as having scientific knowledge of nursing that masters professional skills properly and correctly so that it can influence the workload because there are several theories that lead to increasingly the higher the education level, the higher the level of knowledge and attitude. According to previous study, the competency of a nurse is determined by his educational background, role, type of practice. So it can be concluded that the level of education has an influence on the potential possessed by implementing nurses. These competencies affect the implementation generated by the implementing nurse [18].

Characteristics of nurses in work experience most nurses work within a period of 4-7 years, according to Zainullah (2012) work experience on the development of potential is very closely related, because the development of potential can make a person's work productivity and work behavior become a better pattern [20]. The nurses' characteristics based on the training attended by most nurses have completed training 4-7 times, so that much of the training attended by a nurse will greatly help to improve the quality of nursing care services. Seminars and workshops are an informal education for nurses in improving the skills of taking nursing care actions, as well as improving science, Haryati (2014). In order to optimize health services for patients who need services[11]. It is also

in line with Notoatmodjo (2012) that the education and training attended by nurses are expected to improve the ability of a nurse both in knowledge, skills and attitudes[17].

5. Conclusion

Characteristics of nurses in the internal medicine room at the hospital. Dr. Moewardi Surakarta most of the 18-40 years, with the female sex and most recently educated are DIII, have 4-7 years work experience, have a history of training 4-7 times. Characteristics of patients in the internal medicine room based on the level of dependence indicate that patients need Intermediate care and self care, and most patients in the Internal Medicine Room show intermediate care compared to self care Within one working day the nurse in the care room can spend 7.11 hours per day. Nursing activities with the implementation requires the most time is to take the patient, and direct nursing activities require the least amount of time is oral therapy.

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