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Effect of Ergonomic Factors Causing Muscle Complaint Against Employees Performance in the Administration Ulin Hospital Banjarmasin South Kalimantan Indonesia

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Abstract: Research aims: (1) identify and analyze the attitude and position of work can cause muscles complaint to employee. (2) identify and analyze application of not ergonomic work environment can cause muscle complaints to employee. (3) identify and analyze of not ergonomic devices that can cause muscles complaint to employee (4) identify and analyze the attitude and position of work can affect employee performance. (5) identify and analyze the application of not ergonomic work environment can affect to employee performance. (6) identify and analyze not ergonomic devices can affect employee performance. (7) identify and analyze muscle complaints that employees perceived effect employee performance. Research methods in cross-sectional sample of 100 respondents with a saturated sampling, analysis techniques using structural equation modeling (SEM). Research concluded that the highest direct effect both attitude and work position with muscle complaints is 2.472 and the highest direct effect of variable attitude and work positioning, work environment and IT ergonomic with the employees performance is -1.581.

Key words: Ergonomics · Work Environment · Work Tools · Muscles Complaints

INTRODUCTION

Performance factors are very important for all public and private institutions. In achieving the goals of the organization, one of factors which can be a supporting factor for employees is ergonomic factors, according to the results of Johnson's research, entitled "An Assessment Of Ergonomic Computer Workstation User's Pain Among University In A Nigerian Community '. In addition to research, Budi Utomo titled "muscle disorders, neck and shoulder (muscle, Neck, Shoulder) in computer operator and the factors that influence it" suggests the existence of a mismatch with anthropometric employees working device causing muscle complaints [1].

Ergonomic factors are part and work environment factors that are determinants of employee performance achievement in administration Ulin hospital Banjarmasin which includes layout and placement of equipment, especially computer. In addition, the working environment is a working environment that occurs in organizations is one of the factors creating employee performance. More conducive work environment will support employees to do a good job so that organizational goals will be achieved.

The use of computers has increased dramatically year to year. In 1975 only 200,000 computers in the United States and increased to 100 million units in 1995. By 1995 the use of desktop personal computers (PCs) as much as 90% and 10% of the laptop. Computer users in Indonesia in 2011 as many as 40,829,720 people [2].

Employees in doing their jobs, sometimes they do not work positions in accordance with the principles of ergonomics that is too bent, abnormal hands range. Equipment that is not in accordance with the user's convenience will also result problems of fatigue and pain in the back, arms, legs and other body parts also cause eye fatigue.

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The working environment is a working environment that has a direct effect on the workmanship and employee work performed. The work environment includes: lighting, noise, staining, odors and work devices [3].

The use of computers for work is very helpful and enable people do their job and optimize employee performance. The use of computers is now more widespread, almost every human activity can not be separated from the use of computers. Humans as though it is highly dependent on the ability of computers that are designed to aid human activity. Computers are widely used in offices, in research institutions, in universities or in companies, but not many are aware that computer use can cause problems.

Working attitude is the position of the body, head and limbs (hands and feet) well in the relationship between the body and the location of its center of gravity. The factors that most effect include joints corner, body vertical inclination of the head, hands and feet as well as the degree of the addition or subtraction of backbone curve shape [4].

Ergonomics function can not be separated from the working attitude. Include information technology input devices, especially hardware (keyboard and mouse) and the output device, (monitor). [5] Such devices should have compatibility with a way for employees to use in order to make easy do the job. Musculoskeletal complaints are complaints on part of skeletal muscle that is felt by a person, ranging from very mild to very sick complaints. Skeletal muscle complaints generally occurs due to excessive muscle contraction due to provision workloads are too heavy with a long duration of working.

This study will determine the application of ergonomic environment in the General Hospital Ulin Banjarmasin does cause muscle complaints that will affect the performance and employee. Due to working conditions that are safe, comfortable, peaceful and fun, man as a worker will achieve high productivity and stay work for service in a long term.

MATERIALS AND METHODS

The method used in this study is cross-sectional, because in terms of the time this research was conducted at a certain time and executed at any time. Type of research included in the observational and analytic studies, because the data collection is done directly on the object of research and analyze the relationship between the variables to be studied. The variables studied were:

- The free variable is the working position (X1), work environment (X2) and IT ergonomics (X3).
- Dependent variable is the complaint muscoluskeletal (Y1), employee performance (Y2)

Location of the study at the administration Ulin Hospital Banjarmasin. The research conducted in November 2012 to March 2013. Population in this study was a computer operator who works using computer for ± 8 hours per day with as many as l00 operator. Research samples were taken from population (100 respondents) by adopting a non -probability sampling method is the sampling technique does not provide opportunities or equal opportunity for each element or selected members of the population to be sampled. In this study, the sampling technique used is saturated sampling, this technique is used as population and object only 100 respondents, making it possible to collecting data and study overall population. The data used is primary data because of the way the data collect is done directly. Data collected is quantitative. Data collected by distributing questionnaires to the respondents.

Questionaire validity dan reliability test conducted to 10 % sample of respondents. Test validity by the correlation between the scores of the questions with a total score using Person Product Moment technique. In the independent variable, ie the variable working position (X1) is represented by a 4 point question the validity of the value between 0.5 to 0.70, the work environment variables (X2) is represented by the 3 point question the validity of values between 0.782 to 0.855, IT variables ergonomics (X3) is represented by the 3 point question the validity of values from 0.547 to 0.772. The dependent variable, the variable complaints muscoluskeletal (Y1) is represented by a 4 point question the validity of the value between. 568 to. 765, employee performance variable (Y2) is represented by a 5 point question the validity of the values between. 595 to. 760. While the reliability of the questionnaire for all items greater than t - Table (> 1.85). All the questions have also comply construct reliability greater than 0.50, while the value of the construct validity of the overall value of the critical ratio (CR) is greater than the value of the SE.

Hitpotesis in this study are:

- There is the effect of attitude and work position against the muscles complaints Ulin Hospital Banjarmasin employee.

- There is the effect of the work environment to the muscles complaints Ulin Hospital Banjarmasin employee.
- There is the effect of the application of IT ergonomics to muscle complaints Ulin Hospital Banjamiasin employees.
- There is an effect health complaints on the performance among employees Ulin hospital. Banjarmasin
- There an effect between attitude and working position on the performance of hospitals pegawal Ulin Banjarmasin.
- There is the effect of the working environment on employee performance Ulin Hospital Banjarmasin.
- There is the effect of IT ergonomics implementation on employee performance Ulin hospitalBanjarmasin.

RESULTS AND DISCUSSION

The evaluation results of the suitability using criterion of goodness of fit can be concluded that all the good and acceptable criteria. However, for the adjusted goodness of fit criteria index (AGFI) were below standard (0.878 <090), but with attention to the results of tests of goodness of fit others then this may still be said to be marginally feasible for use as a tool to confirm the theory and models which has been built based on existing observational data. The following table summaries the results of the evaluation of the suitability of the goodness of fit:

Evaluation of assumptions through SEM analysis to test the normality assumption critical ratio is not found in existing criteria. The highest value skewnes cr -1.583 and -highest kurtosisi cr is 2.184, this value is still below 2.58. Then the data can be considered in the normal spread. Then assuming outliers also stated that the data is not extreme or outlier, because the value of M d-squared (14.680) <X2 (50.063). Multicollinearity assumption tests also did not reveal any indication of multicollinearity symptoms, because the results of the sample covariance matrix determinant (13.285) were well above 0.

The results of the hypothesis testing by observing Table 2 of the regression weght critical ratio can be seen as follows:

- Cr values between YI Y1_Xl is 0.738 < t table 5 % df 49 (1.67), Xl not give effect to Y1, thus based on the hypothesis that has been formed, the attitudes and work positions do not affect on muscle complaints to employees Ulin Hospital Banjarmasin. Cr value between Y1 _ X2 is -0.711 < t table 5 % df 49 (1.67), X2 does not give effect to Y1, thus based on the hypothesis that the work environment does not give effect to muscle complaints on employee Ulin Hospital Banjarmasin. Cr value between YI _ X3 is -0.153 < t 49 Table 5 % df (1.67), the X3 does not give effect to Y1, thus based on the hypothesis then IT ergonomic not give effect to muscle complaints employees Ulin Hospital Banjarmasin.

Table 1: Criteria Goodness of Fit

Goodness of Fit	Cut of Value	Hasil Estimasi	Keputusan
Chi square (X2)	Tabel	50,06	Good Fit
Significancy Probability	≥ 0,05	0,431	Good Fit
Root Mean Square Erros Appoximation (RMSEA)	≤ 0,08	0,015	Good Fit
Goodnes of Fit Index (GFI)	≥ 0,90	0,923	Good Fit
The Comparative Fit Index (CFI)	≥ 0,95	0,979	Good Fit
Adjusted Goodnes of Fit Index (AGFI)	≥ 0,90	0,878	Marginal
CMIN/DF	≤ 2,00	1,022	Good Fit
Tucker Lewis Index (TLI)	≤ 0,95	0,971	Good Fit

Table 2: Hypothesis Test

construct	Estimate	S.E.	C.R.	P	Label
Y1 ← X1	2,472	3,350	0,738	0,461	Par_8
Y1 ← X2	-0,449	0,631	-0,711	0,477	Par_9
Y1 ← X3	-0,007	0,045	-0,153	0,878	Par_10
Y2 ← X1	-1,581	1,752	-0,903	0,367	Par_13
Y2 ← X2	-0,439	0,559	-0,785	0,432	Par_14
Y2 ← X3	-0,002	0,014	-0,122	0,903	Par_12
Y2 ← Y1	0,066	0,102	-0,102	0,518	Par_11

Table 3: Direct affect

	X1	X2	X3	Y2
Y1	2,472	-0,499	-0,007	0,066
Y2	-1,581	0,439	-0,002	-

- Cr value between Y2 _X3 is -0.122 < t table df 49 5 % (1.67) X3 does not give effect to Y2, based on the hypothesis that had formed the IT ergonomic no effect on employee performance Ulin Banjarmasin Hospital. Values between cr Y2_XI is -0.122 < t 49 Table 5 % df (1.67) XI does not give effect to Y2, based on hypothesis -which has been established then the object of health complaints did not impact on employee performance Ulin Banjarmasin Hospital.

The direct effect is indicated by the arrows in the diagram and in accordance with a given hypothesis. Here is a direct effect of the model is formed and research.

The above table shows that the highest direct effect between X (1, 2,3) with Y1 is between XI with Y1 at 2.472 and the highest direct effect of X (1, 2,3) with Y2 is between XI to Y2 of - 1.581, because on the diagram connecting it with the arrows (←), the effect of other variables is O because there is no direct relationship.

The results showed that the ni direct model between the attitude and the position of the working cause muscle complainant is 2.472, it means -related sitting position during working and the results can be assumed that an attitude and a comfortable working position will not provide a muscle complaints a positively.

Then the model for the relationship the attitude and working position to employees performance Ulin Hospital give a coefficient of -1.581, these results show a decrease in the attitude and not good working position will have a negative impact on employee performance.

Based on the results of the analysis using Maximum Likelihood of Estimates Regression Weights method estimated values were subsequently obtained to get the indirect effect to be analyzed. Indirect effect X1 to Y2 through Yl: 2.472 (0.066) = 0.163. Based on the indirect effect results and the attitude and position of work variables through employee muscle complaints variable to employee performance Ulin Hospital is at 0.163. These results can be interpreted that each increase of one standard deviation of the attitude and position of the work, while the other variables constant will result in increased employee performance Ulin Hospital by 0.163 standard deviations.

Indirect effect X2 to Y2 through Y1: 0.449 (0.066) = -0.029. The results of the indirect effect of the work environment variables through employee muscle complaints variable to employee performance Ulin Hospital is at -0.029. It can be interpreted, each increase of one standard deviation work environment components, while other variables constant will result in a decrease in employee performance Ulin Hospital the standard deviation of 0.029

Indirect effect X3 to Y2 through YI: -0.007 (0.066) = 0.000462. Based on the results of the indirect effect of IT ergonomic variables through variable muscles complaints, neck and shoulders to employee performance Ulin Hospital is equal to -0.000462. These results can be interpreted that each increase of one standard deviation IT ergonomic while the other variables constant will result in a decrease in employee performance Ulin Hospital of 0.000462 standard deviation

CONCLUSSION

Based on the research that has been done can be concluded as follows:

- SEM assumption analysis requirements performed in this study are all fulfilled. So there is no reason to change the model.
- Results and hypothesis testing showed Hypothesis 1, the attitude and the position does not give effect to the working muscle complaints Ulin Hospital employees. Hypothesis 2., The work environment does not give effect to muscle complaints Ulin Hospital employees., Hypothesis 3, IT ergonomic not give effect to muscle complaints Ulin Hospital employees. Hypothesis 4, attitude and working position no effect on employee performance Ulin Hospital. Hypothesis 5, the working environment does not exert effect on employee performance Ulin Hospital. Hypothesis 6, IT ergonomic no effect on employee performance Ulin Hospital. Hypothesis 7, the object of health complaints did not impact on employee performance Ulin Hospital.
- The results of the direct model between the attitude and position of work provides estimates of muscle complaints, neck and shoulder at 2.472. Relationship

models with attitude and work performance of employees' positions Ulin Hospital coefficient value of -1.581

- Results indirect variables effect the attitude and position of work variables through muscle complaints, neck and shoulder complaint to employee performance Ulin Hospital is equal to 0.163. Results of indirect effect and work environment variables through variable muscle complaints on the performance of employees Ulin General Hospital by 0,029. Indirect effect and the IT ergomis variable through employee muscle complaints variable to employee performance Ulin Hospital is at - 0, 000 462. The direct effect between attitude and positions of work provide muscle complaints of 2.47. Indirect effect and the variable XI, attitude and work position through the variable of muscle complaints employee to employee performance Ulin Hospital is at 0.163. Indirectly Effect of work environment through variable X2 through employee muscle complaints to employee performance Ulin Hospital is at -0.029. Indirect effect X3 IT ergonomic variables through employees muscle complaints on the employee performance Ulin Hospital is at -0.029.

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