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Improving the Skills of Toddler Posyandu Cadres Through the Siempro Detection System

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ABSTRACT

Early detection of emotional behavior problems has not been optimally carried out in integrated health posts. 25% of cadres do not yet have the knowledge and skills. Integrated health posts are not yet equipped with valid and easy-to-use early detection instruments. 87% of integrated health posts in Surakarta have not carried out early detection of children's emotional behavior problems. Research has been conducted by the author on the Emotional Mental Problems Information System (Siempro), developed from the Emotional Behavior Problems Questionnaire of the Ministry of Health of the Republic of Indonesia. This information system was tested at one integrated health post in Surakarta, and can be used as a fast-accurate early detection instrument. As a novelty, this study conducted a wider scope experiment. Objective: to determine the effectiveness of using Siempro on cadre skills. Method: Pre-Experimental Design One-Group Pretest-Posttest research design. Representative samples of cadres from 10 integrated health posts in Surakarta, totaling 30 cadres. The instrument uses a questionnaire and checklist, the intervention uses Siempro. Wilcoxon Signed-Rank data analysis. The results after intervention, the knowledge were good (76.7%), the skills were skilled (63.3%), the duration of early detection was 10-15 minutes (70.0%), the accuracy of determining the conclusion was correct (100.0%). Results of the Wilcoxon Signed-Rank test for the knowledge variable p=0.006, skills p=0.000, duration of early detection p=0.002, and accuracy in determining conclusions p=0.000. All p values <α (0.05), meaning that there is a significant difference between before and after the intervention. Conclusion: The use of Siempro is effective in improving the skills of cadres at the Surakarta City. This study produces an instrument for early detection of children's emotional behavior problems that can be used effectively and efficiently.

INTRODUCTION (CHAPTER)

Emotional behavioral problems in children are conditions in which children show emotional and behavioral symptoms that are not in accordance with the norms and development of their age which can interfere with social interactions, learning, and daily life of children [1]. Types of emotional behavioral problems are children experiencing mood swings for no apparent reason; children have difficulty making

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friends and have difficulty interacting with parents, teachers, or peers; children experience concentration problems and learning difficulties; children commit aggressive acts, damage objects, or hurt friends [2].

World Health Organization shows that around 10-20% of children and adolescents worldwide experience mental disorders, including behavioral and emotional problems. Another study stated that the prevalence of emotional and behavioral problems in adolescents globally ranges from 16.5% to 40.8% depending on the country and the instrument used. Based on the 2018 Indonesian Basic Health Research Report, the prevalence of emotional and behavioral disorders in children in Indonesia is 9.6% and this figure has increased from 6.0% in 2013. In Surakarta, most preschool children have normal personal social development, but there is a category of suspected personal social problems of 17.6% in full-day kindergartens and 38.1% in regular kindergartens.

Factors causing emotional behavioral problems in children include parenting patterns, psychological stress especially in mothers, as well as an unsupportive family environment, domestic violence, poor social relationships, and physical illness [3]. The impact of emotional and behavioral problems on children includes disruption in social relationships and daily interactions, decreased learning and concentration abilities, the risk of more serious mental disorders such as depression and anxiety, potential personality problems and difficulty adapting in the future [4].

Emotional behavioral problems in children need serious attention because they have a major impact on the quality of life and development of children. Early detection and appropriate treatment can help children manage their emotions and develop optimally [5]. Early detection of emotional behavioral problems in children is an examination or screening process that aims to find early signs of emotional and behavioral disorders in children. This detection is important because emotional problems in early childhood can have a major impact on their psychological health in adolescence and adulthood [6]. Emotional and behavioral disorders in preschool children reached 74.2%, with 59.08% referred to a developmental clinic and 14.5% receiving counseling therapy.

Emotional development disorders in preschool children have an impact on anxiety disorders of around 9%, 11-15% of emotional disorders, and 9-15% of behavioral disorders. The method for early detection of emotional behavioral problems in children uses standardized screening media. One method commonly used is the Emotional Behavior Problems Questionnaire Ministry of Health of the Republic of Indonesia which helps identify children with potential emotional mental disorders [7]. In addition, questionnaires and behavioral observations are also used to detect signs of deviation in preschool children. Early detection is carried out periodically, twice a year at health centers or child health services, schools, and integrated health posts by involving health workers, teachers, and integrated health post cadres so that they are able to recognize signs, carry out reporting or early intervention [8].

Early detection of children's mental and emotional problems has not been carried out optimally at the integrated health posts. So far, integrated health posts have focused more on monitoring physical growth such as weight and height, as well as immunization, so that the mental and emotional aspects have received less special attention in routine integrated health posts activities [9]. Many integrated health posts cadres do not yet have adequate knowledge and skills regarding early detection of children's mental and emotional problems, including the use of screening instruments such as Emotional Behavior Problems Questionnaire. This causes early detection to not be carried out routinely or to be less targeted. Integrated health posts are often not equipped with valid and easy-to-use early detection instruments to identify mental and emotional disorders in early childhood. As a result, this problem is often missed when monitoring child growth and development [10].

Several studies have been conducted on how to educate and improve the skills of integrated health posts cadres. The results of the study showed that health education using audiovisual media and booklets was effective in improving the skills of cadres in conducting screening. The Wilcoxon test obtained a probability value (p) <0.001, which means that video educational media is effective in improving cadre skills in early detection of stunting [11].

Research on the effect of education on cadre counseling skills obtained a p value = 0.000, meaning that providing education using flipchart media was significant in improving cadre skills in counseling [12]. Research evaluation showed that flipchart media was effective in improving cadre knowledge and skills in providing complete basic immunization education for infants [13].

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The results of research on nutrition education using simulation and practice methods were effective in the knowledge, attitudes and skills of cadres in counseling at integrated health posts [14]. The results of the pre-test and post-test showed that 60% of cadres experienced an increase in knowledge after receiving assistance in anthropometric measurements using lecture, discussion, simulation, and demonstration methods using Microsoft Power Point media and various anthropometric measuring instruments [15].

Research that has been conducted Most of them use common methods to improve cadre skills, namely by using videos, booklets, flipcharts, and lectures with power point media. Research that is different from previous research, the novelty of the research has been conducted by the author on the Emotional Mental Problems Information System (Siempro), which was developed based on the as Emotional Behavior Problems Questionnaire instrument from the Indonesian Ministry of Health in 2019. This information system was tested at one of the integrated health posts in Surakarta. After training and mentoring, there was an increase in the skills of cadres in carrying out early detection, namely 60% good skills, 25% sufficient, and 15% lacking [16]. Siempro can be used as an instrument for early detection of children's behavioral and emotional problems in a faster time, and can provide accurate conclusions from early detection results [17].

However, the research that the author has conducted is still small in scope. Therefore, as a novelty in this study, an experiment was carried out on a wider scope. The purpose of the study was to determine the effectiveness of using the emotional mental problems information system (Siempro) on the skills of cadres at the integrated health posts in Surakarta City. The benefits of this research are to produce media or instruments for early detection of children's behavioral and emotional problems that can be used by cadres effectively and efficiently.

METHOD

Research Design

The research design used Pre-Experimental Design with One-Group Pretest-Posttest. The independent variable of the study was the use of the emotional mental problems information system (Siempro). The dependent variable of the study was the cadre service skills including: 1) Cadre knowledge about children's behavioral and emotional problems; 2) Cadre skills using Siempro; 3) Duration of early detection service; 4) Accuracy in determining conclusions for early detection of children's behavioral and emotional problems.

The study consisted of 3 stages, namely pretest, intervention, posttest. Stage I, a pretest of cadre knowledge about children's emotional behavioral problems was conducted using a questionnaire, then a pretest of cadre skills, duration of early detection, and accuracy in determining conclusions for early detection using manual Emotional Behavior Problems Questionnaire. Stage II, providing knowledge intervention with education, and skill intervention with assistance in using Siempro with demonstration and roleplay methods. Stage III, a posttest of knowledge was conducted using a questionnaire, then a posttest of cadre skills, duration of early detection, and accuracy in determining conclusions for early detection using Siempro.

Population and Sample

The population of the study were cadres from 10 Posyandu (integrated health service post) for Toddlers in Surakarta City. The sampling technique used purposive sampling with inclusion and exclusion criteria. The inclusion criteria were that cadres were willing to participate in the research activities in full, had a device that was adequately connected to the internet. The exclusion criteria were that cadres had an uncertain schedule of other activities, and the device did not support the internet. The research sample consisted of 3 representatives of cadres from 10 Posyandu (integrated health service post) for toddlers, with a total of 30 cadres.

Data Collection Technique

The data were in the form of primary data using a questionnaire. At the beginning of the study, determining the characteristics of the cadres included age, education, occupation and length of service as a cadre. Data on cadre knowledge was taken using a knowledge questionnaire about children's behavioral and emotional problems including definitions, types, causal factors, early detection, prevention and management. Data on cadre skills were taken using a checklist of cadre skills in using Emotional Behavior

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Problems Questionnaire (pretest) and Siempro (posttest) independently. The data on the duration of early detection service was taken using a questionnaire referring to the duration of time from the start to the end of the implementation of early detection with a pretest-posttest comparison. While the accuracy data determines the conclusion of early detection using a questionnaire referring to the conclusion of the results of early detection with a comparison on KMPE: Emotional Behavior Problems Questionnaire (pretest) and Siempro (posttest). Pretest, intervention, and posttest were conducted within a one-week period with a 3-day gap between each stage. The intervention for each sample was the same and conducted at the same time.

Research instrument

The questionnaire instrument has been tested for validity using the Pearson moment test (r value> 0.6) and reliability using the Cronbach alpha test (p value> 0.07). The knowledge questionnaire consists of 25 statements using the Guttman scale (correct answers score 1 and wrong answers score 0). The instrument used to provide intervention to cadres is Siempro. The Mental Problems Emotional Information System (Siempro) is an instrument developed by the author in previous research, guided by the Emotional Behavior Problems Questionnaire instrument from the Indonesian Ministry of Health in 2019. The skills checklist consists of 15 statements, using a Likert scale (score 0 not done, score 1 done imperfectly, score 2 done perfectly) with a passing score of more than 70. The knowledge and skills variables assessed are the level values, namely knowledge at the knowing level and skills at the skilled level.

This research has received ethical feasibility recommendations from The Health Research Ethics Committee of Universitas Muhammadiyah PKU (UMPKU) Surakarta number: 030/LPPM/UMPKU/V/2025.

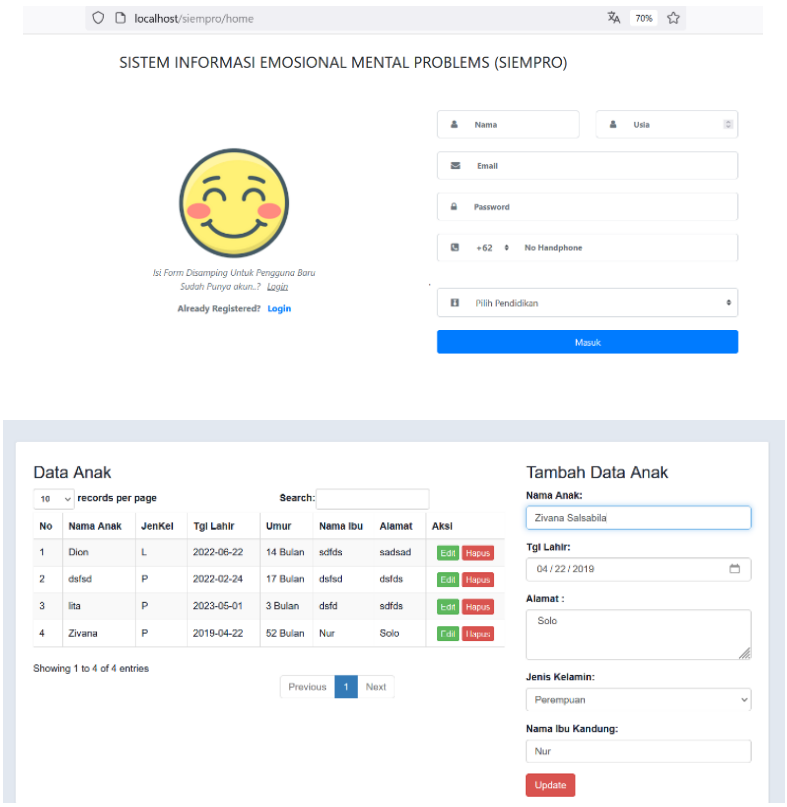

Figure 1. Siempro initial menu display

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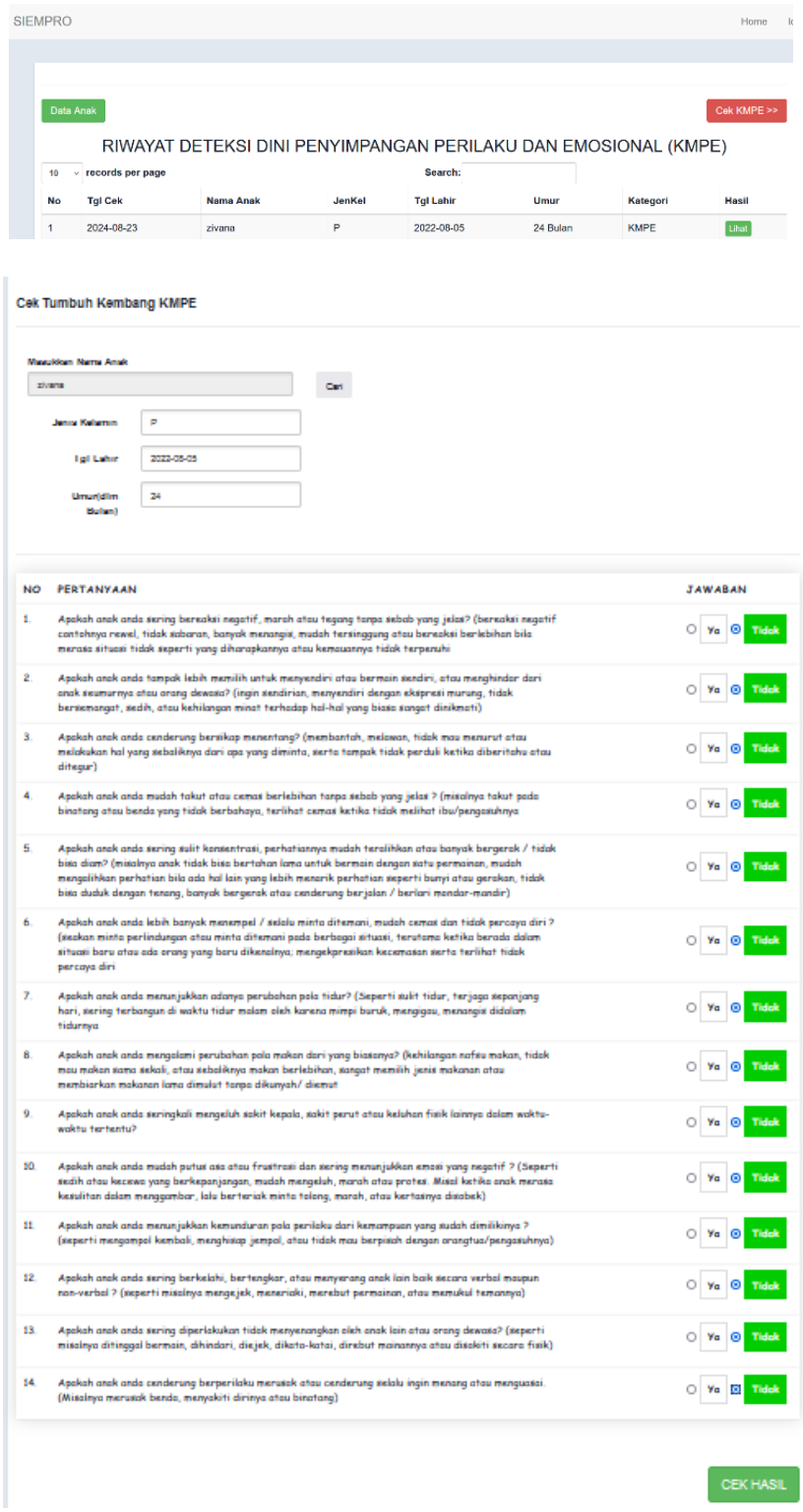

Figure 2. Display of the detection results conclusion menu

Data Analysis Techniques

Data are processed descriptively and analytically. Univariate (descriptive) analysis is used to process respondent characteristic data, and cadre service skill data, namely knowledge, skills, duration of early detection and accuracy in determining early detection conclusions. Univariate analysis uses percentage formulas or frequency distributions. Bivariate (analytic) analysis by conducting a normality test, the Wilcoxon Signed-Rank Test statistical analysis method is used to compare the differences between the pretest and posttest.

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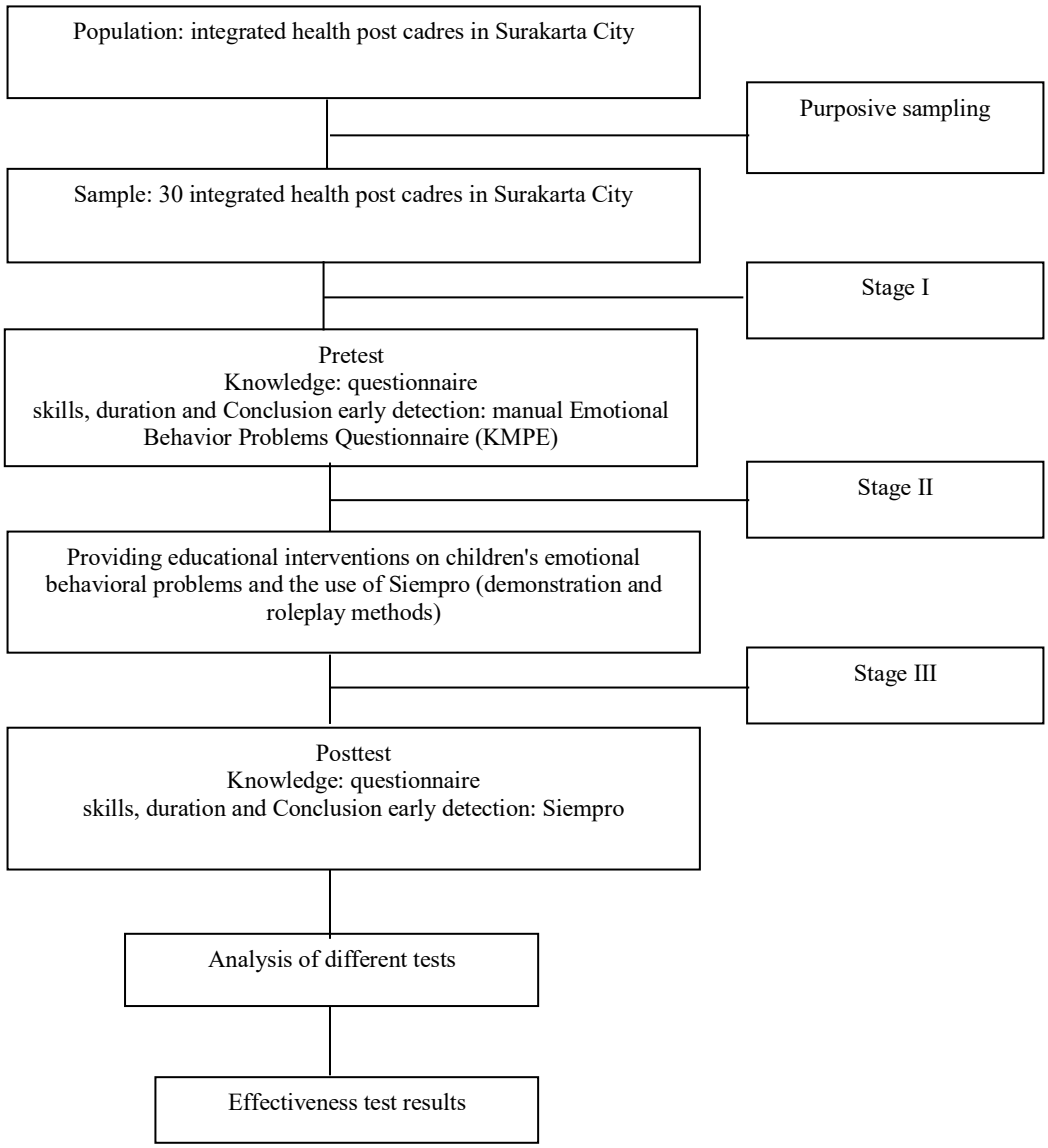

Figure 3. Research flowchart

RESULTS AND DISCUSSION

Table 1. Respondent characteristics

Category	n	%
Age		
<35 Years	4	13,3
35-50 Years	14	46,7
>50 Years	12	40,0
Education		
Primary School	1	3,3
Junior High School	9	30,0
High School	17	56,7
College	3	10,0
Job		
Housewife	22	73,3
Laborer	5	16,7
Trader	3	10,0
Length of time as a cadre		
<5 Years	3	10,0
5-10 Years	11	36,7
>10 Years	16	53,3

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Based on Table 1, the characteristics of respondents include age, education, occupation, and length of time as a cadre. It is known that the majority age is 35-50 years old as many as 14 respondents (46.7%), the majority education is high school education as many as 17 respondents (56.7%), the majority occupation is housewife as many as 22 respondents (73.3%), and the majority length of time as a cadre is >10 years as many as 16 respondents (53.3%).

Table 2. Cadre Service Skills Before and After Siempro Usage Intervention

No	Variable	Before		After	
		n	%	n	%
1	Knowledge				
	Good	3	10,0	23	76,7
	Enough	10	33,3	6	20,0
	Less	17	56,7	1	3,3
2	Skills				
	Skilled	0	00,0	19	63,3
	Quite skilled	6	20,0	8	26,7
	Not yet skilled	24	80,0	3	10,0
3	Early detection time				
	5-10 minutes	0	00,0	9	30,0
	10-15 minutes	4	13,3	21	70,0
	>15 minutes	26	86,7	0	00,0
4	Accuracy in determining early detection conclusions				
	Accurate	7	23,3	30	100,0
	Less Accurate	23	76,7	0	00,0

Table 3. Results of the Difference Test of Cadre Skills Before and After the Siempro Usage Intervention Using the Wilcoxon Signed-Rank

No	Variable	n	Mean	Z	p-value
1	Knowledge				
	Before	30	53,67	-2,731	0,006
	After	30	60,67		
2	Skills				
	Before	30	60,67	-4,694	0.000
	After	30	70,25		
3	Early detection time				
	Before	30	10,60	-3,017	0,002
	After	30	11,60		
4	Accuracy in determining early detection conclusions				
	Before	30	66,29	-4,579	0,000
	After	30	94,60		

* The significance value using alpha (α) is 0.05

Based on table 2, the knowledge of cadres about children's behavioral and emotional problems before the intervention was mostly lacking, namely 17 cadres (56.7%) and after the intervention, the majority was good, namely 23 cadres (76.7%). The skills of cadres in using Siempro before the intervention were mostly unskilled, namely 24 cadres (80.0%) and after the intervention, the majority were skilled, namely 19 cadres (63.3%). The duration of early detection of children's behavioral and emotional problems before the intervention was mostly >15 minutes, namely 26 cadres (86.7%) and after the intervention, the majority was 10-15 minutes, namely 21 cadres (70.0%). The accuracy of determining the conclusion of early detection before the intervention was mostly less precise, namely 23 cadres (76.7%) and after the intervention, the majority was correct, namely 30 cadres (100.0%).

Based on table 3, the results of the Wilcoxon Signed-Rank Test show that in the knowledge variable there is a significant difference between before and after the intervention with a p-value of 0.006 <α (0.05). In accordance with table 2, it is known that the knowledge of cadres about children's behavioral and emotional problems before the intervention was mostly lacking, namely 17 cadres (56.7%) and after the intervention the majority was good, namely 23 cadres (76.7%). This shows that the knowledge of cadres who were previously mostly lacking, after the intervention became mostly good.

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Knowledge is the result of the learning process and understanding of facts, information and concepts obtained through interaction with the environment and experience. Cadre knowledge is the main foundation that allows health cadres to carry out their role as the spearhead of health services at the community level [18].

Sufficient knowledge in cadres is very important so that they are able to carry out their duties effectively, such as filling out reports, conducting health screenings, and motivating the community to maintain health. Training and mentoring of cadres have also been shown to significantly increase their knowledge. This is in accordance with research that has been conducted with the results that there is a difference between the knowledge scores of cadres before and after training, namely p = 0.000 <0.05. Cadres who have good knowledge increased to 100%. Before the training, cadres who had good knowledge were 54.65%. The increase in cadre knowledge scores was 45.35% [19].

Based on table 3, the results of the Wilcoxon Signed-Rank Test show that in the skill variable there is a significant difference between before and after the intervention with a p-value of 0.000 <α (0.05). In accordance with table 2, it is known that the skills of cadres in using Siempro before the intervention were mostly unskilled, namely 24 cadres (80.0%) and after the intervention the majority were skilled, namely 19 cadres (63.3%). This shows that the skills of cadres who were previously mostly unskilled, after the intervention became skilled.

Cadre skills are basic skills that must be possessed by health cadres, especially in providing health services in the community. Health cadres are expected to be able to carry out early detection of diseases, provide health education, provide first aid, and manage community health programs [20].

Health cadres' skills can be significantly improved through formal training, direct practice, and mentoring. Improving cadre skills is intended to support effective and comprehensive primary health services in the community. This is in line with research that has been conducted with the results of cadre skills in managing the Emotional Mental Problems Information System (Siempro) mostly in the good category, namely 10 cadres (50%). These results were obtained after cadres received training through demonstrations, roleplays and tried to independently manage Siempro with mentoring [16].

Other studies also have similar results, namely the average score of cadre skills before mentoring was 25.83 (SD = 19.122). After mentoring in the form of counseling, demonstrations and practicums to cadres, the average action score increased to 79.17 (SD = 9.476). The results of the statistical test showed a significant difference before and after the intervention was given with a p value = 0.000 <0.05, which indicates that there is an effect of mentoring on cadre skills in early detection of stunting [21].

Based on table 3, the results of the Wilcoxon Signed-Rank Test show that in the variable of the duration of early detection there is a significant difference between before and after the intervention with a p-value of 0.002 <α (0.05). In accordance with table 2, it is known that the duration of early detection of children's behavioral and emotional problems before the intervention was mostly >15 minutes, namely 26 cadres (86.7%) and after the intervention the majority was 10-15 minutes, namely 21 cadres (70.0%). This shows that the duration of early detection, which was previously mostly >15 minutes, after the intervention became mostly 10-15 minutes.

Cadre service time and media availability are interrelated in increasing the effectiveness of health services in the community. The availability of complete media and the use of communication and information technology can optimize the implementation of effective health services [22].

The use of technology as an early detection tool can significantly increase the effectiveness of cadre service time. Digital technology and simple health tools provided to health cadres make it easier for them to identify early signs of disease quickly and accurately at the community level. With the support of technology, cadres can conduct basic health screenings. This speeds up the detection process and allows for more appropriate treatment or referral [23].

Information technology such as digital applications and information systems help cadres in recording, reporting, and monitoring public health in real time. Thus, the time required for administration is reduced and cadres can focus more on direct services and health education. Technology as an early detection tool accelerates the process of identifying health problems, reduces waiting times for services, increases the accuracy of health measurements, and facilitates coordination with health facilities, so that the effectiveness of cadre service time increases significantly [24].

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Research conducted by Wilantika explains the concept, design, and benefits of developing a Posyandu Cadre Management Information System. The results of the development of this information system have helped in analyzing data quickly and accurately, enabling more precise and measurable decision-making in health program planning. This system can improve the efficiency, accuracy, and quality of health services at the community level [25].

Based on table 3, the results of the Wilcoxon Signed-Rank Test show that in the variable of accuracy in determining early detection conclusions there is a significant difference between before and after the intervention with a p-value of 0.000 <α (0.05). In accordance with table 2, it is known that the accuracy of determining early detection conclusions before the intervention was mostly less precise, namely 23 cadres (76.7%) and after the intervention the majority were correct, namely 30 cadres (100.0%). This shows that the accuracy of determining early detection conclusions, which were previously mostly less precise, after the intervention became mostly correct.

The information system in the service at the integrated health post is able to automatically analyze child health data and provide timely and data-based intervention recommendations. With the information system, the early detection process becomes more efficient and accurate, so that cadres can make more appropriate decisions or conclusions compared to manual methods or those based on limited knowledge [26].

The use of the Information System at the Integrated Health Post plays an important role in facilitating recording, data management, reporting, and monitoring of maternal and child health activities more efficiently and effectively. The information system not only speeds up the process but also improves the accuracy and quality of decisions taken by cadres. This is in accordance with research that has been conducted, namely designing a health service information system at the Asoka II Bekasi integrated health post. With the existence of a computerized child service information system, it can support the achievement of the child data management process at the Asoka II Bekasi integrated health post and minimize the level of error when the management process is in progress [27].

Results of the difference test of cadre skills before and after the Siempro usage intervention using the wilcoxon signed-rank show that the most dominant variables experiencing changes are skills of cadres and accuracy of determining the conclusion with a p-value of 0.000. The skills of cadres before the intervention were mostly unskilled (80.0%) and after the intervention were skilled (63.3%). The accuracy of determining the conclusion before the intervention was mostly less precise (76.7%) and after the intervention was correct (100.0%). Next, Early detection time with a p-value of 0.002 and the knowledge of cadres with a p-value of 0.006. The duration of early detection before the intervention was mostly >15 minutes (86.7%) and after the intervention was 10-15 minutes (70.0%). the knowledge of cadres before the intervention was mostly lacking (56.7%) and after the intervention was good (76.7%).

The skilled category indicates that a person has gone through a sufficient learning and training process so that their skills are organized effectively and efficiently. This is important so that skills can last a long time, continue to develop, and can be applied consistently in various situations. Without achieving the skilled category, skills tend to be easily lost or decrease in quality. Accuracy in determining conclusions is highly dependent on a person's skill level. The skilled category indicates sufficient mastery to conduct effective analysis and make the right decisions, so that the conclusions produced are more accurate and reliable. In accordance with previous research, the results of cadre skills training have been shown to increase the ability to detect early child development accurately. Skilled cadres have 13.9 times better service than less skilled cadres, thus impacting the accuracy of service [28].

CONCLUSION

The use of the Emotional Mental Problems Information System (Siempro) effectively improves the skills of cadres at the Integrated Health Service Post (Posyandu) Surakarta. With the use of this information system, it can improve the knowledge and skills of cadres, the time for early detection of children's behavioral and emotional problems is carried out faster and more effectively, and the determination of early detection conclusions is more precise and accurate.

The benefits of this study are to produce an instrument for early detection of children's behavioral and emotional problems that can be used by cadres effectively and efficiently. Suggestions for cadres to be

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consistent in providing comprehensive services, developing themselves by increasing knowledge and skills, and following the development of science and technology.

AUTHOR CONTRIBUTIONS

Author contribution specifications are intended to increase the transparency of the paper. Darah Ifalahma: conceptualization, data curation, methodology, software, writing - original draft, editing. Noor Arniwati Binti Mat Daud: supervision, writing – review, validation. Adisty Amalya Putri Handayani: investigation, resources, project administration. Nurlaila Siti Zamrina: investigation, resources, project administration.

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