SAGE Open Medicine
Volume 13: 1–11

DOI: 10.1177/20503121241312532
journals.sagepub.com/home/smo
Sage

Exploring the readiness to practice of underrepresented healthcare workers: A scoping review

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Abstract

Background: Studies across the extant literature suggest that less-experienced healthcare workers are more likely to experience adverse outcomes such as burnout, sick leaves, or intend to leave the profession. Thus, one's readiness to practice is an important element that requires more attention. While extensive research exists on the readiness of certain professions like nurses, a notable gap remains concerning other healthcare workers.

Purpose: This study sought to explore studies examining readiness to practice among various underrepresented healthcare workers.

Methods: We conducted a scoping review to determine the available research related to clinical and nonclinical areas related to the readiness to practice of healthcare workers, excluding physicians and nurses. We examined three databases, MEDLINE, CINAHL, and PsycINFO, from 1 January 2000 to 31 December 2023. Our search focused on readiness to practice among various healthcare professions, whether clinically focused or broadly related to professionalism.

Results: Our search identified 41 articles meeting the inclusion criteria from several professions, including but not limited to physiotherapists and occupational therapists, pharmacists, osteopaths/chiropractors, and social workers. Overall, studies differed in assessing readiness to practice with a broad range of identified clinical competencies that varied between professions and regions. Nonclinical skills, such as communication, conflict management, and cultural competence, were common barriers across professions.

Conclusion: Despite the heterogeneity in job roles, work settings, and geographical reasons, there is evidence to suggest that new healthcare professionals may be clinically adept but may be lacking in other nonclinical skills that could affect their work and well-being. With early-career healthcare workers particularly vulnerable to adverse outcomes in the workplace, future research should standardize core competencies, including nonclinical skills and well-being-related activities, as a prevention method across various health groups.

Keywords

Readiness to practice, healthcare workers, underrepresented, preparedness, scoping review

Date received: 10 October 2024; accepted: 19 December 2024

Introduction

The stability and efficiency of healthcare systems are integral to the health of all. With the elevated occupational stress levels among healthcare workers (HCWs), the efficiency and stability of our healthcare systems are at risk.[1,2] Extended job-related stress can cause elevated levels of burnout and turnover, leading to persistent fatigue, increased absenteeism, diminished patient satisfaction, and heightened errors in diagnosis and treatment. Rates of burnout within HCWs have been reported to range from 35% to 60%, depending on

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the specific healthcare profession and geographical location.[3,4] In 2018, the global burnout rate among physicians was at a staggering 44%, generating grave concern for the stability of our healthcare workforce.[4] Notably, there is a well-known inverse relationship between age and burnout, implying that younger, less-experienced HCWs are more vulnerable to burnout and leave the workforce.[5] Elevated turnover rates also pose a significant threat to the functioning of our healthcare systems. For instance, researchers discovered that nurses with less than 1 year of work experience are twice as likely to leave the workplace than those with over 5 years of work experience.[6] This information regarding the gaps in our healthcare system introduces a compelling question: Are HCWs adequately prepared to practice today?

The current information on "readiness to practice" mainly focuses on nurses and physicians; these two groups of HCWs have been the subject of many publications that assess both clinical and nonclinical aspects of "readiness to practice," including suggestions to strengthen curricula to prevent underpreparedness.[7–11] However, several healthcare groups remain understudied. These "underrepresented" HCWs are providers who are not nurses or physicians with specialized training to provide a broad range of services. We broadly define these groups as HCWs, which are generally not well studied in the literature. These healthcare professionals are integral to a functional healthcare system yet are often overlooked, such as medical laboratory technologists, among other professions. Focusing on these underrepresented groups can help identify global and unique trends in readiness to practice across diverse healthcare settings. This focus addresses a critical gap in the scientific literature by broadening the scope of healthcare. Identifying potential trends can inform targeted interventions, workforce policies, and educational strategies to ensure that all healthcare professionals are adequately prepared to meet the demands of their roles, ultimately enhancing patient care and systemwide resilience.

This study aimed to explore research related to the readiness to the practice of underrepresented human and veterinary HCWs. By addressing this gap, we can enhance our understanding of the diverse healthcare workforce and advance efforts to support the professional development and competency of all healthcare professionals, thereby fostering a more resilient and responsive healthcare system.

Methods

The scope of this study was to determine how previous studies examined readiness to practice among various healthcare groups.

Search strategy

We conducted a scoping review, adhering to PRISMA reporting standards[12] with updated methodological guidance for scoping reviews (PRISMA-ScR).[13] The design and implementation of the scoping review protocol involved collaborative efforts with a library scientist and a proficient research team versed in knowledge synthesis and research on occupational health, healthcare, and mental health. Three databases—MEDLINE, CINAHL, and PsycINFO—were identified as relevant due to their comprehensive coverage of healthcare systems and the readiness for professional practice. A list of search terms and a comprehensive search strategy incorporating Boolean phrases were devised to identify peer-reviewed research articles examining underrepresented HCWs' practice readiness (Supplemental File).

Included studies focused on the level of preparedness to practice of underrepresented HCWs, including veterinarians with up to 5 years of work experience. Within this study, "readiness to practice" denotes the requisite knowledge, skills, and discernment necessary for executing the duties associated with a given healthcare role.[14–17] This definition of "readiness to practice" was formulated by drawing upon diverse prior conceptualizations elucidated within the literature. Collectively, the team decided on a broad definition to collect as much detail about the practice readiness of various HCWs.

We registered this scoping review in the Open Science Framework.[18] The inclusion criteria for this study included peer-reviewed studies published in journal articles between 1 January 2000 and 31 December 2023, in English. They involved new HCWs (0–5 years of work experience), nonnurses, and nonphysicians. To determine kewyord searches, we conducted a preliminary review of HCWs and their readiness to practice. Next, we conducted a review with the research team and a librarian scientist, using the term "healthcare" workers and the following professions: dentists, medical laboratory professionals, occupational therapists, osteopaths, pharmacists, physiotherapists, psychologists, psychotherapists, social workers, and veterinarians. Assessing "readiness to practice" (including other relevant wording of the phrase) needed to be the main objective of the research article. Quantitative, qualitative, and mixed-method studies were included to understand HCWs' readiness. Studies where the authors pooled data on various healthcare groups without differentiation were excluded.

Screening, study selection, and data extraction

The software Covidence[19] was used for all screening and data extraction in this scoping review. SH and LI were the reviewers from the outset of this study. To maintain the rigor of this review, the reviewers participated in a pilot exercise. Independently, they examined the same 50 articles relevant to this review and determined whether they should be included or excluded from this review. The reviewers then discussed their findings to ensure consistency in their decision-making. Initial screening was performed by examining the titles and abstracts of articles based on search criteria. All

articles in the initial screening were dual-screened following the pilot screening. Inconsistencies between reviewers were discussed until a decision involving a third reviewer (BG) was reached. A second screening was performed by examining the full texts of studies following the title and abstract screening to determine the final number of articles included in the data extraction.

The data from each included article were extracted utilizing a standardized form, encompassing the following components: author(s), year published, countries involved, occupational role, study design, clinical and nonclinical competencies, highlighting strengths and areas of need. Clinical competencies refer to procedures or controlled acts specific to a particular profession, and nonclinical skills refer to nonclinical competencies and professional conduct that are likely required in clinical settings and can be assessed across various professions.[20] Data extraction for each article was performed by one reviewer (SH), then reviewed by a second reviewer (SL), followed by a final review by the supervising author (BG).

Results

Study characteristics

The study's initial search found 5756 articles (Figure 1). After screening the titles and abstracts and removing duplicates, 126 full-text articles were selected for inclusion. Following these findings, we excluded articles that did not meet our criteria as they did not investigate the readiness to practice of underrepresented HCWs. These changes resulted in 41 articles being included in the review. The research team utilized the PRISMA-ScR guidelines to report the results.

Combined, physiotherapy and occupational therapy had the most content related to readiness to practice ($n = 14$). We grouped physiotherapists and occupational therapists as they often work closely with one another and are sometimes grouped together in research (Table 1). Ten studies examined pharmacists, six assessed chiropractors and osteopaths, and five explored social workers. Two studies examined readiness to practice among technologists, with one focusing on clinical laboratory scientists and the other on radiographers. Finally, our findings revealed one study for dentists, one for midwives, one for psychologists, and one for veterinarians.

Over one-quarter of the studies were conducted in Europe (Georgia = 1; the United Kingdom = 6; multiple countries combined, including Belgium, Denmark, France, Italy, the Netherlands, Spain, and the United Kingdom = 4; Sweden = 1). Similarly, 26.8% of the studies were from Australasian countries (Australia = 9; New Zealand = 2). Seven (17.1%) studies were from North America (United States = 7). Five studies (12.2%) were conducted in Asia (Kuwait = 1; Malaysia = 1; Saudi Arabia = 1; South Korea = 1; Thailand = 1) and 5 (12.2%) in Africa (South Africa = 3; Nigeria = 2). Almost two-thirds of the studies ($n = 24$) were quantitative (cross-sectional), 11 were qualitative, and 6 employed mixed-methods.

Occupational groups

Physiotherapists and occupational therapists. Half the studies focused on clinical skills, with variations (Table 2). For instance, Australian physiotherapy graduates expressed confidence in utilizing common electrophysical agents.[21] However, uncertainties persist among these new practitioners regarding managing chronic, complex pain patients and their integration within the chronic pain management team.[22] Five studies explored clinical and nonclinical skills,[23–27] and three focused on nonclinical skills.[28–30]

At times, clinical skills seemed adequately developed; however, the nonclinical skills were lagging. For example, Jones et al.[24] revealed that some graduates reported needing to be equipped to navigate conflicts, differing perspectives, and delivering feedback, particularly toward senior staff members. Additionally, those with more placement opportunities felt more prepared.[23,31] High work demands and administrative duties also affected one's readiness.[24,27]

Interestingly, many new physiotherapists felt unprepared for rural practice, mentioning difficulties adapting to the population's lack of resources and low health literacy skills.[25,28,29] Physiotherapists mentioned that this underpreparedness caused them stress and anxiety related to work.[28] Similarly, while most new practitioners have sufficient time to acquire core competencies in the United Kingdom, deficiencies are noted in autonomous practice and cultural competence.[23,30,32] In the United States, clinical instructors observe inadequacies in managing challenging situations, developing discharge plans, and communicating effectively with various stakeholders.[30,31,33]

In South Africa, graduates were inadequately prepared to apply primary healthcare approaches in resource-restricted rural settings, necessitating additional skills in communication, cultural understanding, and navigating hospital politics.[26] Limited exposure to interprofessional education led to misconceptions about the roles of healthcare partners. At the same time, inadequate preparation for administrative duties was noted. Nevertheless, they possessed adequate theoretical knowledge and basic clinical skills for hospital-based interventions. New Zealand graduates experienced difficulty with role clarity, insufficient supervision, and uncertainty in team responsibilities despite feeling confident in their research abilities.[27]

Pharmacists. Six studies examined clinical and nonclinical readiness,[34–39] with two focusing on clinical skills among pharmacists with varying results,[40,41] and two focusing on nonclinical skills.[42,43] In the United States, notable shortcomings included conflict management, professional advocacy, and empathy.[43] Similarly, in Saudi Arabia, deficiencies were observed in critical thinking and interpersonal skills, particularly in interactions across genders.[42] Participants also expressed a lack of hands-on training. When clinical placements were available, there were inconsistencies among placements, with some trainees only being permitted to observe their preceptor and not interact with patients.

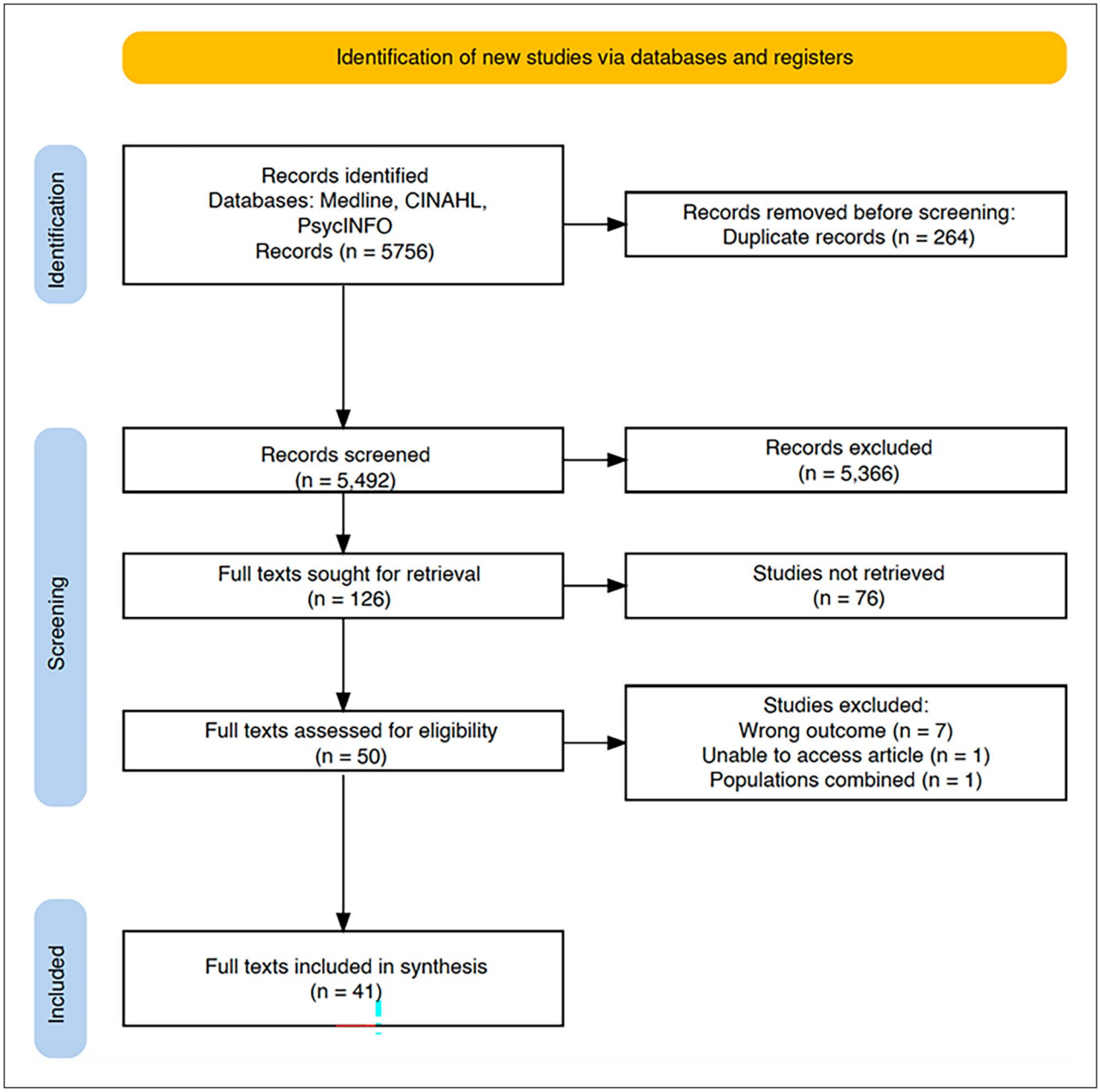

Figure 1. PRISMA-ScR chart showcasing the identification of articles included in the review.

A study from Thailand revealed that while PharmD graduates are clinically skilled to work in the community, there were concerns related to professionalism.[34] Studies from New Zealand, Kuwait, and Australia generally report favorable levels of preparedness, albeit with some identified areas for improvement, such as enhanced professional attitudes and communication skills.[35,36,41] Furthermore, high loads and administrative tasks affected their readiness. In the United Kingdom, new graduates expressed confidence in mental health knowledge; however, they lacked the communication skills to adequately support their patients and skills related to understanding care pathways.[37]

Osteopaths/chiropractors. Of the six studies, three[44–46] explored clinical and nonclinical skills, and the remainder examined nonclinical skills.[47–49] In Australia, graduates generally exhibit a high level of preparedness for practice, particularly in manual therapy skills, although gaps are evident in written communication and interprofessional practice.[45,46]

In Europe, respondents rated themselves highly in professional and chiropractic expert competencies.[44] However, deficiencies are noted in collaborator and scholar competencies, particularly in contributing to professional and scientific knowledge and consulting effectively with other healthcare professionals. A multi-European analysis revealed

Table 1. Study characteristics.

Occupational group	Region	Study design
Physiotherapists = 11	Africa = 2	Cross-sectional = 7
Occupational therapists = 2	Australasia = 7	Qualitative = 4
Physiotherapists and occupational therapists = 1	Europe = 2	Mixed methods = 3
	North America = 3	
Pharmacists = 10	Africa = 1	Cross-sectional = 5
	Asia = 5	Qualitative = 3
	Australasia = 2	Mixed methods = 2
	Europe = 1	
	North America = 1	
Osteopaths = 3	Australasia = 2	Cross-sectional = 4
Osteopaths and chiropractors = 2	Europe = 4	Qualitative = 2
Chiropractors = 1		
Social workers = 5	Europe = 4	Cross-sectional = 3
	North America = 1	Qualitative = 1
		Mixed methods = 1
Clinical laboratory scientists = 1	North America = 1	Cross-sectional = 1
Dentists = 1	Africa = 1	Cross-sectional = 1
Midwives = 1	Africa = 1	Cross-sectional = 1
Psychologists = 1	North America = 1	Cross-sectional = 1
Radiographers = 1	Europe = 1	Cross-sectional = 1
Veterinarians = 1	North America = 1	Qualitative = 1

Table 2. Methods for assessing readiness to practice by profession.

Occupational group	Assessing "readiness"
Chiropractors/osteopaths	Non-clinical skills = 3[47–49]
	Clinical and nonclinical = 3[44–46]
Clinical laboratory scientists	Clinical skills = 1[56]
Dentists	Clinical skills = 1[58]
Midwives	Clinical skills = 1[60]
Pharmacists	Clinical skills = 2[40,41]
	Nonclinical skills = 2[42,43]
	Clinical and nonclinical skills = 6[34–39]
Physiotherapists/occupational therapists	Clinical skills = 6[21,22]
	Nonclinical skills = 3[28–30]
	Clinical and nonclinical skills = 5[23–27]
Psychologists	Clinical skills = 1[61]
Radiographers	Clinical skills = 1[57]
Social workers	Clinical and nonclinical = 5[50–54]
Veterinarians	Nonclinical skills = 1[59]

that smaller classrooms yield a higher sense of preparedness than larger classrooms.[47] This was attributed to more opportunities for tutorial-based learning, which allowed students to interact with their instructors and improved their learning experience.

Social workers. All five studies examining the readiness to practice of social workers explored clinical and nonclinical skills.[50–54] In the United States, participants demonstrated confidence in core generalist practice skills, such as ethical practice and empathic relationships. Still, they expressed less confidence in using direct practice skills and addressing COVID-19-related issues.[50] In Scotland, while a significant portion of participants perceive adequate preparation for complex decision-making and task-oriented aspects of practice, concerns arose regarding integrating health and social care in academic programs.[51] In Wales, the Diploma in Social Work had mixed clinical findings. Still, nonclinical skills such as communication, teamwork, and administration might be among the areas where training could be improved.[52]

The tension between academic programs and professional practice in Georgia contributes to inadequate student

preparedness.[53] In Sweden, graduating students exhibited mixed sentiments, with some feeling secure and self-confident. In contrast, others expressed insecurity and needed further training, particularly in communication skills.[54] Challenges in placements and learning opportunities with other professional groups are noted in the United Kingdom.[55]

Other HCWs. In the United States, clinical laboratory scientists generally felt well-prepared for their laboratory responsibilities, with a majority indicating high levels of preparedness.[56] Clinical laboratory scientists consistently face staffing shortages; however, Beck and Doig[56] found that new graduates intended to stay in their positions as long as employment conditions were favorable. They concluded that it is part of the educator's responsibility to prepare students for workplace standards of practice adequately and to promote realistic expectations of the workforce experience, which would help reduce the number of clinical laboratory scientists leaving the profession. Radiographers in the United Kingdom showed differences in preparedness perceptions between graduates and supervisors, with supervisors rating graduates as more prepared than the graduates perceived themselves.[57]

Nigerian dentistry students expressed concerns about their preparedness to treat special needs patients, with a significant proportion feeling inadequately prepared due to limited placement opportunities.[58] Furthermore, several nonclinical skills were of particular concern among American veterinarians, including self-sufficiency and self-doubt, changing clientele and ethical dilemmas, leadership and conflict, poor mentorship, and high caseloads and administrative duties.[59] Self-care, conflict management, and client communication were perceived as the most important professional skills for success in the transition to practice. New graduate veterinarians reported needing more preparation to work with clients with financial constraints and managing conflict.[59] Midwives face challenges in South Africa due to limited standardization in clinical teaching and practice, impacting student competency and outcomes, particularly in handling financial constraints and managing conflicts.[60] Finally, the clinical readiness of psychologists was examined in one study that focused on those working with older adults.[61]

Discussion

The main aim of this study was to explore the readiness of underrepresented HCWs to practice by identifying relevant clinical and nonclinical skills. Our study findings revealed varying degrees of preparedness across different domains of practice and regions, with identified competency deficiencies and areas for improvement. From a clinical perspective, the identified competencies varied between studies. Given the scarcity of information pertaining to clinical skills, especially with vast geography and variations within scopes of practice and professional standards, it is challenging to uncover specific trends that would highlight areas of strength or opportunities for improvement.

Despite the heterogeneity of the occupational groups and identified results, our research identified a critical theme that needs to be addressed: inadequate preparedness in relation to the non-clinical skills of these healthcare providers (Table 3). Several studies examining the preparedness of physiotherapists, occupational therapists, pharmacists, osteopaths/chiropractors, and veterinarians highlighted lagging skills in conflict management between team members and leaders and effectively communicating with various stakeholders, including leadership teams.[30,31,33,35,36,41–46,52,54,59] Poor conflict resolution is a notable predictor of sick leaves[62] and intention to leave the organization.[63] Likewise, poor communication and interpersonal skills among HCWs and patients could lead to various adverse outcomes that could impact patient care.[64]

Readiness to deal with geographical and cultural challenges, such as working in rural settings or working with different cultural groups, was also identified as an area of concern among physiotherapists, occupational therapists, and pharmacists.[23,24,26,30,32] This finding highlights that clinical mastery independent of the setting or cultural context may lead to poor outcomes for both the clinician and the patient.

Physiotherapists, occupational therapists, and veterinarians identified that high caseloads and administrative tasks in their respective work have led to experiencing poorer readiness to practice.[24,27,59] While the increased workload is common in healthcare settings, managers and policymakers must closely address its impact, especially among trainees. For instance, a meta-analytic study revealed that early-career physicians are nearly three times more likely to experience burnout or stress with high job demands.[65]

Similar to the other nonclinical challenges that could affect HCWs, high workloads could have deleterious effects on HCWs but were not measured in some of the identified studies due to the diversity in research objections with perhaps a greater focus on clinical competencies. For instance, this study revealed that medical technologists reported being prepared to practice from a technical standpoint; however, they face staffing issues.[56] Results from the extant literature suggest these staffing shortages are related to high work demand, causing poorer mental health and increasing the risk of leaving the profession.[66,67] Thus, clinical educators must consider a more holistic view of how to prepare future clinicians, in addition to clinical competencies. Specifically, training during the educational period regarding communication skills, conflict management, and self-care training to cope with high work demands is essential to enhance the resilience of future clinicians.

Our results also highlighted that hands-on learning and attending placements can improve readiness to practice.[23,31,42,58] Hands-on learning has been established as a helpful tool for adequately prepared physicians, making clinical placements an integral part of their medical education.[68] Simulated patient experiences are another helpful hands-on

Table 3. Summary of identified nonclinical skills influencing readiness within professions.

Study (first author, year)	Profession	Professionalism (including conflict) and communication skills (with clients, colleagues, supervisors, or other HCWs)	Organizational factors (role clarity, demands, employee shortages, administrative tasks)	Cultural/ geographical	Supervision or hands on training
Pulkkinen, 2019	Chiropractors	Yes	No	No	No
Haworth, 2021	Chiropractors/osteopaths	Yes	No	No	No
Haworth, 2022	Chiropractors/osteopaths	Yes	No	No	No
Beck, 2007	Clinical laboratory scientists	No	Yes	No	Yes
Oredguba, 2008	Dentists	No	No	No	Yes
Keller, 2002	Occupational/physiotherapists	No	No	No	Yes
Naidoo, 2017	Occupational therapists	Yes	Yes	Yes	No
Luciani, 2014	Osteopaths	No	No	No	Yes
Vuso, 2017	Midwives	Yes	Yes	No	No
Ameer, 2018	Pharmacists	Yes	No	No	Yes
Daughtery, 2022	Pharmacists	Yes	No	No	Yes
Chanakit, 2015	Pharmacists	Yes	No	No	No
Kairuz, 2010	Pharmacists	Yes	No	No	No
Katoue, 2014	Pharmacists	Yes	No	No	No
Mak, 2014	Pharmacists	Yes	No	No	No
Rutter, 2013	Pharmacists	Yes	No	No	No
Chesterton, 2021	Physiotherapists	No	No	No	Yes
Fairburn, 2019	Physiotherapists	Yes	No	No	No
Forbes, 2022	Physiotherapists	No	No	No	Yes
Gibbs, 2013	Physiotherapists	Yes	No	No	No
Jones, 2021	Physiotherapists	Yes	No	No	No
Martin, 2020	Physiotherapists	No	No	Yes	No
Robertson, 2009	Physiotherapists	No	Yes	No	Yes
Stoikov, 2022	Physiotherapists	No	No	Yes	No
Wells, 2021	Physiotherapists	No	No	Yes	No
Mackay, 2020	Radiographers	No	No	Yes	No
Beltran, 2023*	Social Workers	No	No	No	No
Grant, 2016	Social Workers	No	No	No	Yes
Pithouse, 2002	Social Workers	Yes	Yes	No	No
Saitadze, 2023	Social Workers	Yes	No	No	Yes
Tham, 2019	Social Workers	Yes	No	No	No
Reinhard, 2021	Veterinarians	Yes	Yes	No	Yes

*Focused on readiness to practice during COVID-19.

learning opportunity. They can be used to prepare trainees for clinical placements and provide an alternative when placements are unavailable. Exposing trainees to real-life environments with adequate support and high-quality mentorship is essential for nurturing early-career professionals. Thus, educators and preceptors are encouraged to offer hands-on training, starting with simulated clients and then exposing them to practicum internships to help them build their clinical and nonclinical skills in real-world situations but in a supervised environment.

While hands-on learning is an important aspect of healthcare education, established standards must be maintained. Best practices for clinical placements include ensuring that placements are similar to sites that HCWs will be practicing at after graduation, exposing the trainee to an interdisciplinary environment, and allowing the trainee to be involved with the entire course of patient care.[69]

As previously mentioned, HCWs had trouble working in locations with unique geographical or cultural components, highlighting the importance of clinical placements similar to postgraduation sites. Ensuring clinical placements involve interdisciplinary exposure could mitigate inadequate communication and teamwork skills. Interdisciplinary teams are a crucial part of healthcare systems; however, approximately 50% of Australian pharmacy graduates felt unprepared to engage in interdisciplinary teams. These students had little to no experience with them through their clinical placements.[41] The experience of pharmacy students in Saudi Arabia demonstrates the importance of involving trainees in all aspects of patient care while at clinical placements. Limiting students to

observing their preceptor or completing narrowly defined tasks does not provide sufficient preparation for their future careers as pharmacists.[42] Hands-on learning provides an opportunity to develop skills unique to real-world experiences but will only aid in training if established standards are maintained.

The identified need for improved nonclinical skills for HCWs resembled those of professionals with adequate research, such as nurses. For instance, early-career nurses' communication skills and conflict resolution were highlighted as areas of need during training and in practice.[70] Despite the similarities in our findings to well-studied professions, our study emphasizes that nonclinical skills, irrespective of the profession or the health setting, could significantly impact early-career professionals. Accordingly, in addition to ensuring that early career professionals receive adequate training during their education, health organizations are encouraged to foster a supportive work environment and adequately integrate them within the healthcare system. For instance, mentorship programs offered to early-career nurses increased job satisfaction and sustained employee retention.[71] Similarly, a systematic review revealed that positive relationships between early career nurses and preceptors were critical for development.[8]

While the readiness to practice among smaller healthcare groups, such as veterinarians, reflects similar nonclinical skills challenges as larger groups like nurses, these professionals often face unique barriers.[72] Specifically, their work environments are often isolated or smaller in scale, which limits access to mentorship and professional support. As such, these HCWs would benefit from seeking mentorship beyond their immediate workplace. By fostering external mentorship relationships, these professionals can better navigate complex situations, develop necessary nonclinical skills, and improve their overall readiness to practice.

Limitations

Inherent limitations with knowledge syntheses are search and selection biases. Specifically, despite our efforts, it is possible that our search strategy did not identify other healthcare groups that may have unique challenges. Furthermore, as this scoping review broadly explored various professions, some of our results were too broad to offer any specific conclusions, particularly with the content related to clinical skills.

Recommendations

Emphasizing practitioners' readiness to practice is a prevention-focused approach to protecting future HCWs and enhancing service delivery. Thus, upcoming research should standardize essential competencies while incorporating well-being and other nonclinical skills into training programs to maximize readiness. Practical experience through simulated training, practicum, and internships can effectively prepare trainees while considering geographical and cultural differences. Additionally, healthcare organizations should establish or improve mentorship for early-career professionals, prioritizing manageable workloads, coaching in conflict resolution, and clear communication with patients, coworkers, and supervisors. Access to external mentors may be warranted for smaller health settings.

Conclusions

This study aimed to explore the readiness of underrepresented HCWs to practice. Our findings revealed that while there were variations in clinical competencies across professions, the most pressing concern was the lack of preparedness in nonclinical areas, such as communication, conflict management, and cultural competence. These gaps in nonclinical skills can significantly impact healthcare delivery and HCWs' well-being, particularly in complex and high-demand environments. Given the importance of these skills, future training programs should incorporate a more holistic approach, emphasizing clinical expertise and nonclinical competencies. Practical experiences, such as hands-on learning, clinical placements, and internships, prepare trainees for real-world challenges. Moreover, mentorship within or external to the workplace should be strengthened to provide early-career professionals with the support they need to navigate these challenges effectively.

Author contribution statements

All participants contributed to this study and the final draft of this article. SH, LI, and BN-K were involved in the study's conceptualization and methodology. SH, LI, SL, and BG were involved in the analysis. SH was involved in original draft preparation and all authors contributed to the editing and review of the final draft.

Data availability statement

Available upon request.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Ethical statement

This study did not require ethics approval.

Informed consent

Not applicable.

Trial registration

Not applicable.

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Supplemental material

Supplemental material for this article is available online.

References

1. Youn SC, Kwon S and Kang HJ. The influence of emotional labor, job stress, and burnout on turnover intention of care worker's at long-term care hospitals. *J Korea Acad Ind Coop Soc* 2016; 17(5): 428–440.
2. Gohar B, Larivière M, Lightfoot N, et al. Meta-analysis of nursing-related organizational and psychosocial predictors of sickness absence. *Occup Med (Lond)* 2020; 70(8): 593–601.
3. World Health Organization. Burn-out an "occupational phenomenon": international Classification of Diseases, https://www.who.int/news/item/28-05-2019-burn-out-an-occupational-phenomenon-international-classification-of-diseases (2019, accessed 16 April 2024).
4. Rotenstein LS, Torre M, Ramos MA, et al. Prevalence of burnout among physicians. *JAMA* 2018; 320(11): 1131.
5. Fernández-Suárez I, García-González MA, Torrano F, et al. Study of the prevalence of burnout in university professors in the period 2005–2020. *Educ Res Int* 2021; 2021: 1–10.
6. Park B and Ko Y. Turnover rates and factors influencing turnover of Korean acute care hospital nurses: a retrospective study based on survival analysis. *Asian Nurs Res (Korean Soc Nurs Sci)* 2020; 14(5): 293–299.
7. Barnes T, Yu TCW and Webster CS. Preparedness of medical students and junior doctors for their role as clinical leaders: a systematic review. *Med Teach* 2020; 42(1): 79–85.
8. Edward KL, Ousey K, Playle J, et al. Are new nurses work ready—the impact of preceptorship. An integrative systematic review. *J Prof Nurs* 2017; 33(5): 326–333.
9. Masso M, Sim J, Halcomb E, et al. Practice readiness of new graduate nurses and factors influencing practice readiness: a scoping review of reviews. *Int J Nurs Stud* 2022; 129: 104208.
10. Missen K, McKenna L and Beauchamp A. Registered nurses' perceptions of new nursing graduates' clinical competence: a systematic integrative review. *Nurs Health Sci* 2016; 18(2): 143–153.
11. Monrouxe LV, Grundy L, Mann M, et al. How prepared are UK medical graduates for practice? A rapid review of the literature 2009–2014. *BMJ Open* 2017; 7(1): e013656.
12. Tricco AC, Lillie E, Zarin W, et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med* 2018; 169(7): 467–473.
13. Peters MDJ, Marnie C, Tricco AC, et al. Updated methodological guidance for the conduct of scoping reviews. *JBI Evid Synth* 2020; 18(10): 2119–2126.
14. Berkow S, Virkstis K, Stewart J, et al. Assessing new graduate nurse performance. *JONA J Nurs Adm* 2008; 38(11): 468–474.
15. Mirza N, Manankil-Rankin L, Prentice D, et al. Practice readiness of new nursing graduates: a concept analysis. *Nurse Educ Pract* 2019; 37: 68–74.
16. Wolff AC, Regan S, Pesut B, et al. Ready for what? An exploration of the meaning of new graduate nurses' readiness for practice. *Int J Nurs Educ Scholarsh* 2010; 7(1): 7.
17. Wolsky K. *Establishment of a standard definition of practice readiness: academia's versus practices' registered nurses perceptions related to new graduate nurse competencies within Alberta, Canada*, ProQuest Dissertations & Theses, Capella University, USA, 2014.
18. Hussein S, Ishaky L, Laughton S, et al. A scoping review on readiness to practice among healthcare workers: a protocol. OSF, 2024. DOI: 10.17605/OSF.IO/HXRT3.
19. Veritas Health Innovation. Covidence systematic review software, 2024. https://www.covidence.org
20. Prineas S, Mosier K, Mirko C, et al. Non-technical skills in healthcare. In: Donaldson L, Ricciardi W, Sheridan S, et al. (eds.) *Textbook of patient safety and clinical risk management*. Charm, Springer International Publishing; 2021, pp. 413–434.
21. Chipchase LS, Williams MT and Robertson VJ. Preparedness of new graduate Australian physiotherapists in the use of electrophysical agents. *Physiother* 2008; 94(4): 274–280.
22. Forbes R and Ingram M. New-graduate physiotherapists' readiness for practice and experiences of managing chronic pain; a qualitative study. *Physiother Theory Pract* 2021; 37(11): 1177–1184.
23. Chesterton P, Chesterton J and Alexanders J. New graduate physiotherapists' perceived preparedness for clinical practice. A cross-sectional survey. *Eur J Physiother* 2023; 25(1): 33–42.
24. Jones A, Ingram ME and Forbes R. Physiotherapy new graduate self-efficacy and readiness for interprofessional collaboration: a mixed methods study. *J Interprof Care* 2021; 35(1): 64–73.
25. Wells C, Olson R, Bialocerkowski A, et al. Work readiness of new graduate physical therapists for private practice in Australia: academic faculty, employer, and graduate perspectives. *Phys Ther* 2021; 101(6): pzab078.
26. Naidoo D, Van Wyk J and Waggie F. Occupational therapy graduates' reflections on their ability to cope with primary healthcare and rural practice during community service. *S Afr J Occup Ther* 2017; 47(3): 39–45. DOI: 10.17159/2310-3833/2017/v47n3a7.
27. Robertson LJ and Griffiths S. Graduates' reflections on their preparation for practice. *Br J Occup Ther* 2009; 72(3): 125–132.
28. Martin R, Mandrusiak A, Lu A, et al. New-graduate physiotherapists' perceptions of their preparedness for rural practice. *Aust J Rural Health* 2020; 28(5): 443–452.
29. Stoikov S, Maxwell L, Butler J, et al. The transition from physiotherapy student to new graduate: are they prepared? *Physiother Theory Pract* 2022; 38(1): 101–111.
30. Fairburn C, Nesbit K, Haga S, et al. Clinical instructors' perceptions of critical knowledge, critical patient care skills, and student physical therapist preparedness in the acute care setting. *J Allied Health* 2019; 48(4): 277–286c.
31. Keller C and Ward RS. Educational preparedness for physical therapists and occupational therapists in burn care. *J Burn Care Rehabil* 2002; 23(1): 67–73.
32. Mackay N. Caring for the dying: how prepared do newly qualified physiotherapists feel about providing care for patients who are dying? *Physiotherapy* 2020; 107: e154–e155.

33. Gibbs K and Furney S. The importance of integumentary knowledge and skill in physical therapist entry-level education: are they prepared for practice? *J Allied Health* 2013; 42(1): 40–45d.
34. Chanakit T, Low BY, Wongpoowarak P, et al. Hospital pharmacists' perceptions of the suitability of doctor of pharmacy graduates in hospital settings in Thailand. *BMC Med Educ* 2015; 15(1): 181.
35. Kairuz T, Noble C and Shaw J. Preceptors, interns, and newly registered pharmacists' perceptions of New Zealand pharmacy graduates' preparedness to practice. *Am J Pharm Educ* 2010; 74(6): 108.
36. Katoue MG, Awad AI, Schwinghammer TL, et al. Pharmaceutical care education in Kuwait: pharmacy students' perspectives. *Pharm Pract (Internet)* 2014; 12(3): 411.
37. Rutter P, Taylor D and Branford D. Mental health curricula at schools of pharmacy in the United Kingdom and recent graduates' readiness to practice. *Am J Pharm Educ* 2013; 77(7): 147.
38. Song YK, Chung EK, Lee YS, et al. Objective structured clinical examination as a competency assessment tool of students' readiness for advanced pharmacy practice experiences in South Korea: a pilot study. *BMC Med Educ* 2023; 23(1): 231.
39. Saka SA, Akanbi OS and Eze UIH. Perceptions of Nigerian final year undergraduate students of the adequacy of the pharmacy curriculum for mental health care. *J Pharm Pract Res* 2020; 50(1): 48–54.
40. Blebil AQ, Dujaili JA, Mohammed AH, et al. Knowledge and attitude of pharmacy students regarding geriatric care: questionnaire-based analysis in Malaysia. *Adv Med Educ Pract* 2022; 13: 95–102.
41. Mak VSL, March G, Clark A, et al. Do South Australian pharmacy interns have the educational and behavioral precursors to meet the objectives of Australia's health care reform agenda? *Int J Pharm Pract* 2014; 22(5): 366–372.
42. Ameer L, MacLure K, Tonna A, et al. An initial exploration of the perceptions of preparedness to practise among Saudi Arabian trained hospital pharmacists. *Pharm Pract (Granada)* 2018; 16(2): 1192.
43. Daugherty KK, Caldwell D, Armistead LT, et al. A pilot study on the use of the nominal group technique to refine core pharmacy roles and to determine what competencies may be missing from pharmacy education. *Curr Pharm Teach Learn* 2022; 14(9): 1122–1134.
44. Pulkkinen E and de la Ossa PP. Newly qualified chiropractors' perceptions of preparedness for practice: a cross-sectional study of graduates from European training programs. *J Chiroprac Educ* 2019; 33(2): 90–99.
45. Haworth NG, Horstmanshof L and Moore KM. Chiropractic and osteopathic students' perceptions of readiness for transition to practice: the educational value of university clinic vs community and private clinics. *J Chiropr Educ* 2021; 35(1): 38–49.
46. Haworth NG, Horstmanshof L and Moore KM. Australian chiropractic and osteopathic graduates' perceptions of readiness for transition to practice. *J Chiropr Educ* 2022; 36(2): 153–164.
47. Luciani E, Cerritelli F, Waters M, et al. Osteopathic student satisfaction and preparedness to practice: a comparative study. *Int J Osteopath Med* 2014; 17(1): 28–37.
48. Luciani E, Consorti G, van Dun PLS, et al. An overview of osteopathy graduates' perceived preparedness at transition from educational environment to clinic environment one year after graduation: a cross sectional study. *BMC Med Educ* 2018; 18(1): 319.
49. Luciani E, van Dun PLS, Esteves JE, et al. Learning environment, preparedness and satisfaction in osteopathy in Europe: the PreSS study. *PLoS One* 2015; 10(6): e0129904.
50. Beltran S, Yalim A, Morris A, et al. Emerging social workers during COVID-19: exploring perceived readiness and training needs. *J Soc Work* 2023; 23(3): 428–442.
51. Grant S, Sheridan L and Webb SA. Newly qualified social workers' readiness for practice in Scotland. *Br J Soc Work* 2016; 47(2): bcv146.
52. Pithouse A and Scourfield J. Ready for practice? The DipSW in Wales. *J Soc Work* 2002; 2(1): 7–27.
53. Saitadze I and Dvalishvili D. Gaps between academia and practice: perspectives on new graduates' readiness for social work practice in Georgia. *Int Soc Work* 2023; 66(2): 504–517.
54. Tham P and Lynch D. "Lost in transition?" – Newly educated social workers' reflections on their first months in practice. *Br J Soc Work* 2019; 22(3): 400–411.
55. Caldwell K, Atwal A, Copp G, et al. Preparing for practice: how well are practitioners prepared for teamwork. *Br J Nurs* 2006; 15(22): 1250–1254.
56. Beck S and Doig K. Are new CLS practitioners prepared to stay? *Clin Lab Sci* 2007; 20(3): 161–171.
57. Mackay SJ, Anderson AC and Hogg P. Preparedness for clinical practice—perceptions of graduates and their work supervisors. *Radiography* 2008; 14(3): 226–232.
58. Oredugba F and Akinwande J. Preparedness of dental undergraduates for provision of care to individuals with special health care needs in Nigeria. *J Disabil Oral Health* 2008; 9(2): 81–86.
59. Reinhard AR, Hains KD, Hains BJ, et al. Are they ready? Trials, tribulations, and professional skills vital for new veterinary graduate success. *Front Vet Sci* 2021; 8: 785844.
60. Vuso Z and James S. Effects of limited midwifery clinical education and practice standardisation of student preparedness. *Nurse Educ Today* 2017; 55: 134–139.
61. Karel MJ, Sakai EY, Molinari V, et al. Training for geropsychology supervision and practice: perspectives of geropsychology program graduates. *Train Educ Prof Psychol* 2016; 10(1): 37–44.
62. Sterud T, Marti AR and Degerud E. The relationship between workplace conflicts and subsequent physician-certified sick leave: a prospective population study. *Int J Environ Res Public Health* 2022; 19(10): 6047.
63. Zhang Y, Wu X, Wan X, et al. Relationship between burnout and intention to leave amongst clinical nurses: the role of spiritual climate. *J Nurs Manag* 2019; 27(6): 1285–1293.
64. Lee CTS and Doran DM. The role of interpersonal relations in healthcare team communication and patient safety. *Can J Nurs Res* 2017; 49(2): 75–93.
65. Zhou AY, Panagioti M, Esmail A, et al. Factors associated with burnout and stress in trainee physicians. *JAMA Netw Open* 2020; 3(8): e2013761.
66. Nowrouzi-Kia B, Dong J, Gohar B, et al. Factors associated with burnout among medical laboratory professionals in Ontario, Canada: an exploratory study during the second wave

of the COVID-19 pandemic. *Int J Health Plann Manage* 2022; 37(4): 2183–2197.
67. Dignos PN, Khan A, Gardiner-Davis M, et al. Hidden and understaffed: exploring Canadian medical laboratory technologists' pandemic stressors and lessons learned. *Healthcare* 2023; 11(20): 2736.
68. Burford B, Whittle V and Vance GH. The relationship between medical student learning opportunities and preparedness for practice: a questionnaire study. *BMC Med Educ* 2014; 14(1): 223.
69. Hoge MA, Huey LY and O'Connell MJ. Best practices in behavioral health workforce education and training. *Adm Policy Ment Health* 2004; 32(2): 91–106.
70. Forbes TH and Evans S. From anticipation to confidence: a descriptive qualitative study of new graduate nurse communication with physicians. *J Nurs Manag* 2022; 30(6): 2039–2045.
71. Fox KC. Mentor program boosts new nurses' satisfaction and lowers turnover rate. *Contin Educ Nurs* 2010; 41(7): 311–316.
72. Moir F and Van den Brink A. Current insights in veterinarians' psychological wellbeing. *N Z Vet J* 2020; 68(1): 3–12.