Digital Enhancements for Primary Medical Manuscripts: A Survey on Perceptions, Challenges, and Needs of Medical Publication Professionals

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ABSTRACT

Given their potential for engaging audiences, there has been increasing interest recently in the use of digital enhancements, such as video abstracts and infographics, for primary publications in peer-reviewed medical journals. However, their uptake by authors and sponsors of medical publications has been mixed, with few top journals offering the possibility of publishing digital enhancements beyond supporting slides and lay summaries.

Digital enhancements for primary manuscripts may provide new opportunities for medical writers to expand their skills and services, but it is unclear whether medical writers receive and accept requests to develop digital enhancements regularly and what training they need to generate high-quality deliverables for their clients. Understanding the perspectives of medical publication professionals and their clients on digital enhancements for peer-reviewed journals may help address misconceptions and concerns and identify more effective ways to create auxiliary digital content to support the dissemination of research findings. Here, a survey was conducted to gauge the overall interest in accompanying digital enhancements among medical publication professionals and their perception of their clients' needs, determine the perceived value of these features, and identify barriers in development.

The survey was created and posted on AMWA Engage, AMWA New England Chapter E-News, LinkedIn, and the MedComms Networking webpage. A total of 116 respondents completed the survey. About half had developed digital enhancements for primary publications, mostly for pharmaceutical companies, medical communication agencies, and other nonacademic organizations. Infographics and visual abstracts were the most frequently requested type of enhanced content. Although the respondents recognized the importance of digital enhancements to facilitate data visualization, approximately half reported not having specific training or experience to enable them to accept such assignments. For their clients, the main reasons given for not developing digital enhancements were cost and time constraints, lack of interest, and author unavailability.

The medical literature is essential to the communication of scientific evidence. In the past few decades, traditional print journals have predominantly assumed electronic formats, allowing for wider access and outreach, and social media and digital tools are now important vehicles in content dissemination.[1]

A digital enhancement in the context of scientific publications is an online feature that is developed to aid in the visualization and interpretation of data. Infographics have been used for quite some time, particularly in patient education materials, and are effective channels for the communication of complex concepts. Infographics typically combine text with graphics, illustrations, and/or charts in a logical sequence to tell a story.[2,3] Examples of infographics can be found here in https://www.fda.gov/media/82381/download and https://www.who.int/reproductivehealth/publications/violence/VAW_infographic.pdf?ua=1.

Visual or graphical abstracts are schematic or animated representations of the content of an article, require less time and effort to create than infographics, and can be easily shared on social media.[4,5] For examples of visual abstracts, see https://www.nejm.org/doi/full/10.1056/NEJMoa2026845?query=featured_home and https://www.cell.com/cancer-cell/fulltext/S1535-6108(21)00339-1. Video formats have become very popular with the widespread availability of mobile and relatively inexpensive filming/recording devices.[6] Different types of video abstracts can be viewed here: https://www.youtube.com/watch?v=vNIg0pah3wE, https://players.brightcove.net/656326989001/default_default/index.html?videoId=5824269862001, and https://player.vimeo.com/video/301841421. In addition, "Twitter abstracts" (visual abstracts that are disseminated via Twitter) are gaining traction

as a rapid means of disseminating research findings to a wider audience.[7]

Written lay summaries are digestible forms of presenting data to patients, nonspecialist health care providers, or the public. Lay summaries require no expertise in terms of graphic design and have been embraced by several publishers as important elements of research articles.[8-10] Examples of different formats of lay summaries can be found in https://www.acpjournals.org/doi/10.7326/P21-0006 and https://link.springer.com/article/10.1007/s13300-018-0531-0#Sec1. Other digital enhancements accepted by biomedical journals include audio abstracts, which are voice recordings summarizing an article, and interviews with the authors, in either video or audio format, in which the authors have a conversation with an interviewer about their research findings. For audio and video interviews, see https://jamanetwork.com/journals/jamaophthalmology/pages/jama-ophthalmology-author-interviews and https://www.mayoclinicproceedings.org/video-archive-2021.

Given their ease of access and potential for engaging audiences,[11-13] there has been increasing interest in recent years in the use of digital tools for data dissemination, and this interest was greatly amplified by the COVID-19 pandemic and the increase in virtual congresses. Regarding primary publications in peer-reviewed medical journals, the uptake of digital enhancements by authors and/or pharmaceutical companies sponsoring the development of scientific publications has been mixed.

Digital enhancements for primary manuscripts may provide new opportunities for medical writers to expand their skills and services. Understanding the main advantages and limitations of digital features may help address misconceptions or concerns about the development of auxiliary digital content to enhance the communication of research findings. The main objective of this survey was to gauge the overall interest and demand for accompanying digital enhancements among medical writers and other publication professionals. The secondary objective was to determine the perceived value of digital enhancements and identify barriers to their development.

METHODS

A survey targeting medical writers and other professionals involved in the development of primary manuscripts for peer-reviewed journals was developed using Google Forms. The 25-question survey, which took no longer than 10 minutes to complete, was shared on AMWA Engage, the AMWA New England Chapter E-News, and the LinkedIn pages of AMWA, the AMWA New England Chapter, MedComms Networking, the Publication Plan, and the Medical Writers Corner. In addition, the survey was disseminated directly in the MedComms Networking online newsletter. Permissions to advertise the survey were requested as needed. Responses were accepted from August 25, 2020, to June 1, 2021.

The survey included 24 multiple-choice questions and a comment box (question 25) to collect feedback from respondents. Some questions allowed for more than one answer to be selected. All questions allowed respondents to add in their answers, if different from the choices provided; there were no mandatory questions. Information captured in the survey included demographic data (ie, region, role, therapeutic areas, and years of experience), the number and type of enhancements developed, the perceived benefits and main obstacles encountered before and during the development of digital enhancements, and metrics deemed relevant to evaluate their impact. Awareness, interest, and determining factors in the decision-making process were assessed for academic compared with nonacademic sponsors and/or authors. The complete survey is included as a supplement.

RESULTS

As of June 8, 2021, a total of 116 responses had been received; the majority of the respondents were based in Europe (59%) and North America (35%). The top 3 roles (n = 114) were medical writers (66%), publications planners (29%), and editors/proofreaders (25%) (more than one option could be selected). The vast majority of respondents (97%) were employed or worked as freelancers, and most worked full-time (72%); 62% had more than 10 years of work experience, and only 3% reported having less than 2 years of experience in the field. The most common therapeutic areas (n = 114) in order of prevalence were oncology (52%), neurology (28%), respiratory diseases (26%), and cardiology and endocrinology (approximately 24% each) (more than one option was allowed).

The majority of the respondents were employed by medical communication agencies or contract research organizations (37%) or worked as freelancers (35%); a small portion of respondents were affiliated with academic institutions and other medical and educational organizations (10%) (Figure 1).

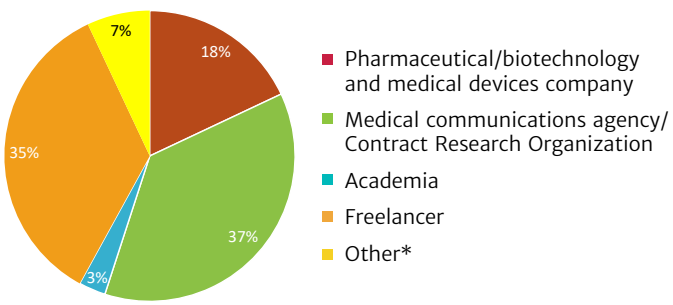

Figure 1. Survey population per professional setting (N = 116). *Includes medical societies, journal publishers, and nonprofit research and/or educational organizations.

More than half of the respondents (53%) had developed digital enhancements professionally (ie, created the concept, produced content, or reviewed the deliverables). Of these (n = 62), the majority provided these services for clients in the life sciences or medical communication industry (92%). Among respondents who had not developed enhancements for primary manuscripts (n = 55), only a small proportion (7%) reported not having an interest in doing so. For respondents with digital enhancements in their professional portfolios, 37% typically worked on 1-2 of these types of projects per year, with 28% indicating working on more than 5 enhancements in 1 year. A total of 49% reported receiving more requests for developing enhancements during the COVID-19 pandemic, and 49% saw no change in these requests (n = 63).

The most frequently developed enhancements (n = 62) were infographics/illustrations (76%) and visual/video abstracts (74%) (more than one option was allowed) (Figure 2).
The perceived benefit of digital enhancements by medical communication professionals (n = 115) was improved data visualization and comprehension (60%), followed by increased interest in primary publication (21%) and increased access (13%). For the clients, as reported by the respondents (n = 102), the value of digital enhancements was to stimulate interest in the primary publication (36%), to increase data access to a wider audience (29%), and to improve data visualization and comprehension (22%). Approximately 5% of the respondents did not see a benefit but noted that their clients inquired about these enhancements because they were a requirement provided by the target journals of the primary publications.

Although respondents working for nonacademic clients (n = 66) reported that their clients mostly rejected proposals to develop digital enhancements because of cost (73%) and time (49%) constraints, concerns about enhancements being perceived as promotional (34%) were also reported. Clients in the academic or nonprofit sector (n = 26) mostly reported to the respondents about concerns related to the unavailability of authors (69%), concerns about the time needed to develop enhancements (50%), and concerns about the associated costs of development and publication (42%). The unavailability of peer review or specific metrics for enhancements were only deemed relevant for clients in the nonacademic setting (Table).

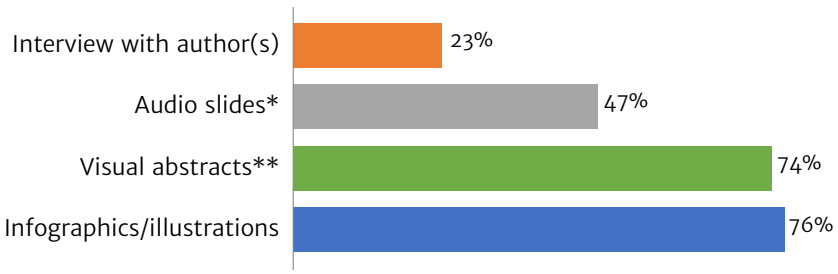

Figure 2. Most frequently developed digital enhancements (n = 62). More than one option could be selected. *Summary slides with audio commentary. **Video or animated abstract with/without voice-over and/or images/charts.

Table. Reasons for Rejecting Digital Enhancements

	Industry Clients (n = 66)	Nonindustry Clients (n = 26)
No Perceived Value	12%	15%
May Be Perceived as "Promotional"	34%	4%
Journal Does Not Offer Peer Review	9%	0%
Copyright Issues Related to Enhancement	21%	4%
Insufficient Dissemination by Journal (eg, Link Not Easily Visible)	14%	8%
Hosted Externally to Journal (eg, Commercial Video Platform)	12%	4%
Journal Does Not Collect Specific Metrics	6%	0%
Cost (eg, Production Costs, Journal Fees)	73%	42%
Time and Resources Needed for Development	49%	50%
Authors Unavailable	27%	69%

A maximum of 3 options could be selected.
Industry clients: pharmaceutical, biotechnology, or medical device companies, contract research organizations, or medical communications agencies.
Nonindustry: academia, medical societies, or individual authors.

Approximately 63% of the respondents (n = 114) reported proposing the development of digital enhancements to clients; of those who suggested (n = 70) enhancements depending on the type of project or whenever applicable to the manuscript, the majority (79%) suggested these features to nonacademic clients only. The main barriers for medical communication professionals (n = 109) in the development of accompanying digital features were a lack of specific training and/or experience (45%), a lack of time or insufficient pay (21%), and unclear/absent instructions from the journal (20%) (Figure 3). Not surprisingly, 46% claimed they would accept this type of assignment if they had adequate training, with 26% mentioning better guidance from journals regarding the requirements for submission of enhancements and 16% noting the importance of special pay rates to accept these services (n = 110).

Respondents (n = 108) thought that adequate dissemination of the enhancement with the manuscript (eg, visible link next to the manuscript) would be the determining factor in the

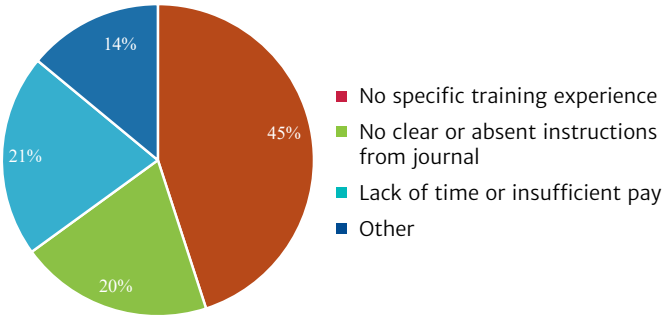

Figure 3. Main barriers for medical communications professionals (n = 109). A maximum of 3 options could be selected.

decision to develop digital enhancements for nonacademic clients (64%), which was followed in importance by the availability of useful metrics specific to the enhancement (50%). However, for those providing services to clients in academia and nonprofit entities (n = 60), journal assistance (60%), adequate dissemination (48%), and no or reduced fees for hosting the enhancement (47%) were referred to as factors that could influence a decision to develop enhancements. The most relevant enhancement-specific metrics for medical publication professionals (n = 113) were the total number of views/downloads (56%) and the time spent viewing the enhancement (30%); 55% of the respondents reported they would use the total number of views/downloads as a measure of the impact of digital enhancements to promote this type of service to clients.

In the open-ended responses, the respondents recognized that demand for digital features will continue to grow and specifically mentioned the difficulties in demonstrating the overall benefit compared with the cost to clients as well as issues related to open access and copyright.

DISCUSSION

This survey was conducted to learn about the impact of digital enhancements on the practices of professionals involved in the development of primary publications, and the responses obtained provided a glimpse of the challenges encountered in the field of biomedical publications. Despite the current interest in digital formats, which has been intensified by the COVID-19 pandemic, and increasing research attempting to measure their value, digital enhancements for peer-reviewed primary publications do not seem to have a significant presence outside the context of medical communication agencies and sponsors of scientific publications in the life sciences industry.

Although sponsors seem to recognize digital features as effective means of disseminating scientific data, there are oftentimes issues to address that do not relate to content or the choice of the most adequate format for the data in question, namely the journal's capacity for hosting enhancements and requirements, the timing of submission of the enhancements, the availability of peer review, the visibility of the enhancements, and copyright licensing.

For medical publication professionals, accepting requests to develop these features may involve advising hesitant clients or authors, discussing benefits and concerns, and integrating the development process for digital features into the timeline for the core manuscript. Some journals may request the submission of an enhanced content piece with a manuscript, but if the manuscript is rejected, the enhancement developed may not be in the correct format for another journal. For these reasons, clients and authors may see enhanced features as a poor use of their time and budgets.

In addition, different practices by journals in terms of how digital enhancements are displayed on their websites (eg, as supplementary materials, as links to external websites, or prominently displayed with the article) may hinder access. Authors also face barriers to sharing digital content online, as the copyright license for the enhancement may be owned by the journal. Moreover, nonacademic sponsors may have restrictive policies on sharing content online, which may partially explain the low level of engagement of academic coauthors in the development of enhanced digital content in these industry-sponsored publications. Authors, sponsors, and medical communicators alike would certainly benefit from having detailed guidance, assistance, and quantitative data from journals hosting digital enhancements.

Finally, there is currently a lack of evidence regarding the best strategies to effectively disseminate data and engage the target audience through digital channels. In the future, digital enhancements may be as standard as traditional written abstracts in journal articles, ultimately benefiting their audiences.

Limitations

This study had some limitations. First, there was selection bias owing to how the survey was advertised to medical publication professionals. Most respondents were experienced professionals who may have had a distinct exposure to this type of publications compared with less "seasoned" professionals. In addition, the survey may have captured the responses of those already developing or with an interest in developing digital features.

Second, biomedical publication professionals from other geographic regions other than Europe and North America as well as professionals working in nonprofit, academic, and educational backgrounds were poorly represented, which may be

explained by the only relatively recent rise in medical writing services in Asia[14] and the traditionally low presence of these professionals at research centers and universities.

Finally, the open-text format of some of the questions added a level of complexity to the analysis of the responses, as some of the answers added were the same as the ones provided, but with different wording, and others did not fit into the context of the questionnaire (eg, interactive posters for congresses).

CONCLUSION

Digital enhancements may add value to primary publications, but many barriers persist and hinder a wider uptake by medical communication professionals and their clients. Although nonacademic clients may be particularly concerned about the return on investment, the cost and time invested in the development of these features pose challenges to both academic and nonacademic clients.

Medical communication professionals are uniquely positioned to provide clients and authors with much needed support in creating visual and digital enhancements for publications, but confidence in their own expertise to guide the development process falls below expectations. Professional societies such as AMWA could potentially contribute to meet the needs for specific training in the development of digital enhancements in the form of continuing education activities.

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ISMPP University, "Visual Medical Communications," Webinar presented on January 29, 2020: https://www.ismpp.org/complimentary-ismpp-u-webinars

Boston University, Certificate in Visual and Digital Health Communications: https://www.bu.edu/academics/met/programs/graduate-certificate-in-visual-digital-health-communication/

Graphical abstracts: https://www.cell.com/pb/assets/raw/shared/figureguidelines/GA_guide.pdf

Twitter posters: https://www.youtube.com/watch?v=fQDL8r3r_d4

Plain language summaries: https://www.envisionthepatient.com/plstoolkit/

Tools: Canva Infographic (https://www.canva.com/), PiktoChart (https://www.piktochart.com/), Motifolio (https://www.motifolio.com/), Mind The GRAPH (https://mindthegraph.com/)

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