

Quality assurance in allied healthcare education: A narrative review

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Introduction: There is no standard methodology for outlining the intricacies of allied healthcare education (AHE) or its quality. The profound misconception is that quality assurance (QA) in AHE is used on a “voluntary” basis. Given the absence of statutory regulatory mechanisms such as accreditation, validation, and audit by the peripheral agencies concerning QA, adoption of QA measures in AHE is not consistent, and it results in producing a subpar allied health workforce. This paper analyzes the need to include QA measures as an essential domain in evaluating the effectiveness of allied health professional education programs.

Method: A large database search was performed using pertinent terms, and a blueprint was developed for a meticulous literature review published between 2015 and 2021. Five hundred eighty-two articles were found and screened; a critical appraisal was performed for 22 peer-reviewed articles for relevant information.

Results: The literature review identified the need to use academic domains such as leadership, planning, delivery, and feedback as QA criteria to evaluate the efficiency of education and training in allied health professional education programs. Instructors and facilitators for specific knowledge and skill development and a description of their roles should also be used in QA evaluation.

Conclusion: Resources for effective learning and teaching in the allied healthcare domain are limited. This review highlights the significant need to include a QA system in AHE, considering the pivotal role of these students in supporting humankind, now and in the future. The findings contribute to the research by providing essential insights into current trends and focusing on existing research in AHE quality.

Key Words: *quality assurance; education; allied healthcare profession; allied healthcare education*

INTRODUCTION

Allied healthcare is an umbrella term encompassing various healthcare disciplines and supportive services. The professional classification is based on specific practice areas, and it varies among different countries, governmental healthcare bodies, industries, healthcare settings, and training institutions [1]. Allied healthcare professionals (AHPs) diagnose, treat, and rehabilitate patients and conduct disease-prevention activities or healthcare education based on scientific principles and evidence-based measures [2]. The allied healthcare professions include respiratory therapy, radiology, occupational therapy, podiatry, physiotherapy, social work, medical laboratory technology, imaging technology, and other authorized professions that support quality healthcare services to individuals suffering from certain illnesses [1, 2].

The responsibilities of AHPs include the accurate assessment of a patient's health conditions and the provision of appropriate medication and care. However, the healthcare sector is facing specific

challenges, such as failure to address growing consumerism among patients, slow adoption of information technology, workforce shortage, and discontent, which create barriers to providing adequate healthcare services to patients [3]. Standardized assessment procedures and accreditation benchmarks have been set by several international healthcare and quality organizations such as the World Healthcare Organization (WHO), Joint Commission International (JCI), and Global Alliance for Improved Nutrition (GAIN) to lessen the healthcare sector's complexities. These organizations also emphasized the support of allied healthcare services to ensure that quality care is provided to patients. A global survey conducted by the WHO reported that approximately 30% of total health workers are AHPs [4]. Although respiratory therapy, occupational therapy, speech therapy, and physiotherapy are regarded as therapeutically oriented professions, clinical lab and imaging technology professionals are more involved in diagnostic services. The activities in allied healthcare are often interrelated and overlapped role functions are observed as well [5].

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The role of any AHP is to optimize functional capacity to provide optimal healthcare services to patients, thereby improving their quality of life. In certain countries, allied healthcare services are provided by professionals who are not in the medical profession but provide care. To ensure quality healthcare is provided to a patient, the AHP adopts different roles and tasks. Quality assurance (QA) in healthcare delivery shows similar constructs to healthcare education [6]. Here, the term QA is defined as the fragment of quality management focused on providing confidence that required quality will be accomplished [7]. Further focusing on the higher education aspects, it is a combined process by which the university as an academic organization confirms that the quality of the educational process is sustained to the standards it has set itself [8]. Also, it is observed as a comprehensive term covering all the policies, processes, and actions through which the quality of higher education is sustained and improved [9]. QA in higher education is a process of developing stakeholder confidence that provision (input, processes, and outcomes) meets expectations or measures up to threshold minimum requirements [10]. In terms of QA, there are significant interrelated overlaps in both healthcare delivery and healthcare education, whereas both share the common goal of providing adequate service to the public. In healthcare education, QA is associated with upholding, improving, and comparing the essential training standards that an AHP receives in medical institutions, ensuring that those who qualify to earn their degrees and licenses from institutions are competent enough to provide healthcare services to the patients they encounter [11].

Different factors, such as grants, information, progress reviews, and others, determine the inclusion of QA in allied healthcare education (AHE). For example, strategies to enhance research capacity building for AHPs will help to evaluate and demonstrate the quality and efficiency of the healthcare services being provided [12]. Additionally, activity-specific information or decisions by policy makers also sometimes influence how QA is incorporated into healthcare delivery and the healthcare education system. For example, specific grants are awarded to continue a research process with a proven record of success in the past, thus acquiring even more valuable information and ensuring successful outcomes for the learners. Apart from this, individual research activities are also conducted by learners to enhance their learning and provide possible solutions to numerous problems identified by others [13]. Based on the above, it is witnessed that quality AHE is essential to increasing the proficiency of AHPs so they are appropriately equipped to provide quality services to their patients.

The current research examines the role of QA in AHE to gain valuable insights into the development of well-rounded professionals at the end of course tenure. The methods used and lessons learned in conducting document reviews of medical and allied health curricula, critical steps in curriculum evaluation, and so forth are assimilated to better comprehend AHPs and their contribution to the healthcare sector. This comprehensive narrative review was performed to analyze the need to include essential QA measures when evaluating the effectiveness of allied health education programs.

METHODS

Search strategy

This study identified papers focusing on QA in AHE by searching online literature in databases such as Google Scholar, ProQuest, Science Direct, Scopus, and Web of Science. This search was restricted to papers published between 2015 and 2021 and written in English. The search timeline was set to begin from 2015 because the organization of International Chief Health Professions Officers (ICHPO) and by the Health and Care Professions Council (HCPC) classified allied health care professions consecutively in the year 2012 and 2014 [14, 15]. Further, this study reviewed the reference lists of the included papers for analysis to obtain additional relevant papers.

Selection criteria

A descriptive research design was used to gain valuable facts related to methods used and lessons learned in conducting document reviews of

medical and allied health curricula by introducing a curriculum evaluation system. The secondary method of data collection was data collected from secondary resources, such as experimental studies, observational studies, case studies, commentaries, concept papers, and validation studies. Original articles, review articles, and conceptual papers were selected and included in the review and the articles not matching the specific keywords, conference proceedings, abstracts, editorial materials, and book chapters were excluded. Research papers that were not published between 2015 and 2021 were also excluded from the current review, as they did not match the year selection criteria of the study. The data extraction focused on details of author and year of publication, aim and methodology, applied tools and techniques used, and findings. The researchers then extracted key findings from each study and filled them into a predesigned data extraction sheet.

The search was initiated by selecting the keywords “quality assurance,” “education,” “allied healthcare profession,” and “allied healthcare education,” which matched the current research topic. About 582 research papers, articles, scholarly papers, and journals were selected at this stage. In the next step, during the title screening process, the selected research sources were sorted and the duplicated search results removed, leaving 70 articles; of those 10 were not published within the specific period in the search criteria (between 2015 and 2021) and were removed, leaving 60 articles for further scrutiny. Next, 11 abstracts and 27 articles (including non-educational interventions, conference proceedings, book chapters, or editorial materials) were removed. Finally, 22 articles were selected and included for analysis in this study (Figure 1). Data were consolidated by means of thematic analysis as study designs were heterogeneous in nature, so a meta-analysis was not feasible. The principal investigator extracted key texts and potential new lines of inquiry and interpreted the findings, thereby drawing on the combined insights of the selected articles to identify common themes that emerged from comparison across chosen research articles. The principal investigator then discussed the emerged themes ($n = 10$) with other team members with a broader methodological and open disclosure issues perspective. To enhance the meticulousness of the findings and curtail researcher bias, analysis was discussed among members of the research team. While finalizing the 10 major themes, efforts were taken to conclude the findings from the extracted literature without the impact of each team member’s professional background, experiences, and prior assumptions.

RESULTS

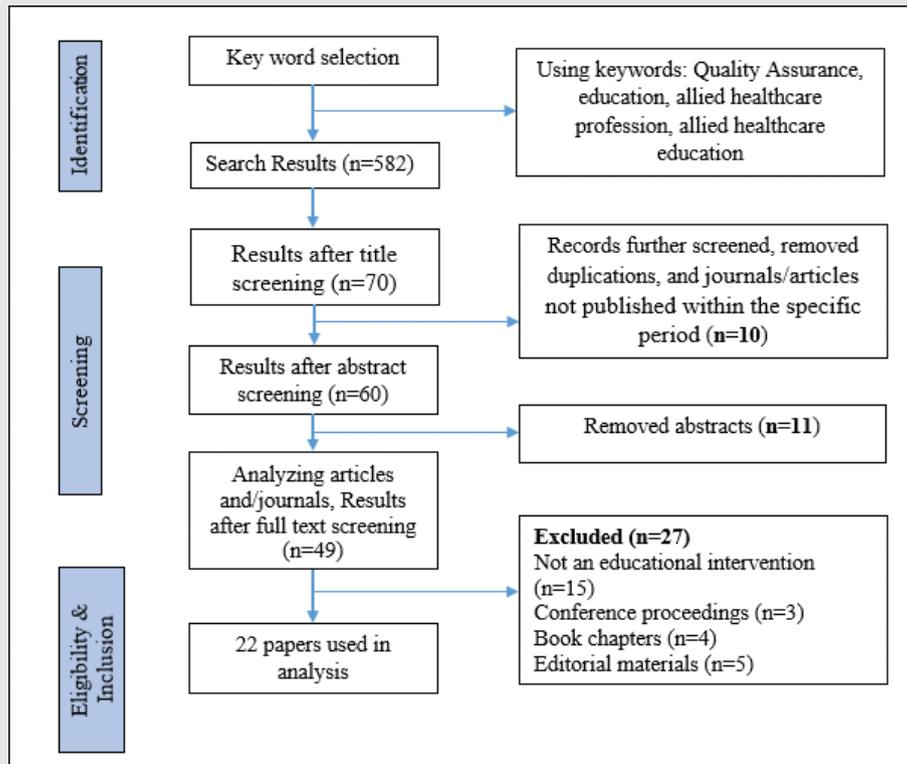
To identify the current trends in the literature about QA in AHE, this section presents the results of the organized literature review. Out of the 70 articles identified in an electronic database search, 22 articles met our eligibility and inclusion criteria (Table 1) and were analyzed.

FINDINGS

QA is an important aspect to be considered for bringing improvements in AHE so that the standard of quality care provided by the AHPs graduating from the AHE institutions is improved [11]. The primary focus is to give quality care to the patients and adopt approaches to deliver quality service to the whole healthcare sector. By including QA in AHE, AHPs’ competency will improve, leading to high-quality healthcare services being provided [16]. A standard QA system used by all educational programs will ensure graduates of these programs are able to provide quality care to patients in their chosen field. An earlier study highlighted that the allied health educational institutions must adopt advanced technology, such as data intelligence and simulation to increase the learner’s capability to identify patient issues and provide treatment solutions against them [19]. Additionally, the allied healthcare educational institutions shall introduce generic standards by forming inter or intra-institutional steering committees, to strengthen quality regulations in the absence of statutory bodies in their respective region. Adopting different QA processes helps to increase the capabilities of the professionals and allows them to provide quality services to the patients by adopting a patient-centric approach [24].

FIGURE 1

Flowchart depicting the article retrieving process.



DISCUSSION

Our review identified that there is a paucity of literature supporting the need for QA in the AHE [24]. This reflects the need for benchmark studies on existing AHE curricula available globally, to gain valuable insights into QA in AHE and its regulations [12, 37]. QA in AHE ensures that the best learning is available to learners to provide evidence-based quality services to their patients. By acquiring quality education from the healthcare educational organization, the AHPs will follow and implement the QA principles in their service provision attitude [36]. It includes considering patients' experiences as the core motivating learning and service provision [33]. It also emphasizes maintaining professional integrity to acquire inter-professional learning by sharing professional experiences. Based on the review of literature, 10 major themes emerged depicting the role of QA in AHE.

1. Patient care and treatment process

AHPs must be experts in different health support systems to assist and execute their responsibilities as sterile processing technicians, anesthesia technicians and technologists, materials management personnel, and others. The AHPs can also work as support staff that would execute responsibilities related to administrative and clerical staff, surgery schedulers, environmental services personnel, and others [31]. The AHPs could provide quality patient care and treatment processes after diagnosing the symptoms [25].

2. Guidelines/model for healthcare education

As per the standards and guidelines provided by the Commission on Accreditation of Allied Healthcare Education Program, standards and protocols are to be followed in every step of the program management [38]. For instance, the sponsoring of the institute must be through an accredited agency so that supervised clinical practice can be provided, as the programs provided for healthcare education must be affiliated with a

community, college, or university [32]. The personnel administration activities are to be conducted by adopting adequate management and leadership attributes [39]. The faculty must be trained in providing instruction in a didactic format to develop and enhance the student's clinical skills. Additionally, the Clinical Preceptors must provide clinical assistance to the learners about course intricacies and to ensure there is an accurate assessment of learner capabilities [22, 30, 31].

3. Professional development for teaching staff in AHE

Professional development standards for teaching staff in AHE include acquiring learning, education, and training in diverse aspects such as narrative medicine initiative, organizational effectiveness, professional development series, pastoral care, nutrition, and social work [35]. Apart from this, many well-known universities are organizing review courses, conferences, and webinars to provide professional development opportunities to the teaching staff in AHE [16, 17].

4. Quality of learning

Quality learning can be defined as a purposeful learning process in which all the aspirants and learners are provided with enriched and standard learning to enhance their skills and competencies. Quality learning describes the satisfaction of the learner with the learning procedure [25]. The AHE organizations emphasize recruiting highly skilled, talented, and experienced educators to ensure that quality learning is provided to the students [34]. It also includes providing adequate infrastructure and other essential equipment; hence, the learners can practice their theoretical concepts with practical instruments in the laboratories [23, 33].

5. Performance indicators in QA

In allied healthcare, performance indicators in QA are associated with effectiveness, access, safety, efficiency, quality, appropriateness, cost, equity, patient experience, outcomes of care, continuity, acceptability,

TABLE 1
Summary of reviewed articles with details regarding quality assurance in allied healthcare education

No. Study	Year	Design and participants	Outcomes assessed	Relevant findings
1. Davahli et al. [16]	2020	Systematic literature review	The effectiveness of incorporating system dynamics (SD) and QA in healthcare and allied specialties that address complex healthcare issues, and ways to improve quality of SD models.	The SD simulation approach helped assess the quality system models of healthcare in hospitals and healthcare centers.
2. Birch et al. [17]	2019	Literature survey	There was a lack of in-service education for health teachers. Because of this, there was a gap between professional preparation and certification in health education.	The shortcomings in quality healthcare education could be improved by adopting comprehensive school health education and providing opportunities for ongoing professional development to practicing healthcare teaching staff.
3. Green et al. [18]	2019	Literature survey	There was a critical analysis of the Health Impact Assessment (HIA) in the context that it was undertaken. The development of a standardized form of QA is highlighted in the HIA to attain greater clarity while conducting grading and assessment.	Introducing the QA review framework in the HIA will help enhance the quality aspects of allied health education and strengthen the legal, policy, economic, social, environmental, and cultural constructs.
4. Brown et al. [19]	2020	Cross-sectional study	A 90-question survey instrument was used by selecting 190 students (173 females and 17 males) that were pursuing AHE programs. The traditional healthcare education system is based on data that has been extracted from epidemiological studies, creating a gap in the present learning of the students.	Quality control is defined as the surveillance mechanism through which quality care provided by the healthcare personnel is analyzed. It includes having a high level of omics knowledge to provide healthcare learning to the public.
5. Manton et al. [20]	2021	Critical reflection	Review of international literature related to allied healthcare, Indigenous Peoples, and workforce development. Community consultations were conducted in four regions of the Australian jurisdiction of New South Wales. QA refers to the accountability of the healthcare professionals toward the quality of services provided by them. It includes meeting the standard guidelines for providing care and treatment processes to ensure total patient safety.	The quality of AHE could be improved by providing professional development and training opportunities to the teaching staff. Improvements could also be brought by including Indigenous perspectives in the curriculum.
6. Aloisio et al. [21]	2018	Cross-sectional study	A survey was conducted to identify factors (demographic, individual, and organizational) that predict job satisfaction among allied healthcare providers. Performance indicators in QA include factors such as assessment, supervision, organizing, adoption, and interaction. The performance indicators in the QA process include evaluation, monitoring, planning, implementation, and dialog.	Psychological empowerment is predicted with a high level of job satisfaction along with autonomy in decision-making. The study also highlights a need for qualitative studies to further examine the relationship between perception of one's competence for the job and job satisfaction among allied health staff.
7. Brannan et al. [22]	2019	Original study	Most healthcare professionals struggle to deliver a message to patients and acquire feedback from them. Interventions such as physical activity, engagement, and function are required to improve poor healthcare practices. The Moving Healthcare Professionals Programme (MHPP) model offers a coherent whole-system approach to embed public health action into existing healthcare education models and, as such, provides a framework for rapid change as well as upstream implementation to support the clinicians.	Cultural change in medical education is necessary to London's AHE. The national public health agency in England is responsible for developing a new education system, and the inclusion of MHPP will help strengthen medical education in the country.
8. Berndt et al. [23]	2017	Systematic review	AHPs that work in rural regions face challenges related to resources, lack of skilled staff, and motivation among the learners.	Technology inclusion in the AHE system will help deliver high-quality learning for students. It will provide a more sophisticated approach to allied healthcare learning by the educational providers.
9. Rawekar et al. [24]	2020	Review article	Ensuring QA in AHE enables professionals to acquire better learning and training and actively serve their patients.	There have been limited surveys about QA in terms of individual providers or practitioners. There is a lack of relevant information in the public health data analysis section.
10. Zhang et al. [25]	2018	Systematic review	QA in AHE helps professionals learn better about the patient interventions and provide them tangible support to recover early. QA processes for standardized patient programs from health professions education literature were reviewed.	The thematic analysis revealed that quality in AHE could be improved by including standardized patient training programs, structured feedback to students, and statistical measurements to ensure inter-rater reliability.
11. Rizwan et al. [26]	2018	Review article	Students struggle to be admitted to healthcare educational organizations due to high competition. It was found that after the initial struggle for admission, when the students enroll in the educational institution, there is immense competition among the students.	Globalization influenced the demand for healthcare professionals and increased competition in this field. Identifying student migration and the medical educational organization's needs will help increase QA in allied healthcare.
12. Maphumulo et al. [27]	2019	Systematic review	Quality in healthcare is categorized into two indicators: internal quality improvement measurement and external accountability measurement. Because of these indicators, several challenges exist in acquiring reliable outcomes from assessing quality in care delivery.	The article quantifies problems facing quality care delivery and strategies used to improve the healthcare system in South Africa.

TABLE 1 (Continued)
Summary of reviewed articles with details regarding quality assurance in allied healthcare education

No.	Study	Year	Design and participants	Outcomes assessed	Relevant findings
13.	White et al. [28]	2019	Cross-sectional survey	There were inconsistencies in the availability of training to healthcare professionals, including AHPs, which reduced their ability to serve their patients. Other challenges, such as lack of resources and shortage of funds and time were also discussed. The expert guidance provided by the monitoring body would help develop an effective plan through which the QA system within allied healthcare educational institutes could be strengthened.	Inconsistencies cause peer pressure, academic performance stress, and ranking pressure resulting in more focus on attaining grades instead of understanding the concepts and their implementation in real-life situations. The health management information system (HMIS) quality assurance practices in Kayunga were suboptimal. Training and support supervision of HMIS focal persons is required to strengthen the quality assurance of HMIS
14.	Kagoya et al. [29]	2018	Cross-sectional descriptive study	The review was performed to recognize and integrate the literature on educating healthcare students and practitioners about digital professionalism on social media. The focus must be given to establishing minimum generic standards to improve the mechanisms for implementing QA in AHE.	This review provided the synthesis of the literature on educating the medical, nursing, and allied health professions on digital professionalism on social media. It identified potential issues and knowledge gaps and highlighted the implications for future educational interventions. It also emphasized the need for accreditation bodies, third-party payers, and professional communities' involvement in the task force to develop minimum generic standards for QA in AHE.
15.	O'Connor et al. [30]	2021	Narrative review	Finding possibilities for introducing simulated patient (SP) methods and possibilities of their implementation into the pharmacy curriculum. This paper explores the need for specialized training for the professionals to differentiate between common and uncommon health problems and for the students regarding the use of different testing and diagnostic machines to increase their ability to identify patient disease and symptoms.	The introduction of the SP method in patient education, pharmacy, and others will help to provide safe healthcare services and eliminate errors in the treatment process. The findings suggest that the SP method allows for accomplishing many skill-based learning outcomes defined in the pharmaceutical curriculum. It can be implemented by enhancing communication skills, patient counseling skills, patient education and pharmaceutical care, teamwork, and interprofessional collaboration between the Pharmacy, medicine, or nursing and allied healthcare students. Providing learning opportunities and increasing scholarships to Hispanic students will help increase students' participation in allied health educational programs. Removing barriers and creating environments that support quality education for the vulnerable population is essential to lessen the health disparities
16.	Cerbin-Kocorowska et al. [31]	2020	Narrative review	This review examined the results of a literature review to identify contributing factors to a severe scarcity of Hispanic students who enroll in allied health and nursing programs in the United States.	The study finds a significant gap concerning the quantitative impact of AH students on patient activity levels and time use, and overall productivity. Healthcare services are facing immense challenges due to increased service demand pressure, and that increases pressure on the universities in providing quality education in the allied healthcare sector.
17.	Sanchez et al. [32]	2017	Narrative review	The influence on clinicians' patient activity by overseeing students quantitatively and the time use and productivity in the allied health (AH) professions of nutrition and dietetics, occupational therapy, physiotherapy, and speech pathology were reviewed. The paper also analyzed the overall activity of AH clinicians with or without students. About 17 studies were selected for analysis.	As per the study analysis, most allied healthcare students showed positive perceptions of the prevention and control of COVID-19, except the severe conditions and those who are more prone to COVID-19. The study endorses quality education, and providing authentic information to the health science students will help to convey the right message to the community, especially in situations like this pandemic.
18.	Bourne et al. [33]	2019	Systematic review and meta-analysis	This study was designed to assess the knowledge and insights about COVID-19 among medical and allied healthcare students in India. The pandemic requires substantial awareness about the clinical presentation, dissemination, prophylactic measures, and management of COVID-19.	The findings have been synthesized to cultivate a concise and cohesive framework for research capacity building, which is pertinent for AHPs in publicly funded secondary and tertiary healthcare organizations.
19.	Gohel et al. [34]	2021	Cross-sectional survey.	This systematic review analyzed the need for evidence information about allied health research capacity-building approaches in a publicly funded healthcare setup. The focus was given for the need for establishing dedicated research capacity for AHPs by understanding the fact that it is essential for providing quality care to patients.	The study concluded with findings that emphasize the ambiguity in role definitions and expectations of AHP clinical academics. Funded training opportunities and recognition is needed to shape distinct pathway for AHPs.
20.	Matus et al. [12]	2018	Systematic review	The objective of this observational study was to explore the experiences of early-career clinical academic AHPs who have initiated or are undertaking, clinical academic masters and doctoral studies in the United Kingdom. The study intended to give insights to the academic institutions on the key determinants for an efficacious atmosphere that best capitalises on their new expertise, passion, and career aspirations.	
21.	Cowley et al. [35]	2020	Observational study.	This review article spotlighted the research gaps investigated and consolidated the possible evidence relevant to the development and implementation of trusted professional activities in health care.	
22.	Shorey et al. [36]	2019	Narrative review		The learning abilities of the allied health students could also be improved with the help of trusted professional activities. It will help to transfer competencies into observable clinical practices. The study also recommended the necessity for the transformation from traditional (time-based) allied health teaching practices to outcome-based teaching. It will help increase students' learning levels through practical learning approaches.

reporting, and others [12]. Each indicator is associated with specific customer satisfaction and experience that provides valuable information regarding QA in allied healthcare [30]. The parameters for QA may vary in different countries. For example, QA in healthcare in the Netherlands is mainly associated with national regulatory boards, healthcare insurers, and consumer expectations, whereas, in Scotland, performance indicators are mainly linked with the Quality Measurement Framework and 12 quality outcome indicators that do not have specific targets [21].

6. Service quality in healthcare

Service quality in healthcare has an essential role in differentiating between services by identifying the customers' satisfaction levels in the hospital settings [22]. Service quality is defined as the difference between expected and received services from the customer's perspective. Therefore, service quality occurs when the patients' expectations are met. The service quality of the institutions offering AHE should also be periodically assessed from the students' perspectives, thereby enhancing higher education quality [24]. Establishing a quality framework will contribute to specific AH performance assessments to advance the delivery and appropriateness of AH services [18]. This will also contribute to healthier implementation of evidence-based findings, more persistent attention to patient choices, and enhanced health outcomes [19, 40].

7. External bodies (accreditation)

Some of the external accreditation bodies that certify the AHE include the Accreditation Commission for Acupuncture and Oriental Medicine (ACAOM), the American Occupational Therapy Association (AOTA), the Accreditation Council for Pharmacy Education (ACPE), and Accrediting Bureau of Health Education Schools (ABHES). ACAOM offers awards to the learners, professionals, and experts who have completed their Acupuncture and Oriental Medicine training. AOTA provides accreditation to occupational therapy practices, education, and research. ACPE serves as the accrediting review committee for the organizations that offer courses belonging to the pharmacy, technician education, and medical training programs. ABHES provides specialized and institutional accreditation to the health education programs offered under U.S. Secretary of Education Programs [29].

8. Allied healthcare education

The duration of AHE programs varies from 2 to 4.5 years. Allied healthcare students are provided with education and training in various specific health-related domains such as respiratory care, palliative care, dental care, radiology, and others. By pursuing AHE, learning and expertise are acquired in research, laboratories, or health-related subjects [24]. Applying for interprofessional educational programs in AHE colleges and universities is desirable to boost the student's comprehension of their own purpose, and the duties of other health professionals, which will persuade AHPs to play an influential role in the community [40].

9. Training for AHPs

The training for AHPs includes several stages depending on the chosen specialization and university [17]. For example, the training module that Gerthill Allied Health School offers teaches the students about Symptom Control and Disease Management. Once the learners acquire expertise in this section, they are moved to the next module section, i.e., nutrition monitoring, followed by assisting patients with activities of daily living. When the learners acquire learning in these two segments, they are provided extensive learning about care practices and techniques—age-specific training, body mechanics, and monitoring patients' vital signs. After acquiring learning in these sections, the learners are provided training in nursing care—basic and complex care and safety practices in patient care. Finally, when learners acquire expertise in these sections, they learn about communication enhancement and basic life support [31].

10. Challenges facing AHE

The AHE institutions face significant challenges such as the lack of skilled professionals responsible for providing quality knowledge, learning, and training to the aspirants [23]. Curriculum issues are also

observed as there is insufficient time for training to be allocated to every clinician's technique and terminology. Additionally, collaboration issues are faced between the curriculum planner, expert teaching technique, and learning abilities of the allied healthcare learners. Tools and simulator issues also plague the learners because there can be gaps (if not discrepancies) between theoretical learning and practical usage. Resource shortage is another major issue faced while providing quality AHE to the aspirants [26–28].

LIMITATIONS

Limitations are present as grey literature, conference proceedings, book chapters, and abstracts were excluded, which means few relevant kinds of literature may have been forfeited. Furthermore, in the current review, the quality of the studies included was very modest, a handful of studies had poor descriptions of the participants and methodology and the interventions associated with the educational strategy. Some studies used very weak designs, therefore comparison amongst different groups was not possible. These inadequacies may have restricted the value of the outcomes, and henceforth the review findings should be interpreted with pensiveness. However, it is recommended to adopt a scoring system used by Qasem et al. [41] in future studies to assess the quality of the observed studies that indicate the capability of those studies to give answers to the research questions. Using this system, a score is provided based on how approximately the answers matched the research questions [41].

CONCLUSION

Based on the above facts, it is inferred that QA is one of the critical aspects to consider while providing education to AHPs. The consistent inclusion of QA in the AHE curriculum would allow all professionals to increase their abilities and guarantee that those would adopt more patient-centric approaches to providing quality service to their patients. This study examined those challenges such as the lack of adequate expertise and financial assistance faced by the AHE institutions, creating numerous issues in the adoption of QA systems within the organization. Under such circumstances, the governing, private, and public agencies must provide adequate training and financial assistance to strengthen the implementation of the QA system within AHE. It is concluded that by adopting a QA system within AHE, the competencies of the AHPs will be improved, allowing them to provide quality services to the patients as per the recognized standards and benchmarks in the healthcare industry. As a result of these higher competencies and greater confidence, AHPs everywhere will experience and enjoy enhancing their abilities to serve their patients better—diagnosing disease, developing trust, and bringing proper health to those who need it.

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DISCLOSURES

Contributors

The research team consists of an academician ($N = 1$), AHPs ($N = 2$), a quality management expert ($N = 2$), and an administrator ($N = 1$) belonging to the allied healthcare profession. The principal author is involved in the conceptualization of the research and carries out writing and editing tasks. Further, two co-authors are involved in identifying and collecting all the relevant literature based on the keywords chosen (MAN, MK). Then, three authors (AVS, AAQ, and SAR) screened the collected literature to ensure whether it fulfills the inclusion criteria and saved it for further analysis. The principal investigator extracted key texts and

potential new lines of inquiry and interpreted the findings, thereby drawing on the combined insights of those selected articles to identify common themes that emerged from comparison across chosen research articles. Finally, the principal investigator discussed the emerged themes ($n = 10$) with other team members with a broader methodological and open disclosure issues perspective. While finalizing the 10 major themes, efforts are taken to conclude the findings from the extracted literature without the impact of each team member's professional background, experiences, and prior assumptions.

Conflict of interest

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Ethical approval

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Author contributions

JKS conceptualized and designed the review. JKS & AVS undertook the search, screening, data extraction, and analysis processes with support from SAR, MK, MGS, ASQ, MAN, and AAS. AVS performed the objective analysis and scrutiny. JKS wrote the first draft of the review, and all authors contributed to the writing of the final manuscript. All authors have agreed on the final version.

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