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Coaching to develop leadership of healthcare managers: a mixed-methods systematic review

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Abstract

Introduction Coaching is commonly used to facilitate leadership development among healthcare managers. However, there is limited knowledge of the components of coaching interventions and their impacts on healthcare managers' leadership development. This mixed-methods systematic review aimed to synthesize evidence of coaching to develop leadership among healthcare managers.

Methods The authors conducted a mixed-methods systematic review using a convergent synthesis design where quantitative and qualitative evidence was collected and analyzed concurrently using a matrix synthesis method. They reviewed studies published in English or Chinese by searching databases including MEDLINE (Ovid), CINAHL, Embase, Cochrane Library, Nursing & Allied Health Premium, Scopus, Wanfang, CNKI, SinoMed, and VIP databases from their inception to August 10, 2023, and updated the search again on July 9, 2024. Articles were screened and assessed for eligibility. First, from eligible studies, the qualitative data were extracted to describe intervention components, the perceived impact of coaching, and participants' perceptions of being involved in coaching intervention. Second, quantitative data analysis was conducted to describe the impact of coaching interventions and the frequency of each theme evolved in the data. Third, qualitative and quantitative data were synthesized using the matrix synthesis method.

Results A total of 13 studies were included in the analysis. Three qualitative studies were assessed as having 'no or few limitations', three case series studies were scored between five and eight out of 10 points, two quasi-experimental studies showed 'moderate' overall bias, and the five mixed-methods studies scored from 40 to 60% (out of 100%). For Objective 1, which covers the component of coaching (aims, ingredients, mechanism, and delivery), the typical aim of coaching interventions was to develop the leadership skills of middle management managers. The ingredients of coaching encompassed three distinct coaching categories and seven specific procedures. The mechanisms of most coaching interventions were based on theory and empirical evidence. The average delivery time was approximately four months. Overall, coaching positively impacts outcomes for managers, organizations, and staff (Objective 2). Perceptions of the participants toward coaching interventions were divided into six categories: barriers,

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facilitators, effective components, attitudes, satisfactory aspects, and suggestions for designing high-quality coaching interventions to improve leadership (Objective 3).

Conclusions The components of coaching interventions varied across different studies. The impact of coaching on leadership development was positive across three levels (manager, organization, and staff). Therefore, we recommend coaching as an intervention for healthcare managers aiming to enhance their leadership level. Future coaching interventions may achieve greater effectiveness if they are specifically aligned with the participants' perceptions identified in our study.

Keywords Coaching, Leadership, Healthcare managers, Systematic review

Introduction

The development of leadership in healthcare managers is critical for promoting effective and efficient healthcare delivery [1]. Management is defined as achieving organizational goals effectively and efficiently through planning, organizing, leading, and controlling resources [2]. It is typically based on an official position within the organization [3]. In contrast, leadership is a process of motivating individuals or groups to achieve common goals [4, 5], regardless of their formal position [3]. To positively impact organizations, patients, and healthcare providers, healthcare managers need to be equipped with leadership skills [6–8], which can be improved by effective interventions [9].

Coaching has been recommended as an intervention for developing leadership in healthcare settings [10, 11]. Coaching refers to a collaborative relationship between a coach and a coachee that facilitates goal attainment and individual change [12]. It provides healthcare managers with the opportunity to discover and reflect on their respective leadership styles and skills, increase their resilience and confidence, interact with subordinates [13], and facilitate goal attainment [14].

To better understand effective interventions for developing leadership, it is important to identify the components of these interventions [15]. A systematic review by Greaves et al. [16] specifically highlighted that, to be effective, intervention components such as mechanism and delivery should be clear. Bragge et al. [17] further summarized four components that can be used to describe an intervention: the aims (what do you want your intervention to achieve, and for whom?), the ingredients (what comprises the intervention?), the mechanisms (how do you propose the intervention will work?), and the delivery (how will you deliver the intervention?). Given the complexity of healthcare systems and the critical role of managers in driving changes within these systems [18], it is important to identify the components of coaching interventions for healthcare managers, as coaching may need to be tailored to specific disciplines [19] to effectively address the unique challenges and requirements faced by this group.

To understand the existing work in this area, we conducted a systematic literature search to identify systematic reviews of coaching interventions used to develop healthcare managers' leadership. Our initial PubMed search on January 30, 2023, yielded no systematic reviews with evidence of the use of coaching for this purpose. We then broadened our search to more general leadership development interventions for healthcare professionals, resulting in 291 reviews. Two systematic reviews [20, 21] included coaching as part of their interventions to develop leadership, with healthcare managers included among the study populations. Cummings et al. [21] reviewed 49 studies to determine the effectiveness of various interventions for developing leadership in nurses and nurse managers, identifying coaching as one of the methods used. Chen et al. [20] conducted a mixed-methods systematic review of 69 studies to evaluate interventions aimed at improving leadership competencies of managers supervising nurses, with coaching or mentoring included as part of the intervention. However, neither review [20, 21] detailed the specific components [17] of coaching interventions or their effectiveness in leadership development.

There remains a knowledge gap regarding the components (aims, ingredients, mechanism, and delivery) [17] of coaching interventions and their impacts on leadership development among healthcare managers. To address this knowledge gap, we synthesized existing studies on coaching interventions that specifically targeted healthcare managers, determining the interventions' components and impacts on leadership. The target group in this review were healthcare managers, as they play a central role in complex healthcare services [22, 23]. They also hold significant influence at all levels of the health and policy systems and are recognized and valued by service users, colleagues, policymakers, and the general public [24].

We used a mixed-methods approach of combining both qualitative and quantitative studies in this review to obtain a deeper insight into the available literature [25, 26]. Specifically, we used a convergent synthesis design where quantitative and qualitative evidence was collected and analyzed concurrently using a matrix synthesis

method [27]. The insights gained from this systematic review can be used to design coaching interventions for leadership development among healthcare managers in global healthcare settings [28]. The following specific study objectives were set: [1] to identify the components (aims, ingredients, mechanism, and delivery methods) of coaching for leadership development among healthcare managers [2], to determine the reported impact of coaching on leadership development outcomes, and [3] to describe the perceptions of the participants of coaching interventions for leadership development.

Methods

Protocol and registration

This review was conducted using the Cochrane systematic review method [29], adhering to the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) [30]. The protocol for this systematic review has been registered in the International Prospective Register of Systematic Reviews (PROSPERO; registration number: CRD42020194290) and published [31].

Eligibility criteria

The PICOS framework was used to define the inclusion and exclusion criteria for this review [29].

Population (P)

The eligible population for this review consisted of healthcare managers, defined as individuals in managerial positions who are responsible for managing daily activities and long-term goals for a healthcare organization [32], regardless of their hierarchical level (middle or senior) [33, 34]. Only studies in which the majority of participants [35] (more than 50%) were healthcare managers were included. For additional details, see the protocol [31].

Intervention (I)

Coaching was defined as an intervention or a component of a complex intervention for leadership development among healthcare managers, including but not limited to leadership knowledge, behaviours, skills, attitudes, and practices [36–39].

Comparator (C)

Alternative interventions as well as usual practices served as the comparators were included in this review. As this was a mixed-methods review, intervention studies without a control group were also included [40].

Outcome (O)

Quantitative outcomes were related to the manager (e.g., leadership knowledge, skills, and behaviours), organization (e.g., length of hospital stay), staff (e.g., staff's job satisfaction), and patient levels (e.g., patient satisfaction and health outcomes). Qualitative outcomes focused on the managers' leadership (i.e., knowledge, skills, and behaviours) resulting from a coaching intervention or the participants' perceptions of coaching for leadership development.

Study design (S)

We included several types of studies: [1] quantitative studies, which comprised randomized and nonrandomized controlled trials and observational studies; [2] qualitative studies, comprising those based on direct observations, in-depth interviews, and focus group discussions; and [3] mixed-methods studies.

Nonempirical studies, such as discussions, commentary papers, reviews, and meta-analyses, were excluded.

Information sources

Literature searches were conducted across the following databases: MEDLINE (Ovid), CINAHL, Embase, Cochrane Library, Scopus, Nursing & Allied Health Premium, China National Knowledge Infrastructure (CNKI), Wanfang Data, China Science and Technology Journal Database (VIP), and Chinese Biomedical Literature Service System (SinoMed). The search was restricted to English and Chinese languages. Searches were performed on August 10, 2023, and updated on July 9, 2024. The search strategy was developed in line with the Cochrane Handbook for Systematic Reviews of Interventions [29]. Chinese and English librarians were consulted to identify additional databases and formulate the most appropriate search strategies. A search strategy was initially developed, conducted, and finalized for MEDLINE (Ovid) and subsequently adapted for the other databases listed. After completing the electronic database searches, we cross-checked the reference lists of the included studies to identify additional studies. We also searched Google Scholar, Health Coach Alliance, and Baidu Scholar for grey literature [41]. No new studies were identified through these grey literature searches.

Search

The search strategy combined controlled terminology (MeSH or Cumulative Index to Nursing and Allied Health Literature headings) and keywords based on the concepts of coaching, leadership, and healthcare managers to ensure adequate subject coverage. The full search strategy and results for each database can be found in Supplementary File 1.

Study selection

Three researchers (SH, WH, and WC) screened and selected the studies using the following process. All studies were imported into Covidence (https://www.

covidence.org/). Duplicates were removed, and the remaining studies were screened in two stages. In the first stage, two researchers (SH and WH) independently screened the titles and abstracts of the studies. In the second stage, the same two researchers independently conducted the full-text screening. These two screening stages and reasons for exclusions were recorded in Covidence. Any discrepancies between the two researchers were resolved through discussion. If consensus could not be reached, a third researcher (WC) was consulted. The search results and the screening process were then presented in a study flow diagram in line with the PRISMA guidelines [30].

Data collection process

For data collection, we developed a form using Microsoft Excel 2019 (Microsoft, Corporation, Redmond, Washington). Two researchers (SH and JC) independently performed the data extraction. The data extraction form was synchronized online and allowed both reviewers (SH and JC) to extract data independently and enabled comparisons between reviewers. Searches were conducted for secondary publications or requests were sent to the authors if there was any missing data.

Data items

The following information was extracted:

- Study characteristics: the first author, year of publication, journal, language, country, study purpose, research design, data collection method(s), and scales used;
- Population characteristics: profession, number of coachees and coaches, age range, gender, ethnicity, position, and level of seniority;
- The components of coaching interventions based on the AIMD framework (aims, ingredients, mechanism, and delivery) [17]: aims (what do you want your intervention to achieve and for whom?), ingredients (what comprises the intervention?), mechanisms (how do you propose the intervention will work?), delivery (how will you deliver the intervention?);
- Outcomes: outcomes related to the impact of coaching and participants' perceptions of coaching; raw scores were extracted for quantitative outcome measurements, and authors' descriptions and participants' perceptions of coaching were provided in the qualitative data.

Risk of bias in individual studies

Two reviewers (JH and SL) independently assessed the methodological quality of each included study. Disagreements were resolved through discussions with a third researcher (WC). Nonrandomized trials, qualitative studies, mixed-methods studies, and case series were evaluated using the Risk of Bias in Non-Randomized Studies of Interventions (ROBINS-I) tool [42], the Critical Appraisal Skills Programme (CASP) checklist [43], the Mixed Methods Appraisal Tool (MMAT) [44], and the Joanna Briggs Institute (JBI) critical appraisal checklist for case series [45], respectively.

Data analysis and synthesis

Our data analysis was conducted using a mixed-methods approach, which is well-suited for combining evidence from multiple studies using both quantitative and qualitative methods [25]. Specifically, we utilized a convergent synthesis design, in which both qualitative and quantitative were collected, analyzed, and then synthesized using a matrix synthesis method [27]. In general, from eligible studies, the qualitative data were extracted first to describe the specific content. Following the qualitative extraction, we analyzed the data quantitatively to determine the frequency of specific subcategories across studies. Finally, both qualitative and quantitative data were synthesized using the matrix synthesis method [35].

Specifically, six steps of the thematic analysis process [46] were used to analyze each of the research questions: (1) quotations, (2) keywords, (3) codes, (4) themes, (5) conceptualization, and (6) development of a conceptual model (a summary of the results). For Objective 1, a combination of deductive and inductive coding approaches was used to identify various intervention components using a thematic analysis process by Naeem et al. [46]. First, the components of coaching interventions were identified using a deductive approach guided by the AIMD framework (aims, ingredients, mechanism, delivery) [17]. After the identification of these components in the data, an inductive approach was used to code quotations and keywords by bolding the words in the text. The text with similar content was coded accordingly; if the text could not be categorised using existing codes, a new code was created. This process continued until all relevant text was coded and all codes were grouped into themes. Identifying keywords, codes, and themes facilitated a preliminary understanding of the data, which could then be further interpreted to summarize the results.

For Objective 2, to determine the measured impact of coaching on leadership development outcomes, we were unable to perform a meta-analysis of quantitative data due to a lack of effectiveness data [39]. Therefore, we extracted all quantitative results based on numeric data (if available) and described the data using a narrative description only. For the perceived impact of coaching on leadership development outcomes, we extracted

qualitative data using quotations, keywords, sub-codes, codes, and themes as long as they were related to our review objectives. Therefore, six steps of the six thematic analysis process [46] was used to analyze the qualitative data. An example of the data analysis process can be found in Fig. 1. To explore the perceptions of the participants for coaching interventions for leadership development (Objective 3), again, a thematic analysis process [46] was used.

Finally, the matrix approach was used to synthesize the quantitative and qualitative findings [35]. The quantitative and qualitative findings were compared to either support (confirmation), complementary, or contradict each other (refutation) [47]. To ensure the truthfulness

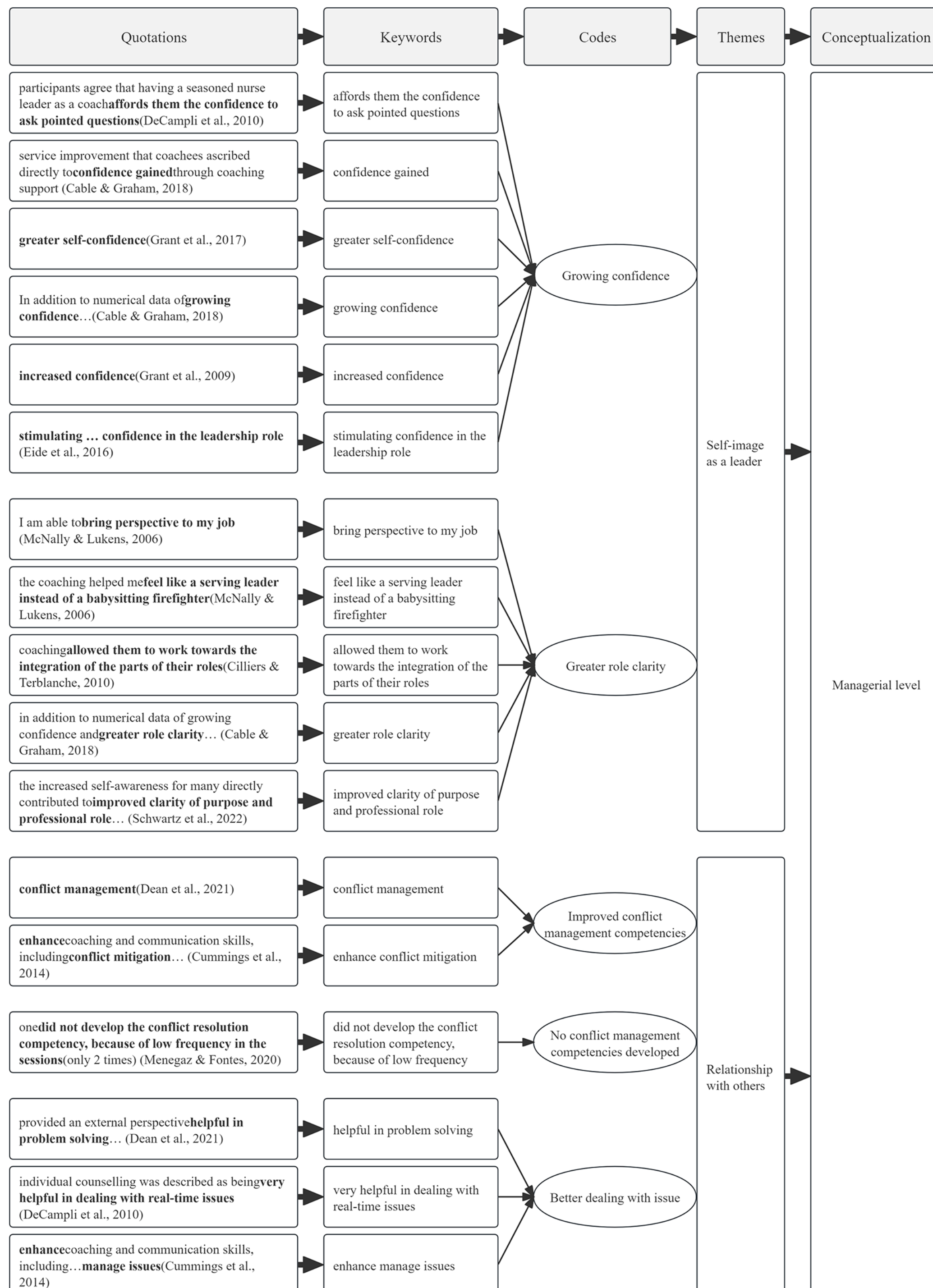

Fig. 1 An example of the data analysis process (modified from Naeem et al.) [46]

of the data analysis [48], another reviewer (XL) independently checked the data analysis process and results and provided feedback.

Confidence in cumulative evidence

We did not perform a meta-analysis of the quantitative studies due to their heterogeneity in outcomes. Consequently, the Grades of Recommendation, Assessment, Development, and Evaluation (GRADE) framework [49] was not applicable for evaluating the confidence of the quantitative evidence. Qualitative evidence was derived from a variety of sources, including qualitative studies, case series, quasi-experimental studies, and mixed-methods studies. Given this variety, the GRADE-CERQual (Confidence in the Evidence from Reviews of Qualitative Research) tool [50] was not suitable for evaluating the confidence of the qualitative evidence. For more details on the differences between the protocol and the review, please refer to Supplementary File 2.

Results

Study selection

The database search yielded 7,060 records. After removing duplicates, we screened the titles and abstracts of the remaining 5,081 records, resulting in 130 relevant articles for full-text screening. An additional record was identified through citation search, bringing the total to 131 records for full-text review. Of these, 13 studies met the eligibility criteria and were included in our review. The study selection process and results are shown in Fig. 2 [30]. Reasons for the exclusion of studies can be found in Supplementary File 3.

Study characteristics

The studies included in the present review were published between 2009 and 2023. All studies [13, 14, 36, 51–60] were published in English. The studies were conducted across seven countries, with the majority from the US (n=4) [13, 52, 54, 60] and Australia (n=3) [14, 53, 56]. The studies included various types, including qualitative studies (n=3) [51, 55, 60], case series (n=3) [36, 52, 57], quasi-experimental studies (n=2) [56, 59], and mixed-methods studies (n=5) [13, 14, 53, 57, 58]. The purposes of the studies included assessing the impact of coaching (n=6) [13, 55, 57–60], describing participants' experiences while receiving coaching (n=2) [36, 51], describing a coaching plan (n=3) [52–54], or exploring the efficacy of coaching (n=2) [14, 56]. All studies employed self-report measures [61] (e.g., questionnaire, report, in-depth interview) [13, 14, 36, 51–54, 56–60], with only one study [55] utilizing both self-report and observation

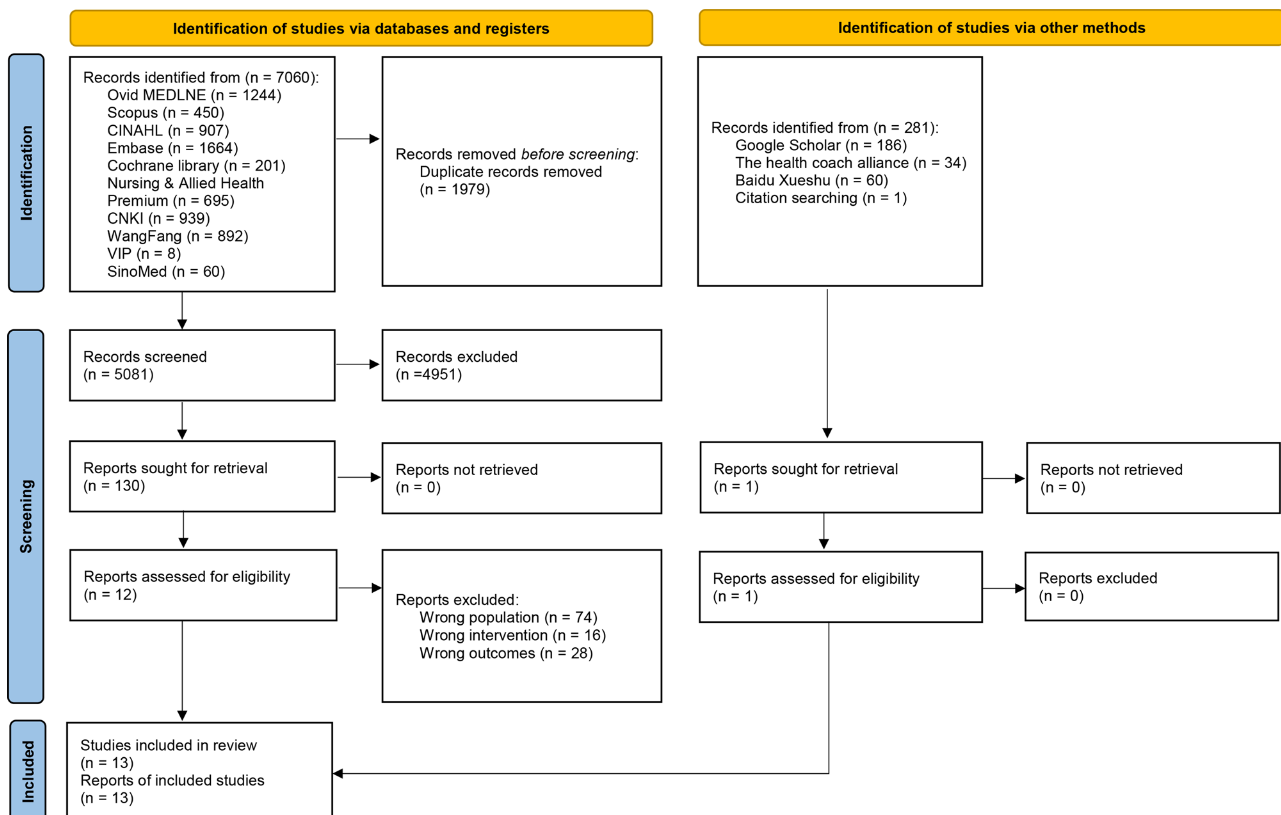

Fig. 2 Prisma flow diagram

methods. Table 1 presents the study characteristics in detail.

A total of 507 coachees and 41 coaches participated in the coaching interventions across the 13 studies. Nine studies [36, 51–58] targeted nurse managers, while four studies [13, 14, 59, 60] recruited nurses, doctors, allied health professionals or public health managers. The coaches were primarily nurses and psychologists. The coachees range in age from 30 to 54 years, but the ages of the coaches were not reported. Five studies [36, 52, 55–57] focused on middle management level coaches (such as unit managers), two studies [51, 53] focused on the senior management level coaches (e.g., director), four studies [13, 14, 54, 58] included both middle and senior level coaches, and the remaining two studies [59, 60] did not provide information regarding the level of healthcare managers. Detailed descriptions of the participant characteristics can be found in Table 2.

Risk of bias in the studies

The overall assessment for the three qualitative studies [51, 55, 60] resulted in "No or few limitations," meaning most items in the tool were answered with "yes" [62]. Insufficient descriptions of the recruitment strategy [51, 60] and data collection methods were the weaknesses of the three studies [55] (see Supplementary File 4, Table S1).

The critical assessment scores for the three case series [36, 52, 54] included in this review ranged from five to eight out of a total score of 10. Quality concerns primarily arose due to the lack of clarity about whether the studies included participants consecutively and comprehensively [36, 52]. Additionally, there were concerns about the inadequate reporting of participants' "clinical information" (information related to the participant's management experience, such as the level of positions held and the duration of time spent in management roles) [36, 52] (see Supplementary File 4, Table S2).

The two quasi-experimental studies [56, 59] assessed both with an overall bias rating of "Moderate." One study showed a moderate risk of confounding bias but a low risk of bias in other areas [56]. The other study had moderate risks of both confounding bias and outcome measurement bias, with low risk of bias in the other areas [59] (see Supplementary File 4, Table S3).

The critical appraisal scores for the five mixed-methods studies [13, 14, 53, 57, 58] ranged from 40 to 60% out of a possible 100%. Concerns were identified in all studies regarding Q3.1 (Are all the participants representative of the target population?) and Q5.5 (Do the different components of the studies adhere to the quality criteria for each tradition of the methods involved?). In all studies except one [53], the confounders were not accounted for in the design and analysis. All studies met criteria 1.1, 1.2, 1.3, 3.5, 5.1, 5.2, 5.3, and 5.4 (see Supplementary File 4, Table S4).

The components of coaching interventions

Aims

Most of the coaching interventions aimed to facilitate the development of leadership skills [13, 14, 36, 53, 55, 57, 58, 60] ($n=8$) or behaviours [53, 54, 56] ($n=3$). The target groups of the coaching interventions included healthcare managers at the middle management level [36, 52, 55–57] ($n=5$), senior management level [51, 53] ($n=2$), and mixed [13, 14, 54, 58] ($n=4$) levels (see Supplementary File 5, Table S1).

Ingredients

In seven studies [13, 14, 36, 53–55, 58], materials (e.g., handbooks) were provided to the participants. However, the studies did not specify where these materials could be accessed. We identified three categories of coaching in the included studies: internal ($n=1$) [55], external ($n=9$) [13, 14, 51–53, 56–58, 60], and mixed (internal and external) ($n=1$) [54]. Two studies [36, 59] did not provide information on the category of coaching used. The coaching interventions reported in 10 studies [13, 14, 52–57, 59, 60] included three procedures: a pre-evaluation (baseline evaluation) of the variables (e.g., leadership skills), coaching, and a post-evaluation. Three studies did not involve a pre-evaluation [36, 51, 58]. Two studies [14, 57] had coach-coachee matching procedures, eight studies [14, 36, 51–54, 57, 60] had orientation procedures, three studies [13, 53, 58] had reminder procedures, and only one study [53] had a follow-up procedure. Eight studies [51, 53–59] involved support activities such as forums, meetings, discourse, role-playing activities, group interactions, discussions, conversations, roundtables, reports, seminars, and homework. Five studies [13, 14, 36, 52, 60] did not provide any information about support activities (see Supplementary File 5, Table S1).

Mechanism

All included studies reported on the mechanism of coaching. Five studies [13, 52, 54, 55, 60] were based on empirical evidence. Among these, two studies [54, 60] only described the positive impact of the coaching intervention without providing details on the pathway or process by which the intervention worked. Three studies [51, 58, 59] were based on theory, specifically the systems psychodynamic perspective [51], a coaching model [58], and coaching psychology [59]. Five studies [14, 36, 53, 56, 57] were based on both theory and empirical evidence: three studies [14, 53, 56] were based on cognitive-behavioural theory, and two studies were based on the adult learning model [57] and organization theory [36], respectively. Among these five studies [14, 36, 53, 56, 57], one

Table 1 Characteristics of included studies

Authors, Year	Journal	Language	Country	Research Design	Study Purpose	Data collection method(s); Scale(s)
Cable, 2018	Journal of Nursing Management	English	UK	Mixed-methods study	To assess the impact of a coaching intervention with senior clinical nurse leaders.	**Methods**: questionnaire, interview **Scale(s)**: no detailed information
Cilliers, 2010	Health SA Gesondheid - Journal of Interdisciplinary Health Sciences	English	South Africa	Qualitative and descriptive study	To describe the learning experiences of nursing managers during leadership coaching	**Methods**: field note, reflective essay
Cummings, 2018	Health Care Management Review	English	Canada	Mixed-methods study	To explore the influence of coaching for frontline care managers	**Methods**: questionnaire, focus group interview **Scale(s)**: self-developed questionnaire, resonant leadership, values-based culture, and evaluation scales, the two-item global empowerment instrument
Dean, 2021	Journal of Public Health Management and Practice	English	US	Mixed-methods study	To explore the influence of coaching	**Methods**: questionnaire, interview **Scale(s)**: The Office of Personnel Management's 360-degree assessment tool, questionnaire
DeCampli, 2010	Critical Care Nursing Quarterly	English	US	Case series	To describe a coaching plan for preparing new nursing managers	**Method**: report **Scale(s)**: formal written report
Eide, 2016	Nursing Ethics	English	Norway	Case series	To develop and investigate the feasibility of an ethical leadership educational program and learn from participants' experience	**Method**: focus group interview
Grant, 2009	The Journal of Positive Psychology	English	Australia	Mixed-methods study	To describe an executive coaching program for executives	**Methods**: questionnaire **Scale(s)**: goal attainment scaling, 18-item version of the cognitive hardiness scale, the depression anxiety and stress scale, the workplace well-being index
Grant, 2017	Journal of Health Organization and Management	English	Australia	Mixed-methods study	To explore the efficacy of leadership coaching for individuals implementing strategic change	**Methods**: questionnaire **Scale(s)**: goal attainment scaling, solution-focused inventory, depression anxiety and stress scale, leadership self-efficacy, leader's trust in subordinates; the interpersonal reactivity index, tolerance for ambiguity scale, cognitive hardiness scale, the insight subscale of the self-reflection and insight scale
McNally, 2006	The Journal of Nursing Administration	English	US	Case series	To describe the development and benefits of a partnership in coaching	**Methods**: questionnaire **Scale(s)**: no detailed information
Menegaz, 2020	Revista Mineira de Enfermagem	English	Brazil	Qualitative and descriptive study	To analyze the development of individual skills of leading nurses in coaching	**Methods**: document, observation **Scale(s)**: no detailed information
Yu, 2020	International Coaching Psychology Review	English	Australia	Quasi-experimental study	To investigate the effectiveness of a coaching program	**Methods**: questionnaire **Scale(s)**: taking charge scale, the four-item measure from Morrison and Phelps, the six-item innovative behavior measure, the goal attainment scale, the self-reflection self-insight scale, RBSE scale, positive affect negative affect Scale, psychological well-being

Table 1 (continued)

Authors, Year	Journal	Language	Country	Research Design	Study Purpose	Data collection method(s); Scale(s)
Day 2023	BMJ Leader	English	UK	Quasi-experimental study	To investigate whether psychologically informed leadership coaching impacted on the mental well-being of 80 UK-based senior doctors, medical and public health leaders.	**Methods**: questionnaire **Scale(s)**: The Short Warwick-Edinburgh Mental Well-Being Scale
Schwartz 2022	BMC Medical Education	English	US	Qualitative and descriptive study	To examine the effect of a brief physician 360 leadership coaching intervention on perception of professional dynamics and acquired leadership skills.	**Methods**: interview, field notes

Abbreviations NA, not applicable

study [56] only mentioned the name of the theory, without any information on the pathway or process by which the intervention worked. Regarding empirical evidence, four studies [14, 36, 53, 57] lacked detailed information on the intervention pathway or process (see Supplementary File 5, Table S2).

Delivery methods

Among the 13 studies included, the duration of coaching interventions was not reported in two studies. For the remaining 11 studies, the intervention durations ranged from two days to seven months, with an average of approximately four months. The coaching delivery modes included in-person meetings, telephone calls, videos, and online methods. The interventions described in the studies were delivered individually or through group coaching. The dose of individual or group coaching varied from 45 min to 4 h, and the frequency of the intervention varied from once a week to once a month for a total of 4 to 32 times during the program. The coaches mainly included psychologists, professional coaches, and nurses. The sizes of the target groups varied from 3 to 111. Three studies [51, 52, 55] implemented the intervention in hospital rooms, and one involved an online intervention [36]. One study [13] did not provide any information on the duration, mode, or level of coaching, and nine studies [13, 14, 53, 54, 56–60] did not report the site of the intervention (see Supplementary File 5, Table S2).

The impact of coaching on leadership development

Both qualitative and quantitative data reported the impact of coaching across various outcomes at manager, organization, and staff levels (categories). Twelve studies assessed the perceived impact of coaching using qualitative data [13, 14, 36, 51–55, 57–60], identifying 34 codes that were then grouped into 11 themes across the three categories. Eight studies measured the impact of coaching using quantitative data [13, 14, 53, 54, 56–59], with 26 results extracted and categorized into six classes across the same three levels (see Supplementary File 5, Table S3).

Manager level

The qualitative data showed improvements in the following 15 aspects of leadership among healthcare managers, which were well supported by quantitative data: confidence, resilience, reflection and awareness, role clarity, resonant leadership (a leadership style that focuses on how an individual interacts with others and builds positive relationships) [63], interacting with others, relationships with others, perspective taking, developing others, conflict management, leveraging diversity, team development, feedback process, anxiety, stress, health and well-being, and retention. Qualitative data also identified enhancements in systematic thinking, work/life balance, boundary management, leading by example, dealing with issues, mindset, loneliness, management skills, communication skills, and teamwork skills. However, these findings lacked support from quantitative data (see Supplementary File 5, Table S3). Conversely, the quantitative data indicated improvements in solution-focused thinking and depression, which were not supported by qualitative data.

Organization level

The qualitative findings identified improvement in leadership development among healthcare managers in the following three aspects, all were well supported by quantitative data: retention, vision and strategy, and decision-making and change.

However, the qualitative data also showed there was an enhancement in healthcare quality, which was not supported by the quantitative data (see Supplementary File 5, Table S3).

Staff level

The qualitative data showed that coaching interventions have positive impacts on staff health and well-being, knowledge, and work efficiency; however, the

Table 2 Characteristics of participants

Authors, Year	Number	Profession	Age	Gender	Ethnicity	Position	Level of seniority
Cable, 2018	Coachee: 116 Coach: 16	Coachee: nursing Coach: n.a.	n.a.	n.a.	n.a.	Coachee: senior clinical nursing leader Coach: n.a.	Coachee: middle Coach: n.a.
Cilliers, 2010	Coachee: 6 Coach: 1	Coachee: nursing Coach: psychology	n.a.	Coachee: female Coach: n.a.	Coachee: White: 4 Black: 2 Coach: White	Coachee: senior nursing manager Coach: n.a.	Coachee: senior Coach: n.a.
Cummings, 2014	Coachee: 21 Coach: 1	Coachee: nursing Coach: psychology	Coachee: 30–54 Coach: n.a.	Coachee: male: 3, female: 12, missing: 3 Coach: n.a.	n.a.	Coachee: unit manager, facility manager, director Coach: n.a.	Coachee: middle, senior Coach: n.a.
Dean, 2021	Coachee: 111 Coach: n.a.	Coachee: public health Coach: n.a.	n.a.	Coachee: male: 30, female: 50, missing: 31 Coach: n.a.	n.a.	Coachee: team leader, branch chief Coach: n.a.	Coachee: middle, senior Coach: n.a.
DeCampli, 2010	Coachee: 3 Coach: 3	Coachee: nursing Coach: nursing	n.a.	n.a.	n.a.	Coachee: nurse manager Coach: seasoned nurse leader	Coachee: middle Coach: n.a.
Eide, 2016	Coachee: 9 Coach: n.a.	Coachee: nursing Coach: n.a.	Coachee: 35–48 Coach: n.a.	Coachee: female	n.a.	Coachee: middle manager Coach: n.a.	Coachee: middle Coach: n.a.
Grant, 2009	Coachee: 41 Coach: 2	Coachee: nursing Coach: n.a.	Coachee: 49.84 Coach: n.a.	Coachee: male: 3, female: 38	n.a.	Coachee: director and senior manager Coach: professional executive coaches	Coachee: senior Coach: n.a.
Grant, 2017	Coachee: 31 Coach: 11	Coachee: nursing, medicine, allied health professions Coach: coaching psychology	Coachee: 42.5 Coach: n.a.	Coachee: male: 10, female: 21 Coach: male: 6, female: 5	n.a.	Coachee: executive, senior manager, leading healthcare professional Coach: n.a.	Coachee: middle, senior Coach: n.a.
McNally, 2006	Coachee: 64 Coach: 2	Coachee: nursing Coach: organizational consulting and coaching	n.a.	Coachee: male: 9, female: 55 Coach: n.a.	Coachee: White Coach: n.a.	Coachee: nurse leader Coach: n.a.	Coachee: middle, senior Coach: n.a.
Menegaz, 2020	Coachee: 8 Coach: 1	Coachee: nursing Coach: nursing	n.a.	Coachee: n.a. Coach: female	n.a.	Coachee: nurse manager Coach: n.a.	Coachee: middle Coach: n.a.
Yu, 2020	Coachee: 17 Coach: 1	Coachee: nursing Coach: coaching	Coachee: 37 Coach: n.a.	Coachee: male: 2, female: 15 Coach: n.a.	n.a.	Coachee: nursing manager Coach: n.a.	Coachee: middle Coach: n.a.
Day 2023	Coachee: 80 Coach: -	Coachee: medicine, public health Coach: n.a.	Coachee: 30–63 years (mean 44.5, mode 45.0, median 45.0) Coach: n.a.	Coachee: Male: 43 Female: 37 Coach: n.a.	Coachee: non-white ethnicity: 17 Coach: n.a.	Coachee: senior doctors in formal leadership roles, public health leaders, and non-medical public health leaders Coach: n.a.	n.a.
Schwartz 2022	Coachee: 23 Coach: 3	Coachee: medicine Coach: non- medicine	n.a.	Coachee: Male: 4 Female: 19 Coach: n.a.	n.a.	Coachee: n.a. Coach: international Coaching Federation-certified coaches	n.a.

Abbreviations n.a., not available

quantitative data did not support the latter two aspects (see Supplementary File 5, Table S3).

Participants' perceptions of coaching for leadership development

Thirty-nine findings from eight studies [13, 36, 52, 54, 55, 57, 58, 60] were identified as describing participants' perceptions of coaching for leadership development. These findings formed six categories describing the participants' perceptions of barriers, facilitators, effective components (the components within coaching interventions that participants perceive as effective or valuable) [64], attitudes, and satisfactory aspects (reflecting participants' satisfaction with the coaching intervention) as well as their suggestions to improve coaching for leadership development (see Supplementary File 5, Table S4).

Barriers

Three studies [13, 36, 58] identified 10 barriers to the implementation of coaching for leadership development: uncertain impacts, time constraints, indifferent attitudes of staff, a lack of real conflicts, multitasking in multiple sites/departments, a lack of proper training, heavy workload, communication difficulties, challenges of completing coaching, and not understanding the relevance to leadership.

Facilitators

Three studies [36, 58, 60] described 11 facilitators of coaching for leadership development: pride in leadership, responsibility and time allocation, position and role in the organization, positive impact and feedback, management training, leadership skills and democratic approach, good relationship with staff, educational level and experience, desire and gratification related to developing staff, commitment, and push from coaching components.

Effective components

Three studies [36, 52, 54] highlighted two effective components of implementing coaching for leadership development: the coaching relationship and the delivery model and level (face-to-face or one-on-one coaching).

Attitudes

Six studies [13, 36, 52, 54, 57, 60] identified nine attitudes toward the implementation of coaching for leadership development. Three studies [13, 52, 57] described six positive attitudes: welcoming progress evaluations, enjoyment, persistence, future participation, recommending to others, and appreciating coaching relationships. Two studies [36, 54] noted that some of the participants were initially skeptical but eventually found the intervention valuable. One study [36] reported that some participants felt bored at the beginning, while another study [60] found that some participants experienced discomfort when seeking feedback from stakeholders.

Satisfactory aspects

Six studies [36, 52, 54, 55, 57, 58] identified four satisfactory aspects of implementing coaching for leadership development: positive impact, coaching components, outside coaching, and overall satisfaction.

Suggestions

Only one study [36] included suggestions from the participants after they experienced the coaching intervention. Three suggestions were mentioned: expanding the reflection/feedback period, expanding the whole training program, and providing concise reading material.

The summary of the results

Figure 3 summarizes the results of coaching components, the impact of coaching at manager, organization, and staff levels, and participants' perceptions of being involved in coaching interventions aimed at developing leadership of healthcare managers.

Discussion

We conducted a mixed-methods systematic review to synthesize evidence on the components, impacts, and perceptions of coaching among healthcare managers in healthcare settings, and summarized the results. The synthesis of coaching components, based on the AIMD framework [17], revealed that coaching interventions varied in their components. Most interventions aimed to develop leadership skills. Coaching was perceived as effective in developing leadership at the manager, organization, and staff levels. Participants' perceptions of involving in coaching interventions included barriers, facilitators, effective components, attitudes, satisfactory aspects and suggestions for designing future coaching interventions.

Compared to existing evidence [20, 21], our review is pioneering in identifying the specific components of coaching interventions. Although the two reviews [20, 21] included coaching as part of their leadership development programs for healthcare managers, they did not provide detailed information on how coaching was implemented in healthcare settings. Systematic reviews should provide clear procedural details to enable the replication of effective interventions in healthcare settings [65]. Without such detailed information on the components of interventions, replication may be hindered, which can limit support for policy decisions and evidence implementation [66]. Our review highlights that coaching can be used as an independent intervention for leadership development among healthcare managers. We further identified seven procedures (pre-evaluation, matching,

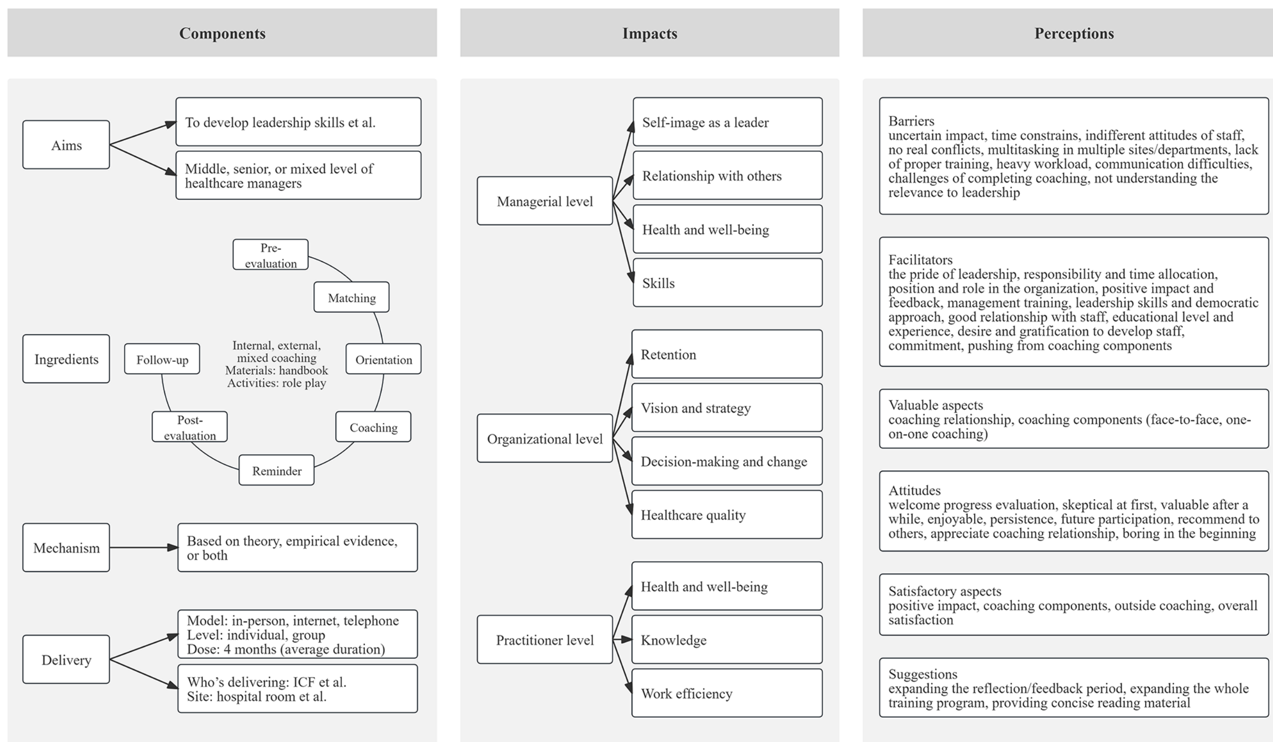

Fig. 3 The summative results of coaching interventions to develop leadership

orientation, coaching, reminder, post-evaluation, and follow-up) and various activities (e.g., role play, group discussion, homework) involved in coaching interventions. This detailed information can guide the step-by-step design of coaching interventions aimed at enhancing leadership development for healthcare managers.

Two previous reviews [20, 21] assessed the effectiveness of leadership development interventions including coaching, for personal leadership growth; however, they did not specifically address the impact of coaching. Our review not only found the positive effects of coaching interventions at the manager level but also identified their positive impact at the organization and staff levels. Evaluating all these levels is important for evaluating the overall effectiveness and quality of healthcare services [67, 68]. Leadership development has reached a certain standard, and the most crucial part of leadership is fostering change in the continually evolving healthcare organizations [69]. Based on our findings, we can conclude that coaching is a promising intervention to enhance the leadership development of healthcare managers, as it supports decision-making and change management within healthcare organizations.

The quality assessment of the included studies indicates that the quality of case series and mixed-methods studies requires further improvement. This highlights the need for careful interpretation and use of the results identified in these studies. Case series [36, 52] and mixed-methods studies [13, 14, 53, 57, 58], lacked clarity in participant selection criteria and processes, which raises concerns about the generalizability and reliability of the findings. This lack of transparency also hinders the interpretation of the coaching interventions' impact and applicability [70] across different management contexts. Additionally, most mixed-methods studies [13, 14, 57, 58] did not address confounding factors, potentially skewing the results and undermining their reliability.

We identified discrepancies in the impact of coaching interventions between qualitative and quantitative data. Specifically, 13 findings in the qualitative data lacked support from quantitative data, while 2 findings in the quantitative data lacked support from qualitative data. This discrepancy is noteworthy and suggests that survey instruments may limit the ability to capture the full impact of interventions from participants' perspectives [71]. Conversely, relying solely on qualitative approaches may introduce subjectivity, lack generalizability, and face challenges in quantifying intervention impacts [72]. Therefore, employing a mixed-methods approach [73], allows for the collection and analysis of both types of data, facilitating meaningful integration and interpretation, and leading to a more comprehensive understanding of the results.

We identified six aspects of participants' perceptions of coaching interventions: barriers, facilitators, effective components, attitudes, satisfactory aspects, and

suggestions for future coaching intervention design. We also identified three studies with negative attitudes toward coaching, such as being bored [36], skeptical toward the intervention [36, 54], and feeling uncomfortable about seeking feedback from stakeholders [60]. The attitudes toward the intervention are very important as they significantly influence the likelihood of successful implementation and its overall effectiveness [74]. Negative attitudes toward interventions may also cause low adherence or high drop-out rates [75]. Previous studies assessing the effectiveness of improvement of leadership skills showed high drop-out rates [76]. Based on our findings, we have new insights into how participants have perceived coaching intervention to ensure acceptable intervention components for healthcare managers' leadership development in the real world.

This mixed-methods systematic review has some practical implications for healthcare managers and future coaching interventions' design. First, healthcare managers should equip themselves with high-level leadership skills, as both the quantitative and qualitative data in this study showed that improvements in the leadership of healthcare managers positively impact the managers themselves (e.g., leadership knowledge), the healthcare organization (e.g., retention), and the staff (e.g., work efficiency). Second, as coaching has proved to be a promising intervention for leadership development, we encourage healthcare managers to consider participating either in a coaching intervention or a complex intervention (an intervention with multiple, interacting components that may require specialized expertise and allow for varying levels of flexibility) [77] including coaching as a component.

Increasing participant engagement is crucial for ensuring that the intervention achieves its intended outcomes and delivers meaningful benefits [78]. Based on the perceptions of the participants, we offer the following recommendations to enhance engagement in future coaching interventions: (1) Facilitate the relationship building between coaches and coaches and prioritize face-to-face, one-on-one coaching model, as these were perceived by participants as the effective components of coaching [36, 52]; (2) Use reminders at different stages of coaching has the potential to increase participant engagement [58] and satisfaction [36]. Enough time for participants to provide feedback should be allocated, as some participants highlighted that the content [36, 52] and timing [36] of the feedback had important impacts on the extent of the participant's involvement in the coaching interventions; (3) Interventions should predominantly follow a one-on-one coaching design combined with group coaching, as group coaching was considered beneficial [52], and one-on-one coaching was considered the most important and most valuable approach [52, 54]. In addition, the quality issues identified from the included studies suggest that future research should improve the transparency of participant selection and detailed reporting, and ensure that confounding variables are properly controlled. Such improvements are crucial for providing more accurate assessments of coaching interventions' impact on leadership development among healthcare managers.

Systematic management and control of professionals may reduce their autonomy [79], a phenomenon known as "de-professionalization" [80]. However, effective leadership among healthcare managers can address this issue by striking a delicate balance between maintaining oversight and allowing staff the freedom to exercise their expertise [81]. Charismatic leadership theory [82] and Trait and Skills-based Theories [83] suggest that leaders' leadership can be developed through learning. Based on the summary of our results, we can conclude that our study confirmed these theories and further found that well-designed coaching interventions may be used to develop leadership for healthcare managers.

Strengths and limitations

The strengths of our review were as follows. First, we registered the study protocol in PROSPERO (registration number: CRD42020194290) and published it [31], which ensured transparency in the review process. Second, our review integrated both qualitative data and quantitative data to understand the impact of coaching on leadership development among healthcare managers. The synthesized qualitative data and quantitative data can provide a more comprehensive understanding of the impact of coaching. Third, we recruited Chinese and English librarians to develop a comprehensive strategy for conducting systematic searches of six English and four Chinese databases, which increased the dissemination and applicability of the review results [84]. Additionally, we cross-checked the reference lists of the included studies and searched key websites for grey literature to include as many eligible studies as possible, which helped reduce publication bias, increase the comprehensiveness and timeliness of our review, and foster a balanced picture of the available evidence [85]. Fourth, the overall completeness of the results was acceptable since our search strategy was wide and involved 10 databases. In addition, we searched PROSPERO and ClinicalTrails.gov for ongoing reviews and randomized controlled studies but found none. Our results are not likely to change in the near future.

We also acknowledge several limitations to this review. First, we did not exclude any studies based on the risk of bias assessment as their quality [35]. As the quality of the two Case Series [36, 52] and three Mixed Methods studies [13, 57, 58] were relatively poor, the results from these

studies should be interpreted cautiously and further rigorous research is needed to confirm these findings. Second, our mixed-methods systematic review included only 13 studies, with participants primarily from Western and English-speaking countries. This geographic and linguistic limitation may restrict the generalizability of our findings.

Conclusions

In conclusion, our review identified the components of coaching interventions and found their positive impact on leadership development across three levels (manager, organization, and staff). Therefore, healthcare managers aiming to enhance their leadership skills are recommended to participate in coaching interventions. Future improvements in leadership among healthcare managers may be more significant if coaching interventions are designed based on the perceptions and feedback of the participants.

Abbreviations

AIMD	Aims, ingredients, mechanism, and delivery
CASP	Critical Appraisal Skills Programme
CERQual	Confidence in the Evidence from Reviews of Qualitative Research
CINAHL	Cumulative Index of Nursing and Allied Health Literature
CNKI	China National Knowledge Infrastructure
GRADE	Grades of Recommendation, Assessment, Development, and Evaluation
JBI	Joanna Briggs Institute
MMAT	Mixed Methods Appraisal Tool
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analysis
PROSPERO	International Prospective Register of Systematic Reviews
TIDieR	Template for Intervention Description and Replication
WHO	World Health Organization

Supplementary Information

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Supplementary Material 1

Supplementary Material 2

Supplementary Material 3

Supplementary Material 4

Supplementary Material 5

Supplementary Material 6

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Author contributions

SH: Conceptualization; methodology; data curation; formal analysis; writing – original draft. MV: Methodology; Conceptualization; writing – original draft; writing – review and editing. SL: Conceptualization; data curation; formal analysis. XL: Conceptualization; data curation; formal analysis. WH: Conceptualization; data curation; formal analysis. XL: Conceptualization; data curation; formal analysis. WG: Conceptualization; data curation; formal analysis. BS: Data curation; writing – review and editing. WC: Methodology; data curation; formal analysis; writing – original draft; writing – review and editing. JC: Methodology; data curation; writing – original draft. JH: data curation; formal analysis; writing – original draft; writing – review and editing.

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Data availability

All data generated or analyzed during this study are included in this published article and its supplementary information files.

Declarations

Ethics approval and consent to participate

Not applicable.

Consent of publication

Not applicable.

Competing interests

The authors declare no competing interests.

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