

Determinants of Video Interactions on UROPEDIA: A Study of Bladder Cancer Education

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What's known on the subject? and What does the study add?

Given their increased accessibility, e-learning platforms have gained significant popularity in medical education, particularly in urology. The coronavirus disease 2019 pandemic has accelerated the adoption of online learning tools in urology, with residents showing a strong preference for digital resources over traditional methods. This study demonstrated that videos presented by urologists and delivered in their native language (Turkish) significantly enhanced viewing rates on UROPEDIA. Residents training videos achieved the highest viewing rates among various types of scientific content, indicating a strong demand for practical, residency-focused educational materials on e-learning platforms.

Abstract

Objective: This study aimed to analyze the factors influencing the viewing rate of bladder cancer (BC) videos on UROPEDIA, an e-learning platform of The Society of Urological Surgery.

Materials and Methods: We evaluated 92 UROPEDIA and four Uromedia (Which is integrated into UROPEDIA and includes surgery videos) videos on BC uploaded from January 2016 to October 2023. Three UROPEDIA videos were excluded due to technical issues. Data collected included the number of views, upload dates, viewing rates, specializations, title, presentation language, and types of scientific event. The association between these parameters and viewing rates was also analyzed.

Results: Ninety-three videos were analyzed, with a median viewing rate of 1.3 monthly views. Most videos were presented by urologists (91.4%) and were in Turkish (77.4%). Videos presented by urologists had significantly higher viewing rates than those by other specialists (1.42 vs. 0.72, $p=0.011$). Turkish videos were viewed more frequently than English ones (1.67 vs. 0.6, $p=0.000$). Surgical videos were significantly more viewed than verbal presentations (19.8 vs. 1.28 $p=0.001$). The resident training videos had the highest viewing rates among all nonsurgical video categories.

Conclusion: This study revealed that e-learning platforms like UROPEDIA are more effective when the content is provided in native languages and tailored to resident training. Interaction is higher when the presenting physician's specialization matches the audience's. Surgical videos attracted more attention than verbal presentations. Additionally, encouraging post-residency urologists to utilize these platforms can help them further their professional development.

Keywords: UROPEDIA, e-learning, urology education, bladder cancer, resident training.

Introduction

The development of online information and communication facilities has recently enabled the use of e-learning for urology training (1,2). E-learning, which involves the use of digital materials, especially videos, in education, has gained significant popularity following the pandemic of the

coronavirus disease 2019 (COVID-19). Recent studies have indicated that e-learning has been widely adopted by urology residents and urologists (3-6).

YouTube is the most frequently used source of information by urologists (7). However, platforms with scientifically prepared materials and well-defined methodologies are lacking.

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To address this need, the Society of Urological Surgery launched the UROPEDIA project in 2016, which created a library with scientific content accessible to urologists and residents. UROPEDIA can be considered an e-learning platform because its content includes surgical videos (called Uromedia), resident education presentations, scientific meetings, and congresses. Uromedia is a sub-platform integrated with UROPEDIA that provides access to surgical videos. UROPEDIA supports the education of urology residents and enables urologists to access up-to-date information.

The high recurrence rate of bladder cancer (BC) necessitates intensive follow-up. In particular, non-muscle-invasive BC often requires repeated invasive procedures. Additionally, recent advancements in the treatment of muscle-invasive and metastatic BC have contributed to the overall cost. Consequently, from diagnosis to death, BC is the most expensive cancer for each patient. Despite these costs, the desired oncological outcomes for BC have not been achieved. (8-10). Urology residents and urologists need to follow and adopt these developments to increase treatment success and efficiency. Since its founding, UROPEDIA has allowed urology residents and urologists to update their knowledge through video presentations that explain current developments, guidelines, recommendations, and future goals regarding BC.

In this study, we aimed to analyze the factors affecting the viewing rate of videos about BC on UROPEDIA. By understanding these factors, we hope to enhance the accessibility and impact of e-learning platforms, ultimately supporting the development of urology residents and urologists in the field of BC.

Materials and Methods

Study Design

This study retrospectively analyzed BC videos available on the UROPEDIA platform (<https://uropedia.com.tr>). A total of 96 videos (4 of them from Uromedia) were identified under the BC tab. The videos were uploaded between January 2016 and October 2023, with presentation dates from October 2012 to September 2023. Three videos were excluded from the analysis due to technical issues, specifically broken links, leaving 93 videos for the final analysis.

Data Collection

Data such as the number of views, upload day, viewing rates, specialization of the presenting physician (urologist, medical oncologist, radiation oncologist, and radiologist), presentation language (Turkish and English), presenter title, scientific event type (best of American Urological Association [AUA], resident training, scientific congress, scientific regional meeting, and

online scientific meeting) were collected. The viewing rates were calculated by dividing the number of views by the number of months since the video was uploaded. Since the videos were uploaded on different days, the viewing rates better reflect the popularity of the videos than the number of views. The parameters affecting the viewing rates were also analyzed.

Ethical Considerations

This study analyzed educational videos and did not include patient data; thus, formal ethics approval was not required. However, ethical research principles, including integrity and respect for intellectual property, were strictly adhered to. This study was conducted with the knowledge and approval of the Society of Urological Surgery.

Statistical Analysis

Normality analysis of continuous data was performed using the Shapiro-Wilk and Kolmogorov-Smirnov tests. Mann-Whitney and Kruskal-Wallis tests were used to compare non-normally distributed variables. Considering the Type 1 error rate, Bonferroni correction was applied to evaluate the results. A p-value of <0.05 was accepted as statistical significance. SPSS software (IBM Corp. IBM SPSS Statistics for Windows, version 23.0, Armonk, NY: IBM Corp) was used for the analyses.

Results

A total of 93 videos were analyzed. Eighty nine of them consisted of verbal presentation videos and four were surgical videos. The median number of views was 1.3 per month (0.16-59.55). Of the physicians who presented, 85 (91.4%) were urologists, 2 (2.2%) were medical oncologists, 2 (2.2%) were radiation oncologists, 3 (3.2%) were radiologists, and 1 (1.0%) was a pathologist. Turkish was presented in 72 videos (77.4%) and English in 21 videos (22.6%). The academic title distribution of the presenters was as follows: Prof. 61 (65.6%), Assoc. Prof. 23 (24.7%), Assist. Prof. 6 (6.5%), and Specialist 3 (3.2%). (Table 1).

The videos presented by urologists were watched significantly more than the presentation of all other specialized physicians (1.42 vs 0.72. $p=0.011$). Moreover, Turkish videos were viewed significantly more than English videos (1.67 vs 0.6. $p=0.000$). Surgical videos were significantly more viewed than verbal presentation videos (19.8 vs. 1.28 $p=0.001$). (Table 2).

Among the verbal presentation videos divided into five categories according to presentation type (best of AUA, resident training, scientific congress, scientific regional meeting, and online scientific meeting), resident training videos were watched significantly more than the others. The academic title did not affect the viewing rate. (Table 3)

Discussion

This study highlights the significant impact of presenter specialization and presentation language on viewing rates of BC videos on UROPEDIA. Furthermore, the high viewing rates of resident training videos suggest that UROPEDIA is an essential resource for urology residents. Residents' ongoing learning process and familiarity with digital platforms make them a primary audience for e-learning resources.

Nowadays, online information resources are expected to be increasingly used for resident training. Salem et al. (1) reported that 90% of urology residents found the internet beneficial for education and spent up to 540 minutes per month using these resources (1). Moreover, Rapp et al. (7) showed that surgical residents mainly benefit from YouTube videos when preparing for surgical procedures. Two-thirds of the medical residents in our country, similar to many other countries, are between the

ages of 26 and 30, which also aligns with the age range of most YouTube users globally (11-13). This trend reflects a broader shift in medical education toward online resources, especially in the post-pandemic era. However, inaccurate information and potential misuse of online resources pose significant risks to education. Moreover, urology residents reported that platforms designed for medical education were more useful than social media (1). Unlike social media, providing medical content on a platform accessible only to medical professionals is highly appropriate for data accuracy and confidentiality, patient safety, prevention of misinformation, and data privacy. In these ways, a platform that offers educational videos prepared by academics using a structured methodology and curriculum is essential (14).

In an interview study, 45% of urology residents reported that they use online resources for education. Moreover, 26% of participants used textbooks, 16% used journals, and 13% used conferences/courses for their education (1). Adding video recordings of conferences and courses to e-learning platforms after live sessions can allow urology residents who cannot actively participate to benefit from this content. Moreover, revisiting and reviewing presentations at one's own pace enhances comprehension and retention of complex material, thus improving clinical practice. In this way, the use of online resources for education by urology residents could exceed 50% and surpass conventional resources. Providing diverse educational materials, including surgical videos and guideline updates, can further enhance the learning experience. Studies have shown that urology residents and urologists find surgical videos and guideline updates to be the most useful content (5,6). Additionally, ensuring easy access and user-friendly interfaces will encourage more residents and urologists to engage with these platforms. Ultimately, such initiatives can significantly improve the quality of urology education and training, leading to better patient outcomes.

While UROPEDIA has proven to be a valuable tool for residents, it also has the potential to benefit practicing urologists who need to stay updated with the latest developments in their field. Presentations by experienced urologists, who share their knowledge and experience with colleagues, are essential educational resources for urologists, even those at an advanced stage of their careers. A platform like UROPEDIA, which

	All videos (n=93)
Viewing rate (median, min & max)	1.3 (0.16-59.55)
Specialization of the presenting physician	
Urology	85 (91.4%)
Medical oncology	2 (2.2%)
Radiation oncology	2 (2.2%)
Radiology	3 (3.2%)
Pathology	1 (1.0%)
Presentation language	
Turkish	72 (77.4%)
English	21 (22.6%)
Presenter Title	
Prof.	61 (65.6%)
Assoc. Prof.	23 (24.7%)
Assist. Prof.	6 (6.5%)
Specialist	3 (3.2%)
Scientific event type	
Best of the AUA	11 (11.8%)
Resident training	7 (7.5%)
Scientific congress	45 (48.4%)
Scientific regional meeting	17 (18.3%)
Online scientific meeting	9 (9.7%)
Surgical Video	4 (4.3%)
min: Minimum, max: Maximum, AUA: American Urological Association	

	Urology (n=85)	Others (n=8)	p-value
Viewing rate (median, min, and max)	1.42 (0.16-59.55)	0.72 (0.25-1.53)	0.011
	Turkish (n=72)	English (n=21)	p-value
Viewing rate (median, min, and max)	1.67 (0.3-59.55)	0.6 (0.16-1.38)	0.000
	Surgical video (n=4)	Verbal presentation video (n=89)	p-value
Viewing rate (median, min, and max)	19.8 (14.35-59.55)	1.28 (0.16-8.59)	0.001
min: Minimum, max: Maximum			

Table 3. Analyzing the viewing rate of verbal presentation videos according to event type and presenter title

Scientific event type	Viewing rate (median, min, and max)	p-value
Best of the AUA	0.7 (0.51-7.32)	Resident training:0.000 Scientific congress:1.000 Scientific regional meeting:0.188 Online scientific meeting: 1.000
Resident training	3.8 (1.44-8.59)	Best of AUA: 0.000 Scientific congress: 0.000 Scientific regional meeting: 0.013 Online scientific meeting: 0.000
Scientific congress	1 (0.16-3.16)	Best of AUA: 1.000 Resident training: 0.000 Scientific regional meeting: 0.006 Online scientific meeting: 1.000
Scientific regional meeting	2.4 (0.45-5.92)	Best AUA: 0.188 Resident training: 0.013 Scientific congress:0.006 Online scientific meeting: 0.096
Online scientific meeting	0.9 (0.7-2.2)	Best of AUA: 1.000 Resident training: 0.000 Scientific congress: 1.000 Scientific regional meeting: 0.096
Presenter title	Viewing rate (median, min, and max)	p-value
Prof.	1.1 (0.25-8.59)	Assoc. Prof.: 1.000 Assist. Prof.: 1.000 Specialist: 1.000
Assoc. Prof.	1.5 (0.16-5.29)	Prof.: 1.000 Assist. Prof.: 1.000 Specialist: 1.000
Assist. Prof.	0.8 (0.47-2.03)	Prof.: 1.000 Assoc. Prof. 1.000 Specialist: 1.000
Specialist	1.8 (0.45-5.92)	Prof.: 1.000 Assoc. Prof.: 1.000 Assist. Prof.: 1.000
min: Minimum, max: Maximum, AUA: American Urological Association		

includes videos discussing current literature, scientific congress presentations, and guideline updates, is undoubtedly beneficial for urologists. Thanks to these platforms, urologists who cannot attend annual scientific congresses and regular scientific meetings can still access up-to-date information shared at these events. This is particularly valuable in an era where travel and time constraints often limit professionals' ability to participate in such scientific events. However, resident training videos achieving higher viewing rates suggest that urologists should be encouraged to more frequently use platforms such as UROPEDIA for post-residency training and self-improvement. Encouraging active participation and making the content more relevant to urologists' daily practice will ensure that these platforms become popular among all urologists.

The repeated presentation of the best sessions from major scientific activities, such as the AUA congress, in local languages is crucial for supporting professional development and removing language barriers. In countries where participation in

such scientific events would be financially challenging, offering these presentations in a local language will increase accessibility to medical knowledge. Through the "Best of AUA" organizations, urologists in our country have been able to stay informed about the latest medical advancements on a low budget. Implementing similar activities by other major international organizations would promote global knowledge sharing. Moreover, hosting these events on e-learning platforms would further enhance accessibility.

One notable limitation of this study is the absence of participant feedback collected through surveys. While video viewing rates provide quantitative data on user engagement, they do not offer insights into the qualitative aspects of user experience, such as perceived usefulness, content quality, and satisfaction with the platform. Many studies have demonstrated that e-learning is useful and has been adopted by participants (1,3-6,15). However, almost all of these studies were conducted during the COVID-19 pandemic when conventional education

was either impossible or limited. UROPEDIA has been actively used since 2016 because it reflects data before the COVID-19 pandemic. Additionally, our study is distinct from other studies in the literature because UROPEDIA includes not only content specifically created for e-learning but also video recordings of routine scientific activities, and our study analyzes these different activity subtypes.

Study Limitations

This study has several limitations that should be acknowledged. First, the analysis lacks a feedback survey that could reflect the qualitative aspects of user satisfaction or the perceived educational value of the content. The significantly lower number of surgical videos than verbal presentations constitutes the second limitation. However, even the least-watched surgical videos achieved a higher viewing rate than verbal presentations, demonstrating the viewing potential of surgical videos. Similarly, in a study, chief urology residents and urology specialists with up to 1 year of experience indicated that surgical videos were the type of online education resources they most frequently participated in and benefited from (16). Another limitation is the lack of detailed demographic data on the viewers, which could provide deeper insights into how different subgroups engage with the content.

Conclusion

This study's findings indicate that to increase the popularity and utility of e-learning platforms like UROPEDIA, content should be provided in native languages and should focus on resident training. In particular, surgical videos significantly increase interaction. Moreover, interaction increases if the presenting physician's specialization is the same as the target audience's. Additionally, strategies to encourage post-residency urologists to benefit from these platforms could further enhance their professional development and improve the quality of patient care.

Ethics

Ethics Committee Approval: This study analyzed educational videos and did not include patient data; thus, formal ethics approval was not required. However, ethical research principles, including integrity and respect for intellectual property, were strictly adhered to. This study was conducted with the knowledge and approval of the Society of Urological Surgery.

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Footnotes

Authorship Contributions

Concept: Y.M.A., N.A.M., Design: Y.M.A., N.A.M., Data Collection or Processing: Y.M.A., N.A.M., Analysis or Interpretation: Y.M.A., Literature Search: Y.M.A., N.A.M., Writing: Y.M.A., N.A.M.

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