

# The Radiation Oncology Industry's Ecosystem of Digital Sites

Safaa Azzouz\*

Professor of Cancer department of Medical Oncology, Japan

## Corresponding Author\*

Safaa Azzouz

Professor of Cancer department of Medical Oncology, Japan E-mail:

Azzouz@gmail.com

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## Abstract

Online discussion forums, wikis, movies, podcasts, journal clubs, online communities, and interactive experiences that supplement medical education are now widely available to residents and practicing radiation oncologists. We identify, categories, and critically assess podcasts, smartphone applications, web-based multimedia, and educational websites for radiation oncologists in this review. OVID-MEDLINE, PubMed, and a mix of pertinent search phrases were used to conduct literature searches throughout a two-month period (April to May 2022). E-learning resources were examined on the websites of pertinent radiation oncology societies. To find digital materials for radiation oncology education, online searches were made using search engines like Google, app shops, and websites for podcast producers. To establish credibility, materials were evaluated by two independent reviewers using the authority, accuracy, objectivity, currency, depth, and appearance criteria per suggested formats for evaluating digital resources in medical literature. 425 citations were found in literature searches conducted using OVID-MEDLINE and PubMed. The ones that apply to radiation oncology give examples of resource development, curricular integrations, interactive modules, case studies, and learner experiences. The multilevel search found 47 free digital learning materials, some of which required membership or a price for full access, including online radiation oncology tutorials, podcasts, films, slide sets, applications, and other interactive tools. Residents in radiation oncology have access to a wide range of online learning resources, which are great for furthering their study. To help doctors who are becoming more dependent on digital resources, particularly in light of the COVID-19 pandemic, this evaluation offers the first thorough overview of the online education tools for radiation oncologists that are now available

**Keywords:** Education • Digital pedagogy • E-learning •

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## Introduction

Residency-based training is regarded as the foundation for acquiring clinical competency, practical skills, and board test readiness. In a radiation oncology curriculum, there are numerous teaching strategies. These consist of traditional classroom instruction, instructive lectures, group discussions, webinars, and conferences. Since the advent of the internet and the widespread use of smartphones, there are now more resources available for research. Additionally, the COVID-19 pandemic changed paradigms in clinical education globally, imposing constraints in the form of social isolation and a reduction in hands-on procedures. There was a significant drop in attendance for in-person classes and case discussions, which restricted the learning possibilities for trainees. Radiation oncology departments are increasingly using online tools and platforms including Zoom, WebEx, and Microsoft Teams for knowledge

sharing. Additionally, the volume of radiation therapy has dropped, affecting opportunities for hands-on training and for education through direct patient care. Clinical education is increasingly depending on online educational resources as a result of the shifting environment of educational options. Online resources including radiation oncology-specific websites, podcasts, smartphone applications (apps), and videos offer helpful sources of knowledge and study material for aspiring residents and working clinicians that have become crucial. Accessibility varies between these resources; some include content that is hidden behind paywalls, while others offer free information to users. With the abundance of open access websites, applications, and other options online, it is crucial to use only reliable sources that provide high-yield information, frequent updates, and correct operation. The aim of this evaluation is to find, compile, and assess radiation oncology-specific websites, mobile apps, videos, and podcasts that offer knowledge

## Discussion

Medical instructors and students were forced to convert in-person instruction to digital platforms as a result of the COVID-19 pandemic, which presented an unforeseen challenge. Alternative forms of education are becoming more and more popular, as is the use of online resources for on-demand access and knowledge sharing. Literature that has already been published focuses on the incorporation of smartphone-specific resources or e-learning resources into trainee education. On the other hand, information about the accessibility of e-learning resources has not been disclosed in any past publications. The resources that are available to radiation oncology students and professors have never before been thoroughly compiled and examined as in this paper. This analysis found 47 currently accessible, free online digital materials for radiation oncology education. There are many online resources available, as described in. At the time of this analysis, a wide range of particular aspects of radiation oncology education, including contouring tutorials, disease site-specific lessons, case vignettes, introductory courses, medical physics lectures, and radiobiology videos, were accessible. The most helpful methods for finding a wide range of digital materials, such as introductory courses, podcasts, webinars, slide sets, and mobile apps, were internet searches and a check of the websites of specialist societies. The results of this study do not include all of the internet resources that are available, despite the use of a thorough identification approach. Even though the internet is a wealth of educational tools, it can be difficult to find trustworthy places to learn. Several websites were discovered to be inactive, to have broken redirect links, and to not have functional account creation tools over the 2-month period of data collection, synthesis, and compilation for this assessment. These results point us yet another drawback of these flexible resources. The wide range of rubrics proposed to evaluate the quality of these contemporary educational resources and, consequently, the potential for inconsistency and weakness in critiquing their educational utility, constitute another inherent weakness in the systematic evaluation of open access resources. Due to the generalizable criteria that could be applied universally across multiple multimedia resources, the assessment criteria released by the UNC Health Sciences Library were used in this analysis. Additionally, some of the materials require registration or membership in a society in order to access them, while many of the educational resources are free, emphasizing the advantage of open access in promoting on-demand education. However thoroughly these materials have been evaluated, there are still questions about the accuracy and reliability of the information supplied. The onus of determining the veracity of the presented information is on the end user, hence we suggest using standards like those described in to help with this. The collection of resources listed here is an exhaustive list of digital sources that are currently on the market, compiled by publishers with a solid track record of knowledge and accuracy.

## Conclusion

The broad array of digital instructional tools available to radiation oncologists—both active doctors and trainees—are being reviewed in the first comprehensive way that is currently known. In addition to tutorials, self-directed learning modules, slide sets, podcasts, and videos, digital materials are also available in a number of other e-learning formats. E-learning is being actively included into training programmes for radiation

oncology, as was found by the literature evaluation carried out in this study. For instructors and trainees, digital and web-based resources are supplemental learning tools. The future of medical education will likely involve self-directed and supplemental learning, so it is important for residents in radiation oncology to be aware of the resources available online. This will improve their education and clinical competency.