

## SYSTEMATIC REVIEW

# The Utilization of Quality Improvements in Public Health Systems Across Asian Countries: A Systematic Review

Rudi Nasib<sup>1</sup>, Nelson Lean Boon Leong<sup>1</sup>, Muhammad Mudassir Abdul Rahim<sup>1</sup>, Nachia Banu Abdul Rahim<sup>1</sup>, Nabihah Ali<sup>1</sup>, Mohd Ihsanuddin Abas<sup>2</sup>, Amirah Azzeri<sup>3</sup>, Hafiz Jaafar<sup>3</sup>, Mursid Raharjo<sup>4</sup>, Nur Ezdiani Mohamed<sup>5</sup>, \*Abdul Rahman Ramdzan<sup>1</sup>

<sup>1</sup> Department of Public Health Medicine, Universiti Malaysia Sabah, Sabah, Malaysia

<sup>2</sup> Community Medicine Unit, Faculty of Medicine, Universiti Sultan Zainal Abidin, Terengganu, Malaysia

<sup>3</sup> Public Health Unit, Department of Primary Health Care, Faculty of Medicine and Health Sciences, Universiti Sains Islam Malaysia (USIM), Negeri Sembilan, Malaysia

<sup>4</sup> Department of Environmental Health, Faculty of Community Health, Diponegoro University (UNDIP), Kota Semarang, Indonesia

<sup>5</sup> Centre for Health Quality Research, Institute Health System Research, Ministry of Health (MOH), Selangor, Malaysia

## ABSTRACT

**Introduction:** Public health leaders in the current scenario face the persistent task of providing efficient public health services, which is made even more challenging due to the limitations imposed by scarce resources. To overcome the issue, various quality improvements (QI) were implemented to improve the efficacy and effectiveness of public health programs, services, and organisations. **Objective:** The review aimed to identify and examine published studies implementing QI within Asian public healthcare systems and their benefits on healthcare performance. **Methods:** The systematic review followed the PRISMA guidelines. A comprehensive search was conducted across three databases - PubMed, SCOPUS, and Cochrane - specifically targeting peer-reviewed articles with titles or abstracts related to QI in the public health system. Only papers published between January 2017 and January 2022 were considered for inclusion in the review. **Results:** Nine articles were identified as relevant to the topic of interest, and the extracted findings were analysed. These nine studies naturally fell into distinct categories of QI, namely the Quality Improvement Model, Key Performance Index, Clinical Audit, and Root Cause Analysis. These studies explicitly connected their implemented QI to enhancing healthcare delivery quality. **Conclusion:** The findings of the review demonstrated that the implementation of QI could lead to notable enhancements in both the quality of care and overall healthcare performance.

**Keywords:** Quality improvement; Public health systems; Performance

## Corresponding Author:

Abdul Rahman Bin Ramdzan, DrPH  
Email: abdul.rahman@ums.edu.my  
Tel: +6017-7849542

## INTRODUCTION

Patients' demand for public health services to seek better health and treatment has escalated over the years as the population expands. Moreover, the healthcare field faces numerous challenges due to its inherent complexity. Consequently, enhancing healthcare quality has become the health systems' primary objective worldwide (1). Because of that, there is a need to ensure effective and high-quality public health services delivery to the population (2). Quality health services encompass providing appropriate care tailored to individuals' needs and preferences, delivered promptly and without causing harm or unnecessary resource depletion (3). Such healthcare of high quality

enhances the probability of achieving desired health outcomes and aligns with seven quantifiable attributes: effectiveness, safety, patient-centeredness, timeliness, equity, care integration, and efficiency. In the present scenario, public health authorities are confronted with challenging decisions regarding the optimal allocation of scarce resources, compounded by shrinking funds, to deliver essential public health services and effectively improve the population's well-being (4,5). These circumstances necessitate careful deliberation and strategic planning to ensure the most efficient utilisation of available resources while maximising the positive impact on the population's health.

QI refer to organised efforts to improve the quality of care and services provided within a healthcare organisation. These involve a defined set of steps encompassing the project's scope (6). Establishing the anticipated completion time, resource allocation, and associated costs is crucial to plan and execute the

initiative effectively. Their scope must align with the overall organisational strategy to maximise the success of quality improvements. By ensuring alignment, the QI can be better integrated into the broader goals and objectives of the organisation, leading to improved outcomes and a more significant overall impact (7). QI employs interventions that enhance the efficacy or effectiveness of a program, process, or organisation, including eliminating “inefficiency, error, and redundancy.”(6,7). To “increase performance,” a clear vision for high-quality public health systems must be established, including specific targets to enhance such systems. Health performance measures are a collection of aims or goals accompanied by “standards” as a guideline for acceptable performance (1,8). Accreditation certifies that an organisation has reached defined performance requirements. For state and municipal public health agencies, QI is projected to be increasingly used to achieve performance indicators connected to growing public health standards and certification.

Among the popular QI implemented in healthcare systems are Key Performance Indicators (KPI), Total Quality Management (TQM), and Quality Model Indicators (9,10). KPI is a quantifiable measure of performance over time for a specific objective. KPIs provide targets for teams to shoot for, milestones to gauge progress, and insights that help people across the organisation make better decisions (11). Conversely, TQM is a collection of management practices implemented across the organisation to meet or surpass customer expectations (12) consistently. Quality Model Indicators can appear in many forms, such as programs, tools, or guidelines to identify, improve, or evaluate the existing system.

This review aimed to identify and explore published studies implementing QI in the Asian healthcare system and their benefits on healthcare performance or health outcomes. Through the extant literature and research, the review would like to address the following research questions.

1. What QI were adopted, and strategies implemented in the Asian healthcare system?
2. What were the benefits to healthcare systems acquired after implementing QIs?

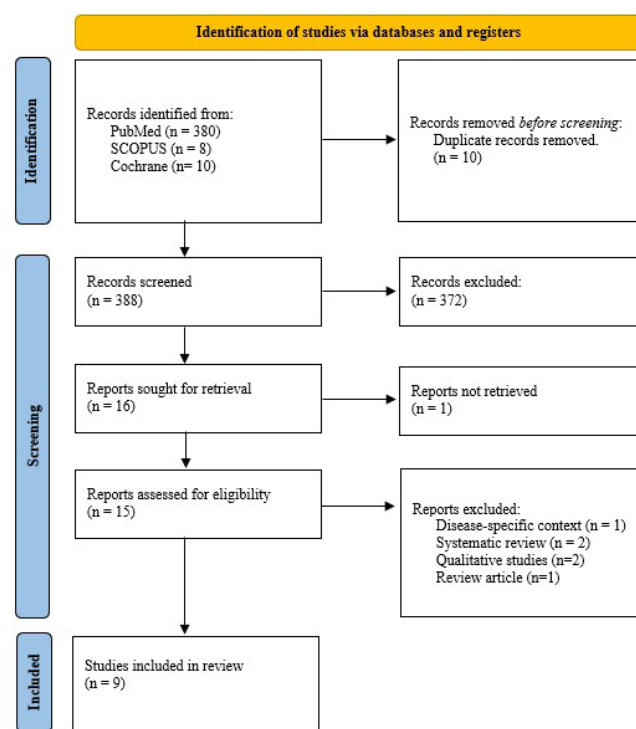
**MATERIALS AND METHODS**

**Study Protocol**

PRISMA guidelines for systematic review were used to conduct this review. The data collection and analysis procedures and eligibility requirements were determined in advance and described in the study protocol (Text I).

**Search Strategies**

The following databases were used to identify eligible studies: PubMed, SCOPUS, and Cochrane. The search was limited to articles written in English. All related articles will be synthesised to gather the following relevant information: the types of QI and key components implemented by different Asian countries and the potential benefits to the public health system due to QI implementation. A comprehensive search was carried out on databases from January 2017 to January 2022 using the search terms “public health,” “quality improvement,” “performance,” and “Asia” to identify pertinent articles. We downloaded full-text articles and eliminated duplicates. The entire text of these articles was collected and analysed for relevance, as shown in Figure 1. All remaining references were imported into the Mendeley software to improve collaboration during the screening and data extraction processes.



**Figure 1 : PRISMA Flow Chart.**

**Selection of Studies**

The retrieved studies were initially screened by two authors using titles and abstracts. Following that, five authors conducted a full-text evaluation of the eligible studies. The main author was consulted for resolution if there were disagreements. The relevant findings were recovered from the publications included in the study and assessed according to the above research questions. The findings were tallied and organised under the following headings: context,

study objectives, quality improvements, findings, conclusion, and influence on the healthcare system, which will be shown in the results section.

### Quality Assessment

The methodological quality of the articles was evaluated using the Joanna Briggs Institute (JBI) Critical Appraisal tool for quantitative and qualitative studies (13,14). Each piece underwent assessment based on a predetermined checklist consisting of 10 items. Each item was assigned a score of “yes,” “no,” “unclear,” or “not applicable.” A score of 1 point was given for each criterion marked as “yes,” while other responses received a 0. The scores for each article were then calculated and aggregated. Subsequently, based on a predetermined score agreed upon by the reviewers, the articles were categorised into “low,” “moderate,” or “high” quality.

### RESULTS

Three hundred ninety-eight articles were discovered through electronic searches of the databases mentioned. After filtering with titles and abstracts, 16 publications were chosen, and seven were omitted since the studies were conducted outside the public health framework. In the end, nine relevant articles that met the inclusion requirements were kept.

#### Critical appraisal within sources of included studies

Out of the total studies reviewed, three were classified as high quality (15–17), four were deemed to be of moderate quality (18–21), and the remaining two were categorised as low quality (22,23). Further details will now be provided for each of the nine studies, encompassing the specific QI strategies or interventions implemented, the reported benefits observed, and the contextual background of each study. This additional information aims to provide a comprehensive understanding of individual studies and their contributions to the healthcare quality improvement field.

#### QI categories and strategies implemented in the Asian healthcare system

The nine studies fell naturally into the following categories of QI: The Quality Improvement Model, Key Performance Index, Clinical Audit, and Root Cause Analysis. Detailed information about the studies is given in Table I, which includes the context of the study, the objectives, interventions involved, findings or results, conclusions, and the benefits of the healthcare system.

Based on the review, we identified several QI strategies implemented in the healthcare system. The implemented QI strategies are tabulated in Table II below.

### DISCUSSION

This review aimed to find QI measures that have been proven effective in enhancing healthcare services in Asian countries. The QI examined in this review focused on improving different areas within healthcare settings, such as organisation, program, and service-specific aspects. These initiatives included approaches like the Quality Improvement Model, Key Performance Index (KPI), Clinical Audit (CA), and Root Cause Analysis (RCA). While considering various perspectives, the primary focus of this review was on the improved health system outcomes as perceived by the beneficiaries, which still need to be commonly considered in many settings.

#### Quality Improvement Model

In our review, six papers used the QI model that demonstrated connections to health system performance or public health outcomes. These studies provided insights into the implementation methods of QI and documented their benefits, contributing to the evidence supporting the importance of implementing such interventions. Various approaches and QI models are available to facilitate data collection, analysis, and change testing. Many healthcare settings are monitoring their performance to meet the rising demand for high-quality patient care. The aim is to ensure the delivery of care that is safe, effective, timely, patient-centred, equitable, and efficient (1,24). Numerous organizations have introduced the principles of continuous quality improvement to their staff to facilitate this process. The QI model is an enhanced approach to quality management that goes beyond conventional quality assurance techniques by emphasizing the organization and its systems. It prioritizes the “process” rather than individual aspects, acknowledges both internal and external “customers,” and advocates for objective data to analyze and enhance processes (24). By comprehending an organisation’s operations and being aware of performance levels in specific tasks, a team of individuals can implement necessary changes to enhance overall team performance. Implementing collaborative quality improvement techniques within Japanese neonatal intensive care units (NICUs) emerged as a pivotal factor in improving pain management practices (18). The study revealed that collaborative improvement programs present a compelling strategy for bridging the gap between evidence-based practices and their implementation within the NICU setting. Using BNA tools in conjunction with QI methods has proven effective in enhancing the quality of care for newborns in resource-limited settings(19). These tools can also aid decision-makers in implementing resource-neutral interventions to address identified bottlenecks through

**Table 1 : Quality Improvements Implementation in Healthcare System of Asian Countries**

No	Context	Objective	Interventions	Findings	Conclusion	Benefits	Type of QIs	References
1	Level III perinatal medical centers with NICUs throughout Japan	The aim was to assess how a collaborative quality improvement program influenced the implementation of pain management in neonatal intensive care units (NICUs) in Japan.	The program was guided by the Institute for Healthcare Improvement Collaborative Quality Improvement Model, which encompasses the following key components: i. Establishment of a local multidisciplinary team ii. Conducting educational sessions iii. Implementation of supportive communication structures iv. Access to best practices information v. Transparent data submission and reporting utilizing the PDCA (plan-do-check-act) cycle	Analysis of the initial pain management data collected from the seven sites identified significant areas for enhancing pain management practices. Implementing changes in the NICU setting led to observable improvements in pain management, as demonstrated by measurable outcomes.	Collaborative quality improvement programs have demonstrated their effectiveness in enhancing pain management and playing a crucial supportive role by offering knowledge, structure, and valuable feedback.	The utilization of collaborative quality improvement techniques proved instrumental in enhancing pain management within NICUs. The program offered compelling strategies for addressing evidence-practice gaps specific to the NICU environment.	Quality Improvement Model	(18)
2	A cross-sectional study was conducted across six governorates in Oman, encompassing 12 primary health care (PHC) centers	To evaluate the performance of PHC services using KPIs	Secondary data from computerized medical records of the PHC centers were analyzed. The data included six essential indicators: accessibility, workload, outcomes, timeliness, satisfaction, and safety.	Among the assessed indicators, safety, satisfaction, timeliness, and accessibility exhibited the highest performance scores, while workload and outcomes fell behind in comparison.	There was a significant variation in performance across the key performance indicators (KPIs) among the facilities, with workload and outcomes demonstrating lower performance compared to other components.	The performance of PHC can be improved using the six quality indicators	Key Performance Index	(21)
3	The state of Meghalaya, India	To employ bottleneck analysis and quality improvement (QI) interventions as a means to enhance interventions in newborn facilities	Data on obstacles hindering the provision of quality care was collected in five district hospitals using an adapted Every Newborn BNA tool. Following this, health workers were provided coaching on utilizing QI methodology to address the identified bottlenecks.	QI improved neonatal interventions in newborn facilities that undertook QI projects.	In resource-limited settings, integrating quality improvement (QI) and bottleneck analysis (BNA) proves to be a successful approach for identifying and addressing bottlenecks in newborn care.	In resource-limited settings, both bottleneck analysis (BNA) and quality improvement (QI) have proven to be effective methods for enhancing neonatal interventions.	Quality Improvement Model	(19)

No	Context	Objective	Interventions	Findings	Conclusion	Benefits	Type of QIs	References
4	Evidence-based audit criteria served as the driving force behind the operations of 73 public primary care clinics under the Hospital Authority of Hong Kong (HAHK).	A two-phase clinical audit was conducted to improve the quality of COPD management in primary care.	Phase I involved reviewing the performance of six evidence-based clinical audit criteria on COPD care. This evaluation identified service gaps, which were then addressed through the implementation of a series of quality improvement (QI) strategies during the one-year implementation phase. The outcomes of the service enhancement were subsequently assessed in Phase II.	During Phase II, there was a significant improvement in performance across all criteria, notably reflecting a substantial increase in the uptake of SIV and PVC (vaccination) as well as improved rates of spirometry performance.	Significant enhancements in COPD care across all audit criteria have been achieved through the implementation of a systematic team approach in all public primary care clinics of the Hospital Authority of Hong Kong (HAHK).	QI such as clinical audits helps to identify gaps and room for improvements in patient care. The hospital admission rate has been reduced, alleviating the burden on the healthcare system.	Clinical Audit	(20)
5	Southwest China. Participation in the Newborn Screening Quality Assurance Program (NSQAP) serves as a means of quality assurance to uphold basic quality management in newborn screening.	The goal is to implement a comprehensive quality management system (CQMS) that facilitates ongoing improvements in newborn screening (NBS) programs.	External quality assessment (EQA) and internal quality control were conducted to maintain essential quality management. In pursuit of continuous quality improvement, a comprehensive set of 16 quality indicators were utilized to oversee the entire screening process, involving the collection of a total of 652,000 samples from newborns.	Sustained improvement in the newborn screening program	The implementation of a CQMS, along with the monitoring of the complete screening process through the utilization of quality indicators, has the potential to facilitate continuous improvement in the quality of newborn screening (NBS).	CQMS and monitoring systems are feasible interventions to sustain quality improvements in healthcare programs.	Quality Improvement Model and Key Performance Index	(15)
6	A nursing management team of 12 staff members was established at Zhongshan Hospital, China, to implement a ward management standardization program using PDCA cycles for continuous improvement.	The study evaluated the effectiveness of employing the PDCA cycle in standardizing nursing management within intensive care units (ICUs) for patients with severe COVID-19.	An analysis of the ICU's current state was conducted, leading to the identification of relevant issues and the proposal of corresponding countermeasures. To achieve standardization in nursing management, the PDCA cycle was implemented within the ICU.	After two weeks of implementing the study's measures, there were notable improvements in virus contamination awareness, professional skills, responsibilities, and the quality of nursing ICU.	By utilizing PDCA cycles, effective nursing management approaches are developed and implemented, leading to the standardization of nursing management in the COVID-19 ICU.	PDCA cycles are applicable in improving healthcare services.	Quality Improvement Model	(23)



No	Context	Objective	Interventions	Findings	Conclusion	Benefits	Type of QIs	References
7	A national ICU quality improvement program was carried out within a controlled cohort of 586 hospitals in China.	The objective was to examine the impact of quality control programs on the quality of critical care.	In the participating hospitals, a comprehensive quality improvement (QI) program was introduced, consisting of three key components: establishing an ICU quality control team, providing training, and delivering performance feedback through national audits.	The implementation of the quality improvement program resulted in continuous and notable enhancements across various aspects of critical care.	Although the implementation of a national quality improvement program enhanced critical care performance, it did not yield a decrease in mortality rates.	The national program led to significant improvements in VAP incidence, pre-antibiotic microbiology detection, DVT prophylaxis, and compliance with the 3-hour and 6-hour SSC bundles.	Quality Improvement Model	(16)
8	The prospective observational cohort in four hospitals in Nepal to analyze the impact of QI interventions on the performance of healthcare workers (HCW)	The objective was to assess the impact of an expanded quality improvement intervention package on the performance of healthcare workers (HCWs) in providing basic neonatal resuscitation care to non-crying infants in public hospitals in Nepal.	The objective of the Quality Improvement (QI) package was to enhance performance at both the hospital management (meso) and healthcare worker (micro) levels. This comprehensive package followed a plan-do-study-act (PDSA) approach and incorporated three key strategies: facilitation, training, and audit accompanied by feedback.	The QI intervention package improved health workers' performance in initiating BMV (bag-mask ventilation) and clearing the airway. Following the implementation of the package, there was a noticeable decrease in the average time taken for the first ventilation.	The QI package is applicable for implementation in additional public hospitals in Nepal and similar settings, allowing for its broader scalability.	The QI interventions package improved the performance of the HCW in basic neonatal care	Quality Improvement Model	(17)
9	Over a span of two years, a retrospective cross-sectional study was carried out in 43 public hospitals and institutes in Hong Kong, examining root cause analysis reports of all sentinel events and serious untoward events.	The objective was to assess the efficacy of recommendations derived from root cause analysis and offer suggestions for enhancing the quality of incident investigations.	The analysis focused on the incident nature, root cause types, and recommendation strengths. Recommendations from the root cause analysis were categorized as "strong," "medium," or "weak" based on the action hierarchy of the US Veteran Affairs National Center for Patient Safety.	Identified root causes encompassed system-related factors, staff behavior, and patient factors. The majority of recommendations were centered around training and education, further study/review, and the review/enhancement of policy/guidelines.	Most root causes were linked to staff behavior, and the majority of recommendations were weak due to factors like inadequate training, limited tools, composition issues, and complexities in implementing large-scale improvements.	The study provided significant findings to the healthcare organization (HA) regarding the impact and effectiveness of implementing root cause analysis (RCA) recommendations within the organization.	Root Cause Analysis	(22)

**Table II : QI Strategies Implementation**

No	QI strategies	References
1	Appointment of a dedicated, well-trained team to oversee and undertake quality initiatives	(16–20)
2	Team members are being trained on quality initiatives and their competencies are being ensured	(16–20)
3	Accurate and transparent reporting and documentation	(15,18–20)
4	Regular monitoring of performance	(15–17,20,21)
5	Policies and objectives development	(15,20)
6	Prioritization of issues and interventions	(19,23)
7	Effective communication and information dissemination	(16,18)
8	Available guidelines and best practices	(18)
9	Appointment of external facilitators for quality initiatives	(17)

**Table III : Quality Assessment of the included studies**

Study	Assessment Items									Quality Rating
	Clearly stated research question or objective	Clearly defined study population	Ascertainment method used (probability sampling or entire population surveyed)	Subjects selected or recruited from the same or similar populations/ inclusion and exclusion criteria for being in the study pre-specified and applied uniformly to all participants	Sample size justification, power description, or variance and effect estimates provided	Sufficient timeframe to see an association between exposure and outcome	Outcome measures are clearly defined, valid, reliable, and implemented consistently across all study participants	Response rate >70%	Adjustment for confounders	
(18)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Moderate
(21)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Moderate
(19)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Moderate
(20)	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Moderate
(15)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
(23)	Yes	Yes	No	Yes	No	Yes	Yes	Yes	No	Low
(16)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
(17)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	High
(22)	Yes	Yes	Yes	No	No	Yes	No	Yes	No	Low

QI strategies. In Southwest China, a comprehensive quality management system (CQMS) was established to monitor newborn screening (NBS) programs, resulting in favourable outcomes in terms of quality indicator monitoring (15). Ultimately, the screening programs have positively impacted the public by providing accurate test results, timely treatment, and regular follow-up.

QI can bring about lasting enhancements in the quality, experience, productivity, and outcomes of care, positively impacting the lives of healthcare professionals. Both care providers and managers must

grasp the concept of QI. Individuals utilising care services and seeking ways to enhance them should also understand it. By implementing quality improvement practices, there is the potential to establish a healthcare service that eliminates unnecessary deaths, minimizes pain and suffering, eliminates helplessness among those involved, reduces waiting times, eliminates waste, and ensures inclusivity for all individuals.

#### Key Performance Index

Two articles used KPIs as their QI strategies for improving service quality. KPIs also known as performance

indicators, in the context of organizational management, can be broadly described as specific physical values or metrics that are utilized to measure, compare, and effectively manage the overall performance of an organisation (11). These indicators serve as quantifiable measures that provide valuable insights into various aspects of an organization's functioning, allowing for objective evaluation and monitoring of its progress over time. By establishing relevant performance indicators, organisations can comprehensively understand their strengths, weaknesses, and areas requiring improvement. These indicators enable management teams to make informed decisions, allocate resources effectively, identify trends, set realistic goals, and drive continuous improvement efforts (11,21). This review found that the performance of Primary Health Care can be enhanced by using six quality indicators. These indicators include accessibility, workload, outcomes, timeliness, satisfaction, and safety (21). By focusing on these critical areas, improvements can be made to the overall quality and effectiveness of Primary Health Care services.

### Root Cause Analysis

Two papers highlighted the significance of Root Cause Analysis (RCA) as a quality initiative within the healthcare system. These papers explored the impact of RCA on healthcare performance and health outcomes, demonstrating its effectiveness in enhancing the quality of health system services. Notably, RCA implementations were observed in various countries across the Asian region, contributing to notable improvements in healthcare delivery.

A root cause is a factor responsible for nonconformance and must be permanently eliminated through process improvement(25,26). It represents the fundamental issue, the primary reason that initiates a chain reaction leading to problems. Root cause analysis (RCA) encompasses diverse approaches, tools, and techniques to identify the causes of issues (26). While some RCA approaches specifically focus on uncovering true root causes, others serve as general problem-solving techniques, and some provide supplementary assistance for the primary activity of root cause analysis. In public primary care clinics in Hong Kong, QI using clinical audits has proven valuable in identifying gaps and areas for improvement in COPD management for patients (20). The article highlights a reduction in hospital admission rates, alleviating the healthcare system's burden. Significant enhancements have been observed in COPD management across all primary care clinics. This progress has been achieved through a team approach, streamlined governance, structure, and active staff engagement. All audit criteria for COPD management in Hong Kong have demonstrated marked improvement. In a retrospective cross-sectional study across 43 public hospitals and institutes in Hong Kong, the study suggests that regular RCA training, adoption of user-friendly tools, the inclusion of human factors expertise in panel composition, promotion of

an organization-wide safety culture, and aggregation of incident analysis are necessary to improve the quality of incident investigation (22). These measures contribute to more effective incident investigations and quality improvement in healthcare settings.

Root cause analysis can be attributed to its roots in the broader domain of total quality management (TQM)(12). TQM has evolved in various directions, encompassing several problem-analysis, problem-solving, and root-cause analysis techniques. Root cause analysis is an integral component of the broader problem-solving process and is crucial in facilitating continuous improvement(25,26). As such, it constitutes one of the fundamental building blocks in an organisation's ongoing efforts for continuous improvement. It is essential to recognise that root cause analysis alone cannot yield substantial results; it must be integrated into a comprehensive problem-solving endeavour to achieve quality improvement.

### Strength & Limitation

This review offers a comprehensive overview of the implementation of QI initiatives in healthcare systems across Asia. It examines the diverse range of QI approaches employed and highlights the notable benefits of these implementations in enhancing the quality of services provided to individuals. By exploring the various QI strategies used in Asian healthcare systems, this review provides valuable insights into the practical measures and practices contributing to improved healthcare outcomes and patient experiences. However, this study has some limitations. Firstly, the researchers found a need for literature documenting quality initiatives implemented in the healthcare system. Due to convenience, the search was restricted to only three databases, potentially resulting in the omission of relevant studies. This could be due to the routine nature of quality initiatives in healthcare practice, leading practitioners not to prioritise documenting and publishing their efforts in peer-reviewed literature or other forms of publication. Secondly, the term "quality initiatives" is broad, which can make it challenging for search tools to identify more specific quality intervention approaches utilised across different levels of healthcare systems. However, considering the limited availability of literature on this vital topic, the findings still hold value and provide meaningful insights.

### Study Implication

The review's findings underscore the importance for public health leaders to prioritise implementing QI strategies to enhance the current delivery of health services. They must explore and adopt evidence-based QI strategies to ensure high-quality services. By embracing such a design, public health leaders can effectively address existing gaps and contribute to improved healthcare outcomes and experiences for individuals.



## CONCLUSION

The present study has provided evidence that QI has successfully contributed to enhancing the quality of care within our healthcare system and improving public health performance. This process is highly advantageous and constructive, facilitating genuine transformations for improving organisations, programs, or services. By focusing on efficiency, patient safety, and clinical outcomes, QI enables substantial improvements in our healthcare system, leading to positive outcomes for patients and healthcare providers.

## ACKNOWLEDGEMENT

The authors would like to thank the Department of Public Health Medicine, Faculty of Medicine & Health Sciences for the guidance and support to publish this article.

## REFERENCES

- Zaadoud B, Chbab Y. The Performance Measurement Frameworks in Health Care: Appropriateness Criteria for Measuring and Evaluating the Quality-of-Care Performance through a Systematic Review. *Management Issues in Healthcare System*. 2021 Nov 23;7(Issue 1-First Online):11–34.
- Foo CY, Lim KK, Sivasampu S, Dahian KB, Goh PP. Improving the effectiveness of service delivery in the public healthcare sector: the case of ophthalmology services in Malaysia. *BMC Health Serv Res*. 2015 Dec 1;15(1).
- Organisation for Economic Co-operation and Development., World Health Organization., World Bank Group. *Delivering quality health services : a global imperative for universal health coverage*. OECD Publishing; 2018. 96 p.
- Thomas S, Beh L, Nordin R Bin. Health care delivery in Malaysia: Changes, challenges and champions. *J Public Health Afr*. 2011;2(2):93–7.
- Nuhu S, Mpambije CJ, Ngussa K. Challenges in health service delivery under public-private partnership in Tanzania: Stakeholders' views from Dar es Salaam region. *BMC Health Serv Res*. 2020 Aug 18;20(1).
- Neutze DM, Stortz L. Quality Improvement. *Chronic Illness Care: Principles and Practice [Internet]*. 2022 Sep 19 [cited 2023 May 23];419–31. Available from: <https://www.ncbi.nlm.nih.gov/books/NBK556097/>
- World Health Organization (WHO). *Improving the quality of health services-tools and resources* [Internet]. 2018. Available from: <http://apps.who.int/bookorders>.
- Smith PC, Mossialos E, Papanicolas I. Performance measurement for health system improvement: experiences, challenges and prospects [Internet]. 2008. Available from: <http://www.euro.who.int/pubrequest>
- Dilley JA, Bekemeier B, Harris JR. Quality improvement interventions in public health systems: A systematic review. Vol. 42, *American Journal of Preventive Medicine*. 2012.
- Beshah B. *Quality Improvement Approaches and Models in Healthcare*. *Industrial Engineering & Management*. 2014;03(03).
- Ishaq Bhatti M, Awan HM. The key performance indicators (KPIs) and their impact on overall organisational performance. *Qual Quant*. 2014 Oct 31;48(6):3127–43.
- Arikkök M. *TOTAL QUALITY MANAGEMENT The way to achieve quality excellence*. 2016; Available from: <https://www.researchgate.net/publication/312054032>
- Lockwood C, Munn Z, Porritt K. Qualitative research synthesis: Methodological guidance for systematic reviewers utilizing meta-aggregation. *Int J Evid Based Healthc*. 2015 Sep 1;13(3):179–87.
- Moola S, Munn Z, Sears K, Sfetcu R, Currie M, Lisy K, et al. Conducting systematic reviews of association (etiology): The Joanna Briggs Institute's approach. *Int J Evid Based Healthc*. 2015 Sep 1;13(3):163–9.
- Yu CW, He XY, Wan KX, Yuan ZJ, Liu H, Zhang J, et al. Improving quality management of newborn screening in southwest China. *Journal of International Medical Research*. 2021;49(4).
- He H, Ma X, Su L, Wang L, Guo Y, Shan G, et al. Effects of a national quality improvement program on ICUs in China: A controlled pre-post cohort study in 586 hospitals. *Crit Care*. 2020 Mar 4;24(1).
- Chaulagain DR, Malqvist M, Brunell O, Wrämmert J, Basnet O, Kc A. Performance of health workers on neonatal resuscitation care following scaled-up quality improvement interventions in public hospitals of Nepal - a prospective observational study. *BMC Health Serv Res*. 2021 Dec 1;21(1).
- Ozawa M, Yokoo K, Funaba Y, Fukushima S, Fukuhara R, Uchida M, et al. A quality improvement collaborative program for neonatal pain management in Japan. *Advances in Neonatal Care*. 2017;17(3):184–91.
- Datta V, Srivastava S, Garde R, Tluangi L, Giri H, Sangma S, et al. Combining bottleneck analysis and quality improvement as a novel methodology to improve the quality of neonatal care in a northeastern state of India: A feasibility study. *Int Health*. 2019 Jan 1;11(1):52–63.
- Chen XRC, Fu SN, Leung WK, Ng SWC, Kwan WYW, Wong TK, et al. Clinical audit on chronic obstructive pulmonary disease (COPD) management in primary care: A quality improvement project from hong kong. *International Journal of COPD*. 2021;16:1901–11.
- Al Rashidi B, Al Wahaibi AH, Mahomed O, Al Afifi Z, Al Awaidy S. Assessment of Key Performance

- Indicators of the Primary Health Care in Oman: A Cross-Sectional Observational Study. *J Prim Care Community Health*. 2020;11.
22. Kwok YTA, Mah APY, Pang KMC. Our first review: An evaluation of effectiveness of root cause analysis recommendations in Hong Kong public hospitals. Vol. 20, *BMC Health Services Research*. BioMed Central; 2020.
  23. Chen Y, Zheng J, Wu D, Zhang Y, Lin Y. Application of the PDCA cycle for standardized nursing management in a COVID-19 intensive care unit. *Ann Cardiothorac Surg*. 2020 May 1;9(3):1198–205.
  24. American College of Cardiology. Introduction to Quality Improvement and the FOCUS-PDSA Model. 2013.
  25. Bhattacharya J, Pharm M, Phil M. Root Cause Analysis-A Practice to Understanding and Control the Failure Management in Manufacturing Industry [Internet]. Vol. 3, *International Journal of Business and Management Invention* ISSN. Online; 2014. Available from: [www.ijbmi.org](http://www.ijbmi.org)
  26. Groot W. Root cause analysis – what do we know? *Maandblad Voor Accountancy en Bedrijfseconomie*. 2021 Mar 10;95(1/2):87–93.