

Review Article

Bridging the Gap: Challenges and Solutions in Online Nephrology Education

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Abstract

The outbreak of COVID-19 has created an unprecedented situation that has accelerated online education in areas like nephrology, which are traditionally served by onsite training. Efforts to educate clinicians remotely provide convenience and flexibility but may leave many open questions when it comes to how well-trained professionals maybe after completing their programs online. This review paper has emphasized the deleterious effects of online nephrology education and identified a number of ways in which it can be problematic such as lack of hands-on training, less patient interface, lack of proper supervision, and inconsistent quality of programs. The ability to make a difference, however, is further restricted by technological barriers and resource constraints. Whilst these programs tend to focus on creating knowledgeable graduates, they often fail to provide the clinical exposure necessary for preparedness. Hybrid programs - which combine online courses with clinical training in person are required to deliver high-quality nephrology care.

Introduction

The rapid transformation to online education, hastened by the COVID-19 pandemic, has affected medical training immensely. Nephrology is a practice-heavy subspecialty and has increasingly been the focus of internet-based diploma courses that aim to teach general practitioners, nurses, and non-dialysis medical doctors from other specialties. Although these programs are more accessible and flexible, they raise significant concerns about the capacity to adequately train practitioners for clinical nephrology practice [1,2].

An online or, in other words, virtual nephrology diploma is an e-learning course that offers to hold out deeper information and additional teaching about renal medicine. Here are programs dedicated to healthcare professionals-doctors, nurses, and physician assistants to increase their knowledge of Kidney diseases, their diagnosis, management, and treatment. The curriculum often includes a wealth of renal physiology, acute and chronic kidney disease, dialysis, kidney transplantation, and associated disorders. On successful passing the participants are awarded a diploma or certificate which is recognized in the field of nephrology and can be used to extend the professional horizons [3].

Discussion

While specific data on the growth of online nephrology

More Information

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diplomas and master's degrees appear scarce, the general trends in online medical education clearly trending upward. For example, the American Society of Nephrology (ASN) published a vast online curriculum and already offers distance learning initiatives, indicating a clear trend toward greater interest in online nephrology education [4]. Likewise, professional bodies such as the International Society of Nephrology (ISN) are promoting various online courses, echoing a wider shift towards electronic medical education [5].

The population of U.S. master's degree recipients has been on a steady rise and there has been an insurmountable shift towards online learning, driven by the fact that this mode of education is a lot more flexible and available [6]. What is reflected by this trend is also being mirrored in specialties, such as nephrology, where professional bodies and universities have broadened their online opportunities for health professionals internationally. These universities have international reputes and offer online nephrology degrees.

There are a number of universities worldwide that offer Nephrology degree programs online. The Online MSc in Renal Medicine at the University of South Wales [7] is a well-known program. Many accrediting societies ensure the standard of education underneath the online nephrology diploma and



Master's at the University of South Wales. For instance, in the UK, the Quality Assurance Agency for Higher Education (QAA) is responsible for ensuring the quality assurance of higher education (including online programs) [8]. Medical education programs, which conform to national standards, are supported by Health Education England (HEE) established to represent health education organizations [9]. Clinical and education standards for programs may be recognized by professional organizations such as the British Renal Society (BRS) and the Renal Association [10]. In addition, educational activities for Continuing Medical Education that take place within Europe are granted accreditation from the European Accreditation Council for Continuing Medical Education (EACCME) [11]. University certification authorities like the Higher Education Funding Council for Wales (HEFCW) play an important role in ensuring the authenticity and standards of these courses. These organizations make sure that those who participate in online nephrology education have prepared themselves for practice.

By providing a more flexible and manageable option for ongoing education, online nephrology diplomas help to address the barrier that some individuals face in pursuing traditional in-person training due to geographical, professional, or personal factors that may not favor a fixed-time commitment. This is highly pertinent in the context of the COVID-19 pandemic that physically limited access to educational institutions [12,13]. Moreover, these programs provide extensive theoretical training including the recent advances and guidelines of nephrology [14]. This guarantees that healthcare providers are primed with the requisite knowledge and skills needed in the management and treatment of patients with kidney-related ailments [15].

However, online nephrology training can have a negative impact. A large part of this is a lack of practical experience and hands-on skills needed in nephrology such as dialysis, renal biopsies, and managing exceedingly complex patients with complex renal diseases [16]. Skills training remains limited in online programs with few opportunities to practice in real-world settings, contributing to a practical competency gap [17]. Although some programs allow simulations to reproduce clinical scenarios, these cannot fully imitate the complexity and variability of patients featured in real life [18]. Simulations fail to capture the subtlety and unpredictability of real-world clinical experience and to adequately train residents in the manual dexterity and judgment-based skills that they need to develop [19]. A second major drawback is the absence of face-to-face patient experience. Nephrology clinic is an incredibly complicated specialty where clinical judgement is the most important issue that can only be nurtured by face-to-face follow-up for patients. Online learning suffers a lack of an ability to mimic face-to-face patient examination and physical examination, interpretation, and on-time clinical decision-making, and results in the development of poor clinical skills in graduating [20].

Furthermore, developing relationships with patients and explaining complex medical concepts are important skills that are best learnt in person, further limiting online courses [21]. Lack of face-to-face patient interaction can deter effective communication and empathy [22]. Lack of supervision and mentorship is a concern. Face-to-face training offers a more informal type of mentorship where trainees can practice under the guidance and supervision of local nephrologists and receive feedback and support. Conversely, such direct mentorship which is necessary for skill development and in developing professionally is something that is largely missing in online programs [23]. Immediate feedback by a supervisor is necessary for trainees to amend any errors in technique and learning, but online programs may not provide such immediate and situational feedback in a specific context and feedback, which may prolong the learning curve and maintain any uncorrected errors [24].

This also presents issues of quality and standardization. There is substantial variation in the quality of online nephrology programs, some of which seem to carry questionable academic and clinical standards [25]. Given the lack of strong accreditation and oversight, there is the potential that some programs may not properly prepare students for clinical practice [26]. Another related issue may be the perception that some programs do not have enough hands-on training and graduates may have difficulty obtaining certification from professional boards thus, perhaps, limiting their ability to practice nephrology independently or at a high level of competency [27].

Eventually, learning may be held back by technological or access barriers. Many of our students do not have access to excellent internet quality or simulation technologies, which can degrade the learning experience and create educational quality and outcome disparities [28]. Beyond this, there is a concern that online programs are unable to provide the same types of resources that allow the facility-based training programs to have greater depth of training, such as access to gate signals and live patient cases [29].

Future directions

The landscape of online nephrology education is evolving rapidly and is likely to undergo substantial transformations in the coming decade, fueled by continued developments in how education is delivered and increased demand for high-quality, flexible medical education. Mobile simulator devices or devices running interactive platforms with live simulations can completely change the dynamics of medical education by providing an immersive or real-life experience of renal simulation learning that is difficult to replicate in everyday life in a typical laboratory or patient care environment. This will be driven, in large part, by Artificial Intelligence (AI), which will deliver individualized learning paths and predictive analytics to meet learners where they are. In addition to that, the implementation of global collaborative networks would

allow the sharing of knowledge and professional development where geographical limits would not obstruct real-time case discussions and consultation with experts from all around the world. Contrastingly, this will be especially helpful in low-resource settings to enable countries to access high-quality nephrology education. Micro-credentialing and modular courses will make sure that nephrologists are engaged in continuous professional development - keeping up-to-date with the latest breakthroughs and best practices. Moreover, the focus on human-centered care and interdisciplinary teamwork will result in curricula that provide systems-level comprehensive care. In conclusion, themes from the feedback elucidate that future directions of online nephrology education will improve competency, promote global collaboration, and be evidence-based as was noted by numerous respondents.

Conclusion

The rapid move to online learning in nephrology due to COVID-19 has created benefits as well as challenges. Although online diploma programs help to increase access and provide flexible learning for general practitioners, nurses, and other health professionals, they fail to provide the necessary practical experience, which is an essential part of practical training to practice clinical practice. Furthermore, the absence of bedside teaching, limited oversight, and a large variation in program quality also contribute to these shortcomings. The effectiveness of online education is also low due to technological barriers and resource constraints. More importantly, hybrid models, whereby students receive a great deal of strong didactic, i.e. theoretical, content online but are also exposed to a lot of clinical on-premises, have to be adopted to better prepare the graduates for the complexities of nephrology. This is how we can bring the knowledge and practice together and continue to maintain world-class care in nephrology.

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