Quality of health care services and performance in public hospitals in Africa: A protocol for systematic review

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Abstract

Background: The delivery of high-quality health care services and performance is the main aim of all health care systems globally. This review objective is to determine the quality of health care services and performance in public hospitals in Africa through a systematic review and meta-analysis of existing studies.

Methods: The search will be conducted in pre-determined databases (e.g., PubMed), for eligible studies between 2000 and 2020, to identify studies published in English, which applied the service quality gap (SERVIQUAL) model to determine the quality of health care services and performance in public hospitals in Africa. The search will also include a review of reference lists of included studies for other eligible studies. Eligible studies will include experimental and observational studies. Two authors will independently screen the search output, select studies and extract data, resolve discrepancies by consensus and discussions. Two authors will use Cochrane risk of bias tools for experimental studies, and Hoy for observational studies. The review will also assess study quality and risk of bias using standardized tools. The review aims to provide comprehensive information on the quality of health care services and performance in public hospitals in Africa.

Discussion: Understanding patients’ or clients’ expectations and perceptions on the quality of health care services provided in the health care systems are very crucial in the improvement of the health status of the general population. The SERVIQUAL model is
a standardized tool used to assess the quality gap of patients/clients perspectives on health care services in hospitals globally. The findings from this review will provide information on the quality gap of health care provided in public hospitals in SSA. Also, we anticipate that the findings will inform policymakers in health care systems on how to improve and maintain the quality of health care services in public hospitals in different African settings.

**Systematic review registration number:** PROSPERO CRD 420212264100 dated 25/07/2021

**Keywords:** Service quality, public hospitals, SERVIQUAL model, and Systematic Review, Meta-analysis, Africa.

**Background**

The main goal of all health care systems globally is to provide a high quality of care. High quality of care is important in the health sector because of its significant impact on the overall health and well being of individuals [1-4]. The importance of assessing the quality of health care services is based on the positive impact on the health status of the general population, leading to both social and economical benefits[1-4].

All countries, especially Low and Middle-income countries (LMICs), need to give high priority to improving the quality of hospital care [1-4]. In particular, improving
public hospital care is important because the hospitals are the main health care providers to the majority of a country's population, mostly poor [5-7].

The first step for quality improvement and management in health care systems is the measurement of quality of care and performance, therefore the quality assessment in public hospital care is very important[8-15]. One of the most commonly used multi-dimensional tools to examine the quality and performance of health care services from patients' or clients' perceptions is the SERVIQUAL model [16].

The SERVIQUAL model, which measures the service quality gap, using five dimensions (tangibles, responsiveness, reliability, empathy, and assurance) is a valid and standardized tool to examine the quality of services across different sectors, including health [1, 2, 4, 10, 11, 15-18]

**SERVIQUAL model**

The SERVIQUAL model has five (5) dimensions namely tangibles (4 questions), reliability (5 questions), responsiveness (4 questions), assurance (4 questions), and empathy (5 questions). Some studies may include a sixth dimension of “access”(2 questions). According to Parasuraman et al. [16], service quality is defined by the differences between the scores of patients' perception and their expectations about the healthcare services delivered (i.e., service quality[SQ] = score of perceptions[P] - score of expectations[E]). The computation of service gap in each SERVIQUAL dimension and subtracting perception score from expectation score derives its sub-items. If the service gap between patients' perception scores and expectation scores are equal, the
quality gap equal zero. If the patients' perceptions score is more (less) than the
expectations score, the quality gap is considered positive (negative). A positive quality
gap indicates that the patients/clients needs were met, and a negative quality gap
means the reverse [16].

Several studies have used the SERVQUAL model to examine the quality of health care
services in hospitals in different regions of Africa, with heterogeneous results. For
example, a study conducted in Dar es Salaam, Tanzania reported the highest and
lowest means of quality score for responsiveness (−0.72), and assurance (−0.47),
respectively [11]. Umoke et al., reported the highest and lowest means of quality of
score for empathy (3.12±0.57), and tangibility (2.57 ± 0.99), respectively, in Nigeria
[19] Another study conducted by Kamanda et al., reported the highest and lowest
means of quality of score for reliability (-0.17), and empathy (-0.05) respectively, in
Tanzania [17] While another study conducted in Tanzania among three hospitals (both
public and private), reported the highest and lowest means of quality of score for
empathy (-7.8), and responsiveness and tangibles (-7.61), respectively [10] Al-
Momani reported the highest and lowest means of quality of score for responsiveness
(-1.71), and empathy (-0.96) respectively, in Saudi Arabia [4] a study conducted in
Iran reported the highest and lowest means of quality score for reliability (-1.84), and
empathy (-1.49), respectively [5] Another study by Razaei et al. reported the highest
and lowest means of quality of score for assurance (-0.88), and responsiveness (-0.56),
respectively, in Iran [2]
From the above example of studies conducted in Africa, it seems imperative to systematically review the current studies to acquire an in-depth understanding of the quality of health care services and performances in public hospitals in Africa.

Specifically, this review will systematically investigate the quality of health care services, and performance of public hospitals in Africa from the perspectives of adult patients/clients. This review aims to provide comprehensive information on the quality of health care services and performance in public hospitals to maintain and/or improve the quality of health care services of health care delivery systems in Africa.

**Objective**

To systematically review the literature for evidence that determines individuals aged 18 years or over of their perceptions of the quality of health care services, and performance of public hospitals in Africa.

**Methods**

**Criteria for considering studies for this review**

The Preferred reporting items for systematic reviews and meta-analysis protocols (PRISMA-P) guided the preparation of this protocol [20, 21]. This review is registered in the PROSPERO International Prospective Register of systematic reviews ([http://www.crd.york.ac.uk/PROSPERO](http://www.crd.york.ac.uk/PROSPERO)) on 25/07/2021 (registration number CRD 420212264100).
Type of studies

This review will include the following study designs: Randomized Controlled Trials (RCTs), cross-sectional studies, case-control studies, and cohort studies.

Participants

Adults (male and female) aged 18 years and above who attended public hospitals in Africa. An adult is defined as a person aged 18 years or older unless national law defines a person being an adult at an earlier age.

Interventions

Not applicable

Comparator/controls

Not applicable

Types of outcome measure

Primary outcome: The overall mean scores of patients’ perceptions and expectations of the quality of health care services.

Secondary outcome: The overall quality scores of the SERVIQUAL and its dimensions of the quality of health care services.

Setting

Studies were conducted in any country on the African continent.
Eligibility criteria

The following criteria will be applied to select studies that assessed service quality and performance in African public hospitals:

1. Studies that reported the mean and standard deviation (SD) of overall expectation and perception scores of total quality and the dimensions.


3. Studies conducted in public hospitals.

4. Studies that used the SERVIQUAL model to measure the quality of healthcare services and performance in public hospitals.

5. Studies with available full text.

6. Studies that examined the quality of healthcare services from patients/clients perspectives.

7. Studies addressing both adults and children if data provided for adults are reported separately.

Studies will be excluded from the review if they are (i) review articles, (ii) qualitative studies, (iii) brief reports, (iv) letters to the editor, (v) editorial comments, (vi) working papers, and duplicate data (i.e., two studies reporting similar studies, the previous study will be excluded from the review). [22]

Information sources

A comprehensive search strategy will be developed to identify both published and unpublished articles on human subjects and limited to the English language from January 2000 to December 2020.
This search restriction is used because since 2000 there has been an emergence of studies using the SERVIQUAL model to assess the quality of care and performance of health care services in SSA. The review will search for related studies in PubMed, The Cochrane Central Register of Controlled Trials (CENTRAL), and The Cochrane Database of Systematic Reviews (CDSR), Databases of Abstracts of Reviews of Effectiveness (DARE), the Institute for Scientific Information (ISI), Scientific Information Database (SID), Social Sciences Citation Index, Web of Science and African Index Medicus. Also, the search will include websites and databases such as Google/and Google scholar, World Cat and greynet.org, to identify unpublished studies, government reports, theses/dissertations and conference papers. To reach literature saturation the review team will scan the reference lists of included studies or identified reviews identified through the search. The personal files of authors will be searched to ensure that the review team captures all relevant materials.

Search strategy

A search of relevant articles will be developed and performed by a qualified Librarian (NM) with expertise in Systematic review searching, using keywords, truncated terms, the Boolean operators (‘OR’ / ‘AND’), and Medical Subject Heading (MeSH terms). The review will use various medical subject headings (MeSH) and search terms such as: “adult”, “patients”, “clients”, “health”, “healthcare”, “Health care services”, “Health care performance”, “public hospital care services”, “public hospital care services quality”, “public hospital services quality”, “SERVIQUAL model”, “gap model”.

The search will be restricted to human subjects, and filters to ensure that only studies in Africa are included in the review. Countries names and regional names will be used in the databases search. Where a country has more than one name, both names will be included to increase the sensitivity of the search to ensure that all relevant articles are for this systematic review. Both country-specific records and records indexed by a regional term will be included in this review. Such terms will include: “Africa”, and “Africa South of the Sahara”. Searches will be combined with the names of each country in Eastern, Northern, and Southern Africa by using the Boolean operators ‘OR’ or ‘AND’ using a comprehensive African search filter that was adapted to suit each database using applicable controlled vocabulary [23]. No restrictions on the date of publication will be made. A draft PubMed search strategy is included in appendix 1. After the PubMed strategy, if finalized, it will be adapted to the syntax and subject headings of other databases. Before the publication of the review, the team will conduct an updated search of eligible SERVIQUAL studies in Africa that may be published during the review process.

Data management

All search results will be merged into reference management software EndNote, and duplicate records of the same report will be removed.
Selection process

The selection process of studies to be included in this review will follow three (3) phases conducted by two independent reviewers. In phase one, Bernard Njau (BN) and Neema Mosha (NM), will check the electronic search results and select all referred to the SERVIQUAL model. Irrelevant studies identified at first glance will be excluded.

In phase two, BN and NM will independently screen the titles and abstracts of relevant studies identified in phase one to determine their eligibility based on the inclusion and exclusion criteria. In the final phase, BN and NM will obtain full copies of articles whose abstracts were identified as relevant in the second phase for data synthesis. Also, the two reviewers will perform a full-text review of articles whose abstract failed to provide a clear description of the study or studies that had no abstract. After finishing the search on the number of databases pre-defined, the literature citations will be exported from the databases (e.g., PubMed), and imported into Endnote. Then, all duplicates will be removed, and then the citations will be imported into Covidence software, a systematic review tool (https://www.covidence.org/). BN and NM will independently apply the inclusion criteria to the results of the searches, based on the titles and abstracts alone, to select relevant data. The two reviewers will independently perform a full-text screening of the selected citations. Neither of the review authors will be blinded to the journal titles, or the study authors or institutions [21].
Data collection process

Two reviewers (BN and NM) will independently extract data using a pre-designed self-constructed checklist and summarize the required information from each article. Any disagreements of opinion between the two reviewers will be resolved by discussion or consultation with a third reviewer, Damian Damian (DD), if necessary. The search and selection of articles for this review will be summarized using the PRISMA flow chart. The characteristics of all included studies and the reasons for exclusion of studies will be presented using tables.

Data extraction and management

Data from the selected articles will be extracted using a standardized Cochrane collaboration data extraction form, which will be modified to accommodate the aim of this systematic review (Appendix 2). A pilot test of the data extraction form will be conducted to check its adequacy, and ensure uniformity among the two reviewers (BN and NM), and made changes, if required. Extracted data will include name of first author/ publication date, study design, study location (e.g., city/ country/or rural/urban, and the number of public hospitals included in the study), study population (e.g., general population or key populations), sample size, and the overall quality scores and its dimensions. Included studies will be examined for credibility, transferability, dependability, and conformability, using the Critical Appraisal Skills Programme checklist [24].
Assessment of risk of bias in included studies

BN and NM will assess the risk of bias for observational studies using the Hoy criteria tool and the Cochrane risk of bias tools for experimental studies.

BN and NM will apply a checklist with a 10-point scale independently to all observational studies to assess for both internal and external validity, respectively. The checklist includes 9 questions related to the target population close representation of the national population, sampling frame true/or close representation of the target population, evidence of random selection/or census undertaken, efforts to minimize non-response bias, data collection methods, case definition(s), reliability and validity of data collection tool(s), the same mode of data collection used for all participants, appropriate parameters for measuring study variables. One point [25] will be assigned if a study meets the quality requirement for each question, and a zero (0) if it is vice versa. The quality scores will be calculated by summing all the points, and quality will be classified accordingly; high (score 7 to 9), moderate (score 4 to 6) or low (score 0 to 3). Disagreements will be resolved first by discussion, and then by the third author as an arbitrator, if necessary. See appendix 3.

For RCTs, the risk of bias will be assessed following the Cochrane Effective Practice and Organization of Care [26] tool. The two reviewers (BN and NM) will independently code each included RCT study, and assess sequence generation; allocation concealment; blinding of participants, personnel and outcome assessors; incomplete outcome data; selective outcome reporting; and other sources of bias. They will independently report their judgment of the risk of bias as low, high, and unclear,
without an attempt to collate and assign an overall score. [27]. Using RevMan 5.3 the reviewers will compute a graphic representation of potential bias within and across trials [28]. (See appendix 4).

In case of disagreements on their judgments, the third reviewer (DD) will be asked to be an arbitrator. A funnel plot will be used to investigate the risk of publication bias, provided 10 or more studies are included in the analysis for each outcome. The funnel plot will be critically examined for asymmetry by both visually and use of formal tests. Strategies to search for and include relevant unpublished studies to reduce publication bias will be used. These strategies will include searching the grey literature, including conference proceedings, and prospective trial registration database to overcome time-lag bias.

**Data synthesis**

A random-effects and fixed-effects meta-analysis model will be used to estimate the pooled overall mean score of patients/clients' perceptions and expectations of the quality of public hospital health care services. The pooled effects and individual study proportions will be assessed by a forest plot with a 95% Confidence Interval (CI). Egger's test will be used to evaluate publication bias.
Dealing with missing data

Efforts will be done to contact corresponding authors to request clarification of all relevant information in case of missing data. If the corresponding author fails to respond within 14 days (two weeks) of requesting information, other authors will be contacted (copying the first author). A full description of missing data and dropouts for each included study will be elaborated in the risk of bias table, and discuss the extent to which the missing data could alter the results. The review will conduct sensitivity analyses to assess the effect of missing data on the outcomes. Ongoing studies will be classified as studies waiting for classification.

Assessment of heterogeneity

Heterogeneity will be assessed by inspecting a forest plot initially and later through the Cochran’s Chi-square test using a 10% level of significance cut–off, and \( I^2 \) statistic where values of 25%, 50% and 75% will reflect low, medium, and high heterogeneity [27, 28]. We will perform subgroup analysis or sensitivity analysis to explain the source of heterogeneity based on Cochran’s heterogeneity statistic (Q) and degree of inconsistency (\( I^2 \)). The Mantel-Haenszel method will be used for the fixed-effect model for non-significant heterogeneity. The random-effect model will be used in the analysis of pooled effects (\( I^2 > 50\% \) or \( P < 0.1 \), denoting significant heterogeneity. If substantial heterogeneity is present, a narrative, a qualitative summary will be used [29].
Sensitivity analysis

Sensitivity analyses will be conducted where we combine studies in a meta-analysis, to investigate the robustness of the results to the risk of bias (i.e., omitting any studies with a high risk of bias), and method of meta-analysis (i.e., random–effects vs. fixed–effect). This will be done to: (i) evaluate the effect of excluding studies unable to meet each quality criterion on the overall estimate, and (ii) evaluate the change in the results if only high-quality studies were included. Also, we will assess the robustness of the pooled estimates by conducting a leave-one-out sensitivity analysis to assess the impacts that each study exerts on the overall pooled estimate. [29]. The analysis will be done using Rev Man 5.3 software [28]. Also, the STATA 14 statistical pack will be used to obtain estimates of effect where necessary. Where statistical analysis is not possible, a narrative technique will be used to explore the relationships and findings both within and between included studies.

Subgroups analysis

Subgroup analyses may be performed where necessary, considering the following: study settings (urban/rural/ semi-urban, etc.), study design, type of study population (general/key population, male/female, etc.), and type of public hospital (district/regional/referral).
Quality of evidence

The quality of evidence will be assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach. The evidence will be based on the level of confidence in each outcome and will be graded as low, moderate, or high certainty of evidence. The effect estimate will be graded as high certainty evidence if the reviewers are very confident that the true effect lies close to the estimated effect. Moderate certainty of evidence will be reported if the authors are moderately confident that the true effect lies close to that of the estimated effect. In cases where the reviewers had very little confidence that the true effect lays close to the effect estimate, low certainty of evidence will be reported [30, 31].

Presenting and reporting of the results

The presentation and reporting of the findings will be guided by the PRISMA-P and PRISMA 2020 guidelines. A PRISMA flow diagram will present a summary of the eligibility criteria and the selection process of all articles included in this review. The reasons for study exclusions will be documented and explained. Where is not possible to obtain pooled estimates, narratives will be presented of findings from individual studies [21, 32, 33].

Discussion

There is an emergence of interest in the improvement of the quality of health care services globally, including SSA. Understanding patients' or clients' expectations and perceptions on the quality of health care services provided in the health care systems
are very crucial in the improvement of the health status of the general population. The SERVIQUAL model is a standardized tool used to assess the quality gap of patients/clients perspectives on Heath care services in hospitals globally. Public hospitals are the main providers of Heath care services particularly for poor populations in most LMICs; therefore it is imperative to understand the quality of care provided in such hospitals. The findings from this systematic review will provide information on the quality gap of health care provided in public hospitals in SSA.

Also, we anticipate that the findings will inform policymakers in health care systems on how to improve and maintain the quality of health care services in public hospitals in different African settings.

**Abbreviations**

CASP: Critical Appraisal Skills Programme; CENTRAL: The Cochrane Central Register of Controlled Trials; CDSR: The Cochrane Database of Systematic Reviews; EPOC: Effective Practice and Organisation of Care; GRADE: Grading of Recommendations Assessment, Development and Evaluation; GRADEpro: GRADE profiler; PRISMA 2020: Preferred Reporting Items for Systematic Reviews and Meta-Analyses; PRISMA-P: Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols; MeSH: Medical Subject Headings; RevMan; Review Manager; STROBE: The Strengthening Reporting of Observational Studies in Epidemiology [34] Statement: Guidelines for Reporting Observational Studies.

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None declared

**Availability of data and materials**

Data will be available online at the end of the data collection, statistical analysis, and synthesis process.

**Ethical approval and consent**
Authors’ contributors

BN is the guarantor. All authors contributed to the conception and design of the protocol as follows. BN, NM, and DD conceived the study. BN wrote the first draft and all authors edited the subsequent versions of the draft before submission. NM will develop the search strategy. BN and NM will perform the literature searches and data extraction, while DD will conduct the analysis and provide statistical expertise. All authors have agreed to be accountable for the review in ensuring that queries related to the accuracy or integrity of any aspect of the work are appropriately investigated and resolved. All authors read, provided feedback and approved the manuscript for publication.

Consent for publication

Not applicable

Competing interests

The authors declare that they have no competing interests.

References

10. Olomi, G., I. Mboya, and R. Manongi, Patients’ Level of Satisfaction with the Health Care Services Received at Outpatient Departments in Kilimanjaro Region, Tanzania. Journal of Patient Care, 2017. 03(01).


Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- SearchstrategyinPubMed.appendix1
- Appendix2.DataextractionformQA.docx
- Appendix3.HOY.docx
- Appendix4.docx