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Implementation Of Maternity Nursing (Essak-Mat) Nursing Standard Based On Android For Improving Nursing Performance

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ABSTRACT- *Nurse performance is part of overall health performance. Good performance based on predetermined performance standards. Nursing care standards Maternity is currently not operationally stated at each stage, so there are many different standards in providing nursing care. The purpose of this study was to determine the implementation of Expert System in Nursing Maternity Nursing Standards (ESSAK-MAT) for Android-based to improve the performance of nurses in the Midwifery Room of Lampung Province Hospital. The target of the research is the production of nursing care standard products in the form of online applications that can be opened easily through android media. Quantitative research type, quasi-experimental analytic research design. The study was conducted at Abdul Muluk Hospital in Lampung Province and Ryacudu Hospital in Kotabumi, North Lampung. The number of samples was 70, the treatment group was 35 and the control was 35 respondents. The treatment group will be trained using ESSAK-MAT with an android application, while the control group will be trained to use SAK-MAT manually / conventionally. The analysis uses dependent and independent T tests. The results showed that there were significant differences in the average nurse satisfaction before and after the intervention (p = 0,000). there was a significant difference in the average performance of nurses before and after the intervention (p = 0,000), there was a significant difference in the average satisfaction of nurses in the intervention group and the control group (p = 0.001). There is a significant difference in the average performance of nurses in the intervention group and the control group (0,000). It is expected that the application of ESSAK-MAT can be applied and developed according to the field of nursing science.*

Keywords- *ESSAK-MAT, nursing performance, nursing standard.*

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I INTRODUCTION

Nurse performance is part of the overall performance of health workers who determine how the performance of hospital health service institutions, health centers and independent practice. Nurse performance is measured by the implementation of nursing care. While the nursing care approach is carried out with the nursing process, in the form of nurses' activities carried out systematically through five stages, which include assessment, nursing diagnosis, planning, action or implementation, and evaluation of nursing.

Nurses in conducting care have standards that have been prepared by the Indonesian National Nurses Association (PPNI), these standards are called Nursing Care Standards. Nursing Standard (SAK) is a statement of the desired quality and can be assessed through the provision of nursing care to patients / clients. The relationship between quality and standards is closely related, because through standards can be quantified as evidence of service increasing or deteriorating (1,2). However, these standards are not yet detailed and still require standard operating statements at each stage.

The goals and benefits of nursing care standards basically measure the quality of care of nurses' performance and the effectiveness of organizational management. In developing standards, it uses a common approach and framework so that it can be arranged who is responsible for developing standards for how the development process is. Care standards focus on patient outcomes, practice standards are oriented towards the performance of professional nurses to empower the nursing process (3,4).

The benefits of applying the nursing process in nursing care include improving technical skills and nursing procedures aimed at meeting patient needs. Also to improve the quality of nursing services and autonomy from nurses, in addition to increasing the responsibility of nurses for actions and the quality of nursing care provided to patients. The application of nursing care is also useful for increasing the role of nurses in the planning and decision-making process on matters relating to patient care.

The main purpose of the standard is to provide clarity and guidelines to identify the size and assessment of the final outcome, thus the standard can improve and facilitate the improvement and achievement of quality nursing care. Criteria for the quality of nursing care include: safe, accurate, continuity, cost effective, humane and provide the same expectations about what is good for nurses and patients. Standards ensure nurses make reasonable and reasonable decisions, and carry out safe and accountable interventions.

Two categories of nursing standards that are widely accepted are the standards of care or statements describing the level of care to be received by patients (Nursing Intervention Classification / NIC) and the standards of practice or expectations of nurse performance in providing care standards (Nursing Outcome Classification / NOC) . Monitoring and evaluation activities ensure that the level of patient care and nurse performance is well achieved. These two types of performance are designed to support nurses in daily practice by providing a structure for these practices and to assist nurses in identifying nursing contributions in patient care.

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In Indonesia legally established Nursing Care Standards (SAK) and enforced and applied in all hospitals in Indonesia through the Decree of the Directorate of Medical Services No. YM 00.03. 2.6.63737 1993 regarding the application of SAK in hospitals, but the standard is not operational in its application in hospitals, even many nurses do not know how to apply it when providing care to patients, especially in wards (Documentation surveys and interviews to several Head of Room at HM Ryacudu North Lampung Mayjend General Hospital on May 25, 2015). The reason for the adoption of SAK is that it is one of the criteria for professional care, a measure of the quality of nursing care, a legal basis for professional care. Then the objectives of implementing SAK include, in general, to improve the quality of nursing care, while specifically to find out the quality of nursing care, know the ability of nurses in providing nursing care, increase the level of patient satisfaction with nursing care, and reduce the cost of care, and protect the interests of patients and nurse.

The existence of a standard is indeed the first step to ensuring the quality of nursing services, but no less important is how the application of these standards, their implementation in the field, in fact implementing the standards requires knowledge, time and cost while the work of nurses in the room is more preoccupied with interacting with patients rather than making a report

II Material and Methods

Type of quantitative research. An analytic, quasi-experimental research design, in which nurses were tried to implement the Expertise Nursing Maternity Nursing Standard System (ESSAK-MAT) in patients in the Pre, Intra and Post natal areas. Before using ESSAK-MAT nurses were assessed for performance by the nurses themselves, their peers and team leaders. After that the Nurse will work using the ESSAK-MAT application, after using ESSAK-MAT for 10 times reviewing the client, the nurse will be re-evaluated its performance. This research was carried out by RSAM and RSUD Mayjend HM Ryacudu, especially the Midwifery Room. The study population was nurses working in the Midwifery Polyclinic, the delivery room and the post delivery room at Bandar Lampung Hospital and Mayjend Hospital HM. Ryacudu Kotabumi totaling 108 nurses. The number of samples was 70 nurses and midwives, consisting of 35 nurses / midwives in the intervention group and 35 nurses / midwives in the control group, with a minimum graduate criteria of Nursing / Midwifery Diploma III and a minimum service period of 6 months.

III Results

Characteristics of respondents can be seen in tables 1 and 2.

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Table 1 Distribution of the average characteristics of respondents, satisfaction and performance of nurses in Lampung Province Hospital

Variable	Mean	SD	SE	Min	Maks
Age	32,73	4,963	0,593	25	46
Length of working	9,9	5,005	0,598	3	31
Nurse satisfaction before intervention	118,86	26,661	3,187	46	176
Nurse Satisfaction after intervention	122,41	26.712	3,193	46	176
Nurse's performance before the intervention	91,87	20,001	2,391	10	146
Nurse performance after the intervention	105,33	18,098	2,163	65	150

Based on table 1 the results of statistical analysis of the average age of respondents 32.73 years, with SD 4.963, SE 0.593, the lowest age of 25 years and the highest 46 years. The average length of work is 9.9 years, SD 5,005, SE 0.598, the lowest length of work is 3 years and the highest is 31 years. Nurse satisfaction before intervention 118.68, lowest 46 and highest 176. Nurse satisfaction after intervention increased to 122.4, with the lowest value of 46 and highest 176. Nurse performance prior to intervention 91.87, lowest 10 and highest 146. Nurse satisfaction after intervention increased to 105.33, with the lowest value of 65 and the highest of 150

Table .2 Distribution of nurse education frequency at Lampung Province Hospital.

Educational level	Frequency	Percentage
D-III	42	60
D-IV	8	12
S1	19	27
S2	1	1
Sum	70	100

The results of the analysis of the frequency distribution of the education level of the most respondents at the Diploma III level of education were 42 respondents (60%).

Table 3 Average differences in nurse satisfaction and performance before and after using ESSAK-MAT on an android-based basis.

Variable	Mean	SD	SE	Pvalue	N
Nurse Satisfaction:					
- before the intervention	118,86	26,661	3,187	0,000	70
- after the intervention	122,41	26,712	3,193		

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Nurse Performance:					
- before the intervention	91,87	20,001	2,391	0.000	70
- after the intervention	105,33	18,098	2,163		

The results of the analysis in table 3 obtained an average nurse satisfaction before the intervention was 118.86 with SD 26.66. After the intervention, the average increased to 122.41 with 26.71 SD. Statistical test results obtained p = 0,000, meaning that in alpha 5% there was a significant difference in the average satisfaction of nurses before and after the intervention.

The average performance of nurses before the intervention was 91.87 with SD 20.00. After the intervention the average increased to 105.33 with an SD of 18,098. Statistical test results obtained p = 0,000, meaning that in alpha 5% there was a significant difference in the average performance of nurses before and after the intervention.

Average differences in nurse satisfaction and performance in the intervention and control groups

Table 4 Average differences in nurse satisfaction and performance in the intervention and control groups

Variable	Mean	SD	SE	Pvalue	N
Nurse satisfaction					
- intervention group	132,57	23,852	4,032	0,001	35
- Control group	112,26	25,822	4,365		35
Nurse performance	113,89	15,333	2,592	0,000	35
- intervention group	96,77	16,698	2,823		35
- Control group					

The results of the analysis in table 4 obtained the average nurse satisfaction in the intervention group was 132.57 with SD 23.85. In the control group the nurses' satisfaction was an average of 112.26 with 25.82 SD. Statistical test results obtained p = 0.001, meaning that in alpha 5% there was a significant difference in the average satisfaction of nurses in the intervention group and the control group.

The average performance of nurses in the intervention group was 113.89 with SD 15.33. In the control group the nurses' performance averaged 96.77 with SD 16, 69. The statistical test results obtained p = 0,000, meaning that in alpha 5% there was a significant difference in the average performance of nurses in the intervention group and the control group.

IV Discussion

The results showed that the statistical analysis of respondents' age was 32.73, the lowest age was 25 years and the highest was 46 years. The average length of work is 9.9 years, the lowest length of work is 3 years and the highest is 31 years. Nurse satisfaction before intervention 118.68, lowest 46 and highest 176. Nurse satisfaction

after intervention increased to 122.4, with the lowest value of 46 and highest 176. Nurse performance prior to intervention 91.87, lowest 10 and highest 146. Nurse satisfaction after intervention increased to 105.33, with the lowest value of 65 and the highest of 150.

The results of the above study explain that ESSAK-MAT is an expert system into one branch of artificial intelligence that learns how to mimic the way of thinking of an expert in solving a problem, according to (5,6) that artificial intelligence is one of the fields of computer science that utilizing computers so they can behave intelligently like humans.

The results of this study also contributed to the expert system to assist nurses in providing nursing care. ESSAK-MAT supports one system called Expert Nurse. This system allows nurses to quickly enter patient data and get all known diagnoses that can be reached from known patient data, specific patient data that support each diagnosis, and suggest patient goals that can be modified for individual patients. Evaluation data collected in the use of this system shows nurses spend less time in establishing a nursing diagnosis, identifying greater diagnostic possibilities and improving the quality of patient records (7,8).

The results of this ESSAK-MAT study also reinforce another successful expert system in the field of nursing namely CANDI (Computer Aided Nursing Diagnosis and Intervention) from (8). This is used to help in establishing a nursing diagnosis based on clinical assessment data. CANDI uses a rule-based system that processes data entered by nurses on the computer during the assessment. The inference engine considers the possibility of several diagnoses.

ESSAK-MAT is a knowledge domain nursing care application in the form of nursing care standards consisting of data obtained from patient assessments, nursing diagnoses, nursing planning (NOC and NIC), implementation and evaluation. This system processes data obtained from patients who then based on these data are enforced nursing diagnoses, then based on nursing diagnoses a nursing plan (NOC and NIC) is developed. To then be implemented in patients, the nursing process ends with an evaluation, where the evaluation indicator is the NOC (Nursing Outcome Classification). Based on the research results obtained an increase in satisfaction and performance after using the ESSAK-MAT application so that its application in nursing services Maternity needs to be applied.

Average differences in nurse satisfaction before and after using ESSAK-MAT based on Android.

The results of the analysis of research that has been done obtained an average nurse satisfaction before the intervention was 118.86 with SD 26.66. After the intervention, the average increased to 122.41 with 26.71 SD. Statistical test results obtained p = 0,000, meaning that in alpha 5% there was a significant difference in the average satisfaction of nurses before and after the intervention.

Satisfaction with something / work is one of the important factors that affect life satisfaction. Satisfaction, according to Setiawan and Ghozali, is a pleasant or emotionally positive condition that comes from a person's assessment of his work or work experience. A pleasant or unpleasant emotional state with which employees view their work. Job satisfaction reflects one's feelings about their work (9,10).

The results of research using the application of ESSAK-MAT affect nurse job satisfaction, this is in accordance with Sutrisno's theory, (2009) that the factors that cause satisfaction are: 1) the opportunity to advance, the opportunity to gain experience and increase ability and 2) the intrinsic factors of work, obtaining applications that make it easier to carry out nursing care using applications, so that it becomes more efficient and effective in completing work.

Average differences in performance of nurses before and after using ESSAK-MAT android-based.

The average performance of nurses before the intervention was 91.87 with SD 20.00. After the intervention the average increased to 105.33 with an SD of 18,098. Statistical test results obtained p = 0,000, meaning that in alpha 5% there was a significant difference in the average performance of nurses before and after the intervention.

Performance is used as a benchmark for the success of a person in carrying out predetermined tasks because performance is something that results from an activity. Performance is generally defined as behavior that contributes positively or negatively to the achievement of organizational goals. A person with high performance tends to be able to complete routine tasks, incidental tasks, and social tasks.

The results of the study using the application of ESSAK-MAT reinforce the theory of Colquitt, (11–13) which states that the intended performance is the value of a series of employee behaviors that contribute, both positive or negative, to the achievement of organizational goals. Referring to the statement it can be stated that a person's success at work can be seen from the results of behavior that contains certain work values that can provide positive and negative input to the organization where a person works. Colquitt explained that performance has three dimensions: (1) task performance, (2) voluntary behavior (citizenship behavior) as a contribution to positive behavior and (3) counterproductive behavior as a contribution to negative behavior.

The results of this study support the results of Yolanda's (2013) study which states that there is a relationship between the use of blackberry smartphones and the performance of employees of PT Asuransi Umum Bumiputera Muda 1967 Samarinda branch. Yolanda's research results state that the closeness of the relationship is at a moderate level. This study also strengthens the results of Fadilah's study (2017) which states that there is a strong or high positive correlation between the use of mobile communication devices and the learning activities of students at SMP Negeri 66 South Jakarta.

Average differences in nurse satisfaction in the control group and the intervention group.

The results of this study explain the average nurse satisfaction in the intervention group is 132.57 with SD 23.85. In the control group the nurses' satisfaction was an average of 112.26 with 25.82 SD. Statistical test results obtained p = 0.001, meaning that in alpha 5% there was a significant difference in the average satisfaction of nurses in the intervention group and the control group.

ESSAK-MAT applications that have been made produce differences in the average satisfaction of nurses in providing nursing care, in the form of increased satisfaction in carrying out nursing care. Various studies on expert systems include Luther, Christie and Montolalu (2011) research on the use of expert systems in

diagnosing kidney disease, which is able to detect kidney disease with two parts namely, 1) the consulting environment and 2) the development environment. The results of using expert systems are information for the user and are in the form of visuals, and the results of Luther's research provide convenience and satisfaction for health workers in using expert systems.

The results of this ESSAK-MAT application study also reinforce Novi and Fery's (2017) research in the enforcement of medical diagnoses, the results of which use forward chaining methods in expert gynecological disease diagnosis systems to greatly assist in the process of research and development of expert systems conducted. The expert system produced in this study is a gynecological disease diagnosis expert system in establishing a disease diagnosis based on the symptoms felt by the user, then the system will display the diagnosis and treatment plan.

ESSAK-MAT research results that increase satisfaction in providing nursing care are also in accordance with the research of Annisa, Dini and Dhami (2017) who have found an expert system capable of detecting skin diseases in children with an expert system development life cycle. The resulting application is the user can consult with the system like consulting with experts to find out the symptoms that occur, find treatment for problems that occur.

ESSAK-MAT's research also supports Cecep, Dini, Dhami's research on designing an expert system to diagnose amenorrhoea with the expert system development life cycle method. This study explains that the limitations of implementing staff can be assisted through the expert system program, the expert system uses the expert system development life cycle which is carried out from the assessment, analysis, this expert system can provide information about amenorrhoea, tree diagrams, knowledge tables, decision tables and trees decisions, including the testing stage, adjusting the design and making of an expert system application, so that the user can know the illness and how to treat it before consulting a doctor or expert. ESSAK-MAT research results are also in accordance with research on the use of the internet with user satisfaction among high school teachers obtained a value of rs of 0.721 which has a fairly high and strong relationship.

Related research in detecting a person's entire illness provides improved service quality and user satisfaction. ESSAK-MAT research is also a specific application that makes it easy for nurses to provide maternity nursing care, provide satisfaction and improve work outcomes, so it is important to be used by maternity room nurses.

Average differences in nurse performance in the control group and intervention group.

ESSAK-MAT application research results obtained an average performance of nurses in the intervention group was 113.89 with SD 15.33. In the control group the nurses' performance averaged 96.77 with SD 16, 69. The statistical test results obtained p = 0,000, meaning that in alpha 5% there was a significant difference in the average performance of nurses in the intervention group and the control group.

Robbins, (2001) explains performance is the performance shown by employees towards their work, attitudes toward work are influenced by economic conditions, types of work that are challenging, adequate rewards and conditions of mutual benefit colleagues. Performance in the opinion of Jhon R. Schermerhom (2005),

Performance is a measure of the quantity and quality of tasks achieved by individuals or groups. In carrying out the work carried out by individuals and groups, it is expected that the work results can be clearly measured, how often the work is done, good or bad from a job produced and in accordance with established standards.

Based on this discussion, it can be illustrated that performance is a combined function of three factors, namely employee internal factors, work (organizational) factors, and work environment or situation factors. Of the three factors in this discussion are more focused on one's internal, which includes three aspects, namely attitudes, competencies, and motivation.

According to John M Ivancevich (2007), performance evaluation (performance evaluation) is also known as performance appraisal, which is an activity to determine employee success in doing a job with good results. Another opinion according to Gibson, J.L., Ivancevich (2006), suggests that the factors that affect performance are individual factors, workplace organization, and psychological factors. Individual factors are abilities and skills, background and demographics. The ability and skills sub-variables are the main factors that influence individual behavior and performance. Demographic sub-variables have indirect effects on individual behavior and performance. Organizational factors are resources, leadership, rewards or rewards, structure, job design, supervision and control. Psychological factors, namely perception, attitude, personality, learning and motivation.

According to the Regulation of the Minister of Administrative Reform and Bureaucratic Reform of the Republic of Indonesia (PP PAN_RB) No. 25 of 2014, a Nurse is a Civil Servant who is given the duties, responsibilities, authority and full rights by an authorized official to carry out nursing service activities at a Health Service Facility or other Health Service Facility. Nurse performance is based on nurses' basic tasks. The main task of a nurse is to perform nursing service activities that include nursing care, nursing management and community service. In accordance with PP PAN-RB No. 25 of 2014 CHAPTER VI concerning the details of nurse activities and calculation of nurse credit numbers based on article 8 the main duties of nurses in providing nursing care include five steps of care namely 1) assessment, 2) establishing the diagnosis, 3) compiling an action plan, 4) implementing and 5) evaluation.

The following are the results of research strengthened by the ESSAK-MAT Application research that is the result of research by Ratih (2007) which states that the ANFIS expert system can be used to diagnose industrial workers who experience health problems especially pain and obtain solutions. ANFIS expert system is able to conduct learning / training with a learning error result of 0.35 with a range of 0.4 and an epoch of 30. This tool has been able to improve the performance of health workers in providing services. namely smartphone dependence as a work supporter to be more productive.

The qualitative study of researcher Vincentia explains that states that dependence on smart phones falls into the category of progression narratives. Expert system (expert system) is a system that seeks to adopt human knowledge into computers, so that computers can solve problems as is usually done by experts, and good expert systems are designed so that they can solve a particular problem by imitating the work of experts (Kusumadewi,

2003: 109). The experts referred to here are people who have special expertise who can solve problems that cannot be solved by ordinary people. For example doctors, mechanics, psychologists, and others.

The results of the ESSAK-MAT application research reinforce the theory of the importance of the expert system used in accordance with the objectives of the expert system namely: 1) Interpretation. Make conclusions or descriptions of raw data sets. Decision making from observations, including speech recognition, image analysis, signal interpretation, etc. 2) Prediction. Project the possible consequences of certain situations. Example: demographic predictions, economic predictions, etc. 3) Diagnosis. Determine the cause of malfunction in complex situations based on symptoms observed in medical, electronic, mechanical diagnoses, etc. 4) Design (design). Determine the configuration of system components that match specific performance goals that meet certain constraints. Example: circuit layout design, building. 5) Planning. Plan a series of actions that will be able to achieve a number of objectives with certain initial conditions. Example: financial planning, military, etc. 6) Monitoring. Comparing observations with expected conditions. Example: computer aided monitoring system. 7) Debugging. Determine and interpret ways to deal with malfunctions. Example: prescribe medication for failure. 8) Instructions. Detect and correct deficiencies in understanding the subject domain. Example: perform instructions for diagnosis and debugging. 9) Control. Manage the behavior of a complex environment. Example: control the interpretation, prediction, improvement and monitoring of system behavior.

ESSAK-MAT's research results also support Heryanto's research. The expert system uses FUZZY to analyze the performance of library and archives office staff in Semarang. Performance appraisal includes loyalty, obedience, achievement, honesty, cooperation, initiatives and supporting factors which consist of leadership and responsibility. In general, the ESSAK-MAT application is also an application that uses the internet, such as internet independent research, which is one of the services provided by Bank Mandiri to facilitate banking activities. The results of this study obtained adjusted R square of 0.443. This means that respondents satisfaction / Mandiri Internet can be explained by 44.3% by tangible variables / physical evidence, reliability / responsiveness / responsiveness, assurance / assurance, and empathy / empathy. The 55.7% is explained by other variables outside the five service quality variables or variables outside this study. As for the mapping of the Level of Interest and Performance (Important Performance Matrix), Mandiri Internet service attributes that need to be improved are the guidelines in the transaction process; easy to learn its use; accessed in a short time; and it is not easy to error after a few moments of operation. Therefore, to improve Mandiri Internet customer satisfaction, the management needs to maintain the performance of Mandiri Internet service attributes that are considered good. For further research it is necessary to explore other service quality variables.

V Conclusion

The average age of respondents was 32.73 years, with the lowest age of 25 years and the highest 46 years. The average length of work is 9.9 years, the lowest length of work is 3 years and the highest is 31 years. The highest

level of education is Diploma III at 60%. Nurse satisfaction before intervention 118.68, nurse satisfaction after intervention increased to 122.4, with the lowest value of 46 and the highest of 176. Nurse performance prior to intervention 91.87, lowest of 10 and highest of 146. Nurse satisfaction after intervention increased to 105.33, with the lowest value of 65 and the highest 150. The average nurse satisfaction before the intervention was 118.86 and after the intervention the average increased to 122.41. There was a significant difference in the average nurse satisfaction before and after the intervention (p = 0,000). The average performance of nurses before the intervention was 91.87, after intervention the average increased to 105.33. There was a significant difference in the average performance of nurses before and after the intervention (p = 0,000). The average nurse satisfaction in the intervention group was 132.57, in the control group the average nurse satisfaction was at a score of 112.26. There was a significant difference in the average nurse satisfaction in the intervention and control groups (p = 0.001). The average performance of nurses in the intervention group was 113.89. In the control group the nurse's performance averaged 96.77. There is a significant difference in the average performance of nurses in the intervention group and the control group (0,000).

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