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Influence of Heart Failure Knowledge on Self-Care Behaviors of Heart Failure Patients in Sub- Saharan Africa: A Systematic Literature Review

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Research Article

Keywords: heart failure, sub-Saharan Africa, knowledge, systematic review

Posted Date: May 21st, 2026

DOI: https://doi.org/10.21203/rs.3.rs-9535954/v1

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Additional Declarations: No competing interests reported.

Abstract

Background

About 60 million people experience heart failure (HF) globally, with half of these cases occurring in low- and middle-income countries, especially those in sub-Saharan Africa (SSA). Empirical evidence in high-income settings shows that strategies to improve knowledge of this condition among HF patients can potentially enhance their self-care behaviors and health outcomes. Understanding the relationship between HF knowledge and self-care behaviors in patients in SSA is warranted.

Objectives

To synthesize evidence regarding the influence of HF knowledge on the self-care behaviors of patients with HF in SSA.

Methods

We searched the PubMed, CINAHL, and Web of Science databases for articles on HF knowledge and self-care published from 2013 to 2025. National Heart, Lung, and Blood Institute assessment tools were used to evaluate the studies' quality.

Results

The initial search yielded 466 articles, of which 16 quantitative studies met inclusion criteria; these studies had cross-sectional, observational, prospective, mixed-methods, or quasi-experimental designs. In these studies, HF knowledge was associated with a significant increase in self-care behavior: greater HF knowledge was associated with better adherence to self-care behaviors, which included weight monitoring, regular exercise, and reduced salt intake.

Conclusions

Greater knowledge of HF is associated with better self-care behavior. Ensuring that patients with HF have better knowledge about their condition is critical for improving patient outcomes, suggesting a need of targeted interventions for HF patients in sub-Saharan Africa.

Background

Heart failure (HF), a complex clinical condition characterized by the inability of the heart to eject blood [1], affects over 64 million people globally [2], with most cases occurring in low- and middle-income

countries. In high-income countries, the prevalence of HF has been declining over the last two decades, but in low- and middle-income countries, and particularly those in sub-Saharan Africa (SSA), HF cases have risen by nearly 10% during the same period [3–5]. This increase in the burden of HF in SSA has been driven primarily by improved life expectancy and increasing incidence of heart disease in the region. Thus, despite progress in HF management, this condition remains a growing public health concern in SSA [6, 7].

In SSA over the last decade, HF morbidity and mortality rates have been high, with 1-year mortality ranging from 29% to 58% and 6-month rates of hospitalization ranging from 43% to 45%, with a younger population affected (mean age 36 to 62 years) [3, 6, 8]. The common causes of HF in SSA are hypertensive heart disease, cardiomyopathy, and rheumatic fever [3], and HF is associated with a decline in economic productivity and lower quality of life [3, 6, 8].

This high burden of HF in SSA underscores the need for a concerted effort, including active patient engagement, in HF management [9–12]. In recognition of patients' critical role in managing HF, self-care guidelines have been developed with an overarching emphasis on patient-driven self-care [1, 13, 14]. HF self-care interventions include the promotion of adherence to treatment recommendations, dietary modification, and lifestyle changes [15, 16]. However, adherence to these self-care guidelines in SSA is poor [17–19], primarily owing to patients' inadequate knowledge of the condition and low levels of education [20–22]. Addressing barriers to uptake of HF self-care recommendations has the potential to reduce the burden of HF and improve the outcomes of patients with HF in SSA [10].

HF patients' knowledge of their condition is central to their successful engagement in HF self-care interventions [20, 21]. Understanding the condition helps patients comprehend its pathology and rationalize the need for compliance with recommended self-care, such as restricting fluid and water intake, weight monitoring, smoking cessation, and physical activity [16]. The fact that HF patients who adopt these self-care behaviors (SCBs) have lower hospitalization rates, better quality of life, and reduced mortality suggests that their uptake may be key to reducing the burden of the condition in SSA [14, 22].

Although no consensus exists regarding the primary determinants of SCBs in HF patients [12, 17, 23–25], studies in high-income countries show that HF knowledge in patients with the condition is associated with good SCB [26], self-efficacy [27], adherence to treatment recommendations, improved quality of life [28, 29], and better outcomes [30]. With SSA showing the highest burden with worse HF outcomes [31], there is a need for interventions that focus on patient involvement in self-care. Previous reviews show that interventions to improve HF knowledge can potentially improve patient outcomes in high-income countries [32, 33]. Additionally, health care in SSA has a decreased capacity to diagnose and treat HF, with limited access to diagnostic equipment and treatment medications, which negatively impacts patients' ability to complete SCB [34]. Understanding current behaviors and knowledge about SCBs in HF patients could help target resources and interventions to decrease the high economic burden of HF and increase the quality of life of HF patients in SSA.

This systematic review was conducted to comprehensively synthesize evidence on the relationship between HF knowledge and patients' SCBs in SSA.

Methods

This systematic review follows the 2020 PRISMA guidelines [35]. In February 2025, the PubMed, Web of Science, and CINAHL databases were searched with keywords, MeSH terms, synonyms, and alternative terms focusing on HF, HF knowledge, and SCBs in SSA (see the Supplementary file). To maximize historical validity and improve comparability of outcomes, we targeted quantitative studies published in peer-reviewed journals from 2013 to 2025. Moreover, during that time, the American Heart Association and the European Society of Cardiology made significant changes to their self-care management guidelines [36, 37]. Studies were included if (a) their population sample consisted of adults with HF, (b) they were conducted in SSA, (c) they evaluated patients' knowledge of HF, and (d) they measured SCBs and related effects. English- or French-language articles were included. Publications were excluded if they were qualitative studies, reviews, conference abstracts, or grey literature, because our purpose was to find peer-reviewed articles to inform evidence-based practice.

Data screening, extraction, and synthesis

Articles from the search were imported into the Covidence platform for literature and systematic reviews (https://www.covidence.org), and duplicates were automatically removed. Seven researchers then screened titles and abstracts to remove studies that did not meet inclusion criteria. All reviewers were trained and supervised by a senior research team member. Subsequently, studies that met inclusion criteria went through full-text review. Each study was screened independently by at least two investigators, during which two consistent decisions were needed before an article could be selected for extraction. Any conflicts in decisions between the two independent reviewers were resolved by a third reviewer or through consensus during weekly meetings.

Data were extracted from the included articles with a piloted extraction form that provided author information, study setting (country), study design, and study outcomes (Table 1). Characteristics and outcomes included year, demographics, sample, setting, SCBs, HF knowledge, and the relationship between SCB and HF knowledge, as well as correlations and odds ratios. A second team member confirmed the accuracy of extraction. Because the studies' designs and outcome measures were heterogeneous, their findings were synthesized as narratives; meta-analysis was not possible, because of differences in instruments and statistical analyses.

Quality assessment

National Heart, Lung, and Blood Institute quality assessment tools were used to evaluate the studies included for review [38]. These checklists consist of 14 items that refer to characteristics of quality, evaluated as "yes," "no," or "other." "Other" signifies that a characteristic of quality does not apply to a given study or is unreported. Two team members completed and reviewed each quality assessment. No

decision conflicts occurred. Overall, the studies included for review were rated as fair in quality, and none were excluded for reasons of quality (Table 2).

Results

Study selection

Our initial search yielded 637 journal articles. After removal of 151 duplicates, 485 titles and abstracts were screened. Of these, 58 articles met the criteria for full-text screening; 47 were then excluded (Figure 1), leaving 11 articles. Five additional articles identified during an ancestry search met our inclusion criteria, bringing the total to 16. Articles were excluded because of wrong population, wrong location, wrong outcome, or wrong study design, or because they did not directly measure education.

Study characteristics

Of the 16 studies that met the criteria (see Table 1), 13 were from Ethiopia [19, 39–50] and 1 each from Nigeria [51], Benin [52], and Togo [53]. Twelve studies were cross-sectional [19, 39, 40, 42–47, 49, 50, 52]. The remaining studies were observational [51], prospective [53], mixed-methods [41], and quasi-experimental [48].

Quality

All studies were of fair quality. The studies were most likely not to have reported measuring confounding variables and did not measure exposure. One study, of a medication management intervention (*N* = 266) in an Ethiopian medical center [48], did not have blinded participants or providers, because this was not feasible in such a study.

Measurement tools

Various tools were used to assess HF knowledge in the studies. Six studies were conducted with the Japanese Heart Failure Knowledge Scale [40, 43, 44, 47, 50], and 3 with the Dutch Heart Failure Knowledge Scale [39, 42, 46]. In one, HF knowledge was measured in those with formal education of 6 years [51]. In 5 studies, self-developed questionnaires were used to assess HF knowledge [41, 45, 49, 52, 53]. One study did not report how HF knowledge was measured [48].

The measurement of SCBs varied across studies. The European Heart Failure Self-Care Behaviour Scale or its revised versions was used in 6 studies [39, 40,42, 44, 47, 50], and the revised heart failure compliance questionnaire was used in 4 studies [40, 43, 44, 47]. Other scales or methods were also used to evaluate specific SCBs, including the medication adherence scale [48], lifestyle and dietary questionnaire [53], and a researcher-developed scale based on European Society of Cardiology guidelines [45]. In Azandjeme et al.'s [52] study conducted in a cardiology outpatient clinic in Benin (*N* = 166), adherence to sodium restriction served as a proxy measure of SCBs.

Level of HF knowledge

Almost all of the reviewed studies measured HF knowledge with a standardized instrument. All of those studies reported poor HF knowledge among patients: from 49% to 86% of participants lacked appropriate knowledge. In an observational study in a tertiary hospital in Nigeria (*N* = 262), Ogah et al. [51] used formal education as a proxy for HF knowledge and reported a relatively high level of HF knowledge. In the capital city of Togo, Lomé, Yayehd et al. [53] assessed knowledge with a single question regarding whether participants knew what they were suffering from (*N* = 103), to which two thirds answered "yes."

Assessment and reporting of specific HF knowledge varied. Two studies reported that participants were least likely to answer questions about sodium restrictions and water retention correctly [19, 52]. Molla et al. [43] conducted a cross-sectional study in 7 public hospitals in Ethiopia (*N* = 304) and reported that the questions least likely to be answered correctly addressed taking medications without food (10.5%), lying flat in order to increase shortness (10.5%), the function of the heart (16.8%), and the necessity of exercise (21.7%).

Self-care behaviors

Eleven studies provided composite scores for SCBs [19, 39–44, 46, 47, 49, 50]. The proportions of patients with good SCBs ranged from 14% to 45% of samples [39, 52]. The level of adherence to SCBs ranged from a low of 28% [47] to a high of 74% [44] of HF patients. Specific SCB domains included weight monitoring, dietary sodium restriction, fluid restriction, alcohol abstinence, exercise, and keeping follow-up appointments. In Tegegn et al.'s [47] cross-sectional study in Addis Ababa (*N* = 396), taking medication had the highest adherence percentage (97.4%), and weight monitoring (5.2%) had the lowest. Levels of participants who reported smoking (0.3%–28.3%) and drinking alcohol (5.6%–54.4%) varied greatly [39, 41, 43, 45]. However, among those who reported it, there were high rates of appointment attendance (87.4%–93.4 %) and medication adherence (84.7%–95.4%) [40, 41, 43,45].

In 12 studies, HF knowledge was positively associated with SCBs [40–50, 52]; 6 of them reported a moderate to strong association between HF knowledge and good SCBs (OR 2.5–9.3) [40–43, 45, 47]. Only 4 studies did not report an association between HF knowledge and SCBs [19, 39, 51, 53]. Low literacy was also associated with hospital readmission (OR = 1.47) [51] and higher reports of depression (AOR 2.5–5.1) [39, 47].

Discussion

In this systematic review, we have synthesized evidence regarding the influence of HF knowledge on SCBs among HF patients in SSA, a region with the highest burden of HF [3, 5] and the fewest resources to manage it [8, 34, 54]. The patient populations in SSA countries are diverse, potentially with different associations between HF knowledge and SCB [55]. We found minimal research on SCB and HF in SSA,

with most of the studies conducted in Ethiopia. Although resources and access to HF care vary greatly from country to country, Ethiopia may serve as a good representative for SSA, with HF etiologies and comorbidities comparable to those of other SSA countries [6]. However, Ethiopia is one of the 10 wealthiest countries in SSA, and it has a volunteer health insurance scheme. At the same time, in SSA overall, health spending is expected to decrease [56]. The scarcity of studies in other SSA countries emphasizes the need for more comprehensive research to understand the relationship between HF knowledge and SCBs.

Level of HF knowledge

The studies in this review reported deficient levels of HF knowledge. This is disheartening; HF knowledge creates an understanding and raises awareness of SCB [57], it influences patients' outcomes, and it contributes to health burden [10]. Low levels of HF knowledge could arise from inadequate time to educate patients, from poor delivery of health care information, or from content's being irrelevant to a patient's context [58]. Health care providers should be mindful of each patient's context; provide information in clear, simple terms that the patient understands; and frequently evaluate patients' comprehension of information shared. Such information can empower patients to engage actively in appropriate SCB.

The knowledge profiles of HF patients in SSA reveal significant gaps that hinder effective self-care [20]. Although some patients understand the importance of medication adherence, they often lack crucial knowledge about other aspects of HF management. These knowledge gaps can lead to unique healthcare behavior that ultimately compromises effective HF management and patients' outcomes [30, 59]. The instruments for reporting varied greatly among the reviewed studies, so generalization of our findings cannot be supported.

Various socio-economic factors also influence patients' HF knowledge in SSA. Seid et al. [44] and Ogah et al. [51] found factors beyond formal education that shaped patients' understanding of their condition. Ogah et al. also highlighted how cultural practices and superstitious beliefs significantly influence health-seeking behavior in Africa. Many patients view hospitals as a last resort, visiting them only after attempting other nonconventional treatments. In addition, patients with chronic conditions like HF are known to move between different health facilities in search of a permanent cure [60], which can negatively impact their adherence to treatment plans and self-care [61].

Self-care behaviors

Comparing the SCBs of HF patients in SSA with those of patients in high-income countries reveals several similarities and differences [62]. In our systematic review, taking prescribed medications was the most frequently performed SCB, and weight monitoring was one of the least performed SCBs. However, adherence patterns in specific SCBs also varied between SSA and high-income settings [44]. For example, appointment keeping had the highest adherence in SSA, but it was one of the least frequently reported SCBs in high-income countries [60]. Fluid restriction and adherence to low-sodium diet

recommendations were low in SSA [19, 43, 44, 48, 51]. These differences in adherence suggest that HF patients in SSA may face unique challenges in adhering to self-care recommendations, probably due to socioeconomic factors, cultural beliefs, and health care system–related factors [22].

It is paramount that nurses in SSA place equal emphasis on all SCB practices when educating HF patients. Proper assessment, HF-specific dietary and nutritional education, and patient-tailored counseling can improve HF patients' knowledge and adherence [53]. Sitotaw et al. [46] reported that more than half of the patients in their study in Ethiopia had not received HF education. In Beker et al. [41], patients reported a need for education on fluid restriction, underscoring the need for targeted HF education interventions. The SSA region is resource-limited, particularly with respect to health care specialists to help manage HF, which may explain the inadequate education for HF patients [34, 54]. Although nurses are trained to educate patients about their condition [57, 58], many SSA countries cannot afford a robust nursing staff to meet these patients' needs [63–65]. This underscores the need to invest in nurses and other healthcare providers to provide health education to HF patients to improve their SCBs and reduce the burden of HF in the region.

Influence of Heart Failure Knowledge on Self-Care Behaviors

Findings of this review showed that knowledge of HF was associated with SCBs; patients knowledgeable about the condition were more likely to adopt good SCBs.[40–43] In particular, patients with better HF knowledge were more mindful of their body weight, salt intake, the need for exercises, adherence to treatment plans, and keeping follow-up appointments. Related to these SCBs are some of the main risk factors for development of HF (e.g., weight gain, inactivity)[65,69] and it is on the basis of this that clinical practice guidelines in high-income countries emphasize on their adoption by patients in order to improve their outcomes.[1] With these guidelines strongly recommending patient education, there is need to situate it as a core component of the care pathways for patients with HF.[1] Apart from improving SCBs, having knowledge of the condition enhances self-control and facilitates the patient's acceptance of the chronicity of the condition and self-managing roles.[20] Adoption of these SCBs would, however, be a challenge in the absence of contextualized

practice guidelines that emphasize patient education as a core component of care in

SSA.

Limitations

Although this systematic review was conducted rigorously, several limitations remain. First, although we searched 3 major databases, it is possible that some relevant articles were not identified. Additionally, most of the reviewed studies were conducted in a single country, Ethiopia, which may limit the generalizability of the findings to the entire SSA region. Differences in cultures and patient populations can yield knowledge and behavioral profiles that require targeted investigation and interventions. The cross-sectional nature of most studies limited the establishment of a causal relationship between HF knowledge and self-care behaviors. Furthermore, the variability of tools used, validated and non-validated, to assess HF knowledge and SCBs across the studies limited our ability to make direct comparisons between study results and precluded pooling of the studies' results for meta-analysis.

Implications for practice

Enhancing heart failure knowledge is vital to promoting self-care behaviors and empowering people for self-management [13]. Embedding educational programs that tailor HF management guidelines for this region of the world in order to improve HF knowledge will ultimately enhance SCBs.

Implications for research

Future studies in this region should focus on diverse geographical areas, adopt experimental designs to establish the mechanisms underlying the association between HF knowledge and SCBs, and identify causes of poor HF knowledge. Studies with culturally sensitive, patient-centered educational interventions are warranted to enhance HF knowledge for SCBs in SSA.

Conclusions

HF knowledge is essential for effective SCBs in patients with this condition. However, patients with HF in SSA have low understanding of HF, which can lead to poor SCBs and poor health outcomes. Enhancing HF knowledge has the potential to improve patients' SCBs, thus reducing morbidity and mortality.

Abbreviations

Heart Failure: Heart Failure

Sub-Saharan Africa = SSA

Self-care behaviors =SCBs

Declarations

Ethical approval: Not applicable, not human subjects

Consent for publication: Not applicable

Availability of data: Not applicable

Competing interests: The authors declare that they have no competing interests

Funding: This research did not receive any specific grant from funding agencies in the public,

commercial, or nonprofit sectors.

Author contribution: J.A.Z, and B.K provided overall supervision of the research process, assisted in writing the manuscript and analysis. M.N. conceptualized the study, wrote the original draft. M.N, A.W., S.G., L.K., S.F. participated in data collection and preliminary analysis.

All authors reviewed and approved the final manuscript and contributed significantly to its intellectual development.

Acknowledgement: The authors would like to acknowledge AMPATH-Kenya and Texas Global, at The University of Texas at Austin for their support for our team.

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Tables

Table 1 and 2 are available in the Supplementary Files section.

Figures

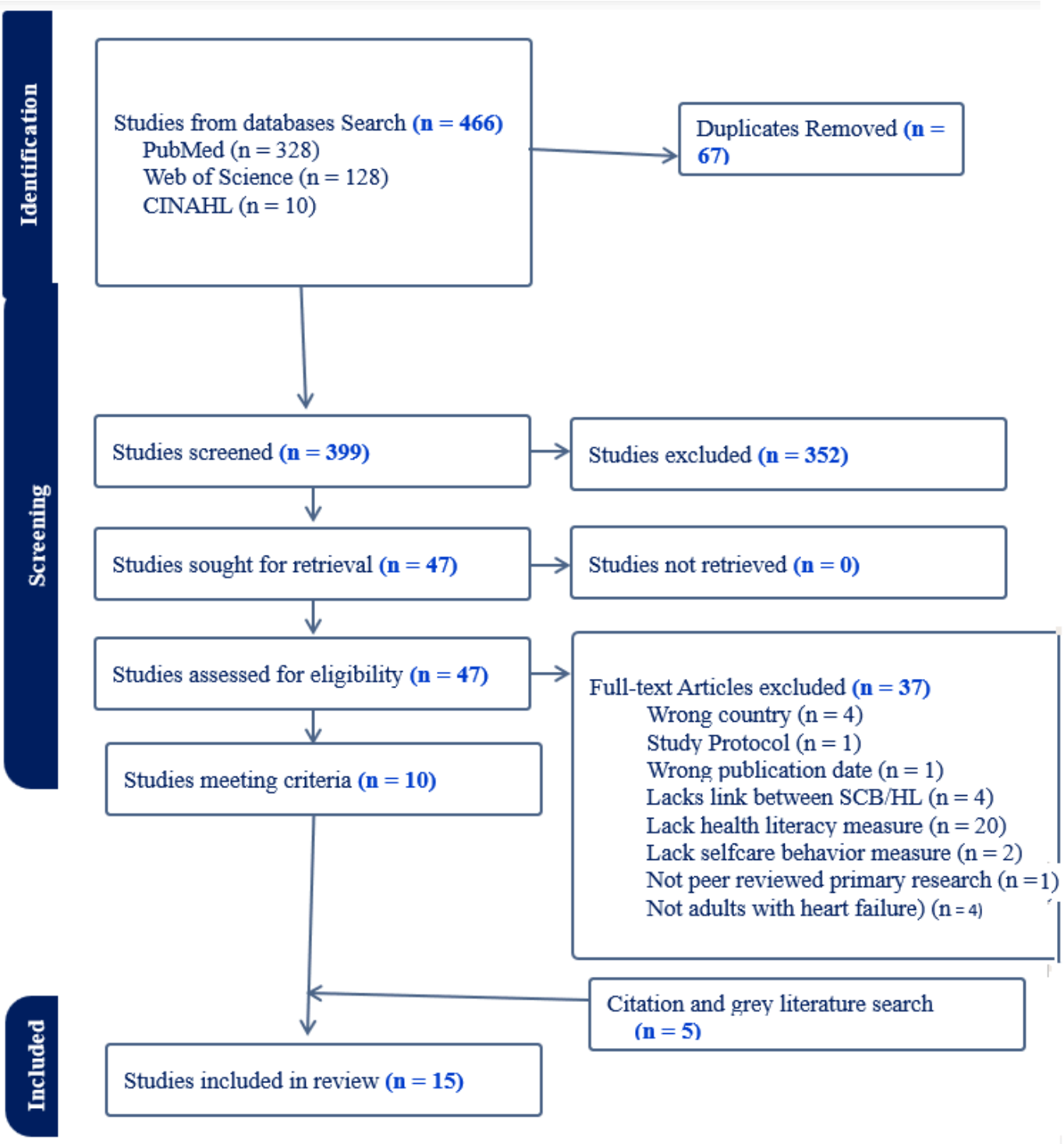


Figure 1

Prims Flow Diagram PRISMA flow diagram showing the number of records identified, screened, excluded, and included at each stage of the review. The search started with 466 articles. Fifteen articles met the inclusion and exclusion criteria.

Supplementary Files

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- Table12.docx