



‘How to stop a nosebleed’: a combined objective and subjective assessment of YouTube videos on first-aid management of epistaxis

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Main Article

Haran Devakumar takes responsibility for the integrity of the content of the paper

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Abstract

Objective. A previous study in 2016 found that the quality of YouTube videos on epistaxis first-aid management was highly variable. This study aimed to reassess the accuracy and patient understandability of such YouTube videos.

Method. YouTube was searched using the phrase ‘How to stop a nosebleed’. The highest 50 ranking videos, based on relevance, were screened. Each video was assessed objectively using a standardised ‘advice score’, and subjectively using a video understandability and actionability checklist, the Patient Education Materials Assessment Tool for Audiovisual Materials (‘PEMAT-A/V’).

Results. The mean advice score was 4.1 out of 8. The mean (standard deviation) understandability and actionability scores were 76 per cent (17 per cent) and 89 per cent (18 per cent), respectively. There was a strong positive correlation between the actionability scores and the advice scores ($\rho = 0.634$; $p < 0.001$), and between the actionability scores and the understandability scores ($\rho = 0.519$; $p = 0.002$).

Conclusion. YouTube videos are providing increasingly relevant advice for patients seeking healthcare information. YouTube is proposed as a useful medium for teaching epistaxis management to patients and community practitioners.

Introduction

Epistaxis, commonly referred to as a ‘nosebleed’, has an incidence of approximately 60 per cent amongst the general population.¹ Most cases are self-limiting and managed in the community, with only 10 per cent requiring emergency care.² Therefore, a robust understanding of first-aid management is required for patients, community healthcare staff and emergency physicians. However, research has shown that many healthcare providers and patients cannot identify the correct first-aid steps for managing acute epistaxis.^{3,4}

YouTube, a renowned internet platform, has become a popular resource for patients seeking healthcare advice.⁵ An American national health survey reported that approximately one-third of the population accessed YouTube for health-related information.⁶ However, content is uploaded without a peer-review process, and by authors with unknown credentials and intentions.⁷ As a result, the quality and reliability of health-related videos can vary significantly.⁸

A key aspect of audio-visual patient material is the understandability of the content; this is particularly important for educating patients with lower literacy levels.⁹ The US Agency for Healthcare Research and Quality created a checklist for evaluating the desirable characteristics of patient educational videos, coined the Patient Education Materials Assessment Tool (‘PEMAT’).¹⁰ This systematic tool was devised by experts in health literacy, content creation and patient education, and provides a structure for healthcare staff creating high-quality patient videos. Rigorous testing has shown the Patient Education Materials Assessment Tool to be a reliable and valid instrument for assessing the understandability and actionability of audio-visual material.¹⁰ Within otolaryngology, the tool has been employed to assess online audio-visual patient material for sinusitis and laryngectomy.^{11,12}

In 2016, Haymes and Harries evaluated the quality of YouTube videos on epistaxis first-aid management using the search query ‘how to stop a nosebleed’.¹³ The objective accuracy of each video was evaluated using a curated checklist based on the National Institute for Health and Care Excellence (NICE) Clinical Knowledge Summaries guidelines for epistaxis.¹⁴ An untested, custom-made scoring system was used to form a subjective evaluation of each video. The quality of YouTube videos was shown to be highly variable, with a poor adherence to NICE Clinical Knowledge Summaries guidelines.

In light of the increased burden on healthcare services since the coronavirus disease 2019 pandemic, and the rise in patients seeking online health information, a reassessment

of online audio-visual material portraying epistaxis management is required.^{6,15} This study aimed to use validated scoring systems to assess the accuracy, understandability and actionability of YouTube videos depicting epistaxis first-aid management, and to assess the differences in trends compared with the previous study by Haymes and Harries.¹³

Materials and methods

Video selection

The YouTube video sharing platform (<https://www.youtube.com>) was searched on 13 August 2022, using the phrase: 'How to stop a nosebleed'. The results were sorted based on 'relevance', and the first 50 eligible videos were selected and screened for duplicates. The exclusion criteria for included videos were: first-aid management not shown, video targeted towards secondary care, no audio or narration, and not presented in English language. This process is depicted in Figure 1.

Video evaluation

The following characteristics were extracted from the included videos: title, uniform resource locator ('URL'), view count, country, upload date, video length, number of comments and number of 'likes'.

The videos were compared to a standardised checklist on first-aid management for epistaxis developed by Haymes and Harries, which is a reflection of current best practice from NICE Clinical Knowledge Summaries guidelines and Patient UK websites.^{13,14,16} The eight criteria are: lean forwards, apply pressure to the appropriate part of the nose, apply pressure for at least 10 minutes, use ice packs or a cold compress, spit out (and avoid swallowing) blood, breathe through the mouth, seek medical attention if it does not resolve after 15 minutes of pressure, and provision of aftercare advice. Each criterion was marked as either absent or present in the video

(score of 0 or 1, respectively), giving a total maximum epistaxis 'advice' score of 8.

A subjective evaluation of the videos was performed using the Patient Education Materials Assessment Tool for Audiovisual Materials ('PEMAT-A/V'), which contains 17 questions addressing the understandability and actionability of patient education materials. Understandability was measured using a 13-item scale that focuses on video content, word choice, use of visual aids and organisational format, whilst actionability was determined using a 4-item scale. Understandability and actionability scores were reported as a percentage of fulfilled items out of 13 and 4 items, respectively. This process was performed independently by two otolaryngology trainees, both members of the Royal College of Surgeons of England (HD and BVT), with disagreements resolved through discussion before a consensus was reached.

Statistical analysis

Summary statistics were calculated for descriptive video characteristics, total advice score, and actionability and understandability (Patient Education Materials Assessment Tool for Audiovisual Materials) scores. Correlations between video characteristics (view count, video age, video length, number of comments and number of 'likes'), objective advice score, understandability score and actionability score were calculated using Spearman's rank correlation co-efficients. *P*-values of less than 0.05 were considered statistically significant. Statistical analyses were performed using Microsoft[®] Excel[®] for Mac software (version 16.65).

Results

The first 50 videos, sorted based on 'relevance', were screened for suitability. Twelve videos were aimed at medical professionals in a hospital setting; these depicted cauterisation, anterior nasal packing or other use of medical equipment. Another six videos were excluded because they: lacked audio narration, promoted alternative medicine or did not focus on first-aid management. A total of 32 videos were deemed eligible for inclusion in the study.

Table 1 summarises the characteristics of the 32 selected videos. Overall, 19 videos (59 per cent) were produced in the USA and 6 (19 per cent) in the UK. The remaining videos were produced in: Canada (*n* = 2), the Netherlands (*n* = 1), India (*n* = 1), Italy (*n* = 1), Australia (*n* = 1) and Singapore (*n* = 1). Across all videos, the mean view count was 159 562 (standard deviation (SD) = 304 557), with a range of 119 to 1 622 877 views. Videos were uploaded between 2008 and 2020, with a mean age of 6.73 years (SD = 3.65). The mean video length was 2.5 minutes (SD = 1.5). The mean number of comments was 132 (SD = 233) and the mean number of 'likes' was 882 (SD = 1199). Six videos (19 per cent) were from an accredited institution.

Correlation analysis of video characteristic data revealed a series of statistically significant associations (Table 2). There were strong positive correlations between the number of views and the age of the video ($\rho = 0.568$; $p < 0.001$), the number of likes ($\rho = 0.908$; $p < 0.001$) and the number of comments ($\rho = 0.845$; $p < 0.001$). Moderately strong negative correlations were observed between video rank and the number of views ($\rho = -0.502$; $p = 0.004$), the number of likes ($\rho = -0.548$; $p = 0.001$) and the number of comments ($\rho = -0.456$; $p = 0.009$).

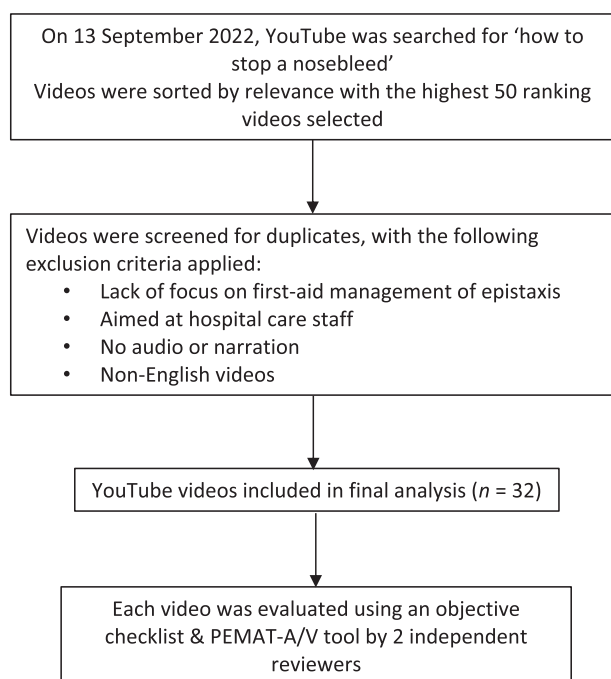


Figure 1. Flow chart outlining the video selection pathway and review process. PEMAT-A/V = Patient Education Materials Assessment Tool for Audiovisual Materials

Table 1. Video characteristics, advice score and PEMAT-A/V score of the 32 selected videos

Rank according to 'relevance'	Title & link	View count (n)	Country	Upload date	Video length (hr:min:sec)	Number of comments	Number of likes	Advice score	Understandability score (%)	Actionability score (%)
1	How To Stop A Nose Bleed https://www.youtube.com/watch?v=I7gCsAPRors	327 046	USA	16/01/2013	00:01:26	678	1900	5	78	100
2	How To Stop A Nosebleed https://www.youtube.com/watch?v=NWpATRds8HM	194 856	UK	22/06/2020	00:03:36	855	3400	7	78	100
3	How to Treat Nose Bleeds - First Aid Training - St John Ambulance https://www.youtube.com/watch?v=PmmhxW0vVXA	400 039	UK	08/01/2015	00:01:20	107	3000	6	100	100
4	How to treat and prevent nosebleeds in children https://www.youtube.com/watch?v=wLVcc_EhFA0	561 292	USA	03/03/2014	00:02:35	252	3000	2	56	67
5	Nose Bleed First Aid - Learn how you stop a bleeding nose in 1 minute https://www.youtube.com/watch?v=V34aB5uheBg	240 161	Netherlands	05/12/2013	00:01:12	93	819	4	80	100
6	How to Stop a Nosebleed Fast First Aid Parents https://www.youtube.com/watch?v=ZZds86xbI74	67 475	USA	02/07/2016	00:01:21	5	323	6	92	100
7	How to Stop a Nosebleed Fast! (Epistaxis Treatment) https://www.youtube.com/watch?v=merPheNLeS8	24 592	USA	04/09/2019	00:05:24	24	353	4	92	100
8	Simple easy way to stop a bleeding nose https://www.youtube.com/watch?v=fSerw7SviCk	63 339	USA	06/06/2011	00:01:48	54	163	0	56	67
9	How to Stop a Nosebleed / Comment faire cesser les saignements de nez https://www.youtube.com/watch?v=ROy70_3Zr18	28 391	Canada	24/09/2014	00:00:54	1	98	5	100	100
10	First Aid: How to Stop a Nosebleed https://www.youtube.com/watch?v=QYWv_kzHCnI	3677	Singapore	19/01/2018	00:00:47	2	27	3	83	100
11	My Nose Won't Stop Bleeding This Morning https://www.youtube.com/watch?v=AotH4_9Nkil	17 356	UK	09/03/2014	00:02:46	0	180	5	33	67

(Continued)

Table 1. (Continued.)

Rank according to 'relevance'	Title & link	View count (n)	Country	Upload date	Video length (hr:min:sec)	Number of comments	Number of likes	Advice score	Understandability score (%)	Actionability score (%)
12	How to Stop a Nosebleed ASAP, According to an ER Doctor https://www.youtube.com/watch?v=84MYdCMR82A	1626	USA	07/10/2021	00:03:52	3	45	2	64	67
13	How to treat a nosebleed NHS https://www.youtube.com/watch?v=vvrDAeYCF79U	26 972	UK	27/06/2017	00:00:37	1	102	5	100	100
14	How to Stop A Nosebleed Dr. Mandell https://www.youtube.com/shorts/Bb08G0tW_2A	36 536	USA	09/01/2021	00:00:56	71	3200	4	100	67
15	How to stop a nose beed #FirstAid #PowerOfKindness https://www.youtube.com/watch?v=K4KWO0FnwGc	1 622 877	UK	30/10/2012	00:01:19	340	3900	5	90	100
16	How to Stop a Nosebleed https://www.youtube.com/watch?v=Mwf9JYYN2fk	194 942	USA	26/03/2010	00:01:19	236	558	6	90	100
17	How To Stop A Nosebleed? (Do's and Don'ts) https://www.youtube.com/watch?v=tp8MuFN_Apl	68 568	USA	14/03/2017	00:02:33	58	477	6	92	100
18	How To Stop a Nose Bleed Instantly https://www.youtube.com/watch?v=LHZxBa8i1WU	142 573	USA	08/08/2014	00:02:52	439	1200	0	56	33
19	How to Treat a Nosebleed - Dr. Julie Wei, Nemours Children's Hospital https://www.youtube.com/watch?v=ARFOMCKI9dA	114 329	USA	20/01/2014	00:01:55	36	653	6	67	100
20	Emergency First Aid : How to Stop a Nosebleed https://www.youtube.com/watch?v=fUgT9TJMy_8	80 361	USA	23/03/2010	00:01:12	55	287	3	90	100
21	How To Stop A Nosebleed Fast https://www.youtube.com/watch?v=w7JNysWRgbA	8689	Canada	30/08/2017	00:02:50	13	69	2	56	67
22	Nosebleeds in Kids Why They Happen & How to Stop Them https://www.youtube.com/watch?v=Xiko8a5WCmQ	40 735	USA	07/11/2019	00:02:01	0	277	2	91	100
23	First Aid for Nose bleeding https://www.youtube.com/watch?v=S-llqmRoaZc	161 128	India	02/05/2014	00:02:31	21	849	3	60	67

24	How to Treat a Nosebleed First Aid Training https://www.youtube.com/watch?v=vRO0qNI-Cnk	588 185	USA	01/10/2012	00:02:02	792	2800	4	67	100
25	How to stop a nose bleed https://www.youtube.com/watch?v=3zXuw0_zY8k	1162	Australia	18/05/2020	00:03:39	0	8	8	91	100
26	Nosebleeds — The Urgency Room — an educational care video https://www.youtube.com/watch?v=krlPtOjv18Q	47 742	USA	05/04/2013	00:04:56	28	397	4	67	100
27	What is the best way to treat a nosebleed with my child? Nose Bleeds - Nina Shapiro, MD https://www.youtube.com/watch?v=ECxatw7Rmws	9301	USA	27/11/2012	00:01:07	7	33	6	67	100
28	How to Stop a Nosebleed https://www.youtube.com/watch?v=CNfWT70yoWc	119	USA	09/09/2021	00:04:44	0	2	3	70	67
29	How to stop a nose bleed https://www.youtube.com/watch?v=y6ZZt3y787s	231	USA	15/03/2021	00:03:22	0	4	6	56	100
30	Home Remedies & Treatments : How to Stop a Bleeding Nose https://www.youtube.com/watch?v=iDXYZQm6axg	21 375	USA	27/09/2008	00:01:32	39	59	2	78	100
31	How to treat a Nosebleed https://www.youtube.com/watch?v=QbQrbDjHBXQ	2149	UK	13/05/2020	00:03:21	1	0	6	56	100
32	How to stop nose bleeding? Pic it easy! https://www.youtube.com/watch?v=o66Enw3hWv0	8148	Italy	22/07/2014	00:01:16	0	44	2	75	67
Mean		159 562		6.73 years	00:02:30	132	882	4.1	76	89
SD		304 557		3.65 years	00:01:30	233	1199	1.9	17	18

PEMAT-A/V = Patient Education Materials Assessment Tool for Audiovisual Materials; hr:min:sec = hours:minutes:seconds; SD = standard deviation

Table 2. Summary of correlation analysis

Parameter	Analysis	Video rank	Video count	Video age	Video length	Number of comments	Number of likes	Advice score	Understandability score
Video count	Spearman's ρ	-0.502*							
	<i>p</i> -value	0.004*							
Video age	Spearman's ρ	-0.01*	0.568*						
	<i>p</i> -value	<0.001*	<0.001*						
Video length	Spearman's ρ	0.198	-0.245	-0.395*					
	<i>p</i> -value	0.278	0.176	0.025*					
Number of comments	Spearman's ρ	-0.456*	0.845*	0.474*	-0.105				
	<i>p</i> -value	0.009*	<0.001*	0.006*	0.567				
Number of likes	Spearman's ρ	-0.548*	0.908*	0.32	-0.118	0.836*			
	<i>p</i> -value	0.001*	<0.001*	0.074	0.519	<0.001*			
Advice score	Spearman's ρ	-0.094	0.057	-0.141	-0.022	0.003	0.056		
	<i>p</i> -value	0.608	0.758	0.44	0.905	0.987	0.763		
Understandability score	Spearman's ρ	-0.297	0.15	-0.115	-0.471*	0.05	0.194	0.329	
	<i>p</i> -value	0.099	0.412	0.531	0.007*	0.788	0.288	0.066	
Actionability score	Spearman's ρ	-0.046	0.161	0.161	-0.228	0.081	0.005	0.634*	0.519*
	<i>p</i> -value	0.804	0.379	0.38	0.21	0.66	0.977	<0.001*	0.002*

*Indicates significant correlations

Table 3. Content appraisal of the 32 selected videos based on the advice score

Guidance	Included (n (%))
Lean forwards	29 (91)
Apply pressure to appropriate part of nose	30 (94)
Duration of pressure (minutes)	
- Time not specified	6 (19)
- <10	7 (22)
- >10	19 (59)
Use ice packs or cold compress	9 (28)
Avoid swallowing blood	15 (47)
Breath through mouth	5 (16)
Seek medical attention if not resolving	
- No instruction provided or time not specified	18 (56)
- <15 minutes of bleeding	4 (13)
- >15 minutes of bleeding	10 (31)
Aftercare advice provided	9 (28)

Our objective evaluation revealed that 29 videos (91 per cent) advised patients to lean forward as soon as a nosebleed commenced. Only 15 videos (47 per cent) advised avoiding swallowing blood and only 9 videos (28 per cent) provided aftercare advice. Even fewer videos suggested breathing through the mouth ($n = 5$, 16 per cent) or using ice packs ($n = 9$, 28 per cent). Thirty videos (94 per cent) demonstrated the appropriate part of the nose to apply pressure, but only 19 videos (59 per cent) advised sustaining pressure for at least 10 minutes, as recommended by NICE Clinical Knowledge Summaries guidelines (Table 3). Six videos (19 per cent) did not mention how long to sustain nasal pressure, whilst 7 videos (22 per cent) suggested less than 10 minutes. Ten videos (31 per cent) advised seeking medical attention if the epistaxis episode did not resolve after 15 minutes of conservative management, and 18 videos (56 per cent) did not specify a time

period. The mean advice score for the videos was 4.1 out of 8 (SD = 1.9).

The subjective evaluation is summarised in Figure 2, which depicts the mean scores for each criterion of the Patient Education Materials Assessment Tool for Audiovisual Materials. The mean understandability score was 76 per cent (SD = 17 per cent). Notably, 94 per cent of videos successfully applied common language and used an active voice. More than 80 per cent of videos used medical language only for familiarisation, and presented the information in a logical sequence. However, only 39 per cent of videos utilised informative headers and only 14 per cent provided a summary. The mean actionability score was 89 per cent (SD = 18 per cent). Two categories scored over 90 per cent (addressing the user directly and identifying an action to stop epistaxis), whilst 75 per cent of videos were able to break down actions into manageable steps. There was a strong positive correlation between the actionability scores and the advice scores ($p = 0.634$; $p < 0.001$), and between the actionability scores and the understandability scores ($p = 0.519$; $p = 0.002$) (Table 2).

Discussion

YouTube provides a large depository for audio-visual information on managing epistaxis. The platform is easily accessible, with more than two billion users and the potential to reach 95 per cent of the world.^{17,18} In recent years, there has been a rise in the number of people searching YouTube for health-related information.¹⁹ However, authors with unknown qualifications can freely upload videos, making the information imparted unreliable. The exact search algorithm used by YouTube is unknown, but it is likely to prioritise entertainment value over informational accuracy. This makes it harder to direct users towards videos of greater educational significance using the search parameters available.²⁰ This is demonstrated within our study, whereby the video with the highest objective and subjective score was ranked 25 on ‘relevance’. The video had 1162 views, which is far fewer than the mean view count of all 32 selected videos (i.e. 159 562 views).

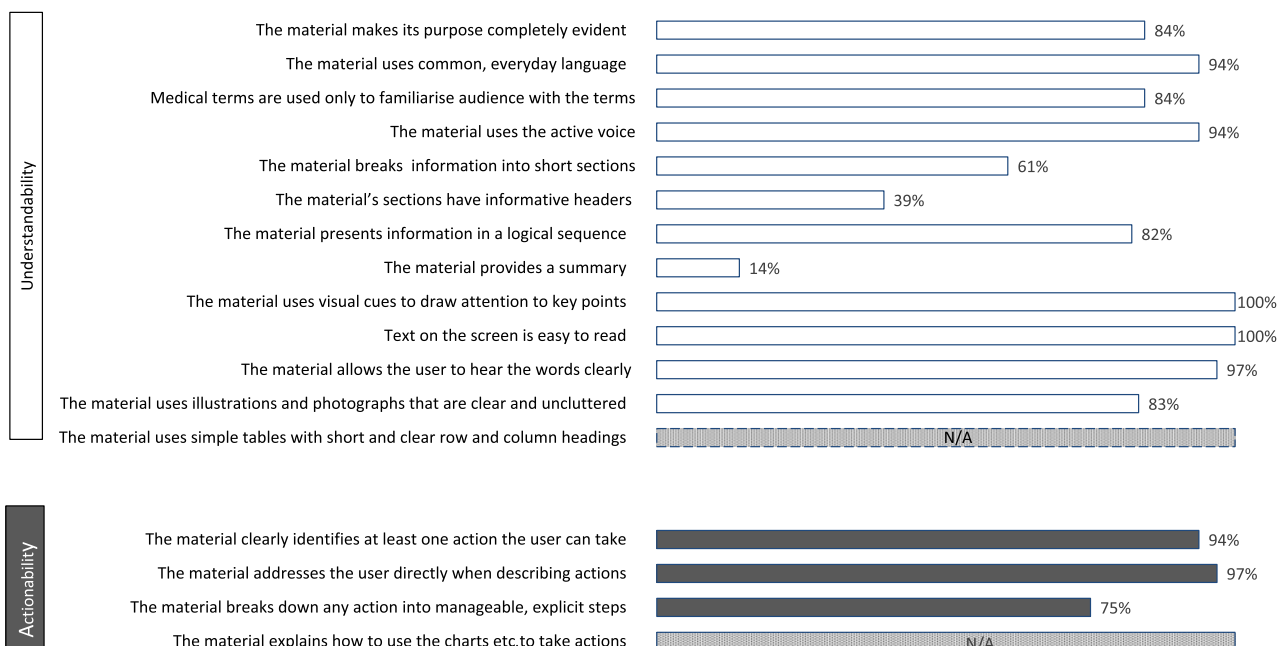


Figure 2. Summary of understandability and actionability scores.

YouTube has sought to address this dissonance by creating an 'accredited' banner for health-related videos authored by verified healthcare resources. The online platform adopted principles set by the National Academy of Medicine to identify credible healthcare resources, starting with pre-vetted public health and government organisations.²¹ From our assessment, 6 videos (19 per cent) were from an accredited institution, but only 2 of these videos were ranked within the first 10.

- Online video websites, such as YouTube, are being increasingly used to search for healthcare information
- Videos uploaded to social media platforms are not peer-reviewed and can vary in patient understandability
- A 2016 evaluation of YouTube videos on epistaxis first-aid management showed the quality to be highly variable, with poor adherence to guidelines
- This study evaluated the 50 highest-ranking videos upon searching 'how to stop a nosebleed' using an objective first-aid management checklist and a subjective assessment tool
- Analysis showed YouTube videos are providing more pertinent and precise advice on epistaxis first-aid management, compared to the 2016 study
- It is proposed that YouTube can be a useful medium for teaching epistaxis first-aid management to patients and community practitioners when carefully navigated

We compared our results with those of Haymes and Harries, who searched 'How to stop a nosebleed' on YouTube in 2016.¹³ Their study produced a mean advice score of 2.0, whilst our study yielded a mean advice score of 4.1. This is a positive outcome, suggesting an overall improvement in informational accuracy over recent years. However, one area that scored low in both studies was the duration of nasal compression advised. This may be explained by the discordance between national guidelines for epistaxis management in America (American Academy of Otolaryngology – Head and Neck Surgery) and the UK (NICE Clinical Knowledge Summaries).^{14,22} There is no general consensus over the optimum period for nasal compression as there is insufficient evidence available.²² The American guideline states that nasal compression should be provided for a minimum of 5 minutes, whilst the UK recommends 10 minutes. This has a marked effect on the study, wherein 59 per cent of the videos originated from America. Furthermore, both studies found that a significant portion of videos failed to correctly specify the length of time one should wait before seeking medical attention. One population study found that 10 per cent of epistaxis patients will seek medical attention, but most epistaxis cases respond to simple first-aid measures and only 0.16 per cent of patients require admission.²² Therefore, better education of epistaxis first-aid management may help in reducing the workload of overstretched emergency services. This is supported by Neshewat *et al.*, who found that the implementation of an epistaxis educational programme for patients on warfarin led to a reduction in emergency department visits.²³

As patients are increasingly looking towards online material for knowledge regarding their condition, the understandability of health information is vital.²⁴ A health survey found that over 50 per cent of patients changed their perspective of a disease after performing research online.²⁵ The Patient Education Materials Assessment Tool for Audiovisual Materials is a method for evaluating online audio-visual patient material, and has been applied to videos relating to otolaryngology issues and conditions such as hearing aid quality, endoscopic sinus surgery and sinusitis.^{11,26,27} However, such studies reported a poor Patient Education Materials Assessment

Tool score that fell well below the recommended threshold of 70 per cent.¹⁰ In comparison, our study demonstrated that the Patient Education Materials Assessment Tool score for epistaxis first-aid management videos on YouTube surpassed the minimum standard threshold, with mean understandability and actionability scores of 76 per cent and 89 per cent, respectively. In contrast, Haymes and Harries reported a low standard of production quality among selected videos, with a mean score of 1.6 out of 3.¹³ High-quality patient educational material is important for teaching low health literacy populations, who are more susceptible to misunderstanding instructional information.²⁸

This is the first study to evaluate online audio-visual patient material on epistaxis first-aid management using the Patient Education Materials Assessment Tool for Audiovisual Materials criteria. Whilst there is an element of subjectivity towards the interpretation and application of the scoring criteria, this was minimised by appointing two independent reviewers to provide responses.

Another limitation is the cross-sectional manner of our search, which does not reflect the dynamic nature of uploading online videos and changes in popularity. Moreover, this study only analysed one online platform, YouTube. There are other mainstream video sharing platforms, which may contain relevant epistaxis patient advice but are likely less popular than YouTube. Cross-platform comparison could be the focus of a future study. Finally, this study only included videos narrated in English; therefore, our findings can only be relevant to the English-speaking world.

Conclusion

Our appraisal of the highest-ranking videos on YouTube pertaining to epistaxis first-aid management showed that the content is becoming more accurate and more understandable. With more patients seeking online materials for medical advice, simple and easily applicable content carries high value. YouTube has taken steps to identify credible authors, although it remains unclear if this is preferentially weighted within the search ranking algorithm. We propose that YouTube can be a useful medium for teaching epistaxis first-aid management to patients and community practitioners, when carefully navigated.

Competing interests. None declared

References

- 1 Petruson B. Epistaxis: a clinical study with special reference to fibrinolysis. *Acta Otolaryngol Suppl* 1974;77:1–73
- 2 Smith J, Hanson J, Chowdhury R, Bungard TJ. Community-based management of epistaxis: who bloody knows? *Can Pharm J* 2019;152:164–76
- 3 McGarry GW, Moulton C. The first aid management of epistaxis by accident and emergency department staff. *Arch Emerg Med* 1993;10:298–300
- 4 Sowerby L, Rajakumar C, Davis M, Rotenberg B. Epistaxis first-aid management: a needs assessment among healthcare providers. *J Otolaryngol Head Neck Surg* 2021;50:7
- 5 Culha Y, Culha MG, Acaroglu R. Evaluation of YouTube videos regarding clean intermittent catheterization application. *Int Neurol J* 2020;24:286–92
- 6 Wu V, Lee DJ, Vescan A, Lee JM. Evaluating YouTube as a source of patient information for functional endoscopic sinus surgery. *Ear Nose Throat J* 2022;101:396–401
- 7 Memioglu T, Ozyasar M. Analysis of YouTube videos as a source of information for myocarditis during the COVID-19 pandemic. *Clin Res Cardiol* 2022;111:1113–20

- 8 Osman W, Mohamed F, Elhassan M, Shoufan A. Is YouTube a reliable source of health-related information? A systematic review. *BMC Med Educ* 2022;**22**:382
- 9 Dewalt DA, Berkman ND, Sheridan S, Lohr KN, Pignone MP. Literacy and health outcomes: a systematic review of the literature. *J Gen Intern Med* 2004;**19**:1228–39
- 10 Shoemaker SJ, Wolf MS, Brach C. Development of the Patient Education Materials Assessment Tool (PEMAT): a new measure of understandability and actionability for print and audiovisual patient information. *Patient Educ Couns* 2014;**96**:395–403
- 11 Rubel KE, Alwani MM, Nwosu OI, Bandali EH, Shipchandler TZ, Illing EA *et al*. Understandability and actionability of audiovisual patient education materials on sinusitis. *Int Forum Allergy Rhinol* 2020;**10**:564–71
- 12 Wong K, Gilad A, Cohen MB, Kirke DN, Jalisi SM. Patient education materials assessment tool for laryngectomy health information. *Head Neck* 2017;**39**:2256–63
- 13 Haymes AT, Harries V. ‘How to stop a nosebleed’: an assessment of the quality of epistaxis treatment advice on YouTube. *J Laryngol Otol* 2016;**130**:749–54
- 14 NICE. Epistaxis (nosebleeds): Scenario: Acute epistaxis. In: <https://cks.nice.org.uk/topics/epistaxis-nosebleeds/> [1 June 2022]
- 15 Geyman JP. Beyond the COVID-19 pandemic: the urgent need to expand primary care and family medicine. *Fam Med* 2021;**53**:48–53
- 16 Patient UK. Nosebleed (Epistaxis). What causes a nosebleed? In: <https://patient.info/ears-nose-throat-mouth/nosebleed-epistaxis-leaflet> [1 June 2022]
- 17 Tackett S, Slinn K, Marshall T, Gaglani S, Waldman V, Desai R. Medical education videos for the world: an analysis of viewing patterns for a YouTube channel. *Acad Med* 2018;**93**:1150–6
- 18 Kyra. How Many People Use YouTube in 2022? In: <https://backlinko.com/youtube-users> [6 September 2022]
- 19 Desai T, Shariff A, Dhingra V, Minhas D, Eure M, Kats M. Is content really king? An objective analysis of the public’s response to medical videos on YouTube. *PLoS One* 2013;**8**:e82469
- 20 Eysenbach G, Köhler C. How do consumers search for and appraise health information on the world wide web? Qualitative study using focus groups, usability tests, and in-depth interviews. *BMJ* 2002;**324**:573–7
- 21 Get info on health-related content - YouTube Help. In: <https://support.google.com/youtube/answer/9795167> [14 September 2022]
- 22 Tunkel DE, Anne S, Payne SC, Ishman SL, Rosenfeld RM, Abramson PJ *et al*. Clinical practice guideline: nosebleed (epistaxis). *Otolaryngol Head Neck Surg* 2020;**162**:S1–38
- 23 Neshewat J, Wasserman A, Alexandris-Souphis C, Haymart B, Feldeisen D, Kong X *et al*. Reduction in epistaxis and emergency department visits in patients taking warfarin after implementation of an education program. *Thromb Res* 2021;**199**:119–22
- 24 Rössler B, Lahner D, Schebesta K, Chiari A, Plöchl W. Medical information on the internet: quality assessment of lumbar puncture and neuroaxial block techniques on YouTube. *Clin Neurol Neurosurg* 2012;**114**:655–8
- 25 Iverson SA, Howard KB, Penny BK. Impact of internet use on health-related behaviors and the patient-physician relationship: a survey-based study and review. *J Am Osteopath Assoc* 2008;**108**:699–711
- 26 Gill AS, Biggs PC, Hagwood G, Believeau AM, Shahlaie K, Strong EB *et al*. Health literacy and web-based audiovisual multimedia in pituitary and endoscopic skull base surgery. *J Neurol Surg B Skull Base* 2021;**83**:e401–9
- 27 Chen K, Zhou L, Zhao R, Tang Y. Assessing the quality of hearing aids-related videos on TikTok. *Front Public Health* 2022;**10**:901976
- 28 Doak CC, Doak LG, Friedell GH, Meade CD. Improving comprehension for cancer patients with low literacy skills: strategies for clinicians. *CA Cancer J Clin* 1998;**48**:151–62