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First Aid in Snakebites: an Evaluation of the Usefulness and Quality of Youtube Videos

Yılan Isırıklarında İlk Yardım: YouTube Videolarının Faydası ve Kalitesi Üzerine Değerlendirme

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Abstract

Aim: YouTube has become an increasingly used platform for obtaining health information such as first aid knowledge of snake bites rescuers in recent years. Aim of the study is to evaluate the quality of existing YouTube videos on first aid interventions for snake bites and whether they are of an educational nature.

Material and Method: Descriptive study. On February 20, 2021, determined search terms such as; "Snake bite emergency aid, Snake bite treatment medicine, first aid in snake bite" were searched separately on YouTube (https://youtube.com). A total of 360 YouTube videos were listed. It was analyzed according to the Global Quality Scale (GQS) developed to evaluate internet-based resources and the DISCERN scale developed to determine reliability.

Results: A total of 72 videos meeting the criteria were identified. The median duration of the videos were 292 seconds. The median number of views were 13.8, the number of comments were 0.01, likes were 0.11, and the number of dislikes were 0.01. When the DISCERN scores and uploaded sources were compared, significant differences were found (p=0.031). DISCERN scores of videos shared by doctors were found to be significantly higher than other sources (p <0.05). While 4.2% (n=3) of the videos gave incorrect information such as sucking with mouth, cutting, it was suggested to apply a tourniquet incorrectly in 5.6%. Limb immobilization and bandage application was shown in 73.6% of all videos.

Conclusions: YouTube videos uploaded by doctors and health-related websites on first aid practices on snake bites contain useful first aid information.

Keywords: First aid, snake bites, quality, YouTube videos

Öz

Amaç: YouTube, son yıllarda yılan ısırığına müdahale edenlerin ilk yardım bilgisi gibi sağlık bilgilerinin elde edilmesi için giderek daha fazla kullanılan bir platform haline gelmiştir. Çalışmanın amacı, yılan ısırmalarında ilk yardım müdahaleleri ile ilgili mevcut YouTube videolarının kalitesini ve eğitici nitelikte olup olmadığını değerlendirmektir.

Gereç ve Yöntem: Tanımlayıcı çalışma. 20 Şubat 2021 tarihinde; YouTube (https://youtube.com) internet sitesinde "Yılan ısırması acil yardımı, Yılan sokması tedavisi, yılan ısırmasında ilk yardım" ayrı ayrı tarandı. Toplam 360 YouTube videosu listelendi. İnternet tabanlı kaynakları değerlendirmek için geliştirilen Global Kalite Ölçeği (GQS) ve güvenilirliği belirlemek için geliştirilen DISCERN ölçeğine göre analiz edilmiştir.

Bulgular: Kriterleri karşılayan toplam 72 video belirlendi. Videoların medyan süresi 292 saniyeydi. Ortalama görüntülenme sayısı 13.8, yorum sayısı 0.01, beğeni sayısı 0.11 ve beğenilmeyen sayısı 0.01 olarak gerçekleşti. DISCERN puanları ve yüklenen kaynaklar karşılaştırıldığında anlamlı bir fark saptandı (p=0.031). Doktorların paylaştığı videoların DISCERN puanları diğer kaynaklara göre anlamlı olarak yüksek bulundu (p<0.05). Videoların %4,2'si (n=3) ağızdan emme, kesme gibi yanlış bilgi verirken, %5,6'sında yanlış turnike uygulanması önerilmiştir. Ekstremite sabitleme ve bandaj uygulaması tüm videoların %73,6'sında gösterildi.

Sonuç: Doktorlar ve sağlıkla ilgili web siteleri tarafından yüklenen yılan sokmalarında ilk yardım uygulamalarıyla ilgili YouTube videoları yararlı ilk yardım bilgileri içermektedir.

Anahtar Kelimeler: İlk yardım, yılan sokması, kalite, YouTube videoları

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INTRODUCTION

Snake bites are a medical emergency encountered all over the world. Since exposure mostly occurs in rural areas, first aid is carried out outside the hospital and by the general public. Lack of first aid knowledge of rescuers is one of the leading causes of death from bite.[1-2] However, for those at risk, such as agricultural workers, nature travelers and wildlife enthusiasts, there are limited sources of accurate information in such emergencies.

Considering that nearly half of the adult population today uses the internet to obtain medical information, it can be said that online platforms are an important source of information in such cases.[3] Especially YouTube has become an increasingly used platform for obtaining health information in recent years.[4] However, it does not have a mechanism to control and regulate the content quality of uploaded videos. This is a cause for concern about the quality of online health information.[5] Although obtaining health information online is considered to be low risk, damaged cases have been reported.[6] For this reason, it has become popular to evaluate medical information contained in YouTube videos. Researchers have so far conducted studies evaluating YouTube videos for some disease and medical applications.[7,8] However, as far as we know, there is no study evaluating treatment and first aid videos in snake bites in the literature. Therefore, in this study, the authors aimed to evaluate the quality of existing YouTube videos on first aid interventions for snake bites and whether they are educational.

The authors wanted to determine the distribution of video sources and identify sources that provide high quality and accurate information. Finally, the authors aimed to compare the number of views, likes, dislikes and comments among video quality groups.

MATERIAL AND METHOD

Study design

This is a descriptive study. First, key terms for search were determined. On February 20, 2021, determined search terms such as; "Snake bite emergency aid, Snake bite treatment medicine, first aid in snake bite, Snake bite emergency medicine, what to do if a snake bites you, what to do if a rattle snake bite you? "were searched separately on YouTube (https: // youtube.com). Browser search history was deleted before research to minimize the impact of past internet usage on search results. The video lists were made according to the number of views, which made the most viewed videos listed on the first page. As previous research showed that the vast majority of users evaluated videos on the first three pages, videos on the first three pages (60 videos) were evaluated for each search term.[9,10] 360 videos were listed for a total of 6 search terms, and as YouTube data is constantly changing, the listed videos were saved for analysis. The sources used in the study are YouTube videos. These resources are open to everyone. In addition, no patient or experimental animals were used in the study. Therefore, ethics committee approval is not required for the study. Ethics committee approval was not obtained in similar studies.

Videos and advertisements that were uploaded in different languages other than English, had duplicate content, had problems with picture or sound quality, were not educational, and were for demonstration purposes were excluded. The videos taken into the evaluation were examined in terms of simplified intervention and first aid applications in accordance with the recommendations of WHO.[1] In the video content;

- Whether he took safety precautions against a new snake bite after exposure
- Whether rings and similar jewelry, if any, have been removed from the bite site.
- Whether wrong practices such as sucking with mouth, cutting, herbal products, mud, egg application have been made,
- Whether a turnstile is recommended or not,
- Whether the bitten limb was immobilized and bandaged applied;

Information was examined.

Measurements:

Global Quality Scale (GQS) is a scale developed to evaluate internet-based resources. GQS has been used in some recent studies to evaluate the quality of information on the Internet.[5,7] The educational features of the videos examined in the study were evaluated according to this scale. The GQS is a five-point Likert-type scale:

1=poor quality, poor flow, most information missing and not helpful to patients;
2=generally poor, some information provided but limited use to patients;
3=medium quality, some vital information sufficiently discussed;
4=good quality, good flow, most relevant information covered, useful for patients;
5=excellent quality and flow, beneficial for patients.

Of the videos, those rated as 1 or 2 were considered low-quality, rated 3 as medium-quality, and those rated 4 or 5 as high-quality.[5,7]

In addition, a modified version of the DISCERN scale was used to determine reliability.[11] The scale includes five closed-ended questions:

1. 'Is the video clear, concise and understandable?',
2. 'Are valid sources quoted?',
3. 'Is the information provided balanced and unbiased?'
4. 'Are sources of information listed for patient reference?',
5. "Does the video address discussion / uncertainty areas?"

Each parameter was scored with 1 point for a yes response and 0 points for a no response.

The duration in seconds of the videos and the number of days from the upload date to the evaluation date were recorded. In addition, the daily number of views, likes, dislikes and comments were calculated and recorded.

Videos were divided into eight groups in terms of resources: (1) Non-profit organization (2) Doctor (3) Health-related website, (4) University / academic institution, (5) Independent user, (6) Non-physician medical staff, (7)) Commercial health institutions and (8) Media-Documentary-News agency

All evaluations were done independently by two researchers, MS and HG, who had previous experience with snakebite. The videos that were found to be inconsistent between the evaluations of these two researchers were evaluated by a third researcher, MMO, and the final decision was made.

Statistical analysis

The compliance of the data to normal distribution was examined using the Shapiro Wilks test. Kruskal Wallis test and Dunn test as post hoc test were used for quality and loading source comparisons of non-normally distributed features. Qualitative variables were compared using Exact and Pearson Chi-square tests. Descriptive statistics of numerical variables are given as median (min-max) and number and% values for categorical variables. Relationships between numerical variables were tested with Spearman rank correlation coefficient. p <0.05 was considered statistically significant.

RESULTS

288 of the total 360 videos; because they were off-topic, had advertisement and entertainment content (n=137), repeated video (n=51), broadcast in a language other than English (n=86), poor image or sound (n=14) not included. After the inclusion and exclusion criteria were applied, a total of 72 videos were identified for evaluation in the study.

The median duration of the videos is 292 seconds (21 - 11235). The median number of views is 13.8, the number of comments is 0.01, likes is 0.11, and the number of dislikes is 0.01. General characteristics of the videos are shown in **Table 1**.

Table 1. General characteristics of the videos

Video features	Median	Minimum-Maximum
Number of days	1201.5	4-4582
Duration (seconds)	292	21-11235
Number of daily viewing	13.8	0.03-8381.98
Daily comments	0.01	0-1.4
Number of daily likes	0.11	0-24.27
Number of daily dislikes	0.01	0-5.37

Videos were produced by non-profit organizations 18.05% (n=13), universities and academic institutions 18.05% (n=13), doctors 13.88% (n=10). 40.23% (n=29) of these videos are high quality, 38.84% (n=28) medium quality 20.83% (n=15) low quality. While 6 (8.33%) of 10 (13.88%) videos produced by doctors were of high quality, no low-quality video was detected. 5 (6.94%) of 11 (15.27%) videos produced by health-related websites are high quality and 2 (2.77%) are low quality. While 6 (8.33%) of 13 (18.05%) videos produced by non-profit organizations are of low quality, 4 (5.55%) of them are of high quality. 3 (4.16%) out of 9 (12.5%) videos produced by independent users are of low quality. Quality distributions according to the sources are shown in **Table 2**.

Table 2. Categorization of the videos according to sources

Source	Total N (%)	GQS low quality N (%)	GQS medium quality N (%)	GQS high quality N (%)
Non-profit organization	13 (18.05)	6 (8.33)	3 (4.16)	4 (5.55)
Physician	10 (13.88)	0 (0)	4 (5.55)	6 (8.33)
Health-related web	11 (15.27)	2 (2.77)	4 (5.55)	5 (6.94)
Academic / University	13 (18.05)	2 (2.77)	8 (11.11)	3 (4.16)
Independent user	9 (12.5)	3 (4.16)	4 (5.55)	2 (2.77)
Non-physician medical staff	3 (4.16)	0 (0)	1 (1.38)	2 (2.77)
Commercial Health Organization	6 (8.33)	1 (1.38)	2 (2.77)	3 (4.16)
Media / documentary	7 (9.72)	1 (1.38)	2 (2.77)	4 (5.55)
Total	72 (100)	15 (20.83)	28 (38.84)	29 (40.23)

GQS: Global Quality Score

In our study, a statistically significant difference was found when the duration of the uploaded videos and their sources were compared (p=0.010). Accordingly, the sharing time of videos produced by academic institutions and doctors is significantly longer (p <0.05) (**Table 3**). When the Discern scores (DS) of the evaluated videos were compared with the uploaded sources, a statistically significant difference was found (p=0.031). Accordingly, the DS of the videos shared by academic institutions and doctors is significantly higher than the DS of the videos shared by independent users. In addition, the DS of the videos shared by doctors were found to be significantly higher than other sources (p <0.05) (**Table 3**).

A statistically significant difference was found between the high, medium and low-quality groups in terms of DS (p <0.001). The highest median DS is in the high-quality group. On the other hand, there is no statistically significant difference between the quality groups in terms of other video parameters (p> 0.05) (**Table 4**).

When the videos are evaluated in terms of content, providing environmental safety in case of snakebite is stated in the publication only 18% (n=13). Removing jewellery from the extremity has been shown or suggested in 33% of the videos. On the other hand, while 4.2% (n=3) were given incorrect information such as mouth sucking and cutting, 5.6% (n=4) were also suggested to apply a tourniquet incorrectly. On the other hand, 38.9% (n=28) emphasized the inaccuracy of applications such as suction cutting in the video, while 37.5% (n=27) emphasized the inaccuracy of tourniquet application in the video. Correct practices such as immobilization and bandaging of the injured extremity were suggested in 73.6% of all videos (n=53). The distribution of other applications is shown in **Table 5**. The kappa score of the study was calculated as 0.81.

Table 3. Comparison of the video Parameters between the source groups

Source	*Day	†Time (sec)	*Watch	*Comment	*Like	*Dislike	‡DS
Non-profit organization	1753	174	14.07	0.01	0.24	0.01	3
Physician	1669.5	517.5	8.14	0.01	0.11	0.01	4.5
Health-related web	1386	280	66.18	0.02	0.63	0.03	3
Academic / university	402.5	1343.5	8.15	0	0.15	0	4
Independent user	2434	249	5.89	0.01	0.03	0	3
Non-physician medical staff	506	197	3.78	0	0.01	0	4
Commercial Health Organization	1201.5	120.5	27.79	0	0.11	0	3
Media / documentary	1017	327	24.06	0.02	0.11	0.02	4
Total	0.170	0.010	0.159	0.412	0.519	0.335	0.031

*p> 0.05, †p< 0.05, ‡p < 0.001, Quantitative data re-expressed as median DS: Discern Score

Table 4. Comparison table of GQS category and video monitoring parameters

GQS	*DS	‡Number of Days	‡Viewing	‡Video duration	‡Comment	‡Like	‡Dislike
Low	2 (1-5)	1193	13.81	289	0.03	0.18	0.01
İntermediate	3 (2-4)	1339	12.8	336	0.01	0.07	0.01
High	p<0.001 4 (2-5)	1192	18.91	292	0.01	0.12	0.01

*p< 0.05, ‡p> 0.05, Quantitative data re-expressed as median, DS: DISCERN Score, GQS: Global Quality Score

Table 5. Distribution of video content

Attempt	Recommended n (%)	Not-recommended n (%)	Not-mentioned n (%)
Ensuring security	13 (18.1)	-	59 (81.9)
Removal of jewellery	24 (33.3)	-	48 (66.7)
Mouth sucking, cutting, misinformation	3 (4.2)	28 (38.9)	41 (56.9)
Recommending tourniquet	4 (5.6)	27 (37.5)	41 (56.9)
Limb immobilization and bandage-splint	53 (73.6)	-	19 (26.4)
Limb elevation	15 (20.8)	-	57 (79.2)

DISCUSSION

The widespread use of the internet today enables people to access information easily and quickly. The fact that YouTube is a free and easily accessible platform makes it widely preferred for both users and producers. Especially users who have difficulties in applying to a health institution often turn to online information in emergency situations. In this case, YouTube is preferred, where applications can be learned visually through videos. However, in addition to high quality videos containing useful information, there are also videos containing misleading and false information on YouTube.[5,7] So, to what extent should we trust YouTube videos for snake bites with fatal consequences?

Almost half (40%) of the videos produced with snake bites are of high quality. With similar evaluation criteria, Koçyiğit et al.[12], in the study on Covid-19 and rheumatological diseases, the rate of high-quality video was shown as 41.4%. Again, Koçyiğit et al.[5] in another study, 46% of the videos were of high quality, while in the study of Ahmad et al.[13] 41.4% of the videos were found to be high quality. In a study on YouTube where Retinopathy of Premature videos were examined, it was shown that two-thirds of the videos consisted of high quality or useful videos.[14] Our study is consistent with the results of these studies. However, there are also studies in the literature reporting low rates of high-quality video.[9,15] These different results in the evaluation of the videos may be related to the different study subjects or the different evaluation criteria.

In our study, high-quality videos were mostly produced by doctors and health-related websites (**Table 2**). Ahmad et al.[13] in his study, it was revealed that videos uploaded to YouTube by healthcare professionals or organizations contain quality and reliable information. Studies in the literature have reported that the main sources of high-quality videos are academicians / universities, followed by doctors and health professionals.[5,14,16] In our study, the videos produced by academicians and universities were mostly evaluated as medium quality. The reason for this is that most of these productions are conference or lecture presentations. These kinds of presentations appeal to people with academic formation rather than public users. Therefore, it seems unlikely that people other than healthcare professionals will benefit from these videos.

In our study, it has been shown that low quality videos are produced by non-profit organizations and our affiliated users. Similarly, other studies have shown that low-quality videos are produced by independent users.[5,14,16] On the other hand, there are studies in the literature reporting that they are not educative enough, even if uploaded by healthcare professionals.[17] However, in terms of resources, it is possible to say that the videos uploaded by doctors and health professionals are quality productions.

The number of views, likes, dislike and comments can also be preferred in YouTube video selections. High rates can affect the viewing preferences of the general public. However,

the most important problem in this regard is that videos that provide misleading information may also have a large number of views.[5] On the other hand, there are studies in the literature showing that "useful" videos have more views and likes.[14] In our study, no significant relationship was found between other parameters such as watching, commenting, and liking, and the video content and GQS level. However, it has been determined that there is a significant relationship between the GQS level of the videos and their DS. Accordingly, the DS of the videos with a high GQS level is significantly higher than the videos at the other level ($p < 0.001$) (**Table 4**). When our study is evaluated in terms of information content, it can be said that the videos mostly contain correct information. Limb immobilization and bandage application, which is strongly emphasized by WHO, has been shown in two-thirds of all videos (**Table 5**). On the other hand, in a study conducted in Myanmar, where the risk of snakebite is high, it was shown that 72% of the participants had no idea about this practice.[18] In the literature, there are studies reporting high rate of wrong practices such as casting spells after a snake bite, putting a snake stone, tying a tourniquet, sucking the wound, and cutting.[19,20] There are a small number of productions that give such false information in the YouTube videos we have reviewed. In the light of these data, it can be said that the information content of the videos uploaded to YouTube on snake bites is mostly in accordance with the WHO recommendations. However, it is an important deficiency that 18% (n=13) of an important application such as ensuring environmental security against a new snake attack was stated in the publication.

The low number of videos uploaded to YouTube on snake bite is the most important factor limiting our study universe. On the other hand, the fact that videos produced outside of English could not be examined, has also restricted our study. Since the evaluation of the content is observational, the perspective of the researchers may have affected the evaluation results.

Limitation

The limitations of the study are the examination of videos in a certain time period due to being a constantly updated channel, the exclusion of languages other than English, limited research on keyword, and also the intervention information on snake bites in the content of the videos containing general first aid information.

CONCLUSION

It is possible to say that YouTube videos on snake bites contain useful first aid information. However, information on ensuring crime scene security against a new snake attack has been highlighted in a small number of videos. People who encounter snakebites and rescuers from public can benefit from videos produced by doctors, health-related websites, and healthcare professionals, in particular. The number of views, like, dislike and comment counts that determine user preferences on YouTube cannot be used as an indicator of correct practices.

ETHICAL DECLARATIONS

Ethics Committee Approval: The sources used in the study are YouTube videos. These resources are open to everyone. Therefore, ethics committee approval is not required for the study. Ethics committee approval was not obtained in similar studies.

Referee Evaluation Process: Externally peer-reviewed.

Conflict of Interest Statement: The authors have no conflicts of interest to declare.

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