



Enhanced Performance Capacity of Posyandu Toddler Cadres on Oral Health Care Using Knowledge Management Training: SECI

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Abstract. Puskesmas Ngagel Rejo is one of the health centres in Surabaya, has run the school dental health effort (UKGS), but has not been able to carry out oral health efforts in the community (UKGM), because puskesmas do not yet have a cadre of oral health in posyandu. The problem with research is that there is no oral health cadres at Puskesmas Ngagel Rejo Surabaya that serves the community. The study aims to increase the performance capacity of cadres of toddlers concurrently becoming oral health cadres as well, using training with a knowledge management approach: SECI. The study was a quasi-experimental study with a non-randomized control group of pre-post-design tests. There were three non-randomly selected groups, then given a pre-test to find out the initial state, which is the difference between the experimental group and the control group. Data analysis uses non-parametric data because the data is not distributed normally. The population of this study is a cadre of Puskesmas Ngagel Rejo Surabaya numbering 317 cadres, while the total sample is 150 cadres. As a result, there were significant differences in knowledge and skill levels between dental health training groups without SECI, dental health training groups with SECI, and control groups (p -value <0.001). This research can prove that the knowledge and skills of the SECI group are better than the other two groups. In conclusion, knowledge management-based training: SECI affects cadre behaviour in oral health

Keywords: knowledge management, SECI, training

INTRODUCTION

In recent years, knowledge management has been widely used to improve the organization's performance. Knowledge transfer is one part of knowledge management, such as discussions, internships, and training. While knowledge is widely recognized as an important source of competitive advantage, the understanding of creating and managing knowledge dynamically within the organization is still lacking. According to Nonaka, the creation of new knowledge through tacit and explicit knowledge conversion is called SECI (Nonaka and von Krogh 2009). Tacit is an intangible and undocumented knowledge, because it is still in the mind, for example, ideas, insights, ways of thinking. Tacit knowledge is easy to understand and practice when such knowledge is documented.

There are researches that been conducted within the addressed subjects, such as Pasaribu researched knowledge management implementation in the college library (Pasaribu 2016). Amartiwi researched knowledge management implementation in universities (Amartiwi 2019). Rizaldi et al. conducted knowledge management research for the diagnosis of nosocomial infections in hospitals (Rizaldi, Muslim, and Yudaningtyas 2014). Rostinah et al. conducted posyandu cadre training at Puskesmas using a problem-based learning approach, not knowledge management (Rostinah, Laksmi Widajanti 2015). Rofiaty et al. research the influence of knowledge management on innovation, strategy implementation, and organizational performance in hospitals (Try, Angga, and Mulyanto 2015). Ardiansyah et al. conduct knowledge management implementation research to support the accreditation of study programs (Ardiansyah, Priyandari, and Damayanti 2016). Martin and Root conducted knowledge management research: SECI in construction (Martin and Root 2009). Fathi and Easa conduct knowledge management research: SECI at the Bank (Fathi and Easa 2012). However, none of the research has linked the use of knowledge management: SECI to posyandu cadre training. Posyandu cadres need to get training on dental and oral health maintenance using knowledge management: SECI because knowledge management: SECI is an effective way to transfer knowledge. The main contribution of this research is to develop training methods using new



knowledge creation through tacit and explicit knowledge conversion so that training materials are easy to understand and implement.

This paper is structured as follows, Section 2 presents the materials and the proposed method in comparison to other standard approaches. Section 3 describes the results of the study. Section 4 presents the discussion and while conclusions are presented in Section 5.

METHODE

This type of research is a quasi-experimental study with a non-randomized pre-posttest design. Three randomly selected groups were obtained, then given a pre-test to find out the different start between the experimental group and the control group.

The population of the study in this study was posyandu cadres in the working area of the Ngagel Rejo Health Center in Surabaya in 2018 totaling 317 people (74 Posyandu). A sample size of 150 cadres, determined by the Slovin formula with precision is 5% (0.05). The study was conducted in April - October 2018. Collecting data for the dependent variable in the form of data on maintenance knowledge and dental and oral health checks, using questionnaires and observations.

Steps taken to collect data, respondents were divided into 3 groups: the experimental group 1 received dental health training without SECI, the experimental group 2: the group received dental health training with SECI, while the control group did not receive dental and oral health training. Each group consisted of 50 Posyandu cadres, then a pre-test. The cadre answered the questionnaire which contained several questions about knowledge of oral and dental health maintenance, then the Cadre was given several questions by the interview guidelines on the skills to examine oral health. After the pretest, the next step is giving treatment/intervention in the form of cadre training on oral and dental health without SECI given to the first experimental group, cadre training based on the SECI model of knowledge management in the second experimental group.

The stages of training without SECI are as follows: researchers explain how to maintain and check oral health to respondents, use modules without slide presentations, then the respondents simulate among their theoretical learning partners into practical learning, then respondents apply their knowledge and skills to mothers and toddlers visiting Posyandu.

There are 4 steps in the training with SECI, starting with socialization, namely the researcher explaining how to maintain and examine the oral health of the respondent using the module with the lecture method, without presenting the training material. The second step is externalization, in which the researcher presents the training module material to respondents. In the third step, the combination of the respondents simulates the theory learning peers they have received into practical learning. The last step is internalization, in which respondents apply their knowledge and skills to check oral health to posyandu patients.

After the dental and oral health training, the cadres were given a post-test in the form of some questions which were the same as the pre-test, namely knowledge, and skills about maintaining oral health.

The method of data analysis in this study uses bivariate analysis to describe the characteristics of the studied variables (independent variables and dependent variables). The homogeneity test to determine the normality of the data obtained p-value in the Shapiro-Wilk test <0.05, meaning that the distribution of paired data is not normally distributed, so using a non-parametric test. The distribution of knowledge and skills before and after the dental health training for each group was analyzed using the Wilcoxon signed-rank test.

Effects of Dental Health Training on Knowledge and Skills analyzed using the Kruskal Wallis Test. Researchers also conducted a posthoc test to examine significant different groups, namely the dental health training group without SECI and the dental health training group with SECI, the dental health training group without SECI and the control group, and the dental health training group with the control group. Treatment dose ≥ 3 times.

RESULTS

Table 1 shows that the age of most respondents in the study was 41-50 years (35.33%), the highest level of education was high school (57.33%) and the most dental and oral health knowledge was in the moderate category (58%).



Table 1. Characteristics of Respondent

Characteristics of Respondent	N	%
Total = 150		
Age (years)		
20 – 30	12	8.00
31 – 40	34	22.67
41 – 50	53	35.33
51 – 60	37	24.67
61 – 70	14	9.33
Gender		
Women	150	100
Male	0	0
Level of education		
Elementary school	25	16.67
Junior High School	37	24.67
<i>Senior High school</i>	86	57.33
Higher education	2	1.33
Knowledge		
Good	21	14.00
<i>Medium</i>	87	58.00
Low	42	28.00

Table 2 shows that the majority of posyandu cadre knowledge about dental and oral health in the three study groups before the training was in the medium category. After the training, the majority of respondents' knowledge in the SECI group was seen in a good category (68%). This shows a significant increase in the SECI group compared to the non-SECI group and the control group.

Table 2. Knowledge of Respondents before and after Being Given Training

Knowledge Level	Before		After	
	N	%	N	%
Non-SECI Group				
Good	6	12	14	28
Medium	30	60	36	72
Low	14	28	0	0
SECI Group				
Good	8	16	34	68
Medium	29	58	16	32
Low	13	26	0	0
Control Group				



Good	7	14	7	14
Medium	28	56	28	56
Low	15	30	15	30

Table 3 shows that the majority of posyandu cadre skills on dental and oral health in the three study groups were conducted before the training was in the low category. After the training, most of the skills of respondents in the SECI group were seen in a good category (62%). This shows that there was a significant increase in the SECI group compared to the non-SECI group and the control group.

Table 3. Respondent Skills before and after Being Given Training

Skill Level	Before		After	
	N	%	N	%
Non-SECI Group				
Good	0	0	12	24
Medium	4	8	38	76
Low	46	92	0	0
SECI Group				
Good	0	0	31	62
Medium	3	6	19	38
Low	47	94	0	0
Control Group				
Good	0	0	0	0
Medium	3	6	3	6
Low	47	94	47	94

Table 4 shows that the level of knowledge and skills of respondents before and after dental health training in the group without SECI increased by 0.06 and 1.16. The level of knowledge and skills of respondents before and after dental health training in the SECI group increased higher by 0.8 and 1.56 than the non-SECI group.

Table 4. Distribution of Knowledge and Skills before and after Being Given Dental Health Training

	<i>Mean</i>	<i>SD</i>	<i>p-value</i>
Non-SECI Group			
Knowledge			
Before	2.32	0.68	<0.001
After	1.72	0.45	
Enhancement	0.06		
Skills			
Before	2.92	0.27	<0.001
After	1.76	0.43	
Enhancement	1.16		
SECI Group			
Knowledge			
Before	2.12	0.62	<0.001
After	1.32	0.47	
Enhancement	0.8		
Skills			



Before	2.94	0.23	<0.001
After	1.38	0.49	
Enhancement	1.56		
Control Group Knowledge			
Before	2.06	0.71	>0.05
After	2.06	0.71	
Enhancement	0		
Skills			
Before	2.94	0.23	>0.05
After	2.94	0.23	
Enhancement	0		

Table 5 shows that there are differences in the level of knowledge and skills between the dental health training group without SECI, the dental health training group with SECI, and the control group (H: 61,151, p-value <0.001; H: 114,440, p-value <0.001). The highest average score of knowledge and skills is the group with dental health training with SECI.

Table 5. Effects of Dental Health Training on Knowledge and Skills

Variables	Groups	Mean Rank	H	p-value
Knowledge	Non-SECI Group	84.70	61.151	<0.001
	SECI Group	99.30		
	Control	42.50		
Skills	Non-SECI Group	90.20	114.440	<0.001
	SECI Group	109.80		
	Control	26.50		

Table 6 shows a follow-up analysis (post hoc test) to determine significantly different groups. The level of knowledge between the dental health training group without SECI with the control group and the dental health training group with the SECI group and the control group showed differences. The level of skills between the dental health group without SECI with the SECI group, the dental health training group without SECI with the control group, as well as the dental health training with the SECI group with the control group showed a difference ($p < 0.05$). While the level of knowledge in the Non-SECI health training group with the SECI group did not show a difference ($p > 0.05$).

Table 6. Effects of Dental Health Training on Knowledge and Skills between 2 groups

Variables	Groups	P-value
Knowledge	Non-SECI Group	>0.05
	SECI Group	
	Non-SECI Group	<0.05
	Control Group	
	SECI Group	<0.05
	Control Group	
Skills	Non-SECI Group	<0.05
	SECI Group	
	Non-SECI Group	<0.05
	Control group	
	SECI Group	<0.05
	Control Group	

DISCUSSIONS

In the SECI group knowledge is obtained from the process of interaction between tacit and explicit knowledge. Tacit knowledge is a tool for effective teaching and learning processes. Knowledge management is the way organizations learn and write, document, describe the process, and is intended to provide knowledge for others (Enakrire and Uloma 2012).



Knowledge management will be successful if there is the interaction between its components and there is no overlap in the flow of knowledge and resources that are transferred to the organization/institution, technology, and workplace culture. Organizations need people who are competent in understanding and using effective information to innovate and give direction to the organization.

Without sharing knowledge, efforts to manage knowledge on company culture, dynamics, and practice will fail. The implementation of knowledge sharing methods can minimize the decline in nurses' memory.

Training is an effort to increase knowledge, change behavior, and develop skills. The general objective of posyandu cadre training is to improve the ability of posyandu cadres in managing and delivering services to the community. Knowledge management can provide solutions to problems of limited space and time to exchange knowledge, also provides an overview of documenting knowledge by utilizing information technology (Santa 2011).

Dental and oral health cadres are volunteers selected by and from the community who have received education or training on dental and oral health so that they can become assistants for puskesmas, especially in the context of achieving dental and oral health programs in the community. Therefore, organizations must consider how to attract, develop, and maintain member knowledge as part of the knowledge management domain.

The results of this study found no difference between the SECI and non-SECI group's knowledge because the modules used were the same, but the stages of the training material were different. Knowledge assets are the input, output, and moderation factors of the knowledge creation process. Knowledge assets must be built and used internally so that the full value is to be realized. To understand the knowledge assets created, obtained, and exploited, so the knowledge assets are categorized into four types: experiential knowledge assets, conceptual knowledge assets, systemic knowledge assets, and routine knowledge assets (Nonaka and von Krogh 2009).

The process of conversion (interaction of 2 knowledge), tacit, and explicit knowledge develops in both quality and quantity (Nonaka and von Krogh 2009). This caused the SECI group's skills to be better than the non-SECI group, although the increase in dental and oral health knowledge of the non-SECI group and the SECI group was not significant ($p > 0.05$). Tacit knowledge is difficult to understand because it is still stored in the head, so it often requires special time and space. Tacit knowledge can only be obtained through shared experience. The process of articulating tacit knowledge into explicit knowledge is called externalization. When tacit knowledge is made explicit, knowledge is crystallized, making it possible to share it with others, and this is the basis of new knowledge.

The successful conversion of tacit knowledge into explicit knowledge depends on the sequential use of metaphors, analogies, and models. In this research, tacit knowledge is delivered through lectures without learning media, then externalized through oral presentations with LCD media, dental and oral health video playback, and demonstrations. After externalization, it continues with transforming explicit knowledge into a more complex and systematic collection of explicit knowledge. Explicit knowledge is gathered from inside or outside the organization and then combined, edited, or processed to form new knowledge. New explicit knowledge is then disseminated among members of the organization.

In this study, the combination phase was carried out in the form of dental caries examination between trainees (cadres) with facilitator assistance, so that cadres were able to identify caries teeth. Bandura's social learning theory explains that people learn from one another, through observation, imitation, and modelling. Learning through observation mimics the behaviour of the model, in that observers pay attention to the model demonstrating something they want to learn and expect to receive praise or reinforcement when mastering it thoroughly. The model does not have to be demonstrated by someone directly but can use someone cast or visualization as a model.

In the Bandura learning model, the person factor (cognitive) plays an important role. The personal factor (cognitive) referred to today is self-efficacy or self-efficacy. Self-efficacy is a belief in one's own ability to deal with and solve problems effectively. Self-efficacy also means believing that you can succeed and succeed (Psikologi, Kedokteran, and Udayana n.d.).



The final stage of knowledge management is implementing the skills that have been learned to the community (internalization), in this study the internalization stage is carried out in the training room or not yet done at the posyandu because there is no posyandu schedule during the research. Individuals with high self-efficacy are committed to solving the problem and will not give up when they realize the strategy being used is not working. The awareness stage means that change requires awareness to change, if there is no awareness then no change is possible.

There are five stages to achieving the ultimate goal of change, namely: awareness, desire, evaluation, trying, and acceptance, also known as awareness, interest, evaluation, trial, adoption (AIETA). Every individual involved in the change process can accept or reject it. Although the change can be accepted, it might one day be rejected after the change is perceived as hampering its existence. Roger said that effective change depends on individuals who are involved, interested, and strive to always develop and progress and have a commitment to work and implement it (Nursalam 2015).

Evaluation of training is done to assess its effectiveness, can be done at the time of training or post-training. Evaluation of the training is done by comparing the results after the training with the criteria expected by management. In the case of training which is developmental, it is necessary to evaluate changes in the attitudes and behavior of participants in the field of work which can later be tested through interviews or performance performances. Based on the results of this study, the SECI knowledge management based training is more effective than non-SECI.

The results of this study are in line with the results of Pratidina (2016) that knowledge management (SECI) can improve knowledge and skills (Pratidina et al. 2016). Combining tacit knowledge and explicit knowledge in knowledge management (SECI) can improve employee performance. The control group did not receive dental health training, so there was no increase or the posttest scores were the same as the pretest scores (Endang Retnoningsih 2013).

CONCLUSIONS

1. Knowledge management based training: SECI influences cadre behavior in oral health.
2. Knowledge management based training: SECI increases knowledge of posyandu cadres about oral health.
3. Knowledge management based training: SECI improves posyandu cadre skills in simple dental and oral health examinations.

SUGGESTIONS

1. Training of dental and oral health cadres is recommended based on knowledge management (SECI) because it proves effective.
2. It is recommended that further research is to measure the performance of oral health cadres who have been trained in knowledge management: SECI to decrease the incidence of caries in toddlers.

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