

Factors Affecting Vocational Education and Skill Training in Allied Health Professionals: A Comprehensive Review

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ABSTRACT

Allied Health Professionals (AHPs) play an important role in healthcare services by providing preventive, rehabilitative, diagnostic, and therapeutic care. With the increasing prevalence of chronic diseases, aging populations, and growing healthcare demands, the need for a competent allied health workforce has become more significant. Vocational education and skill training are essential for preparing allied health professionals to meet these evolving healthcare needs. Therefore, this review aimed to identify and analyse the factors affecting vocational education and skill training among allied health professionals. A systematic review of literature was conducted following the PRISMA 2020 guidelines. Relevant studies published between 2011 and 2025 were identified through databases including PubMed, MEDLINE, SCOPUS, and Web of Science. A narrative synthesis approach was used to analyse findings from studies conducted in different countries and healthcare settings. The review found that workforce shortages, demographic changes, and increasing healthcare demands were major factors influencing allied health education and training. Educational approaches such as Competency-Based Education (CBE), Problem-Based Learning (PBL), simulation-based training, and digital learning methods were reported to improve clinical skills, confidence, and professional competence. However, limited clinical placement opportunities, inadequate supervision, organizational constraints, and shortages of trained educators were identified as significant barriers to effective training. Rural and aged care settings faced additional challenges related to placement availability, resource limitations, and workforce recruitment. The review also highlighted the importance of employability skills, cultural competence, interprofessional education, and research engagement in enhancing professional development and career readiness. The findings suggest that strengthening competency-based curricula, expanding clinical placement opportunities, improving supervision quality, integrating innovative teaching methods, and promoting evidence-based practice are essential for developing a skilled allied health workforce. Collaborative efforts among educational institutions, healthcare organizations, and policymakers are necessary to address existing challenges and ensure the delivery of high-quality healthcare services in the future.

Keywords: Allied Health Professionals, Vocational Education, Skill Training, Competency Based Education, Clinical Placement, Employability Skills, Workforce Development, Healthcare Education

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INTRODUCTION

The increasing prevalence of chronic diseases and the growth of the aging population had placed considerable pressure on healthcare systems worldwide, resulting in a greater demand for skilled Allied Health Professionals (AHPs). Allied health disciplines, including physiotherapy, dietetics, speech pathology, and occupational therapy, were recognized as essential components of modern healthcare delivery. Consequently, the need for effective vocational education and specialized skill training became increasingly important to ensure that these professionals were adequately prepared to address evolving healthcare challenges.

Previous studies indicated that healthcare education programs were designed to develop fundamental clinical competencies, including patient assessment, history taking, communication, and physical examination skills (Alnasir et al., 2013). The literature further suggested that competency-based education (CBE) played a significant role in preparing healthcare graduates by aligning educational outcomes with employer expectations and by promoting the development of relevant knowledge, skills, and professional attitudes (Kulkarni et al., 2015).

Despite the growing emphasis on workforce preparation, the quality and effectiveness of vocational education and training among allied health professionals were reported to vary across countries, healthcare settings, and educational systems.

Differences in workforce requirements, clinical learning opportunities, educational resources, and policy support influenced the development of professional competencies among AHPs.

Evidence from clinical education studies demonstrated that student involvement during clinical placements contributed positively to healthcare service delivery. Bourne et al. (2019) reported that the presence of students during placements enhanced patient activity levels and supported clinicians in managing service demands, highlighting the broader benefits of practice-based education.

In addition, the literature identified employability, practical competencies, and digital capabilities as important determinants of vocational education quality in the era of Healthcare and Industry 4.0. The ability of graduates to adapt to technological advancements and changing service delivery models was increasingly recognized as a key outcome of vocational training programs (Irfansyah, 2023).

Therefore, this review examined and synthesized the available evidence regarding the factors influencing vocational education and skill training among allied health professionals. The review explored findings from studies focusing on educational approaches, workforce challenges, clinical training experiences, and innovative strategies aimed at strengthening allied health workforce development.

METHODOLOGY

The present review was carried out following the guidelines outlined in the Preferred

Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 statement. The PRISMA framework was utilized to ensure a structured, transparent, and systematic process for the identification, screening, eligibility evaluation, and selection of relevant studies included in the review.

A comprehensive literature search was performed using several electronic databases, including PubMed, MEDLINE, SCOPUS, and Web of Science. The search strategy was designed to identify publications related to vocational education and skill training among allied health professionals. To ensure the inclusion of contemporary evidence, only studies published between 2011 and 2025 were considered. This time frame was selected to capture recent developments in allied health education, workforce requirements, and training practices.

The review employed a qualitative literature synthesis approach and incorporated evidence from empirical research studies, surveys, review articles, and systematic reviews. The selected literature represented a wide range of geographical regions, including Australia, India, and Saudi Arabia, and encompassed diverse healthcare settings such as aged-care facilities, rural healthcare services, and remote practice environments. Various educational and training approaches reported in the literature, including competency-based education, simulation-based learning, problem-based learning, and digital learning strategies, were examined.

Due to considerable variation in study designs, methodologies, participant populations, and outcome measures, quantitative meta-analysis was not undertaken. Instead, a narrative synthesis approach was adopted to integrate and interpret the findings across the included studies. Relevant information was extracted, organized, and analyzed according to recurring themes identified within the literature. The major themes included workforce shortages, educational strategies, clinical placement experiences, barriers to training, employability skills, career development pathways, cultural competence, and evidence-based practice in allied health vocational education and training.

The synthesized findings were subsequently categorized into thematic sections to provide a comprehensive understanding of the factors influencing vocational education and skill development among allied health professionals.

RESULT

Workforce Demand and Demographic Shifts

The reviewed studies identified workforce demand, demographic changes, and sector-specific healthcare needs as major factors influencing vocational education and skill training among allied health professionals (AHPs). The growing prevalence of chronic illnesses and the increasing proportion of older adults were reported to have intensified the demand for a skilled allied health workforce, particularly within aged-care services where multidisciplinary support was essential for maintaining quality care outcomes (Singh et al., 2023; Johnston et al., 2014).

The literature also indicated a shortage of students entering aged-care professions. This shortage was attributed to limited access to clinical placement opportunities and perceptions regarding the nature and organization of aged-care work (Johnston et al., 2014). While countries such as Australia were reported to possess a relatively well-established allied health workforce, developing nations including India continued to experience workforce deficits due to physician-centered healthcare systems and inadequate recognition of allied health roles (Singh et al., 2023).

Evidence further suggested that pre-nursing vocational education and training programs contributed positively to workforce recruitment when educational objectives were aligned with learners' career aspirations and stakeholder expectations (Waite, 2025).

Several innovative workforce and training models were described in the literature as responses to healthcare workforce shortages. These initiatives addressed diverse workforce challenges, healthcare specialties, and population groups. However, their implementation was hindered by numerous barriers, including inflexible policies, lengthy accreditation procedures, reluctance to adopt innovative approaches, partnership difficulties arising from differing organizational priorities, resistance to organizational change, and structural constraints. Training-focused initiatives additionally encountered challenges related to inadequate technological resources, lower educational preparedness among trainees, shortages of qualified instructors, and high implementation costs (Kilpatrick et al., 2007).

Educational Approaches Enhancing Competency

The reviewed evidence demonstrated that Competency-Based Education (CBE) and ProblemBased Learning (PBL) were widely recognized as effective educational approaches for developing professional competence among allied health students. Studies reported that CBE enhanced academic achievement, clinical performance, and professional self-confidence more effectively than traditional instructional approaches (Saud & Haris, 2018).

Similarly, PBL was found to encourage active participation, critical thinking, collaborative learning, and the integration of theoretical knowledge with clinical practice (Tavakol & Reichert, 2003).

Technological innovations also played a significant role in transforming educational delivery. Methods such as microlearning, blended learning, flipped classrooms, and high-fidelity simulation were reported to improve students' preparedness for technology-enabled healthcare environments (Shead & Olivier, 2020). Online learning platforms and simulation-based training programs were found to increase students' confidence and readiness for clinical practice, although preferences and effectiveness varied across learner groups (Rossiter et al., 2023). Furthermore, simulation-based education was reported to produce short-term improvements in both confidence levels and practical skills among learners (Heuer et al., 2022).

Clinical Placement Challenges

The literature consistently identified clinical placement availability as a critical challenge in allied health education. Studies conducted in rural healthcare environments suggested that student placements contributed positively to staff knowledge

development and procedural competency within healthcare organizations (Hamiduzzaman, 2024).

Research also highlighted the importance of improving employment opportunities, educational pathways, and regional workforce coordination to strengthen access to allied health services in rural communities (Held, 2019).

A shortage of placement opportunities, particularly within rural and aged-care settings, was reported as a major barrier to workforce development. Contributing factors included workforce shortages, limited supervisory capacity, and organizational restrictions affecting student participation (Johnston et al., 2014; Smith et al., 2023). Although healthcare staff and managers generally expressed positive attitudes toward student placements, several structural barriers persisted. These included inadequate supervisor preparation, workforce clustering, and resource limitations that constrained placement expansion (Wilson & Taylor, 2019).

Interprofessional placement experiences were consistently associated with positive educational outcomes and improved student learning (Boshoff, 2020). Rural placements, however, were found to present additional financial, social, and educational challenges for students. The literature suggested that enhanced institutional support and clearer professional pathways could encourage greater participation in rural practice and contribute to workforce sustainability (Edmunds & Harris, 2025; Moran, 2020).

Sustainable placement models were reported to depend heavily on collaboration between higher education institutions and healthcare organizations (McBride et al., 2020). Findings from the AHRRTS program further indicated that rural and remote healthcare workers experienced barriers related to time constraints, organizational factors, and travel requirements when accessing educational opportunities (Ducat et al., 2014).

Skill Gaps and Training Barriers

Several studies identified persistent barriers affecting skill acquisition and supervision quality within allied health education. Limited time availability, inconsistent understanding of supervisory responsibilities, and inadequate access to trained supervisors were reported to negatively influence learning experiences and competency development (Delany & Bialocerkowski, 2011; Wilson & Taylor, 2019).

Employers also reported that the provision of clinical placements and student mentoring required substantial investments of time and resources, representing one of the most significant challenges associated with workforce training (O'Brien et al., 2017).

The literature further revealed challenges in the development of digital competencies. Barriers included inadequate technological infrastructure, difficulties maintaining student engagement, and insufficient educator preparedness during the rapid transition toward online and digitally supported learning environments (Shawish et al., 2025).

Vocational initiatives such as India's Deen Dayal Upadhyay Kaushal Kendra scheme were reported to improve employability outcomes. Nevertheless, studies emphasized the continuing need to strengthen practical skill development and ensure closer alignment between training programs and labour market requirements (Maheshkumar & Soundarapandian, 2025; Banik & Kumar, 2017).

Employability and Career Pathways

The reviewed studies highlighted employability skills as an essential component of allied health education. Competencies such as communication, teamwork, problem-solving, adaptability, and professional behavior were identified as critical attributes for successful workforce participation and were recommended for integration into vocational curricula (T.O. et al., 2014).

Research also indicated that career development opportunities for Allied Health Assistants (AHAs) could be strengthened through structured training programs, workplace mentoring, and

supportive policy frameworks, thereby enhancing their contribution across healthcare sectors (Huglin, 2021).

National workforce development initiatives, including Saudi Arabia's Vision 2030, demonstrated the effectiveness of competency-based and simulation-supported vocational education programs in building sustainable healthcare workforces. These initiatives emphasized professional regulation, role clarity, and lifelong learning opportunities as important workforce development strategies (Alshamsn et al., 2025).

Cultural Competence and Interprofessional Education

The literature demonstrated the importance of cultural competence training in preparing ethical, inclusive, and socially responsible allied health professionals. Studies reported that dedicated cultural competence programs improved students' awareness, attitudes, and perceptions regarding culturally responsive healthcare delivery (Kessel et al., 2022).

Interprofessional simulation and collaborative learning experiences were also found to strengthen teamwork, communication, and collaborative practice skills. These competencies were considered essential for effective patient-centered care within increasingly complex healthcare systems (Robson et al., 2023).

Research Engagement and Evidence-Based Practice

The reviewed evidence indicated that allied health professionals frequently encountered barriers when attempting to implement evidence-based practice. Common challenges included limited time, insufficient research skills, and competing professional responsibilities, all of which reduced engagement with research activities.

Several studies reported that collaborative research initiatives, leadership support, mentoring opportunities, and organizational commitment positively influenced research culture and strengthened research capacity among allied health professionals (Borkowski et al., 2016; Lizarondo et al., 2011; Batchelor et al., 2024). These strategies were found to facilitate greater integration of research evidence into clinical practice and support continuous professional development.

DISCUSSION

The findings of this review indicated that vocational education and skill development among allied health professionals were shaped by a range of interconnected factors, including workforce demands, educational approaches, clinical training opportunities, and organizational support systems. The increasing need for allied health professionals, largely associated with population aging and the growing prevalence of chronic diseases, highlighted the importance of developing flexible and competency-oriented educational programs capable of meeting contemporary healthcare requirements.

The evidence reviewed suggested that competency-based education models and learner centered teaching strategies, such as problem-based learning, contributed positively to the development of clinical reasoning, decision-making abilities, and professional competencies. These approaches appeared to facilitate the transition of students from academic settings to clinical practice. Furthermore, the incorporation of simulation-based training and digital learning technologies was reported to enhance students' preparedness for increasingly complex and technology-driven healthcare environments.

Despite these advancements, the availability of clinical placements remained a significant challenge across many settings. Limited placement opportunities were found to restrict experiential learning, which is essential for the acquisition and refinement of professional competencies. The literature emphasized the need for institutional and policy-level measures to increase placement capacity, strengthen supervision practices, and address barriers that affected students' clinical learning experiences. Enhanced training programs for clinical supervisors

and the establishment of clear organizational guidelines were identified as potential strategies for improving the quality of supervision and student support.

The review also demonstrated that rural and aged-care environments faced persistent difficulties in attracting and retaining allied health students and professionals. Several studies suggested that targeted placement initiatives, additional support mechanisms, and tailored educational strategies could improve student engagement in these settings and contribute to addressing workforce shortages in underserved regions.

In addition, the integration of employability skills within vocational curricula was recognized as an important factor influencing graduates' readiness for professional practice. Structured career development pathways and workforce planning initiatives were found to support career progression, job satisfaction, and long-term workforce sustainability. National programs and policy-driven initiatives aimed at strengthening vocational education further illustrated the value of coordinated investment in workforce development and lifelong learning opportunities.

Another important finding was the continuing challenge of integrating research evidence into routine allied health practice. The studies reviewed suggested that the development of a supportive research culture, combined with adequate organizational resources and collaborative partnerships, facilitated evidence-based practice and professional growth. Strengthening research engagement was considered essential for reducing the gap between evidence generation and clinical application, thereby improving service quality and patient outcomes.

The literature further highlighted the importance of cultural competence and interprofessional education in preparing allied health professionals for diverse healthcare environments. Exposure to collaborative learning experiences and culturally responsive training was found to enhance practitioners' ability to deliver holistic, patient-centered care and to work effectively within multidisciplinary teams.

Overall, the findings demonstrated that the advancement of vocational education and skill training for allied health professionals required a comprehensive and multi-dimensional approach. Improvements in educational methodologies, clinical placement infrastructure, workforce planning, policy support, research engagement, and cultural competence were all identified as critical components for strengthening the allied health workforce. Future investigations were recommended to examine the long-term effectiveness of educational innovations, explore sustainable models for rural and aged-care placements, and evaluate scalable approaches to clinical supervision and workforce development.

CONCLUSIONS AND RECOMMENDATION

The review revealed that vocational education and skill training of allied health professionals were influenced by multiple factors, including workforce requirements, educational approaches, availability of clinical placements, quality of supervision, employability outcomes, and engagement in research activities. The findings suggested that strengthening these areas was essential for improving the preparedness and effectiveness of the allied health workforce.

The literature indicated that the expansion of clinical placement opportunities, particularly in rural, remote, and aged-care settings, was supported by enhanced supervision training and appropriate organizational policies. Competency-based curricula, simulation-assisted learning, and the integration of digital technologies were identified as effective educational strategies that improved learners' readiness to meet contemporary healthcare demands.

The evidence further demonstrated the importance of incorporating employability competencies and well-defined career pathways into vocational education programs and

workforce development initiatives. In addition, the promotion of a positive research culture was found to support the translation of evidence into clinical practice and reduce gaps between research and service delivery.

The studies reviewed also highlighted the significant contribution of allied health professionals to healthcare systems, particularly in developing nations, where they helped address workforce shortages and reduced the burden on physician-centered models of care while improving patient outcomes.

Overall, the findings suggested that continued investment in education, training, workforce planning, and research capacity had the potential to strengthen the competence and sustainability of the allied health workforce, thereby contributing to the effective delivery of healthcare services and meeting future health system needs.

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