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An Integrated Guide for Designing Video Abstracts Using Freeware and Their Emerging Role in Academic Research Advancement

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ABSTRACT

Video abstracts (VAs) are a motion picture equivalent of written abstracts. With greater use of social media platforms for post publication promotions of research articles, VAs have gained increasing popularity among researchers in recent years. Widespread lockdowns and social distancing protocols in the pandemic period furthered the use of VAs as a tool for efficient learning. Moreover, these may be the preferred medium for communicating certain types of information, such as diagnostic or therapeutic procedures, qualitative research, perspectives, and techniques. In this article, the authors discuss the role of VAs in the advancement of academic research, plausible designs, freeware for making videos, and specific considerations for crafting good VAs.

Keywords: Video Abstracts; Designing; Publishing; Post-publication Promotions; Digitalization

Introduction

In the current era, technological advancement has opened new frontiers for seamless research and modern medicine. Digitalization of academia has led to a remarkable shift of learning and reading to online platforms. The unprecedented coronavirus disease 2019 pandemic has further hastened the process in the face of adversity.[1] Medical journals have greater presence on social media platforms (SMPs) for circulation of new medical literature and post-publication promotion of research among a wider audience.[2,3] Word tweets, infographics, podcasts and video abstracts (VAs) are new tools that are increasingly being availed by medical professionals for assimilation of medical literature. A VA is the motion picture equivalent of a written abstract. Nowadays, many journals provide authors the option of submitting VAs alongside the research article to further supplement the understanding of the readers, and for better scientific viewership. These often provide information which is within the scope of the formal printed article, but is better delivered through videography and motion pictures.[4-7] Some of the leading scholarly journals which have resorted to these practices to promote contents of their print issues include *The Lancet* and *The New England Journal of Medicine*.[8]

Most VAs are 3–5 minutes in length, varying based on journal criteria or author preference.[9] Short videos are preferred for better attention. It is advisable for authors to explain the highlights of a study or research in-brief. Typically, most VAs communicate the background of a study, methodology employed, the study results and potential implication.[10] Although VAs are well-received and typically improve information registration and recall, most authors are wary of designing these due to lack of expertise in video design and editing.[11] Moreover, with the increasing use of smartphone apps for healthcare purposes during the pandemic period, some digital tools may come handy as resource material for various sections of VAs.[12,13]

A worldwide transformation from analogue and single-location information to digital, globally accessible data enables videos to play various diverse roles in the scientific process. These roles include 'show and tell' tutorials, imparting scientific knowledge to healthcare professionals, students and patients, aiding in the decision-making process of physicians as well as patients, curbing misinformation, documentation of processes, performance review, visual argumentation, and fast dissemination of results.[14-20] VAs are inherently better for portraying information like medical procedures and patient interviews in qualitative research.[20] The *Journal of Visualized Experiments* (Cambridge, MA, USA), launched in 2006, with more than 10,000 published videos, is the first peer reviewed scientific video journal, describing new laboratory methods, science concepts and protocols from all over the world in video format to improve the reproducibility of experiments in life sciences and physics.[8,21]

VAs are preferred as human beings perceive motion picture better than a still picture or text. A motion picture transforms individual learning from reading to watching while increasing knowledge permanency, comprehension, motivation, enjoyment, and learning speed in comparison to text-based materials.[22,23] Researchers are resorting to VAs because of their potential in increasing the engagement and readership and hence Altmetric, and subsequently, citation of a study.[24] Research has also proven that human beings perceive and process visual cues way better than verbal ones.[25] Today's digital age requires fast and comprehensive ways of explanation, making videos an excellent method for delivering information.[26,27] VAs can be a great way to engage people outside one's field. Patients also prefer interaction with physicians over audio-visual means than audio or texts alone.[28,29] Furthermore, surveys across the world have revealed that due to a switch to digital broadcasting, television viewership is in rapid decline, and increasing number of people are substituting it for internet streaming services, which are easily accessible on phones and laptops for entertainment and educational purposes.[30,31] Videos on social media and the Internet are increasingly being perceived as the next-gen tool for entertainment.

Elements of a Good VA

A good VA requires a methodical and creative approach, together with careful assessment of the practical aspects keeping in mind the free tools available to prepare one. At the beginning, preparing one may seem to be an arduous task, although with practice the authors may gain greater confidence at the activity. Certain points may be considered before embarking on designing one (**Fig. 1**).[32-37]

1. A 3–5 minute VA is considered ideal. A longer video tends to refrain people from clicking on it. Plus, one does not want to stray people away from reading the original article.
2. The VA should include purpose of the research, methodology and key messages in brief. It is advisable to not go beyond the main findings and take-home messages of the paper.
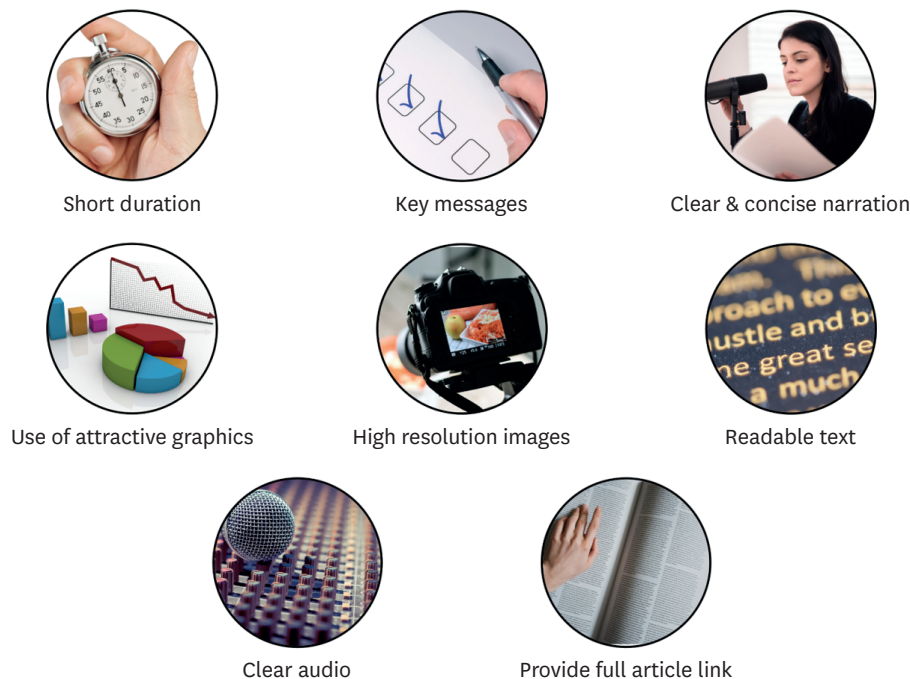
Elements of a good video abstract

Short duration Key messages Clear & concise narration

Use of attractive graphics High resolution images Readable text

Clear audio Provide full article link

Fig. 1. Elements of a good video abstract.

3. While narrating the video it is advisable to be clear and concise. Verbosity will hinder the viewers from properly understanding the content.

4. Mixing of content i.e., person speaking, text, graphs, pictorial diagrams, images, charts, Venn diagrams, tables, interactive interface, animated graphics may enhance the quality and engagement of the VA. However, overcrowding of elements should be avoided.

5. It is advisable to desist from using poor quality images/graphical elements as it tends to distract people from the VA.

6. When including text in the VA, it is suggested that it neither be too big or too small. The ideal font size is the one which is clearly visible on a mobile screen as most people view videos on their phones.

7. Audio of the VA should be clear without any background noise.

8. The link of the article should be provided at the end of the video so that the viewers can read the full article if they wish to. Link shorteners may be used for aesthetic appeal.

Freeware Available for Designing VAs

There are many freeware available for designing a VA. The process of designing and editing a video involves various technicalities which may seem cumbersome to the uninitiated. The authors suggest the following tools after using them for a significant amount of time and observing their ease of working and technical aspects. Microsoft PowerPoint, Canva, iMovie, Animaker, Windows Movie Maker are some of the commonly used tools for designing a video. For authors who are well-versed with the use of Microsoft PowerPoint or Canva, mixing various picture frames to design a video may be far more convenient. A comparative

Table 1. Comparative description of Microsoft PowerPoint and Canva

Microsoft PowerPoint	Canva (https://www.canva.com/)
1. It is a desktop-based application available on all laptops and desktops, requiring an intermediate level of skill expertise.	It is a web-based application, used by beginners as well as professionals for graphic designing and social media marketing.
2. It offers a number of pre-designed background templates, a plethora of font styles, colour schemes, and offers flexibility in including slide designs available on the internet, including pictures and videos from desktop, as well as online images falling under Creative Commons Attribution avoiding copyright issues.	It offers an extensive collection of pre-designed templates, font styles, colour schemes, illustrations, shapes and figures, videos, etc. The availability of pre-designed templates avoids the intensive labour in designing unlike PowerPoint.
3. Unlike other freeware tools, all the features of this application are available without any additional cost or in-app purchases and the final creation does not bear any watermark.	This tool offers many benefits at one place but many of its features and inserts are available only for a Pro account. Images and videos though fulfilling the requirement of Creative Commons Attribution come with a watermark in a free account.
4. It offers in-built templates for tables, graphs, charts, bar diagrams, pie charts, SmartArt graphics, etc., which can be edited according to personal preferences.	Unlike Microsoft PowerPoint it does not offer the flexibility in designing tables, graphs, charts, etc.
5. The presentation slides can be easily converted into a video. The option of choosing from a variety of slide transitions, animations, and duration of individual frames paves the way for a more personalized VA.	The limited number of slide transitions may give the final video a dull look. For best results, the authors recommend saving the project slides as Microsoft PowerPoint and further editing the video as per requirement.
6. It also allows team sharing with Cloud and OneDrive storage.	It allows sharing of designs through a team account.

VA = video abstract.

1. Presentation design videos
2. Animated videos
3. Authors explaining their paper
4. Re-enacting medical procedures and techniques
5. Videos including laboratory footage, context footage and general footage of people

Fig. 2. Various methods of creating video abstracts.

description of both these applications is given in **Table 1**. Various methods of creating a VA are mentioned in **Fig. 2**. A brief introduction to different freeware tools is listed below:

Animated Video/movie Making Softwares

Animaker (https://www.animaker.com/)

Animated videos are being increasingly used nowadays by medical professional making them appealing for all age groups and backgrounds. The U.S. Department of Health and Human Services is actively using animated videos to disseminate health information and research ideas via YouTube.[38] Animaker is an easy to use and popular freeware tool for this purpose. It offers pre-designed characters, motions, transitions, audio editions, other animations, etc. It also offers the flexibility of designing characters from scratch for a personally curated look. One does not have to be skilled in creating animated videos to use this tool. For beginners, the tutorials available on the web site are utilitarian in explaining the entire functioning of the application for ease of use. The major disadvantages are that every video gets downloaded in low quality with a water mark for product advertisement which might be distracting and the character designs bear an amateurish feel, which makes it less than ideal for medical professionals' use.

Moovly (https://www.moovly.com/)

Moovly is a web-based application, similar to Animaker, used to design animated as well as non-animated videos. The major disadvantages are that the downloaded video bears a watermark and is in low quality unless one has a subscription.

Infographic cum Video Designing Softwares

These softwares are useful in designing attractive video frames, which can be included in the VA to supplement the footage of author explaining their paper with the help of video editing softwares mentioned in the next category or added in presentation slides. For the naïve, this may be the best option to begin with for creating videos.

Mind the graph (https://mindthegraph.com/)
Mind the graph is an online graphic design application that specializes in different types of ready-to-use layouts, specially designed for the scientific community. It offers an expansive collection of pre-designed editable templates, designs and illustrations on various research related topics. This application is more suited to create scientific infographics and graphical abstracts that can enable readers within or outside the science community to understand research easily. These designs may be included in the video frames. It also offers a host of illustrations and icons on various topics which may be inculcated in the infographic and subsequently in the VA. The designs can be shared easily with fellow editors. The major disadvantages are that a free account only permits the creation of one design at a time and Mind the Graph has to be cited in every design, despite falling under the license of Creative Commons Attribution.[39]

Google slides (https://www.google.com/slides/about/)
It is a web-based application, similar to Microsoft PowerPoint, offering many features like pre-made presentations, hundreds of font styles, animations, etc. The presentation slides can be easily converted into a video by downloading it as a Microsoft PowerPoint file. They can be accessed, created and edited from any device, with the obvious that the user is connected through their Google account.

Video Editing Softwares

iMovie (https://www.apple.com/in/imovie/)
iMovie is a video editing application available for macOS, iOS and iPadOS devices. It offers all the basic features of a video editing software like modifying and enhancing video colour settings, trimming the duration, video transitions, stabilizing shaky videos, speed, multi-clip video effects, split screen, etc. The software is easy to learn and use, making it suitable for beginners as well. A major disadvantage is that the application is only compatible with macOS and iOS devices, hence, one must possess an Apple device to use it.

Windows video editor
It is a desktop based video editing application offering a variety of features like in-frame transitions, audio modifying and enhancing tools, split screens, etc. The exported videos from a free account bear a huge watermark on the screen making it undesirable to use.

HitFilm express (https://fxhome.com/hitfilm-express)
This application offers almost all the features of a premium video editing software. Unlike other softwares, videos exported from here do not bear a watermark. However, for a more professional look, the advanced features have to be purchased.

VSDC (http://www.videosoftdev.com/)

It is a popular and easy to use desktop application for editing videos. It offers many features like video effects, filters, transitions, colour correction, etc., which one might expect from a premium software, thus making it a popular choice amongst editors. It supports all the popular video/audio formats like .MP4, .MOV, .WMV, .MPG, etc.

The basic and most common video exporting quality is 1,280 × 720 pixels i.e., 720 p, but for higher quality videos one must export in 1,080 p. Videos may be exported in .MP4 (most common), .MOV (stores high quality video, audio and effects but tends to be large in size hence not very ideal for VAs), .WMV (good quality videos with large size compatible with windows devices), or .MPG (MPEG1 or MPEG2). Other commonly used formats are .AVI, .AVCHD, .MKV, .WEBM, etc.[34,36]

Elements of a Good Script

One of the defining characters of a good VA is its script. It determines its potential to hold the attention of the audience. Authors ought to be extremely careful with the choice of words and flow. The following key points may be kept in mind while designing VAs.[9,32,36]

1. The script need not be an exact word to word transcript of the article. Simple language with minimum use of technical words is preferable.
2. Noting down the script beforehand, or just the keywords help in covering all points efficiently.
3. For a smooth voiceover, practicing the script 2–3 times before the final recording is recommended.
4. Use of questions like Why, How, and What captivates people's attention, hence one should incorporate them.
5. Speed and flow of the script should be optimum so that the viewer can grasp the words.
6. One should not sound over rehearsed and stiff. Voice should not sound robotic, and pronunciation of all words must be correct.

Shooting the VA

Some of the most common ways of presenting VAs are real time video of the author explaining the key findings of the paper and re-enactment of medical procedures and techniques.[40] The following points may be considered for the creation of an ideal VA.[41-45]

Recording devices

VAs may be shot on mobile phones, tablets, DSLRs or video cameras. Mobile phones and tablets are the most preferred and easily available devices. DSLRs and video cameras give a professional look to the video but the footage is raw i.e., brightness levels, saturation, colour contrasts, shadows, white black balance, etc., need to be adjusted, hence editing is required. Further discussion on recording devices is beyond the scope of this paper.

Background lighting

There should be adequate amount of lighting present while filming the video. Natural lighting is best recommended, as it is a good way of ensuring even lighting conditions. Sitting directly in front of the light source should be avoided, as it will make the background appear too

bright and distract the viewer's attention from the speaker. If shooting indoors in a research laboratory or office, then one may use multiple light sources to avoid too much contrast.

Stability of the recording device

Use of a tripod or a camcorder with a stabilizer is recommended to reduce vibrations to the minimum. This will also improve the overall video quality after compression. Excessive use of the pan-in and out feature of the video camera should be avoided. One should sit or stand in a place while speaking to camera to help attain audience attention for a longer time.

Presenter's background

A still and suitable background helps in accentuating viewer attention better. A slightly coloured background, poster or a book shelf makes for a subtle yet interesting background. A simple background like a plain wall or blackboard or whiteboard should be avoided.

Frame setting

Frame should be kept simple. Trying to catch excessive action or movement will eventually make the file compression difficult. If the speaker is talking directly to the camera then one may film them above their shoulders to avoid catchy movements.

Frame rate

Frame rate is the frequency at which consecutive pictures called frames appear on a display. It is expressed in frames per second or FPS. It substantially impacts the style and viewing experience of the video. For a cinematic look, a frame rate of 24FPS is recommended. For an animated video or a detail-oriented video requiring the appreciable motion to be crisp, a higher frame rate of 30FPS work best.

Addressing the audience

A key feature of a good VA is its ability to hold viewer attention till the end, and to do so the presenter should be camera-friendly. While addressing the audience directly, one must make eye contact with camera. Camera should be placed at the eye level to avoid unnecessary attention to the things around the speaker. If the speaker is not comfortable talking directly to the camera, they should act like they are speaking to someone, and shoot it as an off-camera shot. A head and shoulders shot is best recommended for shooting a VA.

Concluding Remarks

VAs are a natural evolution of science communication into multimodal environments.[46] They are a part of an overall trend in multimedia communication of information on the internet, which has been facilitated by the wide availability of digital devices and software for creating and sharing videos. VAs typically communicate the background of a study, the methodology employed, the study results and potential implications, much like a text-based abstract might do. However, a VA offers the potential to do more by providing authors an opportunity to communicate their research in a personal, media rich medium. Spicer[44] suggests that another benefit is that the very process of producing a video can be helpful for authors in understanding their research in new ways. VAs might also influence the ultimate impact and usage of the article. In one of the few studies in this area, Spicer[44] explored the relationship between article usage and corresponding VA usage and found that the top 25 and 100 read articles had a significantly higher presence of VAs than articles overall in the study data set.

The use of Video-based learning tools in medicine is becoming a popular tool of education. Videos provide an easy and flexible study environment, enabling learning at any time and any place. It enhances the learning capacity of a person.[22,26,47] Furthermore, creation of a specialized video editing and publishing mega platform, housing different types of peer reviewed, scholarly open-access video presentations could be the harbinger of visually empowered academia.[8]

Journals are popularising and providing a platform to researchers to publish, present and promote their articles in different manners. VAs are being popularised for their efficiency in increasing the readership and outreach of a paper. They also help to substantiate the open access publication initiative with the added benefit of better representation of journals on SMPs and higher citation metrics.[47-49] Cell Press VAs were the first academic journal publications in this manner and that introduced the world to this trend and ever since their viewership has continued to increase. VAs are an efficient medium to express an author's views and visualisation of a paper, they are the future of medical research presentations and journals should subsume them in their publications.

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