






Impact of Point of Care Quality Improvement Training and Coaching on Quality Perceptions of Health Care Workers: Implication for Quality Policy

Dewi Marhaeni Diah Herawati ¹, Deni Kurniadi Sunjaya ¹, Lani Gumilang¹, Fanny Adistie ², Raden Tina Dewi Judistiani ¹, Tetty Yuniati³, Budi Handono ⁴

¹Departement of Public Health, Faculty of Medicine, Universitas Padjadjaran, Bandung, Indonesia; ²Departement of Pediatric Nursing, Faculty of Nursing, Universitas Padjadjaran, Bandung, Indonesia; ³Departement of Pediatric, Hasan Sadikin General Hospital, Bandung, Indonesia; ⁴Departement of Obstetrics and Gynecology, Faculty of Medicine, Universitas Padjadjaran, Bandung, Indonesia

Correspondence: Dewi Marhaeni Diah Herawati, Faculty of Medicine, Universitas Padjadjaran, Jalan Eyckman No. 38, Bandung, Indonesia, Tel +62 821 26033975, Email marhaeni@unpad.ac.id

Background: The quality of infant healthcare service is one of the essential factors in preventing infant mortality. The purpose of the study was to analyze the quality performance in primary healthcare centers (PHC) and hospitals before and after the point of care quality improvement (POCQI) training for Infant Healthcare Services (IHS).

Methods: This is a mixed-method study design with convergence triangulation strategy, conducted at six public PHCs and four hospitals in two districts of West Java Province, Indonesia. One hundred health care workers (HCWs) were involved for quantitative study at baseline and end of intervention. An additional 40 patients participated as informants for qualitative study. Quantitative data analysis was performed by Rasch modeling and independent *t*-test for all variables, followed by content analysis for qualitative data.

Results: There were significant changes in the variables of POCQI skill (mean diff: 5.14, $p=0.001$), quality improvement (QI) understanding (mean diff: 1.2; $p=0.001$), and QI engagement (mean diff: 1.7; $p=0.001$) in the PHC group. Although there was an increase in process and outcome variables, the changes were not significant. There was a significant change in all variables in the hospital group which were outcome (mean diff: 2.32 ($p=0.19$); POCQI skill (mean diff: 2.80, $p=0.001$); process (mean diff: 1.48, $p=0.01$); QI understanding (mean diff: 1.01; $p=0.01$), and QI engagement (mean diff: 1.52; $p=0.03$). Patient perception in the qualitative study showed that PHCs and Hospitals' services improved. Moreover, health care workers found they have a better understanding of service quality and created quality changes and improved POCQI steps.

Conclusion: Implementation of POCQI in PHC and hospitals improved the performance of the quality of his, therefore assuring that POCQI is an appropriate approach and tool to be adopted in the policy for strengthening the health system.

Keywords: point of care quality improvement, training and coaching, performance perception, quality policy

Introduction

Infant mortality and morbidity are sensitive indicators for the success of health development. Although remain as a classic problem globally, a downward trend has been noticeable. Focused efforts to accelerate the process are now being made by improving the quality of antenatal, labor, and postnatal services.^{1,2} The 2020 infant mortality rate in Indonesia was reduced by 19.55%,³ but this reduction ranked as 6th highest among ASEAN countries.⁴ The main cause of infant death was premature birth.⁵ The known risk factors for infant mortality include socio-demographics (such as low maternal education levels, maternal age that is too young or too old, living in rural areas), low economic status, smoking habits, and obesity during pregnancy.⁶ Most of the risk factors for infant mortality are structural and social capital determinants⁷ and the health system may largely be responsible,⁸ especially at the front line of the health care

system.⁸ The front line (point of care) of healthcare services had important role in reducing infant mortality,⁹ where quality is a key element.^{10,11} Efforts in quality services improvement will strengthen health systems, encourage the workers and improve health care performance.^{12,13} Quality of care improvement yields a major problem in healthcare systems worldwide, therefore appropriate tool for measuring performance is mandatory to assess essential aspects for identification, planning and evaluating of quality improvement strategies.¹⁴

The ongoing healthcare service quality assessment policy in Indonesia is based on accreditation, regardless of being a primary or secondary level of healthcare service facility or even government or privately owned. Accreditation emphasizes that all comply with minimum standards of input, process, and output of the healthcare services. Accredited healthcare facilities should continuously maintain their accreditation status above their minimum standards to certify the business license. Experiences showed that fulfilling only the minimum standards were insufficient for improved outcomes and their impacts. The accreditation system has not led to significant changes in the effects of health care performance and outcomes.¹⁵ Therefore quality performance, supported by the quality management system of health services is an addition to quality assurance by the accreditation system. Quality Improvement (QI) of health services is still not structured, systematic and massively used with less emphasis on solving quality problems faced daily in health services. To meet the minimal standard in accreditation does not mean quality activities in institutional healthcare facilities are rooted in, or involve every health worker, which is why it should be further encouraged in the forefront service of a health facility.

Several studies in developed countries used various approaches in quality improvement projects. Such as a project to increase breast milk feeding in premature infants California, USA, with multihospital collaborative design to establish evaluation and improvement model.¹⁶ In the UK an approach has been established which is known as experience-based co-design for quality improvement in healthcare.¹⁷

WHO SEARO introduced the Point of Care Quality Improvement (POCQI) in 2017.^{18,19} POCQI is one method in the health service quality management system with an emphasis on strengthening service processes that are under the control at the forefront of health services units. POCQI is a movement and practice in service quality management. As a movement, POCQI is expected to make positive changes in the mindset or perception of HCWs who deal directly with patients about the quality of health services. In practice the provision of input (e.g resources) is the responsibility of the healthcare system, while POCQI is expected to be able to make changes to the quality improvement activities of the service process. Finally, of course, it will affect the output and outcome of health services. Thus, in the context of the quality system, POCQI is more concentrated on the quality process and is not expected to be able to change directly the quality input or the quality structure. POCQI demands individual engagement from frontline service units that deal directly with patients to improve quality. The use of POCQI can improve newborn care practices to be more feasible, measurable and replicable, adapted to available resources, including units with limited resources.²⁰

It has been reported by WHO, that the implementation of POCQI in the South-East Asia Region particularly in Bangladesh, Bhutan, Nepal, and Sri Lanka had been conducted in hospitals. Meanwhile, in this study, the implementation of POCQI was performed not only in hospitals but also in PHCs.¹⁹ Collaborating with the Ministry of Health which facilitated POCQI implementation for infant healthcare services at PHCs and Hospital, some interventions such as training and coaching are expected to achieve better performance. Performance that can be observed in a short time is HCW's understanding of quality, skills in implementing POCQI measures, and engagement in quality improvement. It is hoped that there will then be changes in the service quality process and outcomes in the form of better health and satisfaction. It will take quite a longer time to reach an impact in general. WHO stated that there were many studies published by POCQI teams from India, however, mostly were focused on maternal and newborn health, while the ultimate goal actually was related to reducing infant mortality.¹⁹

The main intention of this pilot study is to observe the implementation of POCQI in the real situation of infant health care. The longterm purpose of the study is to assess how prominent and influential the implementation of POCQI in the service system is essential for formulating quality policies and strategies for health services. The analysis is about HCW's understanding of improving the quality of service, skills in POCQI measures, engagement in quality activities, as well as changes in the process and intermediate outcomes of health services in PHCs and hospitals before and after the implementation of POCQI for IHS.

Materials and Methods

Research Design

This is a mixed-method study with a convergence triangulation strategy.²¹ Quantitative research strategy was a pre-post-test design, while qualitative strategy was content analyses, conducted from May to November 2021. Measurement of quantitative assessment variables were carried out at baseline and end of study line. Training, assistance, observation and evaluation were also carried out. The implementation of POCQI training was made possible by collaborations with District Health Offices (DHOs) and their staff.

Training and Coaching as Intervention Tools

Researchers, together with the Ministry of Health conducted a need assessment study of POCQI implementation at PHCs and hospitals. Prior to implementation, an approach and coordination were carried out first with the local government, DHOs, and health facilities. As part of the trial, researchers developed operational modules for POCQI training. The selection of health care facilities for the POCQI trial is determined by the DHO. Then training was carried out for healthcare workers in the targeted, problematic healthcare facilities (HCWs) to involve healthcare workers and coaches in the training programs for each healthcare facility.

Sequential training is conducted online for groups of HCWs and coaches for 3 days in 3 weeks. Both groups received the same training materials on day 1 and 2, and specific cases in day 3 using the modules that had been built. All training materials and recordings are stored on a digital platform (cloud based), so that all participants can revisit anytime they wished. Every participant was expected to work in each unit, both at PHC and Hospital, by carrying out POCQI steps at least once a week or as needed, facilitated by coaches. The results of the activities are stored on a digital platform. POCQI activities in each unit develop according to the cases and problems encountered where each team can learn from one or another experiences.

Monitoring and feedback of activities can be done at any time as well by the research team through this digital platform. However, monitoring is also carried out offline once a month for each unit. All the training and coaching act as an intervention, while observed for changes are noted and discussed together accompanied by researchers as resource persons.

Study Context

Cianjur and Indramayu districts have the highest number of infant mortality in West Java Province (173/1000 live births) and (208/1000 live births).²² Cianjur District is a regency located in the southwest of West Java Province and is a mountainous area in the north part, and coastal in its south area. Meanwhile, Indramayu District is a regency located in the north of West Java Province and is a coastal and more flat area in general. The geographical conditions of the two districts are very different, but both have high infant mortality rates.

Cianjur District has 47 PHCs, two public hospitals, and two private hospitals. PHC has been 96% accredited. All public hospitals have been accredited, while only one new private hospital. Meanwhile, Indramayu District has 49 PHCs, four Public Hospitals, and six private hospitals. All PHCs have been accredited. For public hospitals, there are three accredited, while for private hospitals, there are four that have been accredited. The POCQI pilot study was carried out while the COVID-19 pandemic was still ongoing. All research-related activities are carried out with health protocols following government regulations.

Subject

The research population for both quantitative and qualitative studies is HCWs from PHCs and Hospitals. The types of HCWs who are respondents are doctors, specialists, nurses, midwives, and other health workers, depending on the POCQI team at the health service unit at the PHC or Hospital.

The total number of survey subjects was 100 respondents, 50 respondents from Indramayu District, and 50 people from Cianjur District. Thirty respondents were taken from the PHCs and 20 from the hospitals for each district. The unit of analysis used in this research is the PHC and the Hospital. Thus, the number of subjects was 40 respondents for hospitals and 60 respondents for the PHCs survey. The survey was conducted twice for baseline and end line. The

dynamics of HCWs (e.g tour of duties) in the service unit caused some respondents to change during the baseline and end line. So that it affects the collection and analysis of data.

In the qualitative study, the types of health workers who are respondents are doctors, nurses, midwives, and other health workers, and triangulation is carried out on patients. Subjects for the qualitative study were 20 people per district, so the total number of respondents was 40 people.

Research Instruments

The research team developed the instrument for the quantitative study based on logic model theory covering input, process, and outcome,^{23,24} understanding of POCQI using WHO POCQI book references.¹⁹ POCQI emphasizes the ability of HCWs in the forefront to make positive changes to the functions under their control, in this case, the service process.

As a pilot project, the current research focus is more on the acceptance of the POCQI model by HCWs in the leading service units. Observations put more emphasis on mental, cognitive, and skill changes in the POCQI steps of the trained HCWs, not on the impact of implementing the POCQI itself. The questionnaire consists of QI understanding, QI engagement, POCQI steps, process, and outcome (intermediate) variables.

QI understanding refers to participants' understanding of quality improvement; QI engagement refers to the involvement of participants in quality improvement activities. POCQI steps refer to participants' perception of their ability to perform POCQI steps. The process is the participant's perception of the quality of the service process. The Outcome is the participant's perception of the outcome of the quality of health services in his unit. These five variables construct a quality performance perceived by the HCWs themselves. Participants understand better and can assess and reflect on their own situation. Positive changes in participants' perceptions by measuring their perception before and after intervention were chosen as a tool to measure the effect of the intervention.

There are two instruments developed due to the difference in characteristics of the two, one for PHC and one for the hospital. Question items are based on the perception of the respondents themselves, so this instrument is perceptual. The research instrument was compiled in May 2021, and the first instrument trial was carried out in Cianjur District with a sample of 30 people to see validity and reliability. After revisions of the instrument, a second research instrument trial was conducted in Cianjur and Indramayu districts with a total sample of 30 people. After that, enumerator training was performed to be standardized and training to conduct in-depth interviews. The number of enumerators was ten people or 5 enumerators per district.

The results of the validity and reliability of the instrument at the time of measurement are presented in [Table 1](#).

Table 1 Validity and Reliability of the Instrument

Psychometric Attribute	Instrument	
	PHC	Hospital
Number of items	42	39
Outfit Mean Square	0.98	0.93
Mean	0.00	0.00
Standard Deviation	0.78	0.85
Separation	7.33	6.17
Reliability	0.98	0.97
Cronbach's alpha	0.93	0.95
Chi-square (χ^2)	12,720	7196
P-value	0.001	0.001
Unidimensionality		
Raw variance explained by measure	45.9%	58.5%
Unexplained variance 1st contrast	20.4%	13.2%

Data Collection

Quantitative data was collected through surveys, while qualitative data was collected through in-depth interviews. Survey activities were used to obtain data on dimensions of QI understanding, QI engagement, POCQI activities/steps, process, and outputs, before and after the intervention. Meanwhile, in-depth interview activities were used to explore perceptions of quality and POCQI activities before and after the intervention.

Enumerators carried out survey data collection and in-depth interviews for baseline in June 2021. Data collection was carried out at six PHCs and four hospitals (two government hospitals and two private hospitals) for the two districts. The intervention on POCQI was carried out from June–November 2021. End-line data collection was conducted after the intervention has been completed by enumerators and researchers using the same methods.

Data Analysis

The quantitative analysis were aggregated for both districts based on the unit of analysis for the PHC and hospital. The questionnaire uses an ordinal Likert scale with ordinal data. Therefore, the ordinal data is first transformed by Rasch modeling and using the Winsteps application.²⁵ After each dimension can be assigned to numerical data, the data is processed using SPSS version 20.0. Statistical analyses comparing baseline and end-line using independent *t*-test. Qualitative data processing using maxQDA 2020. Qualitative data analysis uses thematic content analysis that focuses on perceived quality and POCQI steps.

Ethical Considerations

This research is by the Declaration of Helsinki and has obtained ethical clearance from the Universitas Padjadjaran Ethical Committee No 435/UN6.KEP/EC/2022. Informed consent was obtained from all subjects before participating in this study, and informants were registered under pseudonyms.

Results

The survey results in the PHC group (Table 2) showed that the five variables observed had a significant change in the mean, especially in QI understanding, QI engagement, and POCQI skills. In addition, there was an increase in the mean of the process and outcome variables, although the changes were insignificant. But overall, there was a significant change in the quality performance of the PHC group.

The survey results in the Hospital group (Table 3) show that POCQI training and coaching in Infant Health Services have significantly changed all variables. The most significant change occurred in the POCQI skill variable, followed by QI engagement and QI understanding. In contrast to PPHC, the Hospital group saw significant positive changes in the process and outcome.

Qualitative results are presented in Tables 4 and 5 to see differences in perceptions of service quality and POCQI steps before and after the POCQI training and coaching intervention.

Table 2 Changes of Perceptions of Staff in the PHC Group (n=60)

Variables	Mean (logit)		Mean Difference	CI (95%)		p-value*
	Baseline	Endline		Lower	Upper	
QI Understanding	0.5942	1.8178	-1.22363	-1.64699	-0.80027	0.001
QI Engagement	1.3140	2.9922	-1.67820	-2.41865	-0.93775	0.001
POCQI Skill	0.8727	6.0083	-5.13564	-6.18472	-4.08656	0.001
Process	2.2897	2.6319	-0.34220	-0.88887	-0.20448	0.218
Intermediate Outcome	2.8438	2.8854	-0.04159	-0.79663	-0.71345	0.913
Quality performance	0.5942	1.8178	-0.88689	-1.03447	-0.73930	0.001

Note: *2 tailed.

Table 3 Changes of Perceptions of Staff in the Hospital Group (n=40)

Variables	Mean (logit)		Mean Difference	CI (95%)		p-value*
	Baseline	Endline		Lower	Upper	
QI Understanding	0.8175	1.8235	1.00600	0.43895	1.57305	0.001
QI Engagement	1.1890	2.7053	1.51625	0.52357	2.50893	0.003
POCQI skill	0.5520	3.3498	2.79775	2.07363	3.52187	0.001
Process	1.4418	2.9183	1.47650	0.36974	2.58326	0.010
Outcome	6.9433	9.2648	2.32150	0.38462	4.25838	0.019
Quality performance	0.1860	1.2525	1.06650	0.79553	1.33747	0.001

Note: *2 tailed.

Table 4 Comparison of Perceived Quality of Infant Health Services Before and After POCQI Interventions in Indramayu and Cianjur Districts

No	Regency	Quality	Before Intervention	After Intervention
1	Indramayu District	PHC Patient Perception	Infant health service is still not good, registration queues for about 1 hour. The equipment in the Emergency Room (ER) is damaged, and when referring patients, they are not accompanied by health workers. It does not have a suggestion box as a means for patients to express complaints about service quality.	The patient is satisfied, the officer explains clearly, and the queue is perceived as not too long. Health workers accompany patients when referring to hospitals, but not routinely. All PHCs already have a suggestion box.
		Public Hospital Patient Perception	ER service is quite good.	Patient services in the ER, until the delivery process, are handled well.
		Private Hospital Patient Perception	The service is good, the staff is friendly, and the place is clean. However, the staff do not inform patients well.	Officers become more informative and care for patients. The hospital has made changes to the service flow. Make handwashing stations in various places so that patients have no trouble finding places to wash their hands.
		Perceptions of PPHC Health Workers	There is no feedback from the leadership about the quality of services provided to patients. Compliance with Standard Operating Procedure (SOP) management has not been maximally carried out. The existing service SOPs are general.	After training and coaching POCQI health workers became more detailed in providing services and observing patients, all services provided were patient-centered. There is supervision to carry out SOP management for health workers. Making SOPs per patient service case.
		Perceptions of Public Hospital Health Workers	The hospital quality team has a high burden. The room service team only reports response time, doctor visit hours, medication errors, etc.	There is a division of tasks between the hospital quality assurance team and the hospital POCQI team. Service is more patient-centered. Completing SOPs per patient service case
		Perceptions of Private Hospital Health Workers	Health workers feel unable to improve the quality of their inputs are not met,	Health workers can improve quality through service processes, care more for patients, and complete SOPs per patient case. Service is more patient-centered.

(Continued)

Table 4 (Continued).

No	Regency	Quality	Before Intervention	After Intervention
2	Cianjur District	PHC Patient Perception	Affordable cost of care but waiting times are long.	Patients are satisfied with the current PHC services because they have made various repair efforts such as the room for mother and child health service, which is different from the treatment center; there is a playroom for children. Patients rarely complain to the primary health center.
		Public Hospital Patient Perception	The service at the hospital is good, and the nurses are friendly, but some doctors are not friendly.	Patients are satisfied with the services provided by the hospital, both in terms of facilities, infrastructure, friendliness, clarity in action.
		Private Hospital Patient Perception	Infant health services are not good and lack human resources, facilities, and infrastructure. There is no NICU and PICU room. The health workers took a long time to decide to refer patients to a higher facility.	The staff is more friendly and cares about patients, the infrastructure is better.
		Perceptions of PPHC Health Workers	So far, quality improvement has focused more on inputs, so that the PHC does not make any changes if there are no tools, facilities, and budget,	The PHC staffs understand that improving the quality of POCQI services is more of a process so that each employee can move to change the service process for the better. Service is more patient-centered The PHC staffs are also enthusiastic about improving the quality of infant health services because so far, the focus has only been on maternal health services. The PHC conducts an audit if there are staffs who do not comply with the mutually agreed SOP.
		Perceptions of Public Hospital Health Workers	Some staff do not comply with SOPs in providing health services.	The compliance of staff with SOPs has increased. Creating new SOPs as an effort to improve infant health services, including SOPs for incubators. Service is more patient-centered.
		Perceptions of Private Hospital Health Workers	Staff do not care and understand the importance of infant health services.	Staff are becoming more concerned with the care of infants, making new SOPs. Patient-centered service

Qualitative Study: Quality Perception Before Intervention

According to the patient, the infant health service at the PHC was not good, the queue at the registration section was quite long, about 1 hour. This made the patient feel bored and annoyed, so the patient writes his frustration in the suggestion box.

Yeah, the service wasn't that great I have to queue at the registration section ... quite a long time, one hour (R25)

Yes, I wrote it in the suggestion box because there are a lot of patients here, so the wait is a bit long, that's all (R10)

Several respondents who visited the PHC who did not have a guaranteed health insurance card (HIC) said that the price for treatment at the PHC was affordable, that is Rp. 10,000 (approximately 0.7 USD).

Table 5 Comparison of POCQI Activities for Infant Health Services Before and After POCQI Interventions in Indramayu and Cianjur Districts

No	POCQI Activities	Before POCQI Intervention	After POCQI Intervention
1	POCQI Team Formation	PHCs and hospitals do not yet have a POCQI team, but they do have a quality team.	-All PHCs and hospitals have formed POCQI teams. -POCQI Team members vary between 5–12 people.
2	Performing 4 POCQI Steps	-Comprehension of service quality is still focused on quality assurance related to accreditation and improvement of inputs. -All health centers and hospitals have not carried out the four steps of POCQI because they do not know and do not understand the four steps of POCQI.	-PHCs and hospital staff have understood what Quality Improvement and POCQI mean and have made improvements to process aspects. -PHCs and hospitals have been able to take the first step of POCQI, which is to determine problems and prioritize problems and goals using the specific, measurable, achievable, reliable and time-bound (SMART) principle. -PHCs and hospitals have been able to carry out POCQI's second step, namely using the fishbone instrument to identify the cause of the problem and alternative solutions to the problem. -PHCs and hospitals have been able to carry out POCQI's third step, namely developing change ideas and implementing Plan-Do-Study-Action (PDSA). -PHCs and hospitals have been able to carry out POCQI's fourth step, namely through continuous improvement.

Healthcare costs at the PHC are not expensive, the price is affordable for me ... only Rp. 10,000, - because I don't have a HIC, but the queues are long both at registration and service ... (C3)

Perceptions of health workers about the quality of infant care at the PHC and at the hospital, still need to be improved in terms of quality improvement. Health workers have submitted requests such as additional human resources and infrastructure, but this is not easy to fulfill due to limited funding.

Every year we ask every year a requestto the ministry ... It's been submitted, since my time it's still like that. No additional HR. Then Rp 2.5 billion, yes, the ventilator ... the incubator is good, the incubator is not cheap. How many incubators in a sophisticated Neonatal Care Intensive Unit (NICU) are Rp 2 billion, just buy 2–3 out. Maybe ... (R14)

Another perception perceived by health workers regarding service quality is the lack of feedback from superiors on services provided to patients.

... .. we have provided services to patients but there is no evaluation or response from superiors. (R9)

Respondents who came from health workers in private hospitals said the quality of infant care could not be provided properly due to the lack of human resources, facilities and infrastructure. Human resources are very limited because they are divided into a healthy baby room, a sick baby and if there is caesarean section (CS), they have to go to the operating room and get out of the baby's room. Human Resources should be shared, causing babies not to be monitored properly because there is no connecting door, to facilitate baby monitoring. There are no NICU and pediatric intensive care unit (PICU) rooms so if there is an emergency it will take a long time to get a referral. In addition, the obstacle in improving the quality of service to children under five is the length of decision making when referring.

... The quality of baby care in our hospital is not good, because human resources are limited, the facilities and infrastructure are the same ... we can't monitor the baby's condition all the time, because there is no connecting door in the room ... we don't have a NICU and PICU room ... often slow in making decisions whether the baby will be referred or not because there must be a person in charge who will refer ... (C9)

After Intervention

The patient's perception of the quality of infant care at the PHC and Hospitals was considered good. Patient care from the emergency room (ER) to the completion of the delivery process is handled as well as possible.

The action is good, the midwife is responsive too, patient ... very patient, ma'am ... (R22)

I'm satisfied, the service is good, ma'am, it's clear if you think about it, I think I understand (R11)

In government hospitals, patient was satisfied with the services provided. The service is in terms of facilities, infrastructure, friendliness of officers, clarity in action. The following is an excerpt from the interview:

I walk around the room every morning ... I like to ask the patient the most or the patient's parents. How come there are complaints or there are our services that are not so good ... From infrastructure or for example from our officers who are not good. Thank God, all this time. Yes, if you come home in good health, from the beginning the child can't walk and when he comes home he can walk alone and run alone. Thank God they are satisfied it seems.. (C11)

After the POCQI training, health workers are optimistic that they can improve quality because it is supported by leadership policies that support infant care, improvement of Standard Operating Procedure (SOPs), and the enthusiasm of health workers in improving quality. The better the quality of service, the better the patient's assessment of hospitals and health centers.

The quality of service here is now increasing now there is an update to the SOP, so the SOP is changed and it must be carried out right ..., previously this. SOP existed, but it was not implemented, sometimes it was just a display on the wall, even if it was implemented, not all of them, ma'am jumping up and down ... now with the Head of the PHC and the doctor of the PHC ... we are being monitored continuously (R26)

According to health worker respondents, PHC are currently starting to make improvements in providing services to patients, especially after the POCQI accreditation and training. The health center provides a play area for children. The maternal and child health (MCH) room is also separated from the general patient care (GPC) room, so the patient feels more comfortable. Therefore, it is very rare to receive complaints from the public nowadays.

... So if the other health centers are GPC, MCH, integrated management of childhood illness (IMCI) are connected, yes, there can be a ride. Yesterday, we had an innovation, we took it, it was moved in one building, so we are waiting for the patient, not at the same time as the parents or elderly patient. The pink building even though well even if it isn't, it's not a new building, but the waiting area is for children, including the children's playground. (C13)

In addition, according to one PHC respondent, POCQI improves the quality of infant health services, because with the POCQI activity, an examination of the nutritional status of infants, which had not previously been carried out in a special infection room, was carried out. The following is the respondent's statement:

Yes ..., after the POCQI was seen in the nutritionist's room, they were actually a room specializing in COVID, they didn't weigh the weight or measure the height, they might not even check it ..., but with this POCQI we are reminded once again that weighing and measuring are important, because we didn't think that way at first ..., it turns out that there was a malnutrition that we didn't handle before, because there were complaints of coughs, colds or fever, just go straight to the orchid room, without looking the nutritional status of the baby, basically they are heading towards COVID (C16)

Best Practices: Changes Made by Primary Health Care and Hospitals

1. Changes in the flow of services make it easier for patients and health workers to provide services to patients.
2. Establish standard operational procedures (SOPs) for each patient case served.
3. Establish SOPs for the use of facilities such as incubators.
4. Conduct an audit of SOP compliance.
5. Sort out the Child and Mother Health and Treatment Center service buildings.
6. Involve the family when providing services.

7. Complete handwashing facilities for patients and their families.
8. All health workers providing services are more patient-centered.
9. Public PHC and hospitals are more creative in providing service processes for the prevention of infant mortality.

The survey results in PHC and hospitals showed that after the POCQI intervention, there was an increase in QI understanding, QI engagement and POCQI skills, and changes in service quality processes and outcomes. These results are by the perceptions of health workers and patients carried out through in-depth interviews that health centers and hospitals have changed to be more focused on patient-centered.

Discussion

The survey results at the PHCs and hospitals showed an increase in comprehension, engagement, and POCQI skills, processes, and outcomes. However, the changes in the processes and outcomes of the PPHC were not significant. In both groups, there is a significant change in the performance of quality efforts. The results of this study are similar to those in Ethiopia, there was a change in understanding of QI and staff were able to make changes to services better after the intervention.²⁶ QI interventions in Ghana, Tanzania, and Uganda can improve maternal and newborn care and prevent infant mortality.^{27,28}

The most significant change occurred in the POCQI skill variable, followed by QI engagement and QI understanding. POCQI is relatively new to be trained on HCWs in forefront services. Therefore, it is reasonable if the change is the highest compared to other variables. Hospitals are relatively more often exposed to the quality of health services than PHCs. This is because the hospital accreditation and other quality management system has been around for much longer than the PHC. However, POCQI skills are also a new thing in the hospital's quality management system.

Training and coaching POCQI for Infant Health Services has changed potential quality performance on average in the PHC group through the measurement instrument built. In addition, training and guidance interventions for service providers effectively improve service quality and performance.^{29,30} The leading service units in PHC, no doubt, have considerable potential to improve services to the community. Previous study investigated factors which influenced the process of QI in three PHCs in Cianjur District, the researchers found there were four main factors which contributed to the QI process namely: leadership, enthusiasm of staff and multidisciplinary collaboration, QI culture integration, and PHC on going accreditation process.³¹

Based on qualitative results conducted on health workers at both the PHC and hospitals, it was stated that the capacity of the officers increased after receiving POCQI training. Increasing the capacity of health workers encourages an increase in the quality of health services. This result is in line with the findings of Kumar et al, who said that the POCQI approach managed by doctors and nurses has been proven to improve the quality of health services and can overcome contextual problems such as limited health service resources.³² The results of the meta-analysis show that public health models and frameworks can support capacity building for health workers.³³

The qualitative results also show that based on the patient's perception after the POCQI training the quality of health services at the PHC and Hospitals is getting better. Patients say that health workers are more caring, more informative, the service rooms are cleaner and the service flow is clearer. This is in accordance with the opinion of Mosadeghrad that the quality of service depends on good care and treatment, improved health, a clean service environment, and interaction with service providers.³⁴ The patient's perspective can be a tool to measure quality.³⁵ Perceptions of the quality of health services vary greatly depending on the context and stakeholder perspectives.³⁴ The quality of health services encourages the use of health services, perceptions of quality affect the health system.³⁶

The qualitative results also showed that after POCQI training, PHC and hospital staff became able to carry out the 4 POCQI steps and were able to make changes to improve the quality of infant health services properly. Plan-Do-Study-Action (PDSA), which is the third step, is a step to make changes when finding problems in infant health services. This is supported by the opinion of Sachan et al who said that PDSA triggers health workers to make ideas for changes to services so that service quality increases.²⁰

PHC, as a government-owned institution, is often stigmatized as the lowest health care facility or as a last resort in obtaining health services. However, this measurement shows a change in the performance of the quality of service at the

PHC. Therefore, there is a very open opportunity for local governments to improve the performance of their health system. Therefore, strengthening the health system is an essential key so that the service system can be stronger and more resilient so that POCQI can run well.

Strengthening the health system in low and middle-income countries has proven to enhance health services to improve service quality.^{37,38} The quality of health care in the US varies greatly between hospitals, cities, and states. Some cases do not even meet the standards, although some cases have met and exceeded service standards.³⁹ Moreover, the strategy of POCQI implementation also successfully in improving quality of care in 131 facilities in India.⁴⁰ PHCs and hospitals in the district have limited resources. PHC and public hospitals are under the responsibility of the DHO in the local health system. If DHO can support better resources, then leading service units can amplify service quality performance. A study in India conducted in a resource constraint setting by Sachan et al, found that a simple POCQI methodology could enhance the quality of care.²⁰

The implementation of POCQI makes all PHC and hospital public HCWs focus more on patient-centered care (PCC), which aims to improve service quality. PCC is a treatment that respects the patient deeply and is responsive to patient preferences, needs and values.⁴¹ PCC is one of the dimensions of high-quality health care, and its implementation has been shown to improve the overall quality of health care.⁴² Efforts to promote PCC must consider patients and their families, physicians and the health system.^{43,44} Therefore, the implementation of PCC requires the role of all stakeholders and the commitment of health care organizations, including DHO.

The limitation of this study is that the intervention did not use a control group. The results of both quantitative and qualitative research are perceived by the respondents. The strength of this research is the mixed method concurrent triangulation method, so it can be used to see the similarities between the quantitative and qualitative results. Research on the implementation of POCQI in IHS with this model will be the basis for the development of knowledge and practice for the next POCQI interventions in Indonesia.

Implication for Policy

POCQI implementation has proven to transform primary and secondary service providers to provide better and more innovative service processes. Therefore, the Ministry of Health of Indonesia should establish POCQI as one of the essential quality policies in providing infant health services. Improving service quality is not enough only by improving the quality assurance (e.g existing accreditation system) but, more importantly changing the quality culture of HCFs and HCWs using POCQI. POCQI implementation encourages community decision making, health workers and national health system policies.⁴⁰

The quality policy in health care facilities should be managed by the state so that improving the quality of services in the forefront units can be implemented in all HCFs. Some countries that already have national institutions to enhance the quality of health services generally have better outcomes.⁴⁵⁻⁴⁷

The implementation of POCQI to complement the quality management system in the local health system is very strategic in improving the health status of infants. Therefore, DHO needs to strengthen quality policies in the local health system through by strengthening PHC in its area by scaling up coaching POCQI for all public and private PHCs.

Conclusion

POCQI training and coaching can improve QI understanding, QI engagement, and POCQI skills, processes, and service outcomes at PHCs and hospitals. However, changes in the processes and outcomes of PHC are not significant. In addition, there has also been a significant change in the performance of quality. Therefore, the Ministry of Health must strengthen the quality policy by implementing the POCQI strategy and strengthening the quality management system in the National and Local Health Systems.

Acknowledgments

The authors would like to thank the Ministry of Health, Cianjur District Health Office, Indramayu District of Health Office, and all enumerators and respondents for supporting the study.

Funding

This study was funded by the Ministry of Health under contract number HK.03.01/6/672/2020, while the cost of publication was funded by the Universitas Padjadjaran with contract number 1959/UN6.3.1/PT.00/2021.

Disclosure

All authors have no financial or non-financial conflicts of interest in this study.

References

- Alkema L, Chou D, Hogan D, et al. Global, regional, and national levels and trends in maternal mortality between 1990 and 2015, with scenario-based projections to 2030: a systematic analysis by the UN maternal mortality estimation inter-agency group. *Lancet*. 2016;387(10017):462–474. doi:10.1016/S0140-6736(15)00838-7
- Say L, Chou D, Gemmill A, et al. Global causes of maternal death: a WHO systematic analysis. *Lancet Glob Health*. 2014;2(6):e323–33. doi:10.1016/S2214-109X(14)70227-X
- The World Bank. Mortality rate, infant (per 1000 live births); 2020. Available from: <https://data.worldbank.org/indicator/SP.DYN.IMRT.IN>. Accessed August 17, 2022.
- The Global Economy. Infant mortality in South East Asia. Available from: https://www.theglobaleconomy.com/ranking/infant_mortality/South-East-Asia/. Accessed August 17, 2022.
- Romero R, Dey SK, Fisher SJ. Preterm labor: one syndrome, many causes. *Science*. 2014;345(6198):760–775. doi:10.1126/science.1251816
- Ratnasiri AWG, Lakshminrusimha S, Dieckmann RA, et al. Maternal and infant predictors of infant mortality in California, 2007–2015. *PLoS One*. 2020;15(8):e0236877. doi:10.1371/journal.pone.0236877
- Kim D, Saada A. The social determinants of infant mortality and birth outcomes in Western Develop Nations: a cross-country systematic review. *Int j Environ Res Public Health*. 2013;10:2296–2335. doi:10.3390/ijerph10062296
- Muldoon KA, Galway LP, Nakajima M, et al. Health system determinants of infant, child and maternal mortality: a cross-sectional study of UN member countries. *Global Health*. 2011;7:42. doi:10.1186/1744-8603-7-42
- World Health Organization. Everybody's business—strengthening health systems to improve health outcomes: WHO's a framework for action; 2007.
- Kruk ME, Pate M, Mullan Z. Introducing the Lancet Global Health Commission on high-quality health systems in the SDG era. *Lancet Glob Health*. 2017;5(5):e480–481. doi:10.1016/S2214X(17)30101-8
- Kruk ME, Gage AD, Arsenault C, et al. High-quality health systems in the sustainable development goals era: time for a revolution. *Lancet Glob Health*. 2018;6(11):e1196–1252. doi:10.1016/S2214-109X(18)30386-3
- Ruelas E, Gomez-Dantez O, Leatherman S, et al. Strengthening in quality agenda in health care in low-and middle-income countries: question to consider. *Int J Qual Health Care*. 2012;24(6):553–557. doi:10.1093/intqhc/mzs061
- Berendes S, Heywood P, Oliver S, et al. Quality of private and public ambulatory health care in low and middle-income countries: a systematic review of comparative studies. *PLoS Med*. 2011;8(4):e1000433. doi:10.1371/journal.pmed.1000433
- Chassin MR, Galvin RW. The urgent need to improve health care quality. *JAMA*. 1998;280(11):1000–1005. doi:10.1001/jama.280.11.1000
- Hussein M, Pavlova M, Ghalwash M, et al. The impact of hospital accreditation on the quality of healthcare: a systematic literature review. *BMC Health Serv Res*. 2021;21:1057. doi:10.1186/s12913-021-07097-6
- Lee HC, Kurtin PS, Wight NE, et al. A quality improvement project to increase breast milk use in very low birth weight infants. *Pediatrics*. 2012;130:e1679–1687. doi:10.1542/peds.2012-0547
- Jones B, Kwong E, Warburton W. *Quality Improvement Made Simple What Everyone Should Know About Health Care Quality Improvement*. The Health Foundation; 2021.
- Deorari A, Mehta R, Livesley N. Improving the quality of care for mothers and newborns in health facilities: point of care quality improvement. In: *Facilitator Manual*. New Delhi: World Health Organization Regional Office for South-East Asia; 2017.
- World Health Organization. Towards maternal and newborn survival in the WHO South-East Asia Region. In: *Implementation Experience of the WHO SEARO Model of Point-of-Care Quality Improvement (POCQI)*. World Health Organization; 2020.
- Sachan R, Srivastava H, Srivastava S, et al. Use of point of care quality improvement methodology to improve newborn care, immediately after birth, at a tertiary care teaching hospital, in an resource constraint setting. *BMJ Open Qual*. 2021;10:e001445. doi:10.1136/bmj0q-2021-001445
- Creswell JW, Creswell JD. Research design. In: *Qualitative, Quantitative, and Mixed Methods Approach*. 5th ed. Sage; 2018.
- Dinas Kesehatan Provinsi Jawa Barat [West Java Provincial Health Office]. Profil kesehatan Provinsi Jawa Barat [Health Profile of West Java Province]; 2020. Indonesian.
- Tabriz AA, Flocke SA, Shires D, et al. Logic model framework for considering the inputs, processes, and outcomes of a healthcare organization-research partnership. *BMJ Qual Saf*. 2019;29(9). doi:10.1136/bmjqs-2019-010059
- Watson DE, Broemeling A-M, Wong ST. A results-based logic model for primary healthcare: a conceptual foundation for population-based information systems. *Health Policy*. 2009;5:33–46.
- Bond TG, Fox CM. *Applying the Rasch Model: Fundamental Measurements in the Human Sciences*. Mahwah, NJ, USA: Routledge; 2015.
- Hagaman AK, Singh K, Abate M, et al. The impacts of quality improvement on maternal and newborn health: preliminary findings from a health system integrated intervention in four Ethiopian regions. *BMC Health Serv Res*. 2020;20:522. doi:10.1186/s12913-020-05391-3
- Singh K, Brodish P, Speizer I, et al. Can a quality improvement project impact maternal and child health outcomes at scale in northern Ghana? *Health Res Pol Sys*. 2016;14(1):45. doi:10.1186/s12961-016-0115-2
- Waiswa P, Manzi F, Mbaruku G, et al. Effects of the EQUIP quasi-experimental study testing a collaborative quality improvement approach for maternal and newborn health care in Tanzania and Uganda. *Implement Sci*. 2017;12(1):89. doi:10.1186/s13012-017-0604-x
- Garcia-Elorrio E, Rowe SY, Teijeiro ME, et al. The effectiveness of the quality improvement collaborative strategy in low-and middle-income countries: a systematic review and meta-analysis. *PLoS One*. 2019;14:10. doi:10.1371/journal.pone.0221919

30. Manzi A, Nyirazinyoye L, Ntaganira J, et al. Beyond coverage: improving the quality of antenatal care delivery through integrated mentorship and quality improvement at health centers in rural Rwanda. *BMC Health Serv Res.* 2018;18(1):136. doi:10.1186/s12913-018-2939-7
31. Limato R, Tumbelaka P, Ahmed R, et al. What factors do make quality improvement work in primary health care? Experiences of maternal health quality improvement teams in three Puskesmas in Indonesia. *PLoS One.* 2019;14(12):e0226804. doi:10.1371/journal.pone.0226804
32. Kumar P, Chawla D, Thukral A, et al. Development of a quality improvement package for reducing sight-threatening retinopathy of prematurity. *Indian J Ophthalmol.* 2020;68(S1):S115–S120. doi:10.4103/ijo.IJO_2087_19
33. Bergeron K, Abdi S, DeCorby K, et al. Theories, models and frameworks used in capacity building interventions relevant to public health: a systematic review. *BMC Public Health.* 2017;17:914. doi:10.1186/s12889-017-4919-y
34. Mosadeghrad AM. Healthcare service quality: towards a broad definition. *Int J Health Care Qual Assur.* 2013;26(3):203–219. doi:10.1108/09526861311311409
35. Gronhaug G, Hagfors J, Borch I, et al. Perceived quality of health care services among people with osteoarthritis – results from a nationwide survey. *Patient Prefer Adherence.* 2015;9:1255–1261. doi:10.2147/PPA.S82441
36. Hanafeld J, Powell-Jackson T, Balabanova D. Understanding and measuring quality of care: dealing with complexity. *Bull World Health Organ.* 2017;95:368–374. doi:10.2471/BLT.16.179309
37. Althabe F, Bergel E, Cafferata ML, et al. Strategies for improving health care quality in maternal and child health in low- and middle-income countries: an overview of systematic reviews. *Paediatr Perinat Epidemiol.* 2008;22(s1):42–60. doi:10.1111/j.1365-3016.2007.00912.x
38. Bhutta ZA, Salam RA, Lassi ZS, et al. Approaches to improve quality of care (QoC) for women and newborns: conclusions, evidence gaps, and research priorities. *Reprod Health.* 2014;11(Suppl 2):S5. doi:10.1186/1742-4755-11-S2-S5
39. Schuster MA, McGlynn EA, Brook RH. How good is the quality health care in the United States? *Milbank Q.* 2005;83(4):843–895. doi:10.1111/j.1468-0009.2005.00403.x
40. Datta V, Srivastava S, Garde R, et al. Development of a framework of intervention strategies for point of care quality improvement at different levels of healthcare delivery system in India: initial lessons. *BMJ Open Qual.* 2021;10:e001449. doi:10.1136/bmjopen-2021-001449
41. Abubakar Z, Rivai F, Saptada NA. Effect of patient centered care application on inpatient outcomes in Rskdia Pertiwi and RSia Ananda (Woman and Child Hospitals). *J Med Sci.* 2020;8(T2):162–167. doi:10.3889/oamjms.2020.5217
42. Institute of Medicine. *Crossing the Quality Chasm: A New Health System for the 21st Century.* Washington DC: National Academy Press; 2001.
43. Epstein RM, Street RL Jr. *Patient-Centered Communication in Cancer Care: Promoting Healing and Reducing Suffering.* Bethesda, MD: National Cancer Institute, NIH; 2007.
44. Epstein RM, Fiscella K, Lesser CS, Stange KC. Why the nation needs a policy push on patient-centered health care. *Health Aff (Millwood).* 2010;29(8):1489–1495. doi:10.1377/hlthaff.2009.0888
45. Gauld R, Burgers J, Dobrow M, et al. Healthcare system performance improvement: a comparison of key policies in seven high-income countries. *J Health Organ Manag.* 2014;28(1):2–20. doi:10.1108/JHOM-03-2013-0057
46. Wilson RM, Michel P, Olsen S, et al. Patient safety in developing countries: retrospective estimation of scale and nature of harm to patients in hospital. *BMJ.* 2012;344:e832. doi:10.1136/BMJ.e832
47. Saleh S, Alameddine M, Mourad Y, et al. Quality of care in primary health care settings in the eastern Mediterranean region: a systematic review of the literature. *Int J Qual Health Care.* 2015;27(2):79–88. doi:10.1093/intqhc/mzu103

Journal of Multidisciplinary Healthcare

Dovepress

Publish your work in this journal

The Journal of Multidisciplinary Healthcare is an international, peer-reviewed open-access journal that aims to represent and publish research in healthcare areas delivered by practitioners of different disciplines. This includes studies and reviews conducted by multidisciplinary teams as well as research which evaluates the results or conduct of such teams or healthcare processes in general. The journal covers a very wide range of areas and welcomes submissions from practitioners at all levels, from all over the world. The manuscript management system is completely online and includes a very quick and fair peer-review system. Visit <http://www.dovepress.com/testimonials.php> to read real quotes from published authors.

Submit your manuscript here: <https://www.dovepress.com/journal-of-inflammation-research-journal>