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RESEARCH ARTICLE

Comparing Physician Associate/Assistant and Comparable Online and Hybrid Training Programs – A Global Perspective

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ABSTRACT

As the number of online and hybrid Physician Associate/Assistant (PA) and PA-comparable programs continues to grow, understanding their curriculum and structure becomes increasingly important. This review examines four representative programs from the United States, Germany, and Malaysia, offering insights into their educational models. Primary faculty members from these institutions provided narrative reviews, highlighting both similarities and differences. There are representative samples of entry level to post-professional doctoral level programs included in this review. Results of the reviews indicate common challenges such as technological requirements and fostering a sense of academic community. However, notable distinctions were found in admission standards, program duration, and curriculum structure. Given the limited scope of this review, comparing two U.S. programs and one each from Germany and Malaysia further research is needed. Continued analysis of online and hybrid PA/PA-comparable programs can offer valuable guidance for newly developing programs, ensuring high-quality education and clinical competency.

Keywords: Online, Hybrid, PA, Physician Associate/Assistant, PA-Comparable, Educational Programs

Introduction

The COVID-19 pandemic necessitated the rapid development and expansion of online and hybrid physician associate/assistant (PA) and comparable education programs. Due to restrictions on interpersonal contact, many healthcare education programs were compelled to adopt remote learning formats.[1] The Physician Assistant National Certifying Examination (PANCE) saw shifts in performance trends in the US during the pandemic, with scores fluctuating due to changes in educational delivery.[1] This motivated educators to evaluate the various methods being utilized to educate the PA and PA-comparable providers. While several PA and comparable online and hybrid programs existed before the pandemic, the need for accessible training—particularly for rural students in the US accelerated the transition toward digital learning.[1] Many PA programs struggled with transitioning clinical education to remote formats, leading to fewer hands-on training opportunities.[1] A Physician Associate/Assistant comparable program is an educational and training pathway that prepares healthcare professionals to perform medical tasks similar to those of Physician Associates/Assistants (PAs) in the United States. These programs focus on providing medical education that enables graduates to diagnose illnesses, develop treatment plans, prescribe medications, and assist in surgical procedures all under physician supervision. These international programs also use a variety of platforms to deliver educational content including online and hybrid platforms.

This review examines four online and hybrid PA and comparable education programs: the entry-level PA program at Yale University and the post-professional doctoral program at the University of Lynchburg in the United States, the PA program at the International University of Applied Sciences in Germany, and a PA-comparable program at the Open University Malaysia. The article aims to provide a structured framework for developing online and hybrid PA education programs by analyzing the degrees offered, curriculum design, and overall program structure. Institutions have developed hybrid interprofessional education models to mitigate barriers and ensure collaborative learning among healthcare students. This review allows a more global review of the various platforms being utilized.

Methods

This narrative review explores the curriculum and structure of four representative PA and comparable programs. There was a random selection of programs representing the US and international programs that were online or hybrid formats of delivery of educational content to PA and PA-comparable students. Faculty members from each selected program contributed detailed reviews, examining key aspects such as admission standards, program length, curriculum format, student enrollment, and distinctive features. The reviews were developed utilizing institutional documents that were publicly available and web based . These reviews were developed collaboratively, incorporating insights from additional faculty familiar with the programs, to draw comparisons between the programs. The result is a comparative case study analysis highlighting both the similarities and differences across the programs examining their distinct contexts, policies, and structures.

Results

THE YALE PA MASTER ONLINE ENTRY LEVEL PROGRAM

The Yale Physician Assistant Online Master's degree program was designed to prepare students for a career as a physician associate/assistant.[2] The program offered the same high-quality education as Yale's on-campus PA program but with the flexibility of learning online in the student's home community.[2] The program integrates interactive online coursework with clinical rotations and hands-on immersion experiences.[2] The program emphasizes a patient-centered approach, with a strong focus on clinical reasoning, evidence-based practice, and interprofessional collaboration hosting a virtual experience in the didactic year, known as Virtual Interprofessional Education (VIPE).[2]

During the first year, students engage in live, virtual classes hosted in an online learning management system led by Yale faculty, participate in collaborative group work, with access to digital campus resources.[2] Students visit the Yale New Haven campus for two in-person immersions in the first year.[2] The first one is three months after beginning the program and the second one immediately before entering clinical rotations.[2] The immersion sessions are interactive with a focus on history taking, physical exam skills, anatomical cadaver lab dissection, and hands-on skills training.[2]

In the 17 month clinical phase, students complete clinical rotations, typically in their home community, and in diverse healthcare settings across the United States.[2] Students are supervised by preceptors at the clinical sites with oversight provided by the Yale PA faculty through online sessions.[2]

Upon successful completion of the didactic and clinical components of the program, students are eligible to apply to take the Physician Assistant National Certification Exam (PANCE), which allows the student to apply for a license to practice medicine as a PA in the US.[2]

The Yale PA Online Program, is discontinuing the virtual program and is scheduled to graduate its last online class

in May 2026.[3] Among the reasons cited are difficulties finding clinical placements near students' residences.[3] Many healthcare systems are grappling with a shortage of preceptors due to increasing workload expectations, time constraints, and potentially lower clinical productivity.[3] This, in turn, has caused an increase in competition for fewer spots for clinical training for all PA programs.

THE UNIVERSITY OF LYNCHBURG POST-PROFESSIONAL ONLINE DOCTORAL PROGRAM

The University of Lynchburg began accepting graduate physician associate/assistant (PA) students into the post-professional Doctor of Medical Science (DMSc) online program in July, 2017.[4] The rationale for the University of Lynchburg post-professional doctoral degree was to expand options for PA careers.[4] The focus would be to not only practice as clinicians, but in other areas such as administration, leadership, research, education, and in the healthcare industry at the level of the corporate boardroom.[4] The program's concept was also to achieve professional parity with other doctoral-trained healthcare professionals in the United States such as pharmacy, physical therapy, occupational therapy, nursing, and others.[5]

The Lynchburg DMSc is a 100% online, asynchronous program.[4] Admission is available to PAs who have earned a master's degree and are certified by the National Commission on Certification of PAs (NCCPA).[4] The program can be completed in as little as 12 months, with the flexibility to extend over time for student convenience. The virtual program is a pathway for academic growth while allowing time for clinical, professional, and personal commitments.

The foundational didactic curriculum includes evidence-based medicine, scholarly medical writing, organizational behavior and leadership, healthcare administration, global health, healthcare law, and disaster medicine.[4] The DMSc program offers several concentration areas: addiction medicine, administrative medicine, advanced professional practice, behavioral medicine, emergency management and global health, and medical education.[4] Each course in the program is approved for continuing medical education (CME) credit offered by the American Academy of Physician Associates (AAPA).[4] PAs can obtain up to 120 CME credits when completing the program.[4]

Upon completion of the clinically focused advanced professional practice concentration, graduates are able to apply advanced and specialized medical knowledge with an emphasis structured beyond general practice by training within fellowship/practicum competencies and analyze skills needed to provide leadership at local and global healthcare institutions that improve patient outcomes.[4] Students also focus on developing professional medical writing skills to advance the PA profession and add to the knowledge base on a variety of medical topics.[4] Each graduate must demonstrate practices that lead to doctoral-level professional writing resulting in a scholarly manuscript suitable for publication or presentations.

A survey conducted by the Lynchburg post-professional DMSc program of PA graduates, found the majority were between the ages of 30 and 49 years.[6] The majority of graduates were considered mid-career PAs.[6] The survey respondents self-reported that they experienced increases in pay and promotions, and changes in leadership roles.[6] The survey respondents indicated that professional, career, and leadership development were the leading reasons for pursuing the doctoral degree.[6]

MALAYSIA'S ONLINE ASSISTANT MEDICAL OFFICERS/ MEDICAL ASSISTANTS PROGRAM

Assistant Medical Officers (AMOs)/Medical Assistants (MAs) are the third largest group of healthcare professionals in Malaysia, with over 25,182 AMO/MAs working across the country as of 2023.[7] Of these, 70% are employed in government hospitals and healthcare facilities, while the remainder work in the private sector.[7] Similar to US PAs, AMOs/MAs are crucial in delivering various medical services.[7] Their presence helps address the shortage of medical providers and ensures comprehensive and accessible healthcare services across various settings.[8]

The Bachelor of Medical and Health Sciences with Honours degree (BMHS) at Open University Malaysia (OUM) is an innovative online program tailored to the educational needs of AMOs/MAs seeking career advancement.[9] Introduced in 2018, this program embodies OUM's mission to provide accessible, flexible education that accommodates the demanding schedules of working professionals in the healthcare sector.[9] To date, 325 students have successfully graduated from the program, with 1,478 currently enrolled.[9] The Bachelor of Medical and Health Sciences with Honours is an 11 semester program that is 3 years and 6 months in length.[9]

To meet the entry requirements, an applicant must pass the Sijil Pelajaran Malaysia (SPM) or its equivalent with a minimum of five credits, including Bahasa Malaysia, two credits from either Science or Mathematics subjects with a preference for one from each category, and two credits from any other subjects.[9] Additionally, applicants must pass a course in English.[9] Furthermore, applicants must hold a Diploma in Medical Assistant (Level 4, Malaysian Qualification Framework) or a related program and have a minimum of one year of related work experience and confirmation as an Assistant Medical Officer.[9]

Adopting an interdisciplinary framework, the BMHS program encompasses critical medical and health sciences domains, including medical and surgical care, emergency medicine, public health, occupational health, and research methodologies.[8] Additionally, the program was designed to equip graduates with technical expertise alongside critical thinking and problem-solving skills, enabling them to navigate the complexities of modern healthcare systems effectively.[9]

The BMHS program distinguishes itself through its delivery via OUM's *MyInspire* learning management system, offering an Open Distance Learning/Online curriculum that can be accessible from any location worldwide.[9] This delivery model is particularly advantageous for AMOs/MAs with demanding work commitments or those stationed across the nation, allowing them to pursue education without disrupting their professional responsibilities.[9] OUM employs a comprehensive online learning approach integrating online tutorials, self-directed study, and synchronous online e-learning modules that allows them to study at their own pace.[10]

The BMHS program offers a comprehensive curriculum comprising core and elective modules that cover fundamental topics such as medical sciences, pre-hospital care, disaster management, pain management, professionalism, and medicolegal considerations.[10] Students can also personalize their learning experience through flexible elective modules that align with career aspirations and interests to tailor their education to their specific professional goals.[10]

Research is a cornerstone of the program, requiring students to undertake projects addressing contemporary challenges in medical and health sciences. These projects cultivate essential research skills, including data collection and analysis, critical thinking, and academic writing. Through active participation in research, students contribute to advancing knowledge in their fields and develop practical insights applicable to their professional contexts.

GERMANY'S ONLINE ENTRY-LEVEL PHYSICIAN ASSISTANT PROGRAM

Germany's first national-accredited online Physician Assistant entry-level Bachelor's degree program was launched in 2022, at International University (IU) of Applied Sciences, enrolling over 600 students to date. Previous German PA programs included in-person, online, or hybrid courses. Clinical partners facilitate internship opportunities. All German programs, including the online program, adhere to the European Credit Transfer System (ECTS) as per the Bologna protocol.[11] The medical skills required are outlined in a 2017 position paper by the German Medical Association and the recommendations of the German University Association of Physician Assistants.[12,13] Ultimately, all study programs align with the Qualification Framework for German Higher Education Degrees (HQR) standards for bachelor's and master's degrees.

To apply for the IU distance study program, applicants must be a qualified healthcare professional, with either the general or subject-related German matriculation standard. Those who are healthcare specialists with at least three years of work experience can apply, even without this matriculation standard. The IU online program comprises 180 ECTS over six semesters and can be completed either full-time or part-time while working. Coursebooks for each subject, video tutorials for selected topics, and medical skills are authored and provided by the university. Synchronous learning is achieved with live tutorials. The thesis accounts for 300 hours of workload.

Clinical practice accounts for a total of 900 hours in internships at select inpatient or outpatient partners. Mentors follow a skills catalogue and confirm competence acquisition. Students must submit a reflection and evaluate a certain medical issue in a scientific context. In Germany, clinical partners receive no monetary incentives but benefit from enhanced communication, workshops, and an improved public image.

The curriculum covers basic subjects including natural sciences, anatomy, scientific writing, and medical law. It also includes major clinical specialties such as surgery, internal medicine, neurology, anesthesiology/emergency medicine. The teaching methods offered include online seminars, problem-oriented learning, and lectures. Examination formats comprise written exams, scientific papers, case studies, and others.

The IU online PA program relies on well-known didactic methods such as the "constructive-alignment" concept and Bloom's competence-taxonomy.[14] Consequently, established teaching and examination formats are applied digitally whenever possible. This encompasses problem-oriented learning, "flipped-classroom" approaches, and application-based assessments, such as objective structured clinical examinations (OSCE), which are conducted in digital or mixed reality environments. Additional novel techniques are being introduced. For instance, the German online program includes tutor robots that facilitate the training of communication strategies and the assessment of a patient's medical history. Tutor robots assist in the application of clinical scores and examinations with interactive medical scenarios that simulate real-life experiences.

Enrollment data indicates that Germany's first online PA Bachelor program attracts students with unique needs. Distance learning offers maximum flexibility but requires high independence and self-organization. Flexibility is the key advantage of distance learning.

Discussion

DEGREE AND TIME COMMITMENT

An analysis of online and hybrid PA and PA-comparable programs reveals a range of degree offerings, from Bachelor's and Master's degrees for entry-level education to Doctoral degrees for post-professional advancement. The duration of these programs varies, spanning from one year to three and a half years. There currently is not a single-standard for degrees or length of training for PA and PA-comparable programs internationally.

CHALLENGES OF ONLINE AND HYBRID PROGRAMS

Online and hybrid medical education programs face several obstacles, with limited direct patient interaction being a primary concern, especially during the initial didactic portion of education. Hands-on experience is crucial for developing competencies in physical examination, diagnostic reasoning, and patient communication. While virtual simulations and case studies offer partial solutions, they cannot fully replicate the complexities of real-world patient care, posing challenges for students as they prepare to transition into clinical settings.

Although many programs integrate in-person clinical experiences, securing placements remains difficult particularly in rural areas in the US and regions with a high concentration of PA programs, where competition for clinical sites is substantial. Addressing these challenges is essential to ensuring that online and hybrid medical education maintains high standards of training and clinical readiness.

Ensuring meaningful engagement and interaction in an online learning environment presents a significant challenge in medical education. Virtual platforms may limit collaborative learning and mentorship opportunities, both of which are essential for fostering professional growth. The absence of in-person interactions with peers and instructors can contribute to feelings of isolation and diminished motivation.

To mitigate these challenges, incorporating virtual discussion boards can facilitate student-to-student and student-to-instructor engagement, fostering a sense of academic community. Additionally, faculty-recorded instructional videos enhance the learning experience by providing a greater sense of presence, helping students feel more connected to their educators and the material.

Clinical partnerships are essential for ensuring high-quality practical training, requiring robust quality control strategies. These collaborations play a crucial role in identifying clinical placements and securing preceptors in an increasingly competitive landscape for PA student training.

To maintain the integrity of online programs, it is recommended that hands-on clinical training be conducted in students' home communities, supported by ongoing monitoring and evaluation measures. The Yale Online PA program faced challenges in securing clinical placements in the US, contributing to its discontinuation of the online program. Similarly, Germany may soon need additional incentives to encourage clinical partners and sustain access to practical training opportunities.[15]

Limited access to reliable technology and internet connectivity remains a significant challenge for students, particularly those in remote or underserved areas where high-speed internet access may be limited. Overcoming these obstacles requires innovative solutions, including hybrid learning models that integrate online education with in-person clinical experiences, as well as advanced simulation technology to enhance virtual training.

During the pandemic, some telecommunications companies provided free internet access to students participating in remote learning, demonstrating the potential for collaborative initiatives to address accessibility concerns. Expanding similar efforts such as subsidized internet programs or technological support for students—could further bridge the digital divide and ensure equitable access to quality medical education.

Online programs, for hands-on professions like medicine, present unique challenges for both students and instructors, necessitating specialized staff for media production and program management. While digital media can effectively support competency development, medical training requires repeated practice to ensure proficiency.

To address this, online and hybrid programs should incorporate in-person training components, such as workshops and skills labs, allowing students to develop essential clinical skills under direct supervision. This blended approach strengthens practical competencies while leveraging the flexibility of digital education.

PROGRAM ACCREDITATION

Accreditation requirements for PA and PA-comparable programs vary significantly by country, making cross-national comparisons complex. There are 55 countries worldwide with PA/PA comparable providers with 17 different titles and at least 4 different degrees offered.[16] In the United States, master's-level PA programs adhere to accreditation standards set by the Accreditation Review Commission on Education for the Physician Assistant (ARC-PA). Meanwhile, the PA doctorate at the University of Lynchburg falls under the purview of the Southern Association of Colleges and Schools Commission on Colleges (SACSCOC), an institutional accreditor

focused on quality assurance in higher education rather than clinical accreditation.

In Germany, accreditation is governed by the Qualification Framework for German Higher Education Degrees (HQR) alongside various educational and clinical associations. Malaysia follows a distinct process, with the Malaysian Qualifications Agency (MQA) collaborating with the Malaysian Medical Assistants Board to accredit AMO/MA programs in accordance with the Code of Practice for Programme Accreditation (COPPA) and the Standards and Guidelines for Medical Assistants Education Programme.

While accreditation is essential for maintaining educational rigor and ensuring patient safety, the complexities of harmonizing global accreditation standards exceed the scope of this article. There currently is no single standard for PA education internationally.

Limitations

This study is limited by its small sample size and the varying accreditation and practice requirements across different countries, making direct comparisons challenging. The authors acknowledge that reviewers from institutions may have potential biases in their perspectives of their program. There may be differences in available program documentation limiting direct comparisons of programs.

Conclusion

Online and hybrid education has proven to be a successful pedagogical model for training PA and PA-comparable students, equipping them to deliver clinical services across diverse healthcare settings. The shift to virtual learning, accelerated by the COVID-19 pandemic, has introduced innovative approaches to medical education. Despite technological challenges, these programs have provided options for significant benefits for patient care by expanding the healthcare workforce, improving access to medical training, and fostering greater equity in healthcare delivery.

However, ensuring clinical competence in an online environment remains a critical area for further exploration. Future research should focus on developing robust assessment methods to guarantee that graduates acquire the necessary hands-on skills.

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