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Research Article

Analysis of The Quality Improvement Management Process through PDSA at Sidoarjo Health Center, Sidoarjo District

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ABSTRACT

Improving the health center's quality is important to realize quality and equitable health services. This study aimed to analyze the implementation of continuous quality management through the PDSA (Plan-Do-Study-Action) cycle at Sidoarjo Community Health Center. The method used was descriptive comparative to compare Deming's PDSA theory with its implementation based on the Sidoarjo Community Health Centers *Quality Improvement Report Year 2024. The results showed shortcomings in the preparation of details at the Plan step, such as the non-use of root cause analysis tools (fishbone or five whys), and the absence of success criteria. At the Do and Study steps, assessment of plan implementation and evaluation of plan effectiveness were not optimal. The Action step has not been implemented in detail, and the follow-up plan has not described the evaluation results of the study.*

Keywords*: Management Process, PDSA, Quality Indicators*

INTRODUCTION

Improving the quality of Community Health Centers is one of the most important things to realize quality and equitable health services throughout Indonesia. Community Health Centers, as the spearhead of primary health services, have a strategic role in organizing Public Health Efforts and Individual Health Efforts by prioritizing promotive and preventive efforts. By carrying out these Community Health Center functions, there needs to be good Quality Governance in Community Health Centers. So that Community Health Centers can encourage the achievement of continuous quality improvement.

To implement continuous quality improvement, it is necessary to carry out a quality management process through the PDSA (Plan-Do-Study-Action) cycle so that continuous improvement efforts can be carried out. The implementation of appropriate PDSA will affect the effectiveness of the improvements made because it starts from preparing the root cause of the problem and a solution-oriented follow-up plan.

Based on the Community Health Center accreditation assessment standards, three types of quality indicators must be met in Community Health Center, including six mandatory National Quality Indicators (INM) from the Ministry of Health of the Republic of Indonesia, one Priority Quality Indicator of Community Health Center (IMPP) obtained through discussions with the entire Community Health Center's team by

considering the achievements of health programs in the previous year, and 12 Service Quality Indicators (IMPEL) sourced from the Minimum Service Standards (SPM) of Health and Community Health Center Performance indicators. So, the number of quality indicators that must be achieved according to the target at the Sidoarjo Community Health Center is nineteen.

In the first quarter of 2024, five quality indicators had not reached the target from the nineteen quality indicators. Meanwhile, in the second quarter of 2024, three quality indicators had not reached the target, even though the management process had been carried out using the PDSA cycle approach. The three quality indicators of the Community Health Center that had not met the target included Triple elimination examination (HIV, Syphilis, Hepatitis B) in pregnant women from the target of 100% achieved 93% (Priority Quality Indicator of Community Health Center), the achievement of toddlers who were weighed gained weight (N/D) from the target of 86% achieved 75.74% (Service Quality Indicators), and the completeness of filling out informed consent in the dental and oral health unit from 100% achieved 77.1% (Service Quality Indicators). Because Priority Quality Indicator of Community Health Center is a priority quality of the Health Center, which in its efforts to achieve its targets, is supported by the internal Community Health Center team (cross-program) and external Health Center (cross-sector), then the Priority Quality Indicator of Community Health Center target should be achieved immediately in 2024. However, in reality, in the second quarter, the indicator has not reached the target even though efforts have been made to improve it through the PDSA cycle. Therefore, it is important to analyze the suitability of the PDSA that has been carried out with the PDSA based on Deming's Theory so that the implementation of PDSA can be optimal and the Priority Quality Indicator of the Community Health Center target can be achieved.

MATERIALS AND METHODS

This study used a comparative descriptive method, namely comparing the suitability between Deming's PDSA Theory and the implementation of PDSA carried out by the Sidoarjo Community Health Centers Quality Team as an effort to improve continuous quality. The data source was obtained from the 2024 Sidoarjo Community Health Centers Quality Improvement Report, which is secondary data. The instrument used in this study was the PDSA steps according to Deming's Theory, which were then compared with the PDSA steps carried out by the Sidoarjo Health Center quality team as an effort to achieve the target of the Health Center Priority Quality Indicators (IMPP). This study attempts to provide a systematic and factual description of PDSA implemented at the Sidoarjo Community Health Centers. It revealed a systematic, factual, and accurate description of how the PDSA cycle is designed, implemented, evaluated, and results achieved by the Sidoarjo Community Health Centers. In addition, this study is also expected to give a description of possible obstacles faced during implementation, as well as efforts made to overcome challenges, so it can become a reference for other healthcare centers which has applied a similar approach.

RESULTS AND DISCUSSION

Analysis of quality improvement at the Sidoarjo Community Health Centers is carried out every 3 (three) months by recording the achievements of each indicator, which is carried out every month. There are 5 (five) quality indicators that in the first quarter of 2024 have not reached the target, including pregnant women examined for triple elimination (3E), completeness of filling in medical records, completeness of filling in informed consent in dental and oral services, toddlers are weighed who gain weight (N/D), People at risk of HIV infection receive HIV testing.

This study focused on discussing the implementation of the PDSA cycle to improve the achievement of pregnant women checked triple elimination (Syphilis, Hepatitis B, and HIV) indicator, as it is a priority quality indicator in Sidoarjo Community Health Centers.

In implementing PDSA, the Sidoarjo Community Health Centers Quality Team compiled the cycle in a report with the following details:

Table 1. Terms in the PDSA Process for Quality Improvement at the Sidoarjo Community Health Centers

PDSA PROCESS	TERMS USED
Plan	Target setting Identification of problems Problem analysis Follow-up Action Plan (RTL)
Do	Implementation of follow-up (supporting evidence is available)
Study	Comparison of achievement with the target
Action	Implementation of further improvements

1.1 Plan

The preparation of the Plan in the PDSA I cycle (analysis after the implementation of the first quarter of 2024/Q1), which was carried out in the process of improving the quality of the Community Health Centers Priority Quality Indicators, is depicted in the following table:

Table 2. Steps of the PDSA Plan by Sidoarjo Community Health Centers

NO.	QUALITY INDICATORS	"PLAN" STEP	
1.	Pregnant woman triple elimination (3E) check	Target setting	95% of pregnant women are examined for 3E (Syphilis, Hepatitis B, and HIV).
		Identification of problems	The achievement of pregnant women examined for triple elimination (3E) in January and February has met the target that has been determined, which is 95%. However, the achievements in February and March experienced a decrease, respectively, namely 87% and 62%.
		Problem's analysis	1. First, pregnant woman health services (K1) data were obtained from all Community Health Centers around the work area of Sidoarjo Community Health Centers, including private healthcare centers. 2. 3E data on pregnant women is obtained from visits by pregnant women to the Community Health Center. 3. It is possible that pregnant women who undergo examinations in the network do not undergo 3E examinations at the Sidoarjo Community Health Centers. 4. Sweeping activities for pregnant women are not optimal.
		Follow-up Action Plan	1. Strengthen cooperation with independent midwife practices (PMB) and maternity clinics in screening pregnant women for triple elimination (3E) examinations. 2. Conducting sweeps on pregnant women in the Sidoarjo Community Health Centers work area involving health cadres.

Based on Deming's Theory of the management process in the PDSA cycle, it is stated that the Plan stage is carried out to include setting goals and tasks, and determining how to achieve them (Musayelyan et al., 2020). Plan activities in PDSA are detailed in identifying problems, determining the causes of problems, compiling plan titles, describing problems, formulating objectives, describing activities, implementing activities, and assessing success criteria and methods. Comparison of the implementation of the Plan carried out by the Sidoarjo Community Health Centers Team with the Plan stages explained in Deming's Theory, as in the following table:

Table 3. Discussion of the Plan at the PDSA of the Sidoarjo Community Health Centers

NO.	QUALITY INDICATORS	DEMING'S THEORY PLAN STAGES	STAGES OF THE QUALITY TEAM PLAN OF SIDOARJO COMMUNITY HEALTH CENTERS	DISCUSSION
1.	Pregnant women are examined for triple elimination (3E)	Identification of problems	The achievement of pregnant women examined for triple elimination (3E) in January has met the target that has been determined, which is 100%. However, the achievements in February and March experienced a decrease, respectively, namely 87% and 62%.	The identification of the problem that was carried out was appropriate, namely by comparing the achievement of the indicator and the target. The target of this indicator is 95% every month, while the achievement in February was 87% and in March was 62%. The gap between achievement and target is a problem that must be resolved.
		Determining the cause of the problem	Written in the problem analysis stages, including: 1. K1 data for pregnant women were obtained from all Community Health Center networks. 2. 3E data on pregnant women were obtained from visits by pregnant women who came to the Community Health Center. 3. It is possible that pregnant women who undergo examinations in the network do not undergo 3E examinations at the Sidoarjo Community Health Centers. 4. Sweeping activities for pregnant women are not optimal	The cause of the problem has been determined by collecting evidence in the form of K1 data for pregnant women and visits by pregnant women. However, in compiling the cause of this problem, it has not been done using standard methods such as fishbone or the five Whys technique. So, the root cause of the problem has not been properly identified. This will affect the effectiveness of the improvement plan to be carried out.
		Preparation of plan title	Written indirectly (implicitly), namely, efforts to increase the achievement of pregnant women being examined for triple elimination (3E).	This stage has been carried out, albeit implicitly.

NO.	QUALITY INDICATORS	DEMING'S THEORY PLAN STAGES	STAGES OF THE QUALITY TEAM PLAN OF SIDOARJO COMMUNITY HEALTH CENTERS	DISCUSSION
		Problem description	It is written indirectly (implicitly), namely that the achievement of pregnant women being examined for triple elimination (3E) has not reached the target in February and March, namely only 87%, 62% and 84.33% in Q1 from the target of 95%.	This stage has been carried out, albeit implicitly.
		Formulation of objectives	Indirectly (implicitly) written, namely increasing the achievement of pregnant women being examined for triple elimination (3E) in the Sidoarjo Community Health Centers work area to 100%.	This stage has been carried out, albeit implicitly.
		Description of activities	1. Strengthen cooperation with independent midwife practices (PMB) and maternity clinics in screening pregnant women for triple elimination (3E) examinations. 2. Conducting sweeps on pregnant women in the Sidoarjo Community Health Centers work area by involving health cadres.	
		Criteria and methods for success assessment		This stage has also not been reflected in the quality improvement report conducted by the Sidoarjo Community Health Centers Quality Team. The intended success criteria are a benchmark that the RTL explained in detail in the activity description has been met in accordance with the intended plan, starting from who, what the targets are, when, where, how it is implemented, the tools and materials, and the costs needed. If everything is in accordance with the

NO.	QUALITY INDICATORS	DEMING'S THEORY PLAN STAGES	STAGES OF THE QUALITY TEAM PLAN OF SIDOARJO COMMUNITY HEALTH CENTERS	DISCUSSION
				plan, then it can be concluded that the planned RTL has been appropriately implemented. Therefore, it is necessary to compile success criteria to measure that the activities or follow-ups carried out are in accordance with what was planned.

1.2 Do

Implementation of Do in PDSA cycle I (analysis after implementation of the first quarter of 2024) carried out in the process of improving quality Priority Quality Indicators Community Health Centers is depicted in the proof support included in the report.

Table 4. Do Stages in PDSA by Sidoarjo Health Center

NO.	QUALITY INDICATORS	"DO" STAGE	
1.	Pregnant women are examined for triple elimination (3E)	The follow-up action implementation described in the Plan includes:	
		1. Strengthen cooperation with independent midwife practices (PMB) and maternity clinics in screening pregnant women for triple elimination (3E) examinations.	There is no evidence of the implementation of this RTL in the report.
		2. Conducting sweeps on pregnant women in the Sidoarjo Community Health Centers work area by involving health cadres.	1. There is a schedule of implementation, a list of officers, and a report on the results of sweeping activities for pregnant women. 2. There is a registration or a list of pregnant women who have undergone the 3E examination, along with the results of the examination.

Based on Deming's Theory of the management process in the PDSA cycle, it is stated that the Do stage includes the implementation of work and training of the implementing team if necessary. The Do stage aims to implement the action plan according to 5W + 1H, namely *what* (what happened), *why* (why it happened), *where* (where it happened), *when* (when it happened), *who* (who did it), and *how* (how to do it) (Musayelyan et al., 2020).

Comparison of the implementation of the Plan carried out by the Sidoarjo Community Health Centers Team with the Plan stages explained in Deming's Theory, as in the following table:

Table 5. Discussion of DO at PDSA Sidoarjo Health Center

NO.	QUALITY INDICATORS	STAGES OF DEMING'S THEORY	STAGES OF THE QUALITY TEAM OF THE SIDOARJO COMMUNITY HEALTH CENTER	DISCUSSION
1.	Pregnant women are examined for triple elimination (3E)	Training of implementing officers, if necessary.	There is no special training for officers.	There is no need for team training because officers must have no special skills to carry out the activities.
		Implementation of the plan in accordance with the 5W and 1H or implementation success criteria.	The follow-up action plan that is prepared includes: 1. Strengthen cooperation with independent midwife practices (PMB) and maternity clinics in screening pregnant women for triple elimination (3E) examinations.	During the implementation of the Plan, a plan has not been prepared in accordance with 5W + 1H to implement this follow-up action plan. So that during the Do stage, the implementation of this follow-up action plan has not been depicted. There should be an implementation description as follows: 1. What form of cooperation is needed between the Sidoarjo Community Health Centers, PMB, and the Maternity Clinic to increase the achievement of pregnant women being examined for 3E? 2. Why is this collaboration necessary? 3. Where is the implementation of cooperation and efforts to improve the achievement of pregnant women undergoing 3E examinations? 4. When will the implementation of cooperation and efforts to improve the achievement of pregnant women undergoing 3E examinations be carried out? 5. Who cooperates and works to improve the achievement of pregnant women undergoing 3E examinations? 6. How can cooperation and efforts be

NO.	QUALITY INDICATORS	STAGES OF DEMING'S THEORY	STAGES OF THE QUALITY TEAM OF THE SIDOARJO COMMUNITY HEALTH CENTER	DISCUSSION
				implemented to improve the achievement of pregnant women being examined for 3E? When implementing Do, this follow-up action plan can be done in detail and structured. In addition, it facilitates the implementation of the Study stage, namely assessing the effectiveness of the Plan, which is prepared as a solution to achieve the target indicator.
			2. Conducting sweeps on pregnant women in the Sidoarjo Community Health Centers work area by involving health cadres.	During the implementation of the Plan, a plan has not been prepared in accordance with 5W + 1H to implement this follow-up action plan. However, there is an implementation schedule, a list of officers, and a report on the results of sweeping activities on pregnant women. So, even though it is not clearly described during the Plan regarding 5W + 1H, there is evidence that this follow-up action plan was carried out in accordance with 5W + 1H, which is described in the supporting evidence for the implementation of the follow-up action plan.
		Documentation	The follow-up action plan that is prepared includes:	
			1. Strengthen cooperation with independent midwife practices (PMB) and maternity clinics in selecting pregnant women for triple elimination (3E) examinations.	There is no documentation of this follow-up action plan. So, the implementation of this activity cannot be assessed. This activity should also be documented as evidence that the Plan has been carried out according to plan. Then, its effectiveness is measured to improve achievements during the implementation of the Study.
			2. Conducting sweeps on	There is documentation in the supporting evidence that

NO.	QUALITY INDICATORS	STAGES OF DEMING'S THEORY	STAGES OF THE QUALITY TEAM OF THE SIDOARJO COMMUNITY HEALTH CENTER	DISCUSSION
			pregnant women in the Sidoarjo Community Health Centers work area by involving health cadres.	illustrates that the follow-up action plan was carried out, including the implementation schedule, list of officers, activity result reports, and photos. This activity documentation is sufficient to explain that the follow-up action plan was carried out according to plan, even though during the implementation of the Plan, the success criteria and the plan had not been prepared in accordance with 5W + 1H.

1.3 Study

Study activities in PDSA cycle I (analysis after implementation of the second quarter/Q2 of 2024) and cycle II (analysis after implementation of Q3) carried out in the quality improvement process in the priority quality indicator are depicted in the following table:

Table 6. Study Stages in PDSA by Sidoarjo Community Health Centers

NO.	QUALITY INDICATORS	DETAILS OF "STUDY" ACTIVITIES	
1	Pregnant women are examined for triple elimination (3E)	Comparison of achievements with targets and previous achievements.	PDSA Cycle I (Analysis of Q2 implementation). The achievement of pregnant women examined for triple elimination (3E) in May and June has met the target, which is 100%. However, the achievement in April has not been achieved (79%), although there was an increase in achievement from April in Q2 of 79%. Problem analysis 1. K1 data for pregnant women is obtained from all Community Health Center networks. 2. 3E data on pregnant women were obtained from visits by pregnant women who came to the Community Health Center. 3. It is possible that pregnant women who undergo examinations in the network do not undergo 3E examinations at the Community Health Center. Sidoarjo 4. There is a joint holiday in April, so laboratory services are not optimal. 5. Sweeping activities for pregnant women are not optimal. PDSA cycle 2 (analysis after implementation of Q3) The achievement of pregnant women being examined for triple elimination (3E) in the third trimester has reached the set target. Problem analysis:

NO.	QUALITY INDICATORS	DETAILS OF "STUDY" ACTIVITIES
		1. K1 data for pregnant women is obtained from all Community Health Center networks. 2. 3E data on pregnant women were obtained from visits by pregnant women who came to the Community Health Center. It is possible that pregnant women who undergo examinations in the network do not undergo 3E examinations at the Sidoarjo Community Health Center. The follow-up action plan recommendations prepared in the second quarter were implemented in the third quarter, namely: 1. Strengthening cooperation with independent midwife practices (PMB) and maternity clinics in screening pregnant women for triple elimination examinations (3E). 2. Conducting sweeps on pregnant women in the Sidoarjo Community Health Center work area by involving health cadres.

Based on Deming's theory of the management process in the PDSA cycle, the Study stage includes a comparison of achievements with targets and an analysis of plan implementation.
Comparison of the implementation of the Study carried out by the Sidoarjo Community Health Center Team with the Study stages explained in Deming's theory, as shown in the following table:
Table 9. Discussion of the Study on PDSA Sidoarjo Health Center

NO.	QUALITY INDICATORS	STAGES OF DEMING'S THEORY STUDY	STAGES OF THE QUALITY TEAM PLAN OF SIDOARJO COMMUNITY HEALTH CENTER	DISCUSSION
1.	Pregnant women are examined for triple elimination (3E)	Comparison of achievements, targets, and previous achievements	Comparison of achievements with indicator targets in PDSA cycle I and PDSA cycle II has been carried out, even though it is written implicitly (indirectly)	- This stage has been carried out, albeit implicitly. - The results have not been written down, and gaps still exist. - A comparison of the previous quarter of 2024 achievements with the current quarter achievements has not been carried out. - At the study stage, a comparison should be made between
		Analyze the suitability between the follow-up plans prepared at the Plan stage and their implementation at the Do stage.	In PDSA cycle I, the suitability between Plan and Do has not been explained.	Evaluation of Do has not been explained whether it is in accordance with the prepared plan. At this stage, a check should be carried out between the description of activities in the follow-up plan and its

NO.	QUALITY INDICATORS	STAGES OF DEMING'S THEORY STUDY	STAGES OF THE QUALITY TEAM PLAN OF SIDOARJO COMMUNITY HEALTH CENTER	DISCUSSION
				implementation, namely the suitability of who is implementing it, when, where, what is needed, and how the method is applied. Then, if there is a discrepancy, the cause is analyzed to make it easier when implementing the Action stage, namely, choosing a more appropriate solution to be implemented next.
		Analysis of the effectiveness of follow-up plans in improving achievement	Both in PDSA cycle I and PDSA cycle II, the effectiveness of the implementation of the plan that has been carried out has not been explained.	- The effectiveness of the implementation of the plan has not been explained. So, there is no correction of which plan needs to be maintained, improved, or not. - Problem identification has been carried out in PDSA I and PDSA II cycles, but in identifying this problem, it has not been done using standard methods such as the use of fishbone or the five whys technique. So, the root cause of the problem has not been properly identified.

2.4 Action

Action activities in PDSA cycle I (follow-up plans compiled after the analysis implementation of (Q2) and PDSA II cycle (follow-up plans compiled after the analysis and implementation of (Q3) carried out in the process of improving quality in IMPP are depicted in the following table.

Table 7. Action Stages in PDSA Sidoarjo Community Health Center

NO.	QUALITY INDICATORS	DETAILS OF "ACTION" ACTIVITIES	
1	Pregnant women are examined for triple elimination (3E)	Implementation of further improvements	Implementation of further improvements (PDSA Cycle II) 1. Strengthening cooperation with independent midwife practices (PMB) and maternity clinics in screening pregnant women for triple elimination examinations (3E). 2. Conducting sweeps on pregnant women in the Sidoarjo Community Health Center work area by involving health cadres. Implementation of further improvements (PDSA cycle III) 1. Conducting sweeping on pregnant women in the Sidoarjo Community Health Center work area by involving health cadres (Implementation of the SIMPEL BERKAH innovation). 2. Conducting a meeting of health cadres (HIV cadres) to strengthen coordination and implementation of the SIMPEL BERKAH innovation (Sweeping of Pregnant Women Triple Elimination Examination with Great Cadres).

Deming's Theory of the management process in the PDSA cycle states that the Action stage includes changes made and improvement plans. Comparison of the implementation of Action carried out by the Sidoarjo Community Health Center Team with the Action stages explained in Deming's Theory, as in the following table:

Table 8. Discussion of Actions at PDSA Sidoarjo Health Center

NO.	QUALITY INDICATORS	DEMING'S THEORY PLAN STAGES	STAGES OF THE QUALITY TEAM PLAN OF SIDOARJO COMMUNITY HEALTH CENTER	DISCUSSION
1.	Pregnant women are examined for triple elimination (3E)	Implementation of further improvements	- For the implementation of further improvements (PDSA cycles II and III), a Follow-up Action Plan (RTL) has been prepared for PDSA cycle I and PDSA cycle II.	The implementation of further improvements is written in the Follow-up Action Plan (RTL) stage. However, it has not been explained in detail by whom the activities are carried out, who the targets are, when, where, how the implementation is carried out, the tools and materials, and the costs required. In addition, the RTL or Action that has been prepared does not yet describe the Study's results. At the Study stage, an effective RTL and changes to the RTL or strategy to improve achievement have not been decided.

CONCLUSION AND SUGGESTIONS

From the analysis conducted, it can be concluded that the Sidoarjo Community Health Center Quality Team has made reasonable efforts to improve quality through the implementation of the PDSA cycle in resolving the problem of not achieving the target indicator for pregnant women to be examined for triple elimination (3E) in the first quarter of 2024. However, there are several steps that have not been carried out correctly and explained in detail.

In implementing the *Plan*, the steps taken have been in accordance with Deming's Theory. However, several steps have not been prepared in detail, including when determining the root cause of the problem, tools such as fishbone or 5 whys have not been used, the preparation of activity descriptions in the follow-up plan has not been written with 5W + 1H, and there are no criteria for the success of the implementation of activities that can be used as a reference for evaluation during the implementation of the Study.

Meanwhile, in the implementation of *Do*, because when the Plan had not been prepared, a description of activities with 5W + 1H, it was not possible to assess the suitability between the follow-up plan and the implementation of the plan. In implementing the *Study*, a comparison of achievements with the target indicators has been made, but has not been compared with previous achievements. The evaluation of *Do* has not been explained whether it is in accordance with the *Plan* that has been prepared.

At the *Action* stage, the implementation of further improvements is written in the Follow-up Action Plan (RTL) stage. However, it has not been explained in detail by whom the activity is carried out, who the targets are, when, where, how it is implemented, the tools and materials, and the costs needed. In addition, the RTL or Action that has been prepared does not yet describe the results of the Study. At the Study stage, an effective RTL and changes to the RTL or strategy to improve achievement have not been decided.

From the results of the analysis that have been concluded, the author provides suggestions for the Sidoarjo Community Health Center Quality Team to be better in carrying out quality improvement efforts through the PDSA concept, namely:

1. The preparation of PDSA should be carried out jointly between the Quality Team and all related units so that it can strengthen the analysis, especially in determining the root cause of the problem and describing the activities that will be carried out as an implementation of the plan that has been prepared to solve the problem.
2. The implementation of analysis and problem identification should use standard methods such as flow charts, the use of fishbone diagrams, or the 5 Whys technique. So, the root cause of the problem has not been properly identified.

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