



MANAGEMENT MODEL OF SCHOOL'S DENTAL HEALTH EFFORT (SDHE) OF INFORMATION SYSTEM-BASED ON IMPROVING THE QUALITY OF DENTAL HEALTH MANAGEMENT AT ELEMENTARY SCHOOL

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ABSTRACT

Dental and oral health services for elementary school students aged 6 to 12 years that have not been optimal. This show that the implementation of SDHE has not succeeded. Monitoring and evaluation on the implementation of SDHE is difficult because the reporting system of SDHE all this time is conducted manually at the end of the year using form combined with the report of the health center. The website-based SDHE management model is an information system that can be used to report the activities of SDHE directly and to monitor as well as evaluate the activities of SDHE to fit the targets that have been set. Produce innovations of the SDHE management model with relevant / appropriate information systems to increase the effectiveness and the efficiency in the implementation of SDHE in elementary school students. Research and Development (R&D) and model trials using the method of pre-experimental. The respondents amounted to 48 populations which consist 24 dental therapist and 24 UKS teachers to assess the quality of E-SDHE management and the quality of information systems in the implementation of SDHE management. The result of design of the model were tested for validation by expert. The data were tested using paired difference test, proportion test, and linear regression test. Validation by expert result the average value of 92, the category is very feasible, and with a p-value of 0,014. The quality of E-SDHE management after intervention has improved compared to before ($p = 0.001$). Respondent's assessment stated that the quality of E-SDHE information system in the good category. The SDHE management model of elementary school based on information systems provides a significant increase in the quality of SDHE management and the quality of information systems in the good category.

Keywords: Elementary school students, SDHE management model, information system

Introduction

The dental and oral health of Indonesian people needs to get serious attention from the health workers, both dentists, and dental and oral therapists.¹ The results of the National Basic Health Research (Riskesdas) in 2018 stated that

20 provinces had a prevalence of dental and oral health issues above the national number, one of which is the province of D.I. Yogyakarta.²

The poor state of the oral cavity of primary school children will affect the status of nutrition and impact the quality

of life. The activities of children who have dental and oral health issues are 12 times more limited than those who don't have dental and oral health issues.³ More than 50 million school hours lost per year due to dental and oral health issues that will impact the performance of children in school.⁴

Dental and oral diseases do not cause death directly but lower the productivity of work. That was caused by the Maximum Service Standards (MSS) targeted by the District Health Office have not been fulfilled.⁵

The Indonesian government has conducted both promotive and preventive efforts for primary school children through the School's Dental Health Clinic (SDHE). The effective promotive and preventive efforts are aimed at primary school children because dental health care must be done thoroughly in order to become a habit in the daily life of children from an early age.⁶

The percentage of Indonesian people with oral and dental health issues increased for the age of 5-9 years old from 28,9% to 54,0%. The age of 10-14 years old also increased from 25,2% to 41,4%. The most common dental and oral diseases suffered by school-age children are gingivitis and dental caries which are 60-90%.^{2,5}

Dental and oral health services for primary school children aged 6-12 years that have not been optimal indicate that the implementation of SDHE has not on target.⁷ According to the research of

Santoso (2015) regarding the analysis of the SDHE activity programs, it was concluded that the SDHE activities conducted at Halmahera Health Center were not successful.⁶

The reporting system in the implementation of the SDHE has been done manually at the end of the year using a form combined with a report from the health center, so it is difficult to monitor and evaluate the implementation of SDHE.⁸

Efforts to improve dental and oral health need to be done, especially in the quality of management which includes planning, implementing, monitoring, and evaluating in the implementation of SDHE. Improving the capability of health workers and improving the quality of both recording and reporting the existing data to increase the motivation of the staffs in carrying out the SDHE activities.⁴

One solution that will be conducted by the author to improve the quality of SDHE management and the quality of information systems is the information system-based SDHE management model. Website-based SDHE management model that is able to be used to report and evaluate the SDHE activities directly.⁹ This can be one of the technological solutions to easily control the process of collecting data, monitoring activities, time efficiency, cost and reducing errors in making decisions or taking action on SDHE activities that are carried out by the health workers and the UKS teachers.¹⁰

Method

Research and development (R & D) are applied in this research. The process of information retrieval, model

design, expert validation, revision, product testing, revision, application testing, final product revision, production of a product. The

information retrieval is done by identifying and analyzing the issues experienced in the implementation of early childhood education programs about dental health through the qualitative descriptive method with observation and interviews with the Health Office, Dentists, Head of Health Centers, Dental Nurses, and UKS teachers.

The results of the information retrieval are used to make a design of the information system-based SDHE management model that is adjusted to the needs in the implementation of SDHE.

Expert validation tests are conducted to verify the feasibility of the product before it is used publicly. Internal testing is planned to be carried out by 6 experts, they are health promotion experts, IT experts, health management information system experts, dental and oral health coordinators, health center heads, and dentists.

The data retrieval technique used was a questionnaire, then revised the use of the information system-based SDHE management models in improving the quality of primary school dental and oral health. The test was carried out to produce products/models that are suitable to be used.

The product testings were carried out by applying models in real fields. The design of the test used *pre-experiment* with one group *pretest* and *posttest*. There were 48 respondents, consisting of 24 dental and oral therapists and 24 UKS teachers. Revisions are made if the results of the initial test do not meet the expected specifications, so it needs to revise the product. The results of the next revision will be used to test the information systems. The product in the form of an information system-based SDHE

management model (E-SDHE) is the output of the development of School's Dental Health Clinic (SDHE) management model for primary school students.

Statistical tests for analyzing the data used paired difference test, proportion test, and regression test, the normality test uses Shapiro-wilk. If the data is normal, then the paired t-test is used whereas it is not normal, then use the Wilcoxon test.

Results And Discussion

Information Retrieval

The results of the information retrieval concluded that the unsuccessful SDHE implementation so far has been caused by the lack of monitoring and evaluation of the SDHE program so that the implementation of SDHE has not been optimal. Therefore, it is necessary to develop a model to become one of the technological solutions to easily control the process of data collection, monitoring activities, time efficiency, cost and reduce errors in making decisions or taking action on SDHE activities carried out by the health workers.

Model Design

The findings were obtained in the early stages, the researchers designed and developed a product in the form of an information system-based SDHE management model "being created as a tool in the implementation of SDHE which previously was a manual into a Website-based information system that will also facilitate the health workers in monitoring and evaluating the SDHE activities.

Expert Validation

Table 1. Expert Validation Result

No	Position	Score	Mean	Category	P-Value*
1.	Health Promotion Expert	98.75			
2.	TI Expert	93.75			
3.	Child Health Information System Expert	96.25			
4.	Public Health Office Kesgilit Coordinator	88.75	92.71	Very Decent	0.014
5.	Public Health Center Head	87.50			
6.	Public Health Center Dentist	91.25			

* *Intraclass correlation coefficient*

Based on the results of evaluations from expert validators above, it is known that the average value of the feasibility score was 92.71 with a very decent category (without revision). The results of the expert validation show that the *p-value* is 0.014, which means that the information systems-based SDHE primary school management model is relevant and is worth testing the model.

Model Testing

Table 2. SDHE Management Quality Data Normality Test

Composite Variable	Statistic P-Value
Planning	
<i>Pretest</i>	0.000
<i>Posttest</i>	0.000
Implementation	
<i>Pretest</i>	0.002
<i>Posttest</i>	0.000
Monitoring	
<i>Pretest</i>	0.003
<i>Posttest</i>	0.001
Evaluation	

<i>Pretest</i>	0.006
<i>Posttest</i>	0.005
<i>Pretest Total Score</i>	0.360
<i>Posttest Total Score</i>	0.260

**Shapiro-Wilk*

The results of the normality test for the management aspects of the SDHE reveal that the *p-value* is <0.05 , so it can be concluded that the data don't have a normal distribution, then it used the non-parametric test. The total score shows that the data have a normal distribution, then it used the parametric test.

Table 3. Results of SDHE Management Quality Analysis Pre and Post the Model Implementation

No	Assessment Quality	Statistic		
		Pre	Post	<i>p-value</i> *
1.	Quality of Planning			
	a. Mean±SD	57.88±11.99	87.52±9.12	0.000*
	b. Min-Max	37-75	75-100	
2.	Quality of Implementation			
	a. Mean±SD	58.67±11.38	87.23±8.59	0.000*
	b. Min-Max	33-75	75-100	
3.	Quality of Monitoring			
	a. Mean±SD	55.94±6.57	85.52±7.23	0.000*
	b. Min-Max	45-70	75-100	
4.	Quality of Evaluation			
	a. Mean±SD	55.62±7.83	86.77±7.03	0.000*
	b. Min-Max	40-75		
5.	Total Score of Questionnaire			
	a. Mean±SD	56.42±6.18	86.31±6.03	0.000**
	b. Min-Max	45-71	75-100	

Wilcoxon* *Paired t-test*

The *p-value* in 119 pect and the total score of the SDHE management quality questionnaire is $p < 0,000$. This shows that there are differences in the effectiveness of using the SDHE management information system.

Model Result

The results of the model are innovation of information systems-based management of SDHE primary schools that are expected to provide benefits for recording, reporting, monitoring, and evaluating the SDHE program as well as overcoming the program problems and obstacles faced by SDHE officers so far when using the manual system.

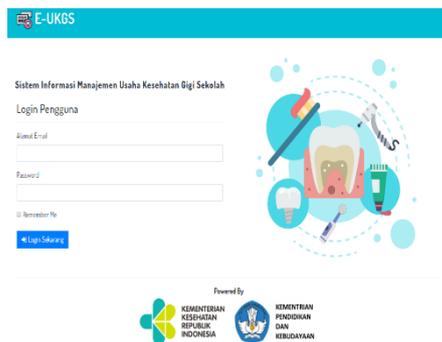


Figure 1. Main Display E-SDHE (www.e-ukgs.pe.hu)

Discussion

The information system-based SDHE management model (E-SDHE) is a monitoring or coverage indicator that aims to record, report, monitor and evaluate the implementation of SDHE in a Public Health working area. SDHE activities are carried out to reduce the number of dental and oral health issues in primary school children. SDHE activities must be routinely carried out so that every student receives dental and oral health services in the form of limited promotive, preventive and curative services according to the needs of each.¹¹

The p-value pre and post the implementation of the model in all aspects of SDHE management quality are $p < 0,000$. The quality of SDHE management consists of planning, implementing, monitoring, and evaluating. Planning for SDHE

activities carried out using information systems can improve cross-sectoral and cross-program coordination.⁴ The E-SDHE information system can provide facilities for program implementers so that they can be implemented and coordinated well through a health information management system.¹² The E-SDHE information system is also can make it easy for SDHE implementers to support the success of promotive, preventive and referral efforts in SDHE.¹³

According to Santoso (2017) the results of monitoring activities in the information system can be used as a basis for measuring the achievement of promotive, preventive and referral implementation activities for primary school students.⁴ The E-SDHE information system can monitor the achievement of the activities implementation so that they can be monitored properly through the system health management information which is in accordance with the objectives of the planning.¹⁴ The E-SDHE information system strongly supports the implementation of program evaluation because the data displayed has been processed automatically so that it can be done as a basis for determining a health policy for primary school children.¹⁵

E-SDHE produces complete and detailed data in identifying dental and oral health issues of primary school students. The information system is trustworthy and free from elements of error and free from bias.¹⁶ This information system is able to provide benefits which are in accordance with dental and oral health r 120 which are in line with the needs of the program of primary school children.¹⁷

The E-SDHE information system can improve the effectiveness in reducing the workload of health workers who are still integrated with the main tasks in the service.¹⁸ The E-SDHE developed in this study produces menus that are quite comprehensive in reporting the results of SDHE activities. Data input becomes more efficient for immediate reporting to the district / city health office.

Conclusion

Based on the results of the study it can be concluded that the information system-based SDHE management model (E-SDHE) is proven to provide a significant improvement in the quality of SDHE management and the quality of information systems in the good category compared to before.

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