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QUALITY IMPROVEMENT FOR MATERNAL AND CHILD HEALTH IN PRIMARY HEALTH CARE: A SCOPING REVIEW

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ABSTRACT

Background: Primary Health Care (PHC) is a gatekeeper in the provision of comprehensive services for maternal and child health (MCH). MCH services in PHC remain limited and have not been evenly handled and distributed. Based on this, MCH in PHC requires Quality Improvement (QI) interventions. **Purpose:** To identify the implementation of QI in maternal and child health in PHC, and to identify the most appropriate QI tools and/or approaches used. **Methods:** This is a scoping review of the qualitative and quantitative results of studies focused on the Quality Improvement of maternal and child health in Primary Health Care. The inclusion criteria consisted of articles published in English and original articles; the topic is improvements of maternal and child health in Primary Health Care; written in full text and open access. **Results:** Six findings were found: QI interventions for MCH problems mostly happen in Low Middle-Income Countries (LMIC); Plan-Do-Study-Act (PDSA) was the most used QI intervention approach; the success of QI implementation included interventions; the most used QI intervention; the role of stakeholders; and the factors related to the successes of QI intervention. **Conclusion:** The implementation of QI is often carried out in Low-Middle Income Countries (LMIC). Furthermore, various QI interventions have been used to solve maternal and child health issues. The most used QI tool was PDSA. Training, mentoring, and workshops for midwives and clinic teams were the most common QI interventions implemented.

Keywords: Quality Improvement, Maternal and Child Health, Primary Health Care, Implementation, QI Approaches

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INTRODUCTION

Reducing maternal and child mortality is one of the Sustainable Development Goals (SDGs) targets. According to the World Health Organization (WHO), in 2018, the Maternal Mortality Rate (MMR) was still high, where 810 mothers worldwide died due to pregnancy and childbirth. Most deaths occurred due to a lack of access and unequal healthcare quality between urban areas and rural areas. The highest MMRs are found in central Asia, eastern areas, Europe, and Northern Africa, according to the WHO. Usually, mothers die due to severe bleeding, infectious diseases, high blood pressure during pregnancy, complications during childbirth, and unsafe abortions. The WHO has targeted the MMR in 2025 to be 119 women per 100.000 pregnant women. In 2020, more than 861 pregnant women died per 100.000 (CDC, 2020). In 2030, it is intended to be 88 women per 100.000 pregnant women. This can be achieved by providing quality care at the point of primary health care (PHC) as the first gateway to health providers (WHO, 2021).

Various diseases and problems in pregnant women can lead to an increase in maternal mortality. To reduce this, health care has a significant role. PHC is a gatekeeper (Sibthorpe *et al*., 2017) and is responsible for the quality of life of the local area. Looking at South Africa, they need to know every update and all data about first antenatal care (ANC) visits before 20 weeks of gestation and the pregnancy complications of pregnant women in the area (Odendaale *et al*, 2022). PHC provides comprehensive services, including preventive, promotive, rehabilitative, and curative approaches to maternal and child health (Deepa and Devi, 2020). In PHC, maternal and child health services consist of reproductive health and family planning services, antenatal care, childbirth, newborn services, postpartum and family planning services, health services for infants, toddlers, pre-school children, and school children services. Some interventions to prevent Maternal and Child Mortality utilize maternal and child booklets, health counseling, delivery screening by midwives, and more (Limato *et al*., 2019).

PHC has preventive and curative uses. However, many MCH services have not been appropriately handled and distributed, resulting in less comprehensive services (Haskins *et al*., 2020). If this problem continues and a Quality Improvement (QI) intervention does not work, there will be many missed opportunities, ineffective delivery services (Lima *et al*., 2018), and an inability to accomplish the SDG's targets (Chetty, 2018). Based on a study in Singapore, in order to make a QI successful, it depends on the QI tools used in the intervention (Fong *et al*., 2020). Compared to the latest research, this paper will not only show what interventions have been used but also which QI tools have worked in MCH in PHC.

Maternal and Child Health (MCH) in PHC requires QI interventions. Previous research has discussed QI in Maternal Child Care in 3 PHC settings in Indonesia, suggesting that MCH health services must transform from focusing on health access to QI in health services (Limato *et al*., 2019). In addition, the study stated that there were a lot of QI interventions used in every PHC (Haskins *et al*., 2020). However, a review of the findings remains relevant to further guide improvements in the quality of PHC in order to continue to reduce maternal and child mortality. Therefore, this paper aimed to identify the implementation of QI interventions in MCH in PHC, and to identify the most appropriate QI tools or approaches used.

METHOD

This paper was a scoping review about quality improvements for maternal and child health in PHC. We identified what kind of interventions have been used to enhance or improve the quality of MCH services in PHC and their success. A scoping review is a tool that can avoid bias because it sees the bigger scope of the topic (Ingemann C, 2018). The inclusion criteria for these articles consisted of articles published in English, original articles about QI for MCH in PHC, in full text and open access, and articles were published within 2017- 2021. The exclusion criteria for this paper consisted of research that only discusses evaluations rather than quality improvements, that did not include quality improvement, and that only discussed pediatrics or did not include quality improvement.

The data was analyzed by searching and compiling articles through a scoping review of online databases. The databases consisted of

PubMed and Google Scholar. The search terms used included: "quality improvement" AND "maternal and child health" OR "antenatal care" OR "maternal and pediatric care" AND "primary health care" OR "community care" OR "primary maternal care" to find related articles. There were 32 related articles found in the PubMed database and 50 articles on Google Scholar. The titles, abstracts, and objectives were reviewed for the first selection, and 13 articles on PubMed and 50 articles on Google scholar were found. Thematic analysis was used to find fit and credible articles, followed by reading the full text and identifying maternal and child health quality improvements in Primary Health Care. Lastly, four potential articles on PubMed and three articles on Google Scholar were finally chosen (Table 1).

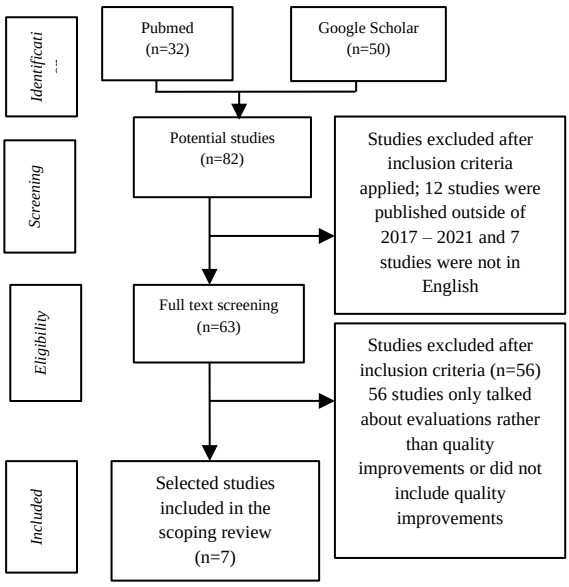

Figure 1. Article Search Result Framework.

RESULT

In this scoping review, articles have been examined discussing primary care that has carried out quality improvements in maternal care globally. This discussion will convey the findings on the kind of intervention implemented in every QI of PHC, QI tools, the success of the QI, and what factors lead to the success of QIs. In total, 7 articles met the criteria and will be discussed in the following table.

Table 1. Articles used in the review

No	Authors	Country	Method	Data Collection	Findings
1.	Limato et al., (2019)	Indonesia	One year interventions on three *Puskesmas* or Primary Health Care (PHC)	Qualitative data was collected using 28 in-depth interviews at two points: pre- (April 2016) and post- QI intervention (April 2017), involving national, provincial, district, and Puskesmas managers; and Puskesmas QI team members. Thematic analysis of the transcripts was conducted.	1. QI in Indonesian PHC regarding maternal health implemented and focused on training for health workers, including screening and monitoring. 2. Use of PDSA cycle tools for the QI. 3. QI intervention did not work completely. 4. The Ministry of Health, Indonesian Midwives Association, and the Province Officer were the stakeholders who helped to obtain information.
2.	Eboreime e EA et al., (2019)	Nigeria	Mixed method study design Observations in 138 PHCs in Nigeria	Three times observation for each local government and an annual review of the national sector.	1. Nigeria utilized DIVA tools (Diagnose - Intervene - Verify – Adjust) for advocating to stakeholders on how to solve maternal and child health issues. Interventions advocated for consist of the commodity of immunization, commodity of the integrated management of childhood illness, and the weak delivery of skilled birth attendance. 2. Use of DIVA and PDSA cycles. 3. QI intervention succeeded. 4. Agency Chief Executive, the Ministry of Health, and the Ministry of Finance were the stakeholders who decided on the QI interventions.

Continuation of Table 1. Articles used in the review.

No	Authors	Countries	Method	Data Collection	Findings
3.	YapaHM et al., (2020)	South Africa	CQI interventions in 7 Primary Health Care clinics	Observations periodically and trial registration for 2 months of intervention	1. QI intervention in PHC regarding maternal and child health was HIV Viral Load (VL) Monitoring to improve quality care and prevent the transmission of HIV from mother to child. 2. Use of process mapping, fishbone diagrams, and PDSA cycles. 3. The QI intervention did not completely work because of the limited time. 4. Local stakeholders helped to obtain the data.
4.	Haskins et al., (2020)	South Africa	Interventions were implemented in the 27 clinics that participated.	Five times every three months a year using pre- and post-tests and interviews.	1. QI in South Africa's PHC resulted in the "Well Mother Baby Service" that consisted of screening HIV care and monitoring service immunization. 2. Use of the BTS model (Breakthrough Series model). 3. The QI intervention did not work entirely because of the administrative barrier. 4. The Health Department of Kwazulu was the stakeholder who helped license the QI interventions.
5.	Darmstadt G et al., (2020)	India	Ananya programs were implemented in 38 districts of Bihar's City on 2550 health sub-centers.	Multilevel assessment and Direct Observations of Delivery (DOD) in PHCs	1. Interventions for PHC for maternal and child health using the Ananya program, which consisted of capacity building for FLWs, QI in facilities, multimedia communications and self-help group facilitation, mentoring for nurses, and many more. 2. The QI intervention used Ananya tools. 3. The QI intervention was successful, but there were some issues with the commodities and a lack of human resources. 5. The Bill and Melinda Gates Foundation (BMGF) and the Government of Bihar (GoB) were the stakeholders who decided on the QI intervention and investment in the QI intervention program.
6.	Ahmed, S. et al., (2021)	Egypt	Operational research was conducted in two Primary Health Care centers in Giza	Pre- and post-interviewing of 50 clients attending ANC and 50 attending FP Clinics.	1. Clinical Audit as an intervention for maximizing the service quality of MCH in Primary Health Care. 2. The QI intervention used an audit as an approach. 3. The QI intervention succeeded. 4. The District Health Office and Zone Health Department were the stakeholders who measured pre-intervention until post-intervention, identified the gap, and developed the action plan.
7.	Argaw, M. D., (2021)	Ethiopia	Pre-post design in 159 PHC Units in 31 Districts	Data extracted from online databases and evaluated using key performance indicators. The intervention was implemented for 12 months.	1. Use of the Community Scorecard Approach with six phases of implementation. It advocated this approach to improve maternal and child health care, skill delivery, growth mentoring intervention, and many more. 2. The tools used were not identified. 3. The QI intervention succeeded. 4. The Health Sector Reform Program (HSRP), th Ministry of Health and Population (MOHP), and the General Department for Quality (GDQ) were the stakeholders who built the QI intervention and evaluated the program through accreditation.

QI interventions for MCH problems in LMIC

Based on Figure 1, seven articles used a QI intervention to address maternal and child health in Primary Health Care. Quality improvement interventions for MCH were carried out in 2771 Primary Health Care settings. This research was conducted in Indonesia, South Africa, Nigeria, India, Egypt, and Ethiopia. Frequently, QI in Healthcare is carried out in Low and Middle-Income Countries (LMIC). An LMIC is a country with a Gross National Income (GNI) per capita of less than USD $4095, where the average GNI per capita is USD $2.2021 (OECD, 2021).

The QI intervention tools

Table 1 provides information on each article about the primary health care interventions used to improve MCH services. Respectively, the PHCs used different approaches and tools; there was the Plan - D0 - Study - Action (PDSA) cycle, the Breakthrough Series Model (BTS) Model, process mapping,

fishbone diagrams, the Diagnose- Intervene- Verify- Adjust (DIVA) model, and Ananya tools. Every PHC used a different approach and tool, but PDSA tools were the most commonly used. Moreover, PDSA tools were more effectively used on a small regional scale, making the data collection easier. Meanwhile, for a larger scope, using other tools besides PDSA was more effective at achieving the target.

Time related to QI successes

The research methods related to duration were also very diverse, ranging from three months, to eighteen months, to six years. This was highly influential on the desired outcomes and closely related to the affect on the number of participating PHCs. Many PHCs observed the long time it would take to do some of the MCH interventions. The longest was in Bihar City, India. It took six years to implement the MCH QI intervention, using a clinical audit for every intervention in Bihar's PHC. The QI intervention was successful. This shows that the period of QI intervention is essential when undertaking QI interventions for MCH at PHCs.

The most used QI Intervention for MCH

The interventions used for MCH are very situation-dependent because they depend on the characteristics of the PHC in each region. Several characteristics such as behavior, culture, climate, and many more will affect the implementation of the interventions. Based on Table 1, we saw that training, supervision, and workshops for health workers were the mainstay interventions in overcoming maternal and child problems. Other than the training intervention, monitoring of the MCH program was also the dominant intervention carried out.

Role of stakeholders in QI interventions for MCH in PHC

Stakeholders have an enormous role in the sustainability of QI interventions for MCH in PHC. In this study, we saw that the government has contributed to the implementation of QI interventions. Some of the roles include providing complete information, licensing for research, acting as the decision-maker for the intervention, investing in the intervention program, and measuring the report to detect any gaps as part of developing an action plan. The participating stakeholders involved the local government, district health office, the Ministry of Finance, the National Midwives Association, and province officers.

Not all interventions can achieve the target

From the results above, there are many QI interventions. Unfortunately, not all interventions achieve their target, such as the QI interventions in Indonesia, South Africa, and India. Only three studies indicated that the QI intervention was entirely successful out of the seven.

DISCUSSION

QI implementation in LMIC

This study found that QI interventions for MCH are often undertaken in LMIC countries. This is related because, in LMICs, there are still a lot of poor sections of society, as well as social exclusion, geographic isolation, and a lack of proper health services and education (Kumar *et al*., 2020). Mutually sustainable, the LMIC community has difficulty getting access to education, especially due to the geographic isolation. The articles show that the country was a resource-poor community according to the Continuous Quality Improvement method (2020). Whether the pregnancy was age-appropriate was also an issue due to the many adolescent and unwanted pregnancies. Education about the use of contraceptives, infant health, and maternal health was very influential. The easier it is to access education and information, the more knowledgeable society becomes as they improve their health and choose contraception (Robbins and Ott, 2017). The maldistribution of health services and incompatible health workers, especially in Primary Health Care, were also concerns in LMICs (Bhan, *et al*., 2020). Therefore, LMICs might be the priority for improving maternal and child health quality. The implementation of QI interventions has to be solved at the root of the problem for effective results.

The mainstay of QI interventions for MCH

There were many interventions detailed for the purpose of improving the quality of PHC in MCH services. Based on this study, we identified that PHC often conducts QI interventions related to health workers and the other human resources in PHC, including training, mentoring, and workshops for midwives and clinic teams. This is because health workers have a crucial role in the success

of QI. The purpose of this is so then health workers in Primary Health Care have clear goals and understand the QI intervention undertaken, as well as the tools to be used, and the procedures for implementing the program. This is supported by previous research (Baker, *et al*., 2018) in Tanzania where it was found that cultivating a sense of ownership among the health workers affects the success of the QI implementation. The higher the ownership of health workers in the QI intervention, the higher the enthusiasm and desire to learn and understand more about the QI implementation will be. The QI intervention will be successful and effective if the health workers and human resources in PHC can operate and work together to own the program. Research by the WHO also supports that mentoring and training are the dominant interventions because they can build the skills and competencies of each staff member (World Health Organization, 2018).

PDSA cycle is the most used approach

QI interventions in PHC aim to enhance and improve MCH services. However, the outcomes show that not all QI interventions achieve their target. Several factors include the tools and approach used, time/period, project potential, human resources, stakeholders, the data involved, and information (Rakhmanova and Bouchet., 2017). Not all QI interventions using the PDSA cycle will succeed; many factors need to be identified to make QIs successful. This is supported by the research of Limato (2019). The implementation of QI interventions using PDSA tools was not necessarily successful when it came to achieving their targets. Approaches using PDSA tools become familiar because they use real-time evidence and are frequently used in LMICs. This is because the implementation is undertaken periodically, making it easier for researchers to identify and know the emphasis of an intervention. According to Ahmed, *et al*. (2019), QI interventions using the PDSA approach will be successful and are influenced by a sufficient duration, collaboration, and supporting data. If there are none of these factors, it will exacerbate the failure of the process.

Stakeholder role in the success of QI interventions

The role of stakeholders in the implementation of QIs supports the success of the intervention, as stated at the Alma Atta conference. The stakeholder's role in QI implementation might be the most significant influence on its success. This happens because the QI needs resources, be they financial, manpower, exposure, and data information. This was supported by the research of Spencer (2020), who found that the failure of QI outcomes due to a limited amount of time, incomprehensive data, unclear policy, and financial issues is closely related to the stakeholders (Spencer *et al*., 2020). According to Spencer, stakeholders often only play a role in the monitoring and consultation but are negligent in its implementation, intervention involvement, and evaluation. In addition, building trust and engagement in interactions is critical to writing a clear policy, complete set of data, and working against any other issues. These factors are aligned with the study results, in that stakeholders must participate in the sustainability of QI interventions in PHC in relation to MCH services. For example, in PHC in South Africa, the implementation of a quality care ANC in HIV requires data from the local government; if the data obtained is incomplete, the QI outcome will not be successful.

Successful QI interventions in PHC for Maternal and Child Health

QI interventions need to involve various factors to be identified as a successful program. However, to make it a success, the factors must occur continuously and sustainably (Marquez, 2020). The success of the QI intervention is also influenced by the area it is implemented in and its duration. The broader the area being intervened in, the more data and resources are needed. For example, the Ananya program takes seven years to implement and is implemented on a national scale. When viewed from a narrow area, the duration will be narrow as well (Darmstadt, 2020). The data and resources required will also be less. In addition, advocacy is also necessary. Based on this study, advocacy is one of the solutions related to the success of QI interventions. Out of several QI interventions, the study that carried out only one advocacy approach was successful.

Research Limitations

This study only examined articles in English and was limited to a publishing window of 5 years, from 2016 to 2021. The research was limited to the policy side of each country.

CONCLUSION

QIs are frequently undertaken in Low-Middle Income Countries (LMIC). They take place because there is a lack of proper health services, resource-poor communities, and many other issues related to MCH. Furthermore, various QI interventions and approaches have solved maternal and child health issues. QI interventions include training, mentoring, and workshops for midwives and clinic teams. Meanwhile, PDSA approaches are still the most used QI intervention for LMIC. However, the duration of the QI also influences the success of the program. Unfortunately, mentoring, training interventions or a PDSA approach do not guarantee that the QI intervention will succeed. The role of stakeholders was also essential for making decisions, ensuring the quality and completeness of the data, and making a transparent policy, as well as making the QI intervention successful by sustaining it, which was also found to be influenced by the duration and area of the QI intervention.

SUGGESTIONS

The success of QI interventions is related to the stakeholders of the countries involved. The maximized advocation of stakeholder power will raise the likelihood of success of the QI intervention. A stakeholder can help to educate and be a role model to introduce the QI intervention, so then people know the purpose of the intervention.

CONFLICT OF INTEREST

The authors have no conflicts of interest.

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AUTHOR CONTRIBUTION

Author Dhea Benedikta Tarigan was the main researcher who chose the topic and conducted the data collection in this study. Author Inge Dhamanti conducted the final proofreading and reviewed the research documents.

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