Evaluation of Occupational Health Safety Management System in Hospitals in Banda Aceh City

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Keywords	ABSTRACT
Hospital, Evaluation, K3, Environment.	The most dominant hospital activity actors at risk of occupational safety accidents (SMK3) are hospital employees such as nurses, *cleaning services*, patients and visitors. The purpose of this study was to evaluate the application and factors affecting the implementation of occupational health and environmental safety management systems at dr. Zainal Abidin Regional General Hospital, Meuraxa Hospital and Banda Aceh Mother and Child Hospital. The data collection technique uses a mix method that combines quantitative and qualitative data with sequential explanatory strategies. The legal basis is Permenkes No. 66 of 2016, and the data was analyzed using the Likert scale method points 1-5 through SPSS version 26. The results of research at RSUDZA, RSIA, and RSUDM Banda Aceh show that the application of SMK3 is good to very good. However, there are several inhibiting factors that need to be considered by the hospital in order to improve the implementation of the Occupational Safety and Health Management System (SMK3) at RSUDZA, RSIA, and RSUDM Banda Aceh, some improvements can be recommended. First, RSUDZA needs to ensure the stability of K3 field officers and improve the marking of K3 signs. In addition, the unification of the drug room with pharmacy employees must be separated to be more effective. RSIA needs to obtain budget for ceiling repairs so as to block various small dirt falling from roof gaps, avoid splashing rainwater falling through the roof insulators or regulators of heat and cold coming from the roof, roof frame covers to make the space neater and cleaner, sound dampers, both generated by rainwater and other sounds and rearrange the right material placement. RSUDM needs to overcome solid waste piles, improve the marking of K3 rooms, and improve the arrangement of parking areas. In addition, it is important to hire additional security personnel in the ER. All these improvements are expected to improve occupational safety and health conditions in hospitals.

INTRODUCTION

A health service place, or better known as a hospital, is a medical building equipped with facilities and infrastructure to serve visitors and support human resources. The influence of hospitals on society is dual and can have both positive and negative impacts (Rahayu *et al.* 2020; Wahyuni *et al.* 2020). Hospital activities, especially those carried out by employees such as nurses, cleaning services, patients, and visitors, have a high risk of accidents (Oakman *et al.* 2022). This potential risk involves environmental pollution due to hazardous medical waste that can threaten human lives around the hospital area (Ministry of Health, 2007).

Hospital workplace accidents can be triggered by dangerous working environment conditions and unsafe human behavior (Suhartoyo *et al.* 2022). Therefore, there is a need for serious efforts in managing occupational safety and health in hospitals to reduce the risk of accidents and ensure a safe environment for all parties involved in activities (Muthoharoh dan Wibowo 2020; Mufidah 2021).

According to data from BPJAMSOSTEK, until August 2022, there were 180 thousand cases of work accidents with a recovery rate of 26%, a disability rate of 3%, and an accident rate of 3% (BPJS, 2019). These figures reflect a significant level of risk in the work environment across different sectors (ADI 2014; Savoy 2022). Therefore, it is important to follow up by implementing effective hospital management to improve supervision and evaluation of the Occupational Safety and Health Management System (SMK3) in hospitals (Eka Fitria *et al.* 2017; Alam *et al.* 2023; Liao *et al.* 2023).

Good management implementation measures may include planning, monitoring, evaluating, and continuously improving hospital occupational safety and health policies (Bastani *et al.* 2021; Getahun *et al.* 2023; Ende *et al.* 2023). Thus, it is expected to reduce the incidence of work accidents, increase the cure rate, and minimize the impact of disability and fatal accidents. This initiative not only aims to safeguard the workforce's well-being, but also to create an overall safe and healthy working environment (Kovacevic *et al.* 2023; Maskari *et al.* 2023; Sontakke *et al.* 2023).

Steps to avoid the risk of hazards in hospitals involve the implementation of an Occupational Health Safety Management System (SMK3) (Dewi dan Wardani 2022; Wijesinghe *et al.* 2023). Implementing Occupational Safety and Health (K3) positively impacts reducing the number of work accidents to improve maximum labor performance (Ibrahim 2013; Bentley *et al.* 2023; Viswanathan *et al.* 2024). K3 Hospital, as part of SMK3, is defined as a health service institution that involves medical personnel and researchers who are also responsible for providing education (Salikunna dan Towidjojo 2011)

Generally, implementing SMK3 in hospitals brings commitment and policies to create a comfortable work environment, increasing labor productivity. Efforts to reduce work accidents continue to be carried out by the Government of Aceh as one of the indicators of human development in the health sector. Article 3 of the Regulation of the Minister of Health Number 16 of 2016 concerning the criteria for SMK3 hospitals consists of planning, policy determination, monitoring, evaluation, review, and improvement of SMK3 performance. Hospital leaders are important in setting K3 policies and are committed to implementing SMK3 by applicable legal provisions.

This study focuses on evaluating the application of SMK3 in three Aceh province hospitals: Dr. Zainal Abidin Regional General Hospital (RSUDZA), Mother and Child Hospital (RSIA), and Meuraxa Regional General Hospital (RSUDM). By understanding current Occupational Safety and Health (K3) practices, identifying obstacles in SMK3 implementation, and analyzing the impact of hospital accreditation on SMK3 implementation, this research seeks to provide insights and examples for strengthening Occupational Safety and Health standards in the health service sector.

Through this research, deeper insights can be obtained on the effectiveness of SMK3 implementation in hospitals and provide a foundation for improvements that may be needed. This evaluation is also directed to provide examples and lessons learned for other hospitals in the surrounding area to strengthen Occupational Safety and Health standards in the health service sector.

METHODS

This study uses a mixed method with a sequential explanatory approach to evaluate the implementation of the Occupational Safety and Health Management System (SMK3) in three hospitals in Banda Aceh City, namely Dr. Zainoel Abidin Regional General Hospital (RSUDZA), Mother and Child

Hospital (RSIA), and Meuraxa Regional General Hospital (RSUDM). This method combines quantitative and qualitative data with a legal basis in the form of Permenkes No. 66 of 2016.

The object of the study involved the three hospitals, with data collection techniques carried out through interviews and direct observation in the field. Information from section heads and employees related to Occupational Safety and Health (K3) and hospital environmental management is obtained. Primary data collection techniques involve observational data, interviews, questionnaires, documentation, and audio recordings. This primary data was obtained by directly observing activities in the field, conducting interviews, and distributing questionnaires to representatives of K3 employees and environmental management employees in the three hospitals.

Primary data collection includes photo documentation of research activities as evidence of implementation accuracy. Meanwhile, secondary data were obtained from literature studies and existing administrative data related to the implementation of SMK3 in the hospital. Secondary data also includes the number of work accident cases in 2022 (Sugiarto 2022).

The research variables consist of dependent variables, namely the number of work accident cases in the three hospitals, and independent variables, namely the application of SMK3 by detailing policies, planning, implementation, monitoring, and evaluation, as well as reviewing and improving K3RS performance.

Data analysis techniques use a quantitative approach with descriptive statistical methods. The analysis involves validity tests, reliability tests, normality tests, multicollinearity tests, heteroscedasticity tests, multiple linear regression tests, hypothesis tests, determination coefficient tests, and scoring methods. Data processing is carried out using SPSS statistical software version 26. Thus, this study covers various aspects, from field data collection to statistical analysis, focusing on evaluating the application of SMK3 in selected hospitals.

RESULTS
Evaluation of the Application of SMK3 in RSUDZA, RSIA and RSUDM in Banda Aceh City
Under the reference parameters of Permenkes No.66 of 2016 obtained from data processing in the Statistical Program for Social Sciences (SPSS) Version 26 method. Here are some details of the percentage value of the evaluation assessment of the application of SMK3 obtained from the quantitative questionnaire instrument data processing in Table 1 and Figure 2.

Table 1. Percentage Instrument Questionnaire with Likert Scale Interval Method

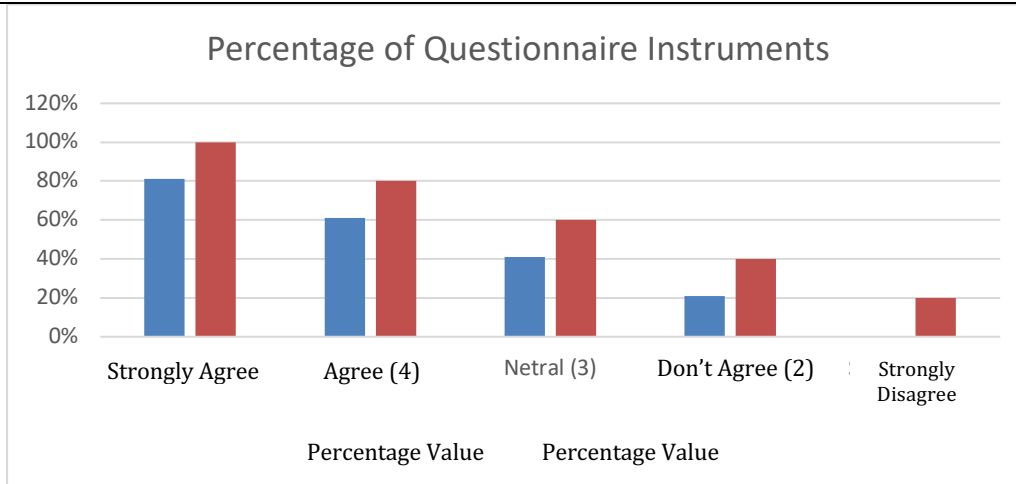| No	Questionnaire Answers	Value Score	Percentage Value $\sum$(%)	Categories
1	Strongly Agree (SS)	5	81%-100%	Excellent
2	Agree (S)	4	61%-80%	Good
3	Neutral (N)	3	41%-60%	Enough
4	Disagree (TS)	2	21%-40%	Not good
5	Strongly Disagree (STS)	1	0%- 20%	Bad

Figure 1. Percentage chart of questionnaire instrument with Likert scale interval method point 5

Based on Figure 1. of the graph above, the blue color means the percentage value starting from the smallest percent, and the orange color is the percentage value to the highest limit used in research with the Likert scale method points 1-5.

1. **Descriptive Statistical Test**

The results of the descriptive statistical test explain briefly and clearly all the answer points from the research indicators of the application of SMK3 at RSUDZA. There are 8 research indicators consisting of 5 variable X indicators (independent) and 3 variable Y indicators (dependent). Variable X indicators are the implementation of K3RS policies and planning. K3RS, implementation of the K3RS plan, monitoring, and evaluation of K3RS performance, review and improvement of SMK3 performance, while variable Y identifies work accident cases at RSUDZA, RSIA and RSUDM Banda Aceh. The descriptive statistical test analyzes questionnaire data by testing descriptive statistics on SMK3 variables according to references in Permenkes No.66 of 2016 by looking at the general data description such as the average value (mean), highest (max), lowest (min) and standard deviation of each research variable. The results of the evaluation of the implementation of SMK3 in RSUDZA, RSIA and RSUDM Banda Aceh are seen in Table 2.

Table 2. Results of Descriptive Statistical Test at RSUDZA, RSIA and RSUDM in Banda Aceh City

	Descriptive Statistics *SPSS* 26											
Indicators	RSUDZA				RSIA				Hospital			
	Min	Max	Mean	Std. Dev	Min	Max	Mean	Std. Dev	Min	Max	Mean	Std. Dev
Kind Gender	1	2	1.50	.505	1	2	1.09	294	1	2	1.50	.514
Age	2	8	6.65	1.973	5	8	7.41	1182	4	8	6.33	1.815
Length of Work	1	5	4.17	1.374	2	5	4.73	767	2	5	3.56	1.097
Part work	1	2	1.56	.501	1	2	1.55	510	1	2	1.50	.514
Level Effectiveness	5	4	1.17	.377	4	5	4.41	503	4	5	4.56	.511
Policy Enforcement K3	11	15	13.40	1.440	8	15	11.32	2.234	12	15	13.17	1.295
Planning K3	8	10	9.52	.684	6	10	7.82	1.220	8	10	9.00	1.029
Implementation K3 plan	30	40	37.71	2.414	44	60	52.23	4.947	32	40	35.89	3.359

Monitoring and evaluation K3 performance	9	15	14.33	1.078	10	15	13.32	1.887	12	15	13.33	1.372
Performance review and improvement SMK3	8	10	9.62	.606	6	10	8.91	1.306	8	10	8.78	1.003
Identification of cases of work accidents in hospitals (Y)	12	15	14.25	.911	10	15	12.41	1.532	12	15	13.33	1.328
Valid N (listwise)	48 respondents				22 respondents				18 respondents		

Based on the results of the descriptive statistical test of the research data above, a follow-up test was carried out, namely a frequency descriptive statistical test in detail and the results of the data analysis were interpreted as follows:

a. Descriptive statistical test of respondents' frequency based on gender.

The following is a descriptive statistical test of respondents' frequency by gender can be seen in table 3 and figure 2.

Table 3. Results of descriptive statistical test of respondent frequency (Gender)

Gender	RSUDZA	RSIA	Hospital
Man	24	20	9
Woman	24	2	9
Total	48	22	18

The results of the descriptive test of the gender frequency of respondents at RSUDZA obtained the number of respondents 48 people consisting of 24 men and 24 women, in RSIA the number of respondents 22 people consisting of 20 men and 2 women and in RSUDM the number of respondents 18 people consisting of 9 men and 9 women. The results of the descriptive test of respondents' sex frequency at RSUDZA, RSIA and RSUDM can be seen in the following graphic image:
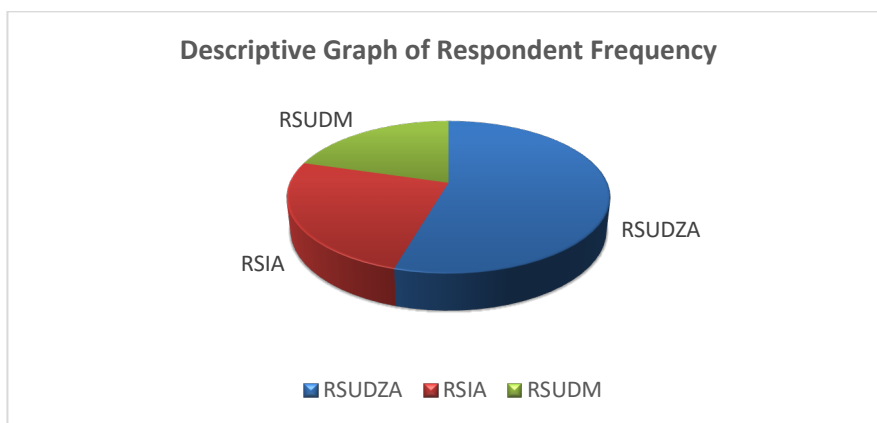

Figure 2. Graph of respondent frequency by Gender

Based on the table and graphic above, the number of research respondents from employees of RSUDZA, RSIA and RSUDM sections K3 and IPLRS.with male gender is greater than female respondents.

b. Descriptive statistical test of respondents' frequency based on age

The results of the descriptive statistical test of respondents' frequency based on age can be seen in table 4, figures 3-4 and 5.

Table 4. Results of descriptive statistical test of respondents' frequency based on age

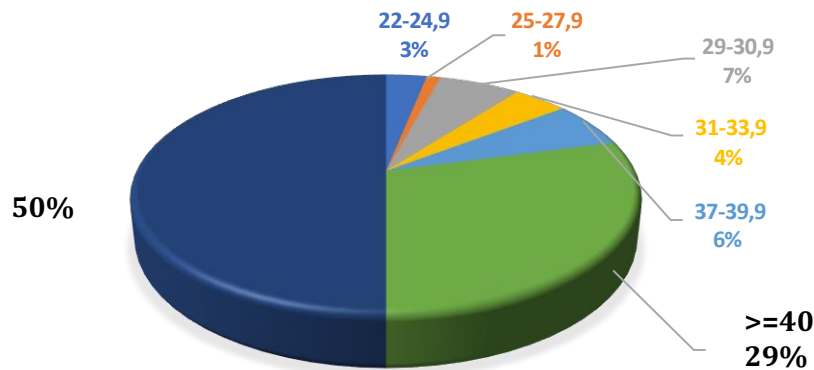| Age of Respondents	RSUDZA	RSIA	Hospital
22-24.9 yrs	3	0	0
25-27.9 yrs	1	0	0
29-30.9 yrs	6	0	5
31-33.9 yrs	4	4	2
34-36.9 yrs	0	0	2
37-39.9 yrs	6	1	0
> = 40 yrs	28	17	9
Total	48	22	18

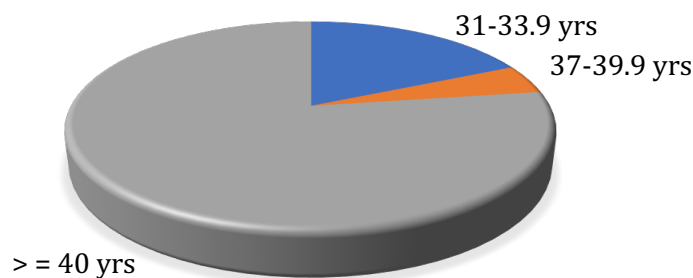**Figure 3. Graph of respondents' frequency by age**

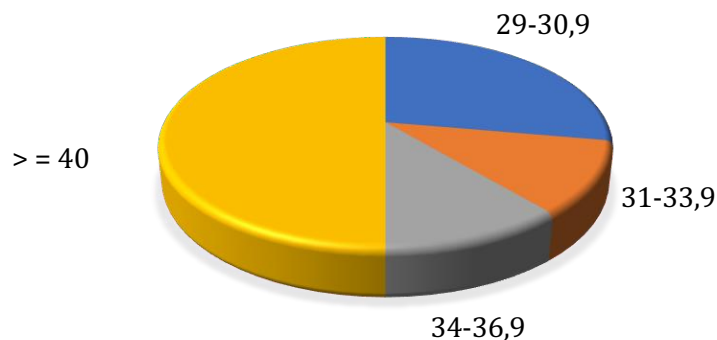**Figure 4. Graph of Respondents' Frequency by Age in RSIA**

Figure 5. Graph of respondents' frequency by age at RSUDM

Based on tables and descriptive statistical graphs, the frequency of respondents based on the interpretation of the age of respondents in RSUDZA, RSIA and RSUDM are more dominant aged aged >40 years as many as 54 people, while those aged 22-24.9 years as many as 3 people, which means that more respondents are older than younger.

c. Descriptive statistical test of respondents' frequency based on length of work

The results of the descriptive statistical test of respondents' frequency based on length of work can be seen in table 5, figures 6-7 and 8.

Table 5. Results of Descriptive Statistical Test of Respondents' Frequency Based on Length of Work

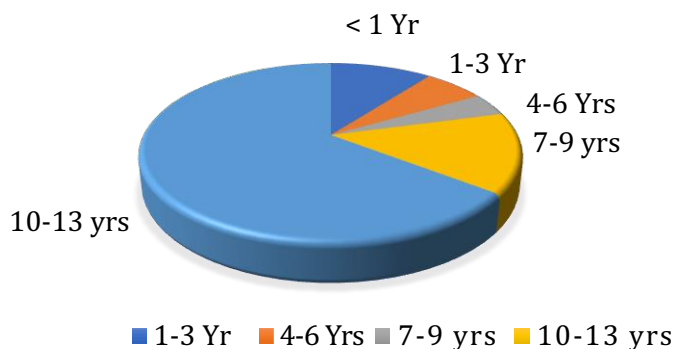| Length of Work	RSUDZA	RSIA	Hospital
< 1 Yr	5	1	0
1-3 Yr	3	0	4
4-6 Yrs	2	1	4
7-9 yrs	7	1	6
10-13 yrs	31	19	4
Total	48	22	18

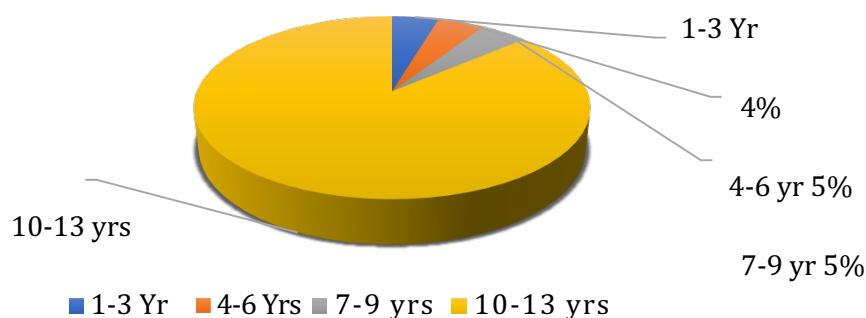**Figure 6. Graph of respondents' frequency based on length of work at RSUDZA**

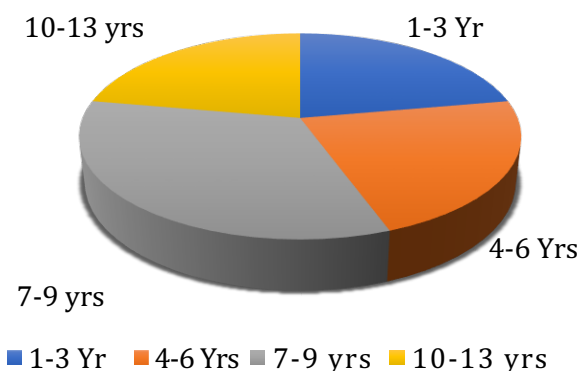**Figure 7. Respondent Frequency Graph Based on Length of Work at RSIA**

Figure 8. Graph of Respondents' Frequency Based on Length of Work at RSUDM

Based on tables and descriptive statistical graphs of respondents' frequency based on the interpretation of respondents' length of work at RSUDZA, RSIA and RSUDM, it can be concluded that the intensity of working time per employee is greater than 13 years as many as 54 people.

d. Descriptive statistical test of respondents' frequency based on part of the work

The results of the descriptive statistical test of respondents' frequency based on the work section can be seen in table 6.

Table 6. The output results of SPSS 26 descriptive statistical tests of the frequency of work parts in RSUDZA, RSIA and RSUDM.

Parts of the work	RSUDZA	RSIA	Hospital
K3	21	10	9
IPL	27	12	9
Total	48	22	18

Based on the results of the frequency descriptive statistical test above, it is interpreted that the respondents' work in the evaluation research on the application of SMK3 in RSUDZA, RSIA and RSUDM is more dominant in the field of environmental management agencies totaling 48 people, compared to the K3 section respondents totaling 40 people.

2. **Data Quality Test**

The data quality test of the evaluation of the application of SMK3 in RSUDZA, RSIA and RSUDM Banda Aceh was carried out by processing questionnaire data through the SPSS method with validity tests and reliability tests. The following are the results of the quality test of research data evaluating the application of SMK3 at RSUDZA, RSIA and RSUDM Banda Aceh:

a. Validity Test

Validity testing is tested per questionnaire and total data to obtain valid data using SPSS tools including *analyze, correlate, bivariate*. The results of the data correlation are tested with the following calculation r formula:

Rumus r hitung
> *r hitung : df = n-2 (n adalah jumlah data)
> *t hitung : df = n-k-1 (n adalah jumlah data, k adalah jumlah variabel bebas / x)
> *f hitung : df1 = k-1 (k adalah jumlah keseluruhan variabel / x+y),
> df2 = n-k (n adalah jumlah data, k adalah jumlah keseluruhan variabel / x+y)

1. The X1 variable validity test (application of K3RS management) obtained a valid test result output in accordance with the provisions of the value from the r table calculate 0.05% in RSUDZA in accordance with the r value of calculate > 284.5 produced SPSS output 455, 311.634 and in RSIA with a calculated value of 0.433 produced SPSS output 433, 875, 633 and in RSUDM with a calculated value of 0.468 produced SPSS output 813, 694, 468.

2. The validity test of variable X2 (planning K3RS) obtained a valid test result output in accordance with the provisions of the value from the r table calculate 0.05% in RSUDZA in accordance with the calculated r value of > 284.5 produced SPSS output of 800, 786, 1 and in RSIA with a calculated value of 0.433 produced SPSS output of 941, 540, 1 and in RSUDM with a calculated value of 0.468 produced SPSS output of 1000, 1000, 1.

3. The validity test of variable X3 (implementation of K3RS planning) obtained a valid test result output in accordance with the provisions of the value from the r table calculate 0.05%, in RSUDZA according to the calculated value in RSUDZA is 284.5 in RSIA 0.433 and in RSUDM is 0.468.

4. The X4 variable validity test (monitoring and evaluation of K3RS performance) obtained a valid test result output in accordance with the provisions of the value from the r table

calculate 0.05%, in RSUDZA according to the calculated value in RSUDZA is 284.5 in RSIA 0.433 and in RSUDM is 0.468.

5. The X5 variable validity test (review and performance improvement of SMK3) obtained a valid test result output in accordance with the provisions of the value from the r table calculate 0.05%, in RSUDZA according to the calculated value in RSUDZA is 284.5 in RSIA 0.433 and in RSUDM is 0.468.

6. The validity test of variable Y (identification of work accident cases) obtained a valid test result output in accordance with the provisions of the value from the r table calculated 0.05%, in RSUDZA according to the calculated value in RSUDZA is 284.5 in RSIA 0.433 and in RSUDM is 0.468.

Based on the output of the variable validity test X1, X2, X3, X4, X5, Y in RSUDZA, RSIA and RSUDM greater than the calculated r value, it is said to be valid and the questionnaire data is declared worthy of research.

b. Reliability Test

Reliability tests on the evaluation questionnaire of the application of SMK3 in RSUDZA, RSIA and RSUDM in Banda Aceh City were used to determine the value *of alpha cronbachs* in SPSS or always measure the level of indicators of reliable research variables for questionnaire answers from respondents consistent and stable. The results of the output reliability test of the evaluation questionnaire data for the application of SMK3 at RSUDZA, RSIA and RSUDM Banda Aceh have been valid with *cronbachs alpha values* > 0.6.

Table 7. SPSS output results Reliability Test of SMK3 Application Indicators at RSUDZA, RSIA and RSUDM in Banda Aceh City

Indicators	Reliability Statistics			N of Items
	Cronbach's Alpha			
	RSUDZA	RSIA	Hospital	
X1	716	332	333	3
X2	409	0.6	1000	3
X3	471	0,6	870	8
X4	321	0.6	880	3
X5	382	0.7	1000	2
Y1	376	764	917	3

Information:

 Cronbach's alpha: > 0.60 (lower limit of the reliability value of a construct)

N of item : Number of questions

Based on the results of the reliability test data of research indicators for the application of SMK3 in RSUDZA, RSIA and RSUDM in Banda Aceh City are considered sufficient and satisfactory because ≥ 0.07 the reliability test data is valid in accordance with the Cronbach alpha value > 0.060. The results of the reliability test data on research indicators of the application of SMK3 in RSUDZA, RSIA and RSUDM in Banda Aceh City all reliable items are consistently reliable with strong realiability values.

3. **Classical Assumption Test**

The classical assumption test with SPSS in evaluating the application of SMK3 in RSUDZA, RSIA and RSUDM Banda Aceh was carried out for questionnaire data analysis with quantitative methods. The results of the classical assumption test of the questionnaire data evaluation of the application of SMK3 in RSUDZA, RSIA and RSUDM Banda Aceh were carried out with several normality tests.

The normality test is a test of the normality of the distribution of research data by testing the most parametric statistical analysis. The normality test is said to be good if the regression analysis is normally distributed. The results of normality tests at RSUDZA, RSIA and RSUDM use graph analysis and statistical analysis in the form of histograms and P-P Plots.

a. Normality Test at RSUDZA

The results of the *Kolmogogrov Smirnov one sample normality test* on the evaluation research of the application of SMK3 at RSUDZA can be seen in Figure 9.
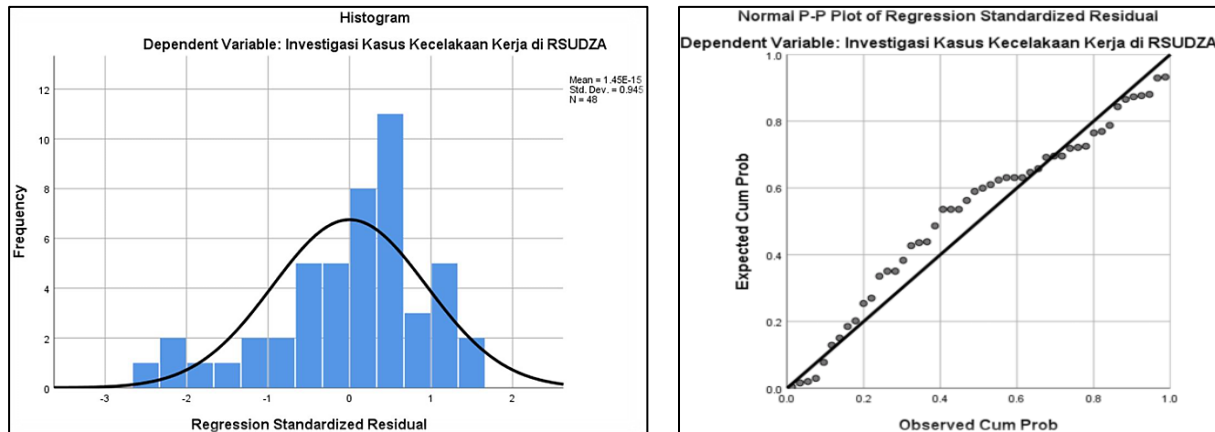

Figure 9. SPSS normality test histogram at RSUDZA and Normality test graph P_P plot in RSUDZA

The normality test results in figure 9. at RSUDZA are said to be valid and normal, the graphical display of frequency tabulation in the form of graphic bars with symmetrical bell-shaped curve lines is not leaning to the right or left. The questionnaire data accumulated all samples, shown in the right histogram graph image showing the value of N = 48 meaning that all questionnaires were distributed to the population in RSUDZA which amounted to 48 respondents. Furthermore, for the output result, the standard deviation value shows a value of 0.945, which means > 0.05 means that the normality test is said to be normally distributed.

The bar graphic in the research histogram at RSUDZA interpreted the descending polygon on the abscissa or base axis -2 which means that the variables X2, X3 and X7 have decreased the value of the questionnaire in the sufficient category with a percentage value of 60%, where according to factors affecting the implementation of SMK3 at RSUDZA needs developments regarding the implementation of the K3 organizational structure for X2, K3 budget management for X3 and evaluation of the provision of more security officers for X7. The standard deviation value of 0.945 in the bar graphic frequency ordinate rises to mean 1 with the highest bar graphic having an effect with a variable value in the questionnaire answers on average 89.49% with a very good category.

The graph of the output results of the P-P plot normality test at RSUDZA as shown in figure 10 shows that the plot points are spread close to the model or straight line, so the data of the evaluation research questionnaire for the application of SMK3 in RSUDZA is said to be normally distributed. However, at ordinates 0.4 and 0.6 the points begin to spread slightly and away from the diagonal line due to a decrease in the value of the questionnaire answer variables at X2, X3 and X7.

b. Normality Test at RSUDZA

The results of the *Kolmogogrov Smirnov one sample normality test in the* evaluation research of the application of SMK3 at RSIA can be seen in Figure 10.
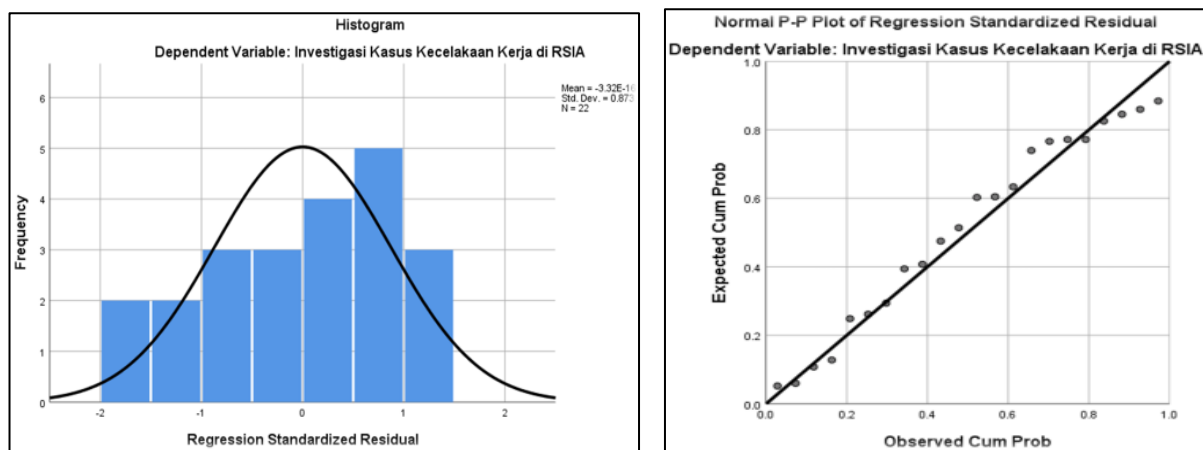
Figure 10. SPSS normality test histogram in RSIA Figure and Normality test graph P_P plot in RSIA

The normality test results on the histogram image at RSIA show a graphical display of frequency tabulation in the form of a bar graphic with symmetrical bell-shaped curve lines not leaning to the right or left, so the results of this normality test are said to be valid and normal. The questionnaire data accumulated all samples, shown in the right histogram graph image showing the value of N = 22 means that all questionnaires were distributed to the population in RSIA which amounted to 22 respondents.

Furthermore, for the output result, the standard deviation value shows a value of 0.873, which means > 0.05, which means the normality test is said to be normally distributed. The bar graphic in the research histogram at RSIA interpreted the descending polygon on the abscissa or base axis 2 which means the variables X3, X7, X9, X11, X12, X14, X15 and X16 decreased the value of the questionnaire in the sufficient category with a percentage value of 60%, where according to factors affecting the implementation of SMK3 in RSIA it is necessary to evaluate the determination of financial support, facilities and infrastructure for X3, evaluation of the procurement of additional security officers for X7, evaluation of B3 waste management for X9, evaluation of K3 infrastructure management for X11, evaluation of medical device management in aspects of K3 for X12, evaluation of SMK3 audit for X14 and evaluation of SMK3 audit report for X15.

The standard deviation value of 0.873 in the bar graphic frequency ordinate rose to a mean of -3 with the bar graphic value decreasing a lot because it affected the variable value in the questionnaire answer on average 67.47% with a good category.

The graph of the output results of the P-P plot normality test *in RSIA* shows that the plot points are spread close to the model or straight line, so the questionnaire data for the evaluation of the application of SMK3 in RSIA is said to be normally distributed. However, in the ordinate there are some points starting to spread slightly and away from the diagonal line, this is due to a decrease in the value of the variable, and this is still not too deviated from the more dominant graph form, the P-P *Plot points* are close to the diagonal line, and this is said to be normal.

c. Normality Test at RSUDM

The results of the *Kolmogogrov Smirnov one sample normality test in the* evaluation research of the application of SMK3 at RSIA can be seen in Figure 11.
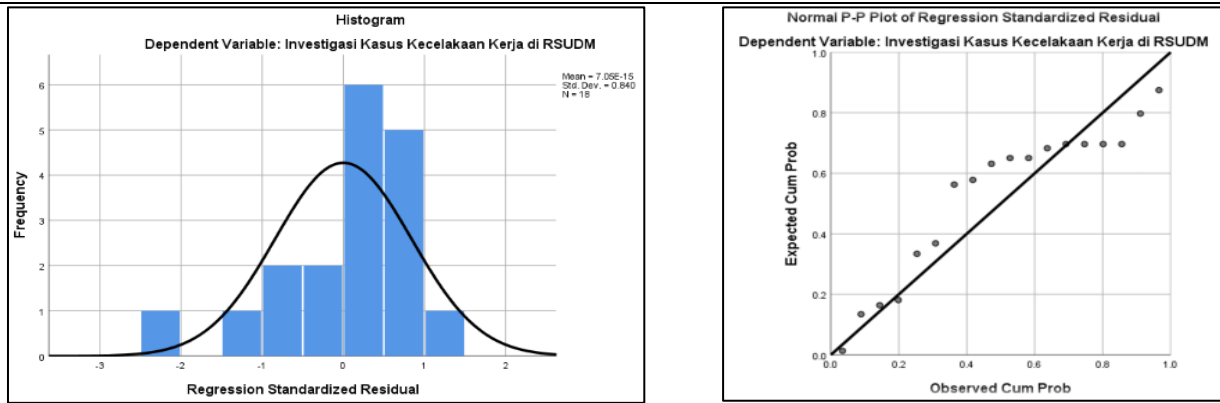
Figure 11. SPSS normality test histogram at RSUDM Figure and Normality test graph P_P plot in RSUDM

The normality test results on the histogram image at RSUDM show a graphical display of frequency tabulation in the form of graphic bars with symmetrical bell-shaped curve lines not leaning to the right or left, so the results of this normality test are said to be valid and normal. The questionnaire data accumulated all samples, shown in the right histogram graph image showing the value of N = 18 means that all questionnaires were distributed to the population in RSUDM which amounted to 18 respondents. Furthermore, for the output results, the standard deviation value shows a value of 0.840 which means >0.05 which means the normality test is said to be normally distributed. The bar graphic in the research histogram at RSUDM interpreted the descending polygon on the abscissa or base axis -2 which means that the variables X3 and X7 have decreased questionnaire values in the good category with a percentage value of 60%, where according to factors affecting the implementation of SMK3 at RSUDM need to be evaluated regarding the determination of financial support, facilities and infrastructure for X3 and evaluation of the procurement of additional security officers for X7. The standard deviation value of 0.840 in the bar graphic frequency ordinate dropped dramatically at the -2 coordinate because it affected the variable values of X3 and X7 with an average questionnaire value of 86.48% with very good categories.

The graph of the output results of the P-P plot normality test *at RSUDM shows that* the plot points are spread close to the model or straight line, so the questionnaire data for the evaluation of the application of SMK3 *at RSUDM* is said to be normally distributed. However, in the ordinate there are some points starting to spread slightly and away from the diagonal line, this is due to a decrease in the value of the variable, and this is still not too deviated from the more dominant graph form, the P-P *Plot points* are close to the diagonal line, and this is said to be normal.

The normality test in the evaluation study of the application of SMK3 in RSUDZA, RSIA and RSUDM in Banda Aceh City has a different form of histogram graph and P-P Plot graph with bar graphs that go up and down according to the state of the variable values evaluated at each research site, because each hospital has different factors that affect different research. The normality test continued data processing with statistical data tests with the Kolmogorov Smirnov test to increase the accuracy of the analysis of research questionnaire data. The results of adding normality test data to the evaluation of SMK3 research in RSUDZA, RSIA and RSUDM namely by bringing up the *value of one sample Kolmogorov – Smirnov test* with a significant asymp value must be > 0.05 can be seen in Table 8.

Table 8. Kolmogorov one sample normality test – Smirnov test

One-Sample Kolmogorov-Smirnov Test	Unstandardized Residual

		RSUDZA	RSIA	Hospital
N		48	22	18
Normal Parameters[a,b]	Mean	.0000000	.0000000	.0000000
	Std. Deviation	.99708148	.1.67230380	.49946527
Most Extreme Differences	Absolute	.142	.133	.241
	Positive	.065	.086	.159
	Negative	-.142	-.133	-.241
Test Statistics		.142	.133	.241
Asymp. Sig. (2-tailed)		.017c	.200c	.007c
a. Test distribution is Normal.				
b. Calculated from data.				
c. Lilliefors Significance Correction.				

Source : Output SPSS 26 one sample normality *test Kolmogorov – Smirnov test*

The output results of the *Kolmogorov – Smirnov one sample normality test* on the research questionnaire data at RSUDZA have a value of 017 c, in RSIA the value of 200 c RSUDM is 0.07 c. The output results of *Kolmogorov's one sample normality test in this* study have been said to be normal because it produces a significant asymp value of > 0.05, this has answered that the research questionnaire is normally distributed to respondents, so the research data has met the normality in the classical assumption test.

d. Multicollinearity Test

The classical assumption test was then carried out with a multicollinearity test on the questionnaire data evaluating the application of SMK3 in RSUDZA, RSIA and RSUDM with the provision that the VIF value must be < 10 and tolleranc > 0.1 then it is said that there are no symptoms of multicollinearity. The following results of the multicollinearity test in the evaluation research on the application of SMK3 in RSUDZA, RSIA and RSUDM are shown in table 9.

Table 9. SPSS Output Results 26 Multicollinearity Test

	Collinearity Statistics					
Type	RSUDZA		RSIA		Hospital	
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
Implementation of K3RS Policy	.855	1.169	.389	2.570	365	2.738
K3RS Planning	.822	1.217	.395	2.530	.120	8.357
Implementation of the plan K3RS	.776	1.289	.864	1.158	.084	11.899
Monitoring and evaluation K3RS performance	.907	1.103	.826	1.210	.135	7.387
Performance review SMK3	.814	1.229	.802	1.246	.309	3.231

The output results of the SPSS multicollinearity test evaluation research on the application of SMK3 in RSUDZA, RSIA and RSUDM obtained valid test results and no symptoms of

multicollinearity occurred because the requirements for passing the multicollinearity test of questionnaire data must have a tolerance value of > 0.1.

e. Heteroscedasticity Test

The output results of the heteroscedasticity test of the evaluation data for the application of SMK3 in RSUDZA, RSIA and RSUDM Banda Aceh have variable variants in the regression model that are not the same as the points spread far from the X and Y axes. Plot graphs with dot patterns in regression scatter plots are obtained from Standardized Predicted Value (ZPRED) and Studentized Residual (SRESID) where predictions from the Y axis and residuals from the X axis.
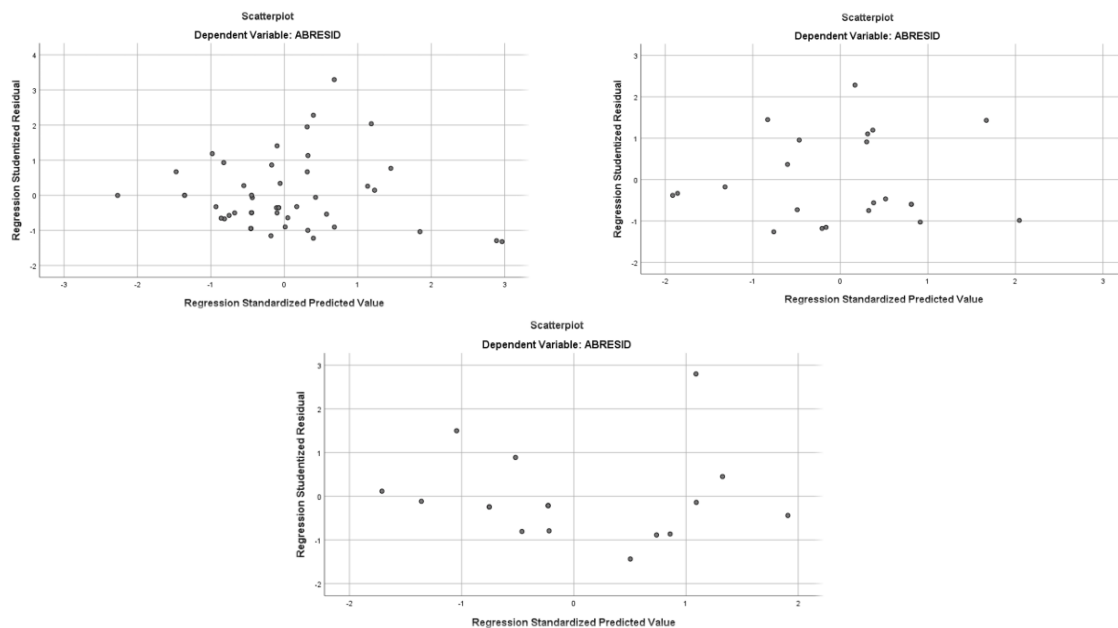

Figure 12. Heteroscedasticity test graph in RSUDZA Figure, Heteroscedasticity test graph in RSIA and Heteroscedasticity test graph at RSUDM

Based on the heteroscedasticity test graph in figures 16-17 &; 18 showing scattered points above and below the 0 ordinate on the Y axis, meaning that the results of the heteroscedasticity test with SPSS have no symptoms of heteroscedasticity, it can be concluded that there are no symptoms of heteroscedasticity or Ho is accepted and can be continued to the next questionnaire data processing, namely the glejser heteroscedasticity test.

Table 10. SPSS 26 output result Glejser Heteroscedasticity Test

Coefficientsa				
		Significant		
Type		RSUDZA	RSIA	Hospital
1	(Constant)	0.601	0.832	.085
	Implementation of K3RS Policy	0.956	0.890	.099
	K3RS Planning	0.905	0.901	.060
	Implementation of K3RS plan	0.626	0.526	.054
	K3RS performance monitoring and evaluation	0.811	0.600	.073
	Review and improvement of SMK3 performance	0.065	0.723	.053
a. Dependent Variable: ABRESIT				

Based on Table 10. it can be concluded that the output results of the regression test heteroscedasticity test have a significant value of > 0.05, so the conclusion is that the heteroscedasticity test does not experience symptoms of heteroscedasticity so that all classical assumption tests have been fully fulfilled.

4. **Multiple Linear Regression Analysis Test**

The test results of multiple linear regression analysis only focus on the value of B in the unstandardized column and constand row per variable. The following results of multiple regression analysis tests in the evaluation research on the application of SMK3 in RSUDZA, RSIA and RSUDM are shown in Table 11.

Table 11. SPSS output result 26 Multiple Linear Regression Analysis Test

		RSUDZA	RSIA	Hospital
	Type	Unstandardized Coefficients		
		B	B	B
	(Constant)	1.349	.440	.504
	Implementation of K3RS Policy	-.019	.017	.082
	K3RS Planning	1.053	.037	.811
1	Implementation of K3RS plan	.099	.004	.150
	K3RS performance monitoring and evaluation	-.056	.045	.100
	Review and improvement of SMK3 performance	.021	.019	-.260
a. Dependent Variable: Investigation of work accident cases in hospitals				

The results of the multiple linear regression analysis test (Table 4.17), namely the output results prove the involvement of two or more dependent variables (Y) and independent variables (X).

5. **Test the hypothesis**

Hypothesis testing of questionnaire data is carried out in two stages, namely hypothesis test, t test and anova hypothesis test, f test. The following is the t hypothesis test and f hypothesis test in research on the application of SMK3 at RSUDZA, RSIA and RSUDM:

a. Test hypothesis t

The t hypothesis test is testing research data from the t column and sig t values > t table (+ value) – t count must < t table (value -) then the significant value must be < 0.05. The following can be seen in table 12 of the results of the hypothesis test in the evaluation research on the application of SMK3 in RSUDZA, RSIA and RSUDM as follows:

Table 12. SPSS output result 26 Hypothesis Test t

Coefficientsa

	Type	RSUDZA	RSIA	Hospital
	(Constant)	1.031	0.727	.808
	Implementation of K3RS Policy	-.446	0.812	.697
	K3RS Planning	11.372	0.690	4.909
1	Implementation of K3RS plan	3.666	0.649	3.042
	K3RS performance monitoring and	-.995	0.902	.999

evaluation			
Review and improvement of SMK3 performance	.201	0.731	-2.934

a. Dependent variable: investigation of work accident cases in hospitals

Based on Table 12. above, the results of the t-test hypothesis test results of data analysis showed significant data results of < 0.05, then the results of the individual partial regression coefficient test in the SMK3 application evaluation research questionnaire at RSUDZA, RSIA and RSUDM mutually influenced between variable X and variable Y and valid in the value of SPSS output significance 26.

b. Anova Test Hypothesis Test Test f

The following results of the anova hypothesis f test in the evaluation research of the application of SMK3 in RSUDZA, RSIA and RSUDM are shown in Table 13.

Table 13. SPSS Output Results 26 Anova Test Hypothesis Test f Test

		ANOVAa RSUDZA				
Type		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	32.472	5	610.494	241.786	.000 b
	Residuals	6.528	42	.155		
	Total	39.000	47			
		ANOVAa RSIA				
2	Regression	49.029	5	9.806	542.459	.000b
	Residuals	.289	16	.018		
	Total	49.318	21			
		ANOVAa RSSUDM				
3	Regression	29.468	5	5.894	132.926	.000b
	Residuals	.532	12	.044		
	Total	30.000	17			

a. Dependent Variable: Investigation of work accident cases at RSUDM

b. Predictors: (Constant), Review and improvement of SMK3 performance, monitoring and evaluation

SMK3 performance, K3RS plan planning, Policy implementation, K3RS plan implementation

Based on Table 13. above, the output of the f test hypothesis test obtained a calculated f value in RSUDZA 241.786, in RSIA 542.459 and in RSUDM 132.926, then the f value is said to be influential and significant because the results of the f test hypothesis test < 0.05.

6. Determination Coefficient Test

The processing of research data on the adjusted R determination coefficient test is continuous with the achievement of the results of the t test and f test which are of significant value. The following test results of the effect of the determination coefficient test on the evaluation of the application of SMK3 in RSUDZA are shown in Table 14.

Table 14. SPSS Output Results 26 Effect Test of Determination Coefficient Test

Model Summaryᵇ

Type	R	R Square	Adjusted R Square	Std. Error of Yre Estimate
RSUDZA	.912a	.833	.813	.394
RSIA	.997a	.994	.992	.394
Hospital	.912a	.833	.813	.394

The results of the effect test of the coefficient determination of the adjusted value of R at RSUDZA 813, at RSIA 992 and RSUD 813, then the value of the coefficient determination of R square is close to the value of 100% significant data. The adjusted value of R with a value of 01 if variable x is only 1 or 2 is used r2 if variables X > 2 are used adjusted Rr2.

7. Results of Scoring Method Calculation

The results of the percentage test of the scoring method calculation per variable in the research questionnaire evaluating the application of SMK3 in RSUDZA, RSIA and RSUDM Banda Aceh can be seen in table 14.

Based on the results of scoring percentage data in Table 14, the effectiveness rate of SMK3 application has an average percentage value for research at RSUDZA 89.49%, at RSIA 67.47% and at RSUDM 86.48%. The results of the Likert scale interval in RSUDZA and RSUDM are at a value of 81%-100% which means that the application of SMK3 shows a very good category, while the Likert scale interval in RSIA is at a value of 61%-80% which means that the application of SMK3 shows a good category.

8. Percentage of Effectiveness of K3RS Management Implementation

The first stage of SMK3 evaluation research is to evaluate the implementation of K3 policy in RSUDZA, RSIA and RSUD Meuraxa Banda Aceh referring to Permenkes No. 66 of 2016 by reviewing K3 policy points seen in Table 15.

Table 15. Results of Percentage Calculation Per-item Questions

	Percentage of Effectiveness Rate Calculation					
	RSUDZA		**RSIA**		**Hospital**	
No Variable	**X=∑mxn 100**	**Interval Likert scale**	**X=∑mxn 100**	**Interval Likert scale**	**X=∑mxn 100**	**Scale Interval Likert**
1	96,25%	Excellent	78,18%	Good	87,77%	Excellent
2	60%	Enough	65,45%	Good	87,77%	Excellent
3	59,58%	Enough	48,18%	Enough	67,77%	Good
4	95%	Excellent	64,54%	Good	90%	Excellent
5	95,41%	Excellent	75,45%	Good	90%	Excellent
6	94,58%	Excellent	76,36%	Good	86,66%	Excellent
7	59,16%	Enough	60%	Enough	62,22%	Good
8	96,66%	Excellent	75,45%	Good	93,33%	Excellent
9	96,66%	Excellent	60%	Enough	88,88%	Excellent
10	97,91%	Excellent	76,36%	Good	88,88%	Excellent
11	88,75%	Excellent	60%	Enough	91,11%	Excellent
12	95,83%	Excellent	60%	Enough	90%	Excellent
13	95,83%	Excellent	76.36%	Good	90%	Excellent
14	96,25%	Excellent	60%	Enough	90%	Excellent
15	94,16%	Excellent	60%	Enough	88,88%	Excellent
16	96,25%	Excellent	60%	Enough	87,77%	Excellent
17	94,58%	Excellent	80%	Excellent	87,77%	Excellent
18	97,91%	Excellent	78,18%	Good	88,77%	Excellent

Flat flat	89,49%	Excellent	67,47%	Good	86,48%	Excellent

Based on Table 15. it shows that the evaluation of the implementation of K3RS policies in RSUDZA, RSIA and RSUDM has a good percentage in accordance with the results of questionnaire data processing with the SPSS 26 method. Meanwhile, the results of the researchers' evaluation regarding the completeness of supporting documents for the implementation of SMK3 in RSUDZA, RSIA and RSUDM in Banda Aceh City are still not perfectly available and still need to be completed as a follow-up effort to support the implementation of the K3 work program to be better, including:

a) Organizational structure documents at RSUDZA and RSIA need to determine the name, allocation of duties / *jobdesk* and not do *double jobs* to focus on the application of SMK3 hospitals. (1)
b) K3 officers at RSUDZA and RSIA need to be determined and approved by the hospital director (1)
c) K3 officers at RSUDZA and RSIA according to the K3 organizational structure appointed must have a K3 expert license (1)
d) The completeness of the structure of the Occupational Safety and Health Advisory Committee (P2K3) at RSUDZA, RSIA and RSUDM are K3 experts who assist hospital leaders for the implementation of SMK3 in hospitals (2)

9. **Factors Affecting the Application of SMK3 in RSUDZA, RSIA and RSUDM**

Based on the results of the evaluation of the implementation of SMK3, there are several factors that affect the implementation of SMK3 in RSUDZA, RSIA and RSUDM in Banda Aceh City, including the following:

Table 16. Factors that affect the implementation of SMK3 in RSUDZA, RSIA and RSUDM in Banda Aceh City

No	RSUDZA	RSIA	Hospital
1	The lack of K3 field officers in assisting the completion of the implementation of K3 work is evidenced by the absence of the determination of the name of the officer in the K3 organizational structure with The reason why the officers changed personnel	The lack of a barrier between the K3 field officer's room and other fields so that the workspace seems narrow and uncomfortable and even looks like a warehouse	The lack of signs and naming of the K3 room so that the workspace looks like employee housing without directions.
2	The lack of K3 signs in the hospital area such as directions in the layout map in the area outside the hospital makes it easier for hospital visitors to find the necessary room	The inaccurate placement of the K3 team room should be in front of the building so that it becomes the front line in overcoming work accidents and emergency response	The lack of parking area signs makes the parking area untidy.
3	The lack of information parties in each hospital building makes it easier to providing information services	The lack of budget in repairing hospital assets and lack of concern about damaged K3 so that many damaged ceilings have not been repaired.	The lack of security personnel for the Emergency Unit (ER) area so that access in and out of patients and even visitors is irregular / free, this causes a reduction

		in the level of hospital security.
4	Lack of infrastructure such as patient waiting rooms so that there are still patients and patient guards resting under the stairs, under windows and corridors of the patient room. This causes slums and can cause a commotion	The lack of information officers at several points in the hospital so that additional information officers are needed in the building
5	The lack of selection between the pharmacy workspace and the drug room affects the health of employees who are confined in the pharmacy room for a long time	

CONCLUSION

The conclusion of the evaluation of the implementation of the Occupational Safety and Health Management System (SMK3) at RSUDZA, RSIA, and RSUDM Banda Aceh showed good to very good results, with an average effectiveness value of 89.49% at RSUDZA, 67.47% at RSIA, and 86.48% at RSUDM. However, these values have not fully met the standards regulated in Permenkes No.66 of 2016. Factors that affect the implementation of SMK3 involve several problems in the K3 field, such as lack of K3 personnel, ineffective drug room management, lack of patient waiting room facilities, to security problems in the Emergency Department. This finding is an important basis for hospital management in improving and developing the implementation of SMK3 in the future.

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