

Temporal Dynamics of Asynchronous Digital Learning Among Physicians: A Real-World Observational Study

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Abstract

Background

The rapid evolution of oncology requires continuous updating of clinical knowledge. Digital educational formats such as podcasts have emerged as accessible tools for asynchronous learning, however, data describing the real-world uptake of oncology-focused podcasts, particularly those developed in local languages and independent of commercial sponsorship, remain limited.

Methods

This descriptive observational study evaluated a Hebrew-language gastrointestinal oncology podcast. Episodes (n = 53) published between April 15, 2025, and April 4, 2026 were analyzed using platform-based download analytics. Outcomes included total downloads, downloads per episode, temporal uptake (day 1, 7, 14, 30), and engagement metrics (T50, T80).

Results

A total of 1889 downloads were recorded. Mean downloads per episode were 35.6 (median 32, range 12–97). Overall, 67.9% of downloads occurred within 30 days, including 19.6% on day 1 and 49.4% within 7 days. Mean monthly downloads increased over time. Engagement persisted beyond 30 days for nearly all episodes.

Conclusions

This independent Hebrew-language oncology podcast demonstrated consistent real-world uptake, characterized by rapid early engagement and sustained long-term use, supporting its role as a flexible digital medical education tool.

Introduction

Oncology is a rapidly evolving field. New systemic therapies, biomarker-driven treatment strategies, toxicity-management approaches, and regulatory decisions continue to reshape daily practice. Although conferences, journals and formal lectures remain central to continuous medical education (CME), they do not always provide timely or easily accessible translation of emerging evidence into patient care. Digital educational tools have therefore become increasingly important as complementary channels for professional learning and knowledge dissemination.^{1–4}

Podcasts have become an established component of undergraduate, postgraduate, and continuing medical education across multiple specialties. Their on-demand format allows flexible access to

educational content and integration of learning into daily clinical routines. Existing literature suggests that podcasts are well accepted by learners and may improve engagement, accessibility, and knowledge acquisition. In some settings, podcast-based learning has achieved knowledge retention comparable to that of traditional educational approaches.^{1,2,5–7}

These findings suggest that clinicians may access educational content at the point of need, potentially during real-time clinical decision-making.

This format may be especially relevant in oncology, where the interval between emergence of new evidence and its incorporation into practice may be short. Gastrointestinal (GI) oncology has evolved particularly rapidly, with expanding use of biomarker-guided therapies, immunotherapy, and increasingly personalized treatment strategies. Clinicians must remain current not only with new trial data, but also with conference updates, toxicity-management principles, approvals, and reimbursement-related developments that may directly affect routine care. Technology-enhanced learning has therefore emerged as an important adjunct in oncology education.^{4,8,9}

Despite growing interest in podcasts as educational media, relatively little is known about the real-world uptake of oncology-focused podcasts. Most published work has examined English-language content produced for North American or European audiences, which may not fully reflect local practice environments shaped by language, regulation, reimbursement policy, and clinical norms. Reviews of podcast content across medical specialties suggest that oncology-specific offerings remain relatively limited, and qualitative work indicates that relevance to the listener's own practice environment is an important determinant of perceived value.^{2,10–12}

Editorial independence is another important consideration. Many medical podcasts are supported directly or indirectly by commercial sponsorship, including pharmaceutical industry funding. Although sponsorship does not necessarily compromise educational value, independence may be particularly relevant in oncology, where therapeutic innovation, regulatory decisions, and market forces are closely intertwined. Independent educational platforms may therefore offer a distinct advantage by providing context-specific discussion without direct commercial influence.^{2,10}

To address these gaps, *Easy to Digest* was developed as a free, independent, Hebrew-language educational podcast focused on GI oncology in Israel. The podcast provides concise weekly summaries of recent research developments, international congress highlights, local and international regulatory and reimbursement updates, and in-depth episodes on clinically relevant topics featuring local key opinion leaders. The aim of the present study was to evaluate the real-world reach, early uptake after release, and longitudinal download-based engagement of this podcast as a digital medical education platform.¹³

Methods

Study Design

This descriptive observational study evaluated the real-world uptake of a weekly, Hebrew-language gastrointestinal (GI) oncology podcast (“Easy to Digest”), distributed free of charge via browser-based access and shareable links (available at: <https://open.spotify.com/show/5Xlgw3nkPgSrPtes6kM50E>).

Podcast Description

The podcast is a weekly audio program designed to provide concise summaries of recent developments in GI oncology research and clinical practice. Content selection prioritized studies and developments with direct clinical relevance, including newly published research, updates from major international oncology conferences, drug approvals, evolving treatment strategies, and in-depth discussions featuring local key opinion leaders.

Each episode had a duration of 15–25 minutes and was produced in Hebrew to improve accessibility for Hebrew-speaking oncology professionals. The target audience included physicians (both senior clinicians and trainees) practicing oncology, as well as other healthcare professionals involved in cancer care. In 2023, the national oncology workforce in Israel included 247 practicing senior oncologists and 147 trainees. The gastrointestinal oncology group affiliated with the Israeli Society of Clinical Oncology and Radiation Therapy (ISCORT) includes 86 registered members.

Episodes were distributed without pharmaceutical or commercial sponsorship via multiple digital platforms, including Spotify, a dedicated podcast hosting platform (Transistor.fm), the ISCORT website, and professional WhatsApp and mailing lists to facilitate dissemination within the oncology community.

Data collection

Podcast analytics were obtained from platform-generated download data, compiled by episode and by time since release.

Outcomes

Primary outcomes included total cumulative downloads and downloads per episode over the study period.

Secondary outcomes included temporal patterns of uptake (proportion of downloads on day 1 and within 7, 14, and 30 days), long-term engagement metrics (T50 and T80), monthly download volume, and identification of the most frequently accessed episode types.

Engagement in this study refers to download-based engagement, as individual-level listening duration and completion data were not available.

Statistical analysis

All analyses were descriptive. Continuous variables were summarized using means, medians, and ranges, while temporal trends in downloads were evaluated across months. Engagement dynamics were assessed by calculating the proportion of downloads occurring within predefined time intervals following episode release.

This study follows the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.

Ethics

Ethics approval was not required, as the study used aggregated, non-identifiable publicly available data.

Patient and Public Involvement

Patients and the public were not involved in the design, conduct, reporting, or dissemination planning of this study. The research was conceived as a descriptive analysis of podcast usage based on aggregated platform analytics, without collection of individual-level data or direct participant interaction. Accordingly, no patients or members of the public contributed to the development of the research question, selection of outcome measures, study design, recruitment, or interpretation of results.

Results

Podcast Production and Overall Reach

A total of 53 episodes published between April 15, 2025, and April 4, 2026, were included in the analysis. Across the study period, the podcast accumulated 1889 total downloads (Fig. 1).

The mean number of downloads per episode was 35.6, median 32, range 12–97 (Table 1).

Table 1
Overall characteristics and download kinetics of the podcast

Measure	Value
Episodes analyzed, n	53
Total downloads, n	1889
Mean downloads per episode	35.6
Median downloads per episode	32 (range 12–97)
Mean downloads within 30 days	24.2
Download accumulation after release	% of total downloads
Day 1	19.6%
Within 7 days	49.4%
Within 14 days	58.6%
Within 30 days	67.9%
Time-to-download milestones	days
Mean T50	13.1 (range 2–47)
Median T50	9 (IQR 3–23)
Mean T80, days	82.4 (range 2-211)
Median T80, days	68 (IQR 15–142)
T50 indicates time to reach 50% of an episode’s total downloads; T80 indicates time to reach 80% of an episode’s total downloads.	

Engagement Patterns

Overall, 19.6% of total downloads occurred on the first day after publication, 49.4% within 7 days, 58.6% within 14 days, and 67.9% within 30 days (Fig. 2).

Download Activity Over Time

Monthly download volume fluctuated over time but generally increased across the observation period. Mean monthly downloads rose from 115.2 in the first 6 months to 181.8 in the last 6 months, with the highest monthly totals observed in November 2025 (238 downloads) and January 2026 (231 downloads likely corresponding to episodes covering major international meeting updates –ESMO (European Society of Medical Oncology) and ASCO (American Society of Clinical Oncology) GI respectively.

The mean time for an episode to reach 50% of its total downloads (T50) was 13.1 days (range 2–47 days), median 9 days (IQR 3.0–23 days), while the mean time to reach 80% of downloads (T80) was 82.4

days (range 2-211days), median 68 days (IQR 15-142days) (Table 1). When restricted to episodes with sufficient follow-up, 48 of 49 episodes (98%) had at least 1 download more than 30 days after publication, 44 of 44 (100%) more than 60 days after publication, 40 of 40 (100%) more than 90 days after publication, and 27 of 27 (100%) more than 180 days after publication.

Content Engagement

The most frequently listened episodes focused on clinically relevant topics with broad clinical applicability and also of local relevancy. These included: tutorials on drug toxicity, dosing and scheduling, international meeting updates and new drug approval by the Israeli ministry of health.

Listening Platforms

Device analytics suggested that most listening occurred on mobile devices, either through mobile web browsers or dedicated mobile apps. 45% of listens originated from embedded players, primarily accessed through links distributed via WhatsApp or the ISCOROT webpage. Approximately 40% of listens occurred through dedicated podcast applications, such as Spotify.

Strengths and Limitations

This study provides real-world insight into physician engagement with a digital educational platform using objective longitudinal analytics. The analysis includes a complete series of episodes over an extended period, allowing characterization of temporal engagement patterns.

However, several limitations should be acknowledged. Download metrics do not capture actual listening behavior, completion rates, or educational impact. Individual-level user data were not available, limiting understanding of audience characteristics. The study reflects a single podcast within a specific language and healthcare context, which may limit generalizability. Finally, no assessment of knowledge acquisition or clinical impact was performed.

Discussion

This study demonstrates a consistent and reproducible pattern of physician engagement with asynchronous, mobile-first educational content. Across 53 weekly episodes, engagement was characterized by rapid early uptake following release, with more than half of downloads occurring within the first week, followed by sustained long-tail utilization extending over several months. Rather than a transient peak in attention, engagement accumulated progressively over time, suggesting that digital educational content supports both immediate and delayed learning needs within routine clinical practice.

These findings point to a broader shift in how clinicians' access and integrate new knowledge. The observed temporal pattern, early concentrated uptake followed by prolonged, lower-intensity engagement likely reflects the realities of contemporary clinical workflows, where learning is increasingly fragmented, opportunistic, and embedded within daily activity rather than confined to scheduled educational settings. Asynchronous formats may therefore complement traditional models of continuing

medical education by enabling both rapid dissemination of new information and flexible, on-demand retrieval when clinically relevant. These findings suggest that clinicians may access educational content at the point of need, potentially during real-time clinical decision-making.

Similar temporal patterns have been described across digital learning environments, suggesting that these findings may reflect broader behavioral characteristics of physician learning. This model may extend beyond oncology and reflect broader patterns of clinician engagement with digital educational content. Local-language delivery may enhance accessibility and relevance, particularly when clinical practice is shaped by country-specific regulatory and reimbursement frameworks. However, the underlying pattern of early uptake combined with persistent long-tail access likely reflects generalizable features of digital learning behaviour among physicians.

Content-related findings further support this interpretation. Episodes addressing practical clinical topics, such as treatment toxicity and therapeutic decision-making, as well as timely summaries of major international meetings, were most frequently accessed. In parallel, the predominance of mobile-based listening suggests that educational content was integrated into everyday routines, reinforcing the role of digital platforms as flexible, point-of-need learning tools.

The absence of commercial sponsorship may have contributed to perceived credibility, particularly in oncology, where potential conflicts of interest are common. However, the present study was not designed to evaluate the impact of sponsorship on engagement, and this observation should be interpreted cautiously.

Several limitations should be considered. First, the analysis was based on download metrics rather than direct measures of listening behaviour and therefore could not assess content completion, unique listeners, or depth of engagement. Second, individual-level listener characteristics were not available, limiting insight into audience composition. Third, the study evaluated engagement rather than educational effectiveness, and no conclusions can be drawn regarding knowledge acquisition or clinical impact. Finally, as a single-platform observational study, findings may be influenced by content selection, dissemination strategies, and audience characteristics.

In conclusion, this study demonstrates a consistent temporal pattern of engagement with asynchronous digital educational content among physicians, characterized by rapid early uptake and sustained long-tail utilization. These findings support a model of just-in-time learning that aligns with the time constraints and workflow realities of modern clinical practice. Digital, on-demand educational platforms may therefore complement traditional educational approaches by enabling both rapid dissemination of new information and flexible access at the point of need. Further research is warranted to determine how these engagement patterns translate into knowledge retention and clinical decision-making.

Declarations

Clinical trial registration

Not applicable.

Ethics approval and consent to participate:

Not required, as this study used aggregated, non-identifiable publicly available data.

Consent for publication:

Not applicable.

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Authors' contributions:

GBH conceptualized the study, conducted the analysis, and drafted the manuscript.

AL contributed to data interpretation and manuscript revision.

ESS supervised the study, contributed to study design, and critically revised the manuscript.

All authors read and approved the final manuscript.

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Author Contribution

GBH conceptualized the study, conducted the analysis, and drafted the manuscript. AL contributed to data interpretation and manuscript revision. ESS supervised the study, contributed to study design, and critically revised the manuscript. All authors approved the final version and agree to be accountable for all aspects of the work.

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Data Availability

Data are available upon reasonable request. Aggregated podcast analytics data used in this study can be obtained from the corresponding author.

References

1. Cho D, Cosimini M, Espinoza J. Podcasting in medical education: a review of the literature. *Korean J Med Educ.* 2017;29(4):229–39. 10.3946/kjme.2017.69.
2. Kelly JM, Perseghin A, Dow AW, Trivedi SP, Rodman A, Berk J. Learning Through Listening: A Scoping Review of Podcast Use in Medical Education. *Acad Med J Assoc Am Med Coll.* 2022;97(7):1079–85. 10.1097/ACM.0000000000004565.
3. Carson RA, Sobolewski B. Evidence-Based Guidelines for Podcast Production and Use in Competency-Based Health Professions Education. *J Pediatr Health Care.* 2026;40(2):286–96. 10.1016/j.pedhc.2025.12.009.
4. Kulaksız T, Steinbacher J, Kalz M. Technology-Enhanced Learning in the Education of Oncology Medical Professionals: A Systematic Literature Review. *J Cancer Educ.* 2023;38:1743–51. 10.1007/s13187-023-02329-1.
5. Surapaneni KM. Implications of Using Podcasts as Handy Tools for Continuing Professional Development in Health Professions. *Med Sci Educ.* 2023;33(4):1021. 10.1007/s40670-023-01830-y.
6. Fernandes C, Vieira L, Silva F, Kubrusly M, Augusto K. Podcasts as an integral part of free open access medical education. *Rev Bras Educ Médica.* 2023;47. 10.1590/1981-5271v47.1-20220119.ing.
7. Chaiklin C, Onyango J, Heublein M, Gielissen K, Kryzhanovskaya IE. Twelve tips for integrating podcasts into medical education curricula. *Med Teach.* 2024;46(5):621–5. 10.1080/0142159X.2023.2280118.
8. Mistry RH, Hausrath DJ, Patel VG. Utility of a Novel Trainee-Level Hematology/Oncology Podcast in Graduate Medical Education: a Pilot Study. *J Cancer Educ Off J Am Assoc Cancer Educ.* 2024;39(2):106–10. 10.1007/s13187-023-02382-w.
9. Dittrich C, Kosty M, Jezdic S, et al. ESMO / ASCO Recommendations for a Global Curriculum in Medical Oncology Edition 2016. *ESMO Open.* 2016;1(5):e000097. 10.1136/esmooopen-2016-000097.
10. Malecki SL, Quinn KL, Zilbert N, et al. Understanding the Use and Perceived Impact of a Medical Podcast: Qualitative Study. *JMIR Med Educ.* 2019;5(2):e12901. 10.2196/12901.
11. Little A, Hampton Z, Gronowski T, Meyer C, Kalnow A. Podcasting in Medicine: A Review of the Current Content by Specialty. *Cureus.* 2020;12(1):e6726. 10.7759/cureus.6726.
12. Wu TC, No HJ, Rahimy E, et al. Performance Analysis of a Radiation Oncology Educational Podcast. *J Am Coll Radiol JACR.* 2024;21(1):186–91. 10.1016/j.jacr.2023.06.026.

13. Patel VG, Tawagi K, Armstrong SA, et al. Educational Impact of a Podcast Curriculum for Hematology/Oncology Fellows: Final Results of the Multicenter Cluster Randomized PODCAST-HOF Trial. JCO Oncol Pract. 2025;21(10):1531–9. 10.1200/OP-25-00324.

Figures

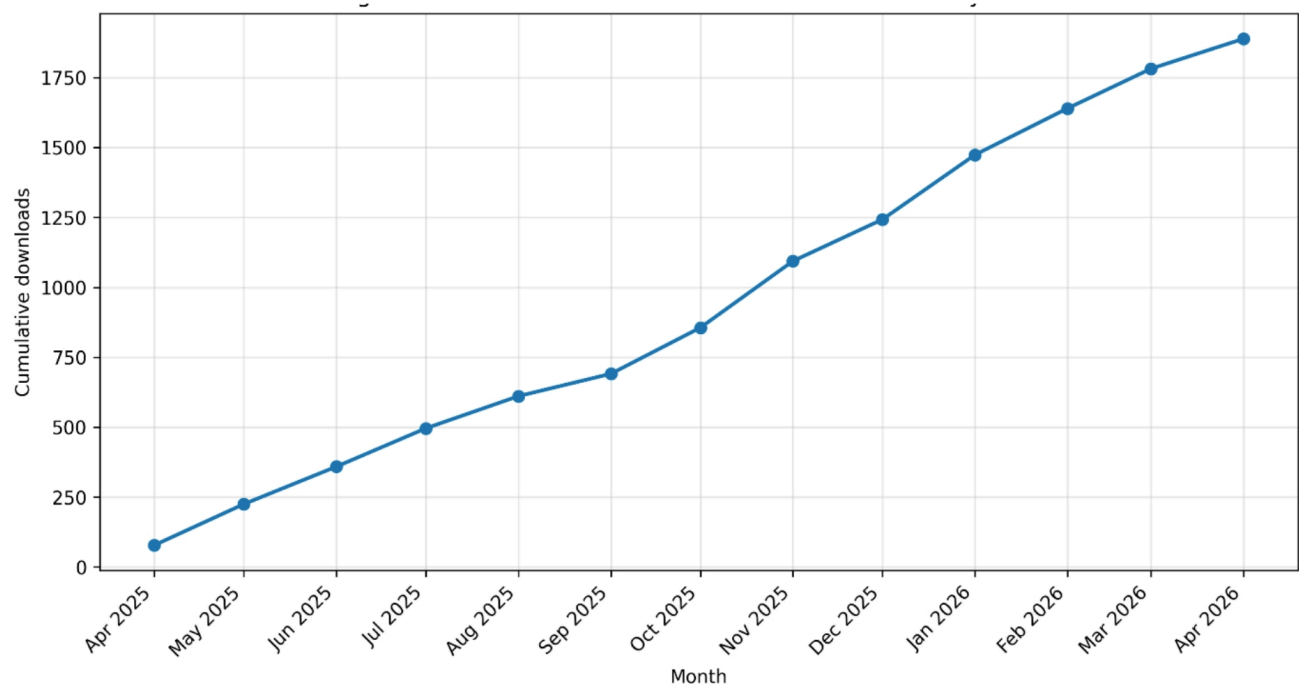


Figure 1

Cumulative podcast downloads across the study period.

Cumulative number of downloads for all podcast episodes between April 15, 2025, and February 28, 2026. The curve demonstrates progressive accumulation of downloads, reflecting both early uptake after episode release and sustained long-term engagement.

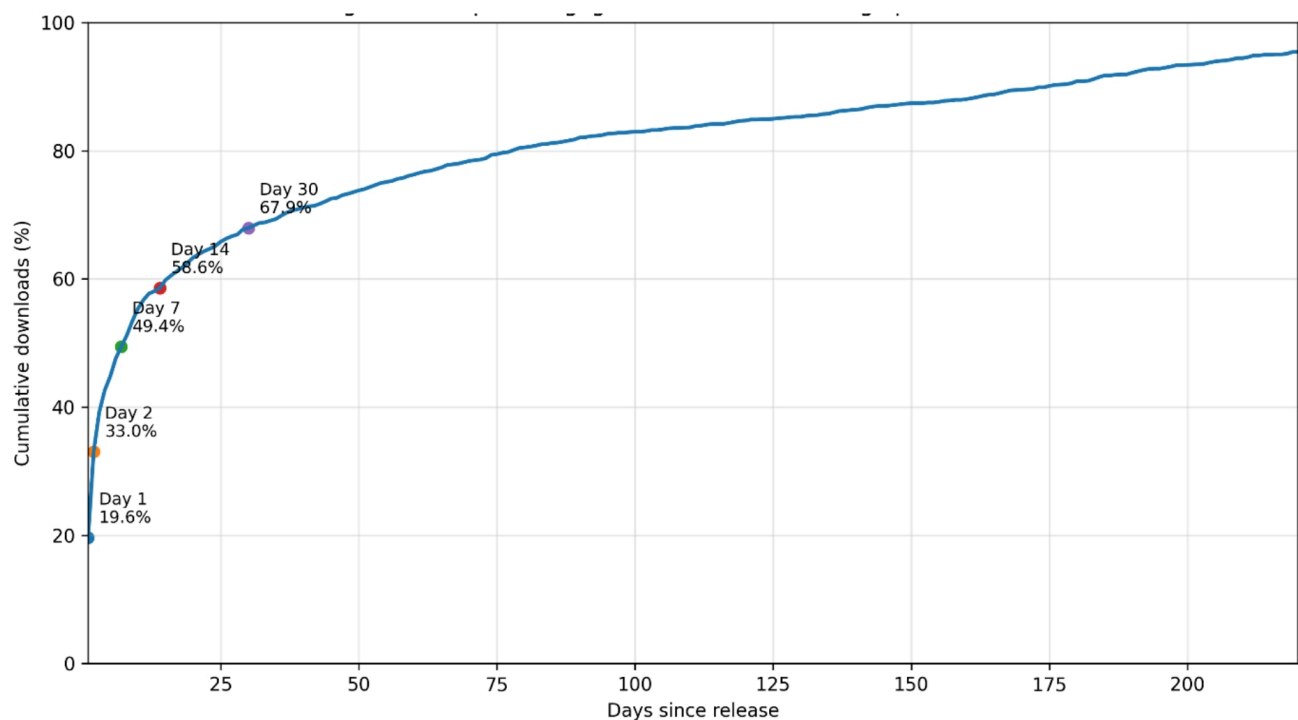


Figure 2

Temporal engagement pattern following episode release.

Proportion of total downloads accumulated over time after publication, illustrating the temporal dynamics of engagement. A rapid initial uptake is observed in the first days after release, followed by gradual accumulation reflecting sustained long-tail utilization.