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Commentary

Evaluation of Quality Indicators in Oncology: New Perspectives

Comment on "Comprehensive Evaluation of Quality Indicators: Analyzing the Dutch Breast Cancer Audit"

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Abstract

Quality indicators (QIs) measurement aids to assess hospital performance and benchmarking between institutes of a country, which ultimately forms the basis of the quality improvement process. This commentary discusses the study by Verheul et al, which assessed 18 breast cancer QIs from the NABON Breast Cancer Audit (NBCA) using a structured framework evaluating feasibility, discriminative ability, validity, and reliability. Most of the evaluation criteria were fulfilled, except for reliability which was the most important issue raised by the author in the study. The weak reliability of the QIs indicated the importance of statistical evaluation in the development of such clinical QIs.

Keywords: Quality of Care, Reporting Quality Indicators, Reliability, Oncology, LMICs

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Quality indicators (QIs) measurement is a method to measure quality of care,[1,2] especially in oncology where management and outcome are guided by multiple factors like patients' tumor biology, accessibility to treatment, and institutional factors/physicians' choice. Standardizing the care pathway based on QIs not only helps for clinical auditing but also aids physicians to make decisions depending on the quality metrics. There have been various studies both in high-income countries and low- and middle-income countries to measure their quality of care and plan further for improvement.[3-5] The article published by Verheul and colleagues[6] entitled "Comprehensive Evaluation of Quality Indicators: Analyzing the Dutch Breast Cancer Audit" discuss the selection of QIs in the cancer management process. I appreciate authors proposing a criterion to evaluate the QIs identified by NABON Breast Cancer Audit to measure the quality of care in surgically treated Dutch breast cancer patients based on some robust criteria, critiquing traditional methods of selection of such QIs.

The main strength of the study is the data from population-based registry of all breast cancer patients treated with surgery from the year 2021-2023, which is generalizable to all within the country reducing bias. Authors bring forth the concern of relying on experts' opinion on selection of QIs of management.[7] Incorporating multiple dimensions in the selection process, the proposed framework for choosing QIs consists of four methodological domains, which are feasibility, discriminative ability, validity, and reliability. Based on the framework, QIs were critically appraised, and further implications were suggested in measuring quality of care and publicly reporting of such QIs. Authors emphasize that the goodness of QIs is not only its clinical relevance but also should be based on statistical parameters. This is particularly important for accountability of institutions and the reimbursement process.

Feasibility is defined as completeness of data (>90%), discriminative ability is the difference in values of between-hospitals variation within the country (interquartile range>10%), validity is case-mix adjustment among hospitals (pseudo-$R^2 < 0.10$ indicating low influence) and rankability is reliability. In the study, none of the QIs met the predefined thresholds on all evaluated criteria. However, feasibility was good with 15 out of 18 QIs having completeness of data but also exclusion of one QI due to missing data brings forth a concern of inadequacy of some of the clinical documentation system. As per discriminative ability results, there was good between-hospitals variation in 8 QIs measurements among hospitals, which somewhat fulfils the reason behind the measurement. The discriminative ability of the indicators is the marker of quality of care among different institutions of the country. The marker identifies specific areas for improvement in a particular institution. The other 10 QIs showed very little variation and hence limits benchmarking, which may be due to very high standardized care in all hospitals of the country

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with little apparent differentiation. In the study, validity was operationalized specifically through the influence of patient and tumor case-mix on hospital comparisons, without being comprehensively assessed. For validity assurance, patient level difference was not confounded by other factors in 11 QIs showing low case-mix influence. Few indicators with high R^2 values highlighted variations in factors like socio-economic and biological factors influencing the results. However, essentially when QIs are measured repeatedly and continuously in different institutions, after the iterative process, these QIs may have low discriminative ability as a quality improvement process. Hence, the low discriminative ability does not always mean ineligibility of the QI for measurement.

Authors have raised primary concerns about reliability/rankability of proposed QIs and their consequence on reporting such indicators publicly. Reliability ranged only from 0%-69% in the study. Rankability is mostly influenced by hospital volume and hospital variation, which may induce delusion on the final data of QIs. Very low proportion of cases may put forth wrong depiction of rankability which is an important drawback of its measurement and public reporting. Low reliability indicates misinterpretation due to very highly random variation in the data, raising doubts among the public about quality of care in the institution. These unreliable scores also waste effort and time of concerned authority. I also agree with these concerns, however at the same time very affirmative towards refining these QIs further according to the contexts, as it aids in the quality improvement process of institutions and globally at large. Hence, identifying better practices to set up these QIs is the key message from the study. Authors have also highlighted that measurement of such QIs over the years may improve the reliability of the data. Although QIs measurement often focuses on the process of care and immediate outcomes, measuring it over years improves reliability and may transfer into quality improvement slowly.

As discussed by the authors in the paper, principally the QIs should be used in internal auditing and improvement of care in an institute. However, within a country itself, all institutions may not have the same expertise and infrastructure to live up to all QIs. A QI may be useful for improving care within a hospital even when it is not reliable enough to rank hospitals publicly. The balance between reliability and actionability is an important message from the study itself. There are various previous examples, where institutions relied on measuring QIs as auditing of managements process and QIs process.[8-10] Hence, even in the situations, where QIs have low measurement to report publicly, internal audit in the institution should be done to assess the areas for improvement. The rates of QIs achieved and reasons behind the scores may also be published as evidence of policy document for quality improvement process.

One of the important drawbacks in the paper is its failure to acknowledge the identification of evidence based QIs in previous studies, which is a reasonable method for choosing specific QIs. Although, the statistical assessment of QIs is a newer and more robust methodology, traditional method should also form the basis of selection of initial QIs according to the settings. The data is from a single country registry which may not be generalizable to healthcare systems outside the country with different populations and contexts. The study included surgical patients only, which may not be a true figure of comprehensive management throughout the country. Furthermore, clinical data about the usefulness of QIs in the individual institute is not available.

Measurement of QIs is particularly important in low- and middle-income countries as they are continuously moving towards quality improvement process. QIs developed in high-resource nations may not directly apply where infrastructure, workforce, access to treatment, and referral systems differ. The score may be low initially, however, streamlining the resources and reevaluating the indicators repeatedly over time, is the idea behind evaluating QIs in an institution. Furthermore, according to the resources available, modifying the QIs as per available logistics may improve the overall score of measurement. It should not be taken as a marker of public reputation as every intuition establishes, and updates its performance based on this type of audit for the betterment of quality care. There are standard national and international guidelines according to which treatment is planned in oncology and evaluating QIs aids in evaluating the care as per guidelines with help of quality standards. The standard guidelines are developed for ideal settings where a patient has access to all treatment according to the guidelines, whereas QIs serve as a method to provide at least minimal quality of care required for treatment in a resource stratified setting. Additionally, the guidelines cannot capture individual institutional performance, like delay in pathology reporting, access to radiotherapy on time etc, for which QIs measurement assist in identifying such gaps in quality treatment.

QIs focus on small details of the care process, which is relevant to a particular setting, at a certain point in time. As mentioned in the study, "multidisciplinary team discussion before breast cancer surgery" has achieved the maximal score as required by QIs and has been suggested to remove from the set, however, it may be relevant a few years back as a marker of quality of care then. Similarly for other factors also, the study emphasizes the iterative process of QI selection, measurement for a certain time period, refinement and retirement after achieving the target, which is a very progressive method of quality-of-care measurement in an institute or country as a whole.

There are few identified barriers in implementation of such QIs in clinical settings especially in resource constrained regions which include barriers in policy level like, lack of administrative support, socio-economic barriers, and educational factors. Resistance to change among clinicians and staff, insufficient manpower to carry out the necessary work, lack of clear financial incentives for extra work and limited time available for these activities are other common obstacles for smooth implementation of such quality standards.[11] Furthermore, identifying and measuring the QIs with the stringent statistical criteria as suggested in the manuscript is again an additional burden in such settings, which could further delay the implementation for measurement of QIs. Hence, to initiate the momentum in measuring QIs in such

settings, identification of relevant evidence based QIs for the individual institution could be the best choice, rather than measuring based on statistical procedure suggested by the study, which could be adapted in due course of optimization of QIs.

Conclusion

The study provided a meticulous process of evaluation of selected QIs for quality improvement measurement and emphasizes statistical methodology for the same. As per the methodical criteria feasibility and case mix dependency was good in most of the QIs, authors raised concern about reliability of the QIs.

Overall, the study highlighted the need for an ongoing refinement process of already selected QIs based on relevancy and robust statistical procedures, which aids on proper selection and public reporting of quality improvement work in the institute. Further studies are needed to identify for feasibility of such statistical procedure of measurement of QIs in various resource stratified settings. In resource constrained setting, initiation of QIs assessment could begin with identification of relevant evidence based QIs based on traditional expert's opinion method, and further statistical identification can be done in larger national scale.

Disclosure of artificial intelligence (AI) use

AI tool (Grammarly) was used for language editing purpose only.

Ethical issues

Not applicable.

Conflicts of interest

Author declares that she has no conflicts of interest.

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