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Epinephrine Auto-injector Use on YouTube: Is It Really Useful?

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Abstract

Aim: Epinephrine is the best treatment for anaphylaxis and gives the best results if given within the first few minutes of a severe allergic reaction. An auto-injector is used by the patient or her/his relatives when the reaction happens. The Internet can be useful in the education of these individuals as much as the education provided by the experts in this field. To the best of our knowledge, there is no study about epinephrine videos on YouTube. In our study, we aimed to evaluate the accuracy of YouTube videos on the use of epinephrine auto-injector and their compliance to guidelines.

Materials and Methods: In order to analyze the quality and compliance of YouTube videos on auto-injectors, the term "using epinephrine auto-injectors for anaphylaxis" was searched at YouTube in January 2015. The videos were then scored from 1 to 10 for reliability.

Results: Of the 610 videos in our study, 210 were about epinephrine auto-injectors. It was found that there was a significant relationship between reliability and uploader, upload date, video length and application model ($p<0.05$), but there was no significant relationship between reliability and the number of views ($p=0.885$).

Conclusion: In conclusion, we postulated that the social network is very efficacious in terms of medical education. In order to prevent misinformation of the community, videos should be shared by relevant authorities or physicians on social networks like YouTube.

Keywords: Auto-injector, epinephrine, YouTube

Introduction

Anaphylaxis is a systemic hypersensitivity reaction that affects many organs for various reasons. Epinephrine (adrenalin) is the first and most important step in the treatment of anaphylaxis. Most anaphylaxis-related deaths are due delayed or lack of adrenaline administration. Since most cases of anaphylaxis develop outside the hospital, patients should carry the adrenaline auto-injector with them and treat themselves (1). In terms of teaching how to use auto-injectors, websites where information can be accessed quickly and easily can be a part of education as physicians (2).

YouTube is a social network where people can easily upload and publish videos. The ease of accessibility increases the prevalence, but the possibility of misinformation in published videos may cause the spread of false information.

In this study, we analyzed the videos on YouTube by searching for "using epinephrine auto-injectors for anaphylaxis" and aimed to determine if the video contents are in accordance with the guidelines and to check their reliability.

Materials and Methods

Setting

The term "using adrenaline/epinephrine auto-injectors for anaphylaxis" was searched on https://www.youtube.com on January, 2016 and the videos were evaluated by one

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dermatologist and two emergency physicians who were trained about adrenaline auto-injectors.

Study Design and Data Collection

The exclusion criteria were as follows: a) videos about medicine, but not related to epinephrine auto-injectors, b) videos with no demonstration of application, c) videos not in the English language, c) videos including news, not training, d) advertising videos (ads about courses etc.), e) funny or non-serious videos, and f) repetitive videos. The uploaders were categorized as a) official institutions (AHA/ERC, Universities etc.), b) professionals such as medical doctors, c) news agency, d) commercial firms (course etc.) and e) unclear. In addition, number of views, upload date (year), length of videos, and application model (no application, applying to a real person, schematic application or both real person and schematic application) are questioned.

All videos were watched by two emergency physicians and one dermatologist. When there was no agreement on the score, the video was watched again together and the score was accounted mutually. The score table from one to ten was used for evaluating the reliability of videos (Table 1).

Statistical Analysis

All data from the study were evaluated by using Statistical Package for Social Sciences for Windows version 20. Quantitative factors were expressed as mean ± standard deviation and categorical factors were summarized as numbers and percentage. Frequency analysis was done. The distributions of variables were examined, and Independent Samples t-test was used for the analysis of normally distributed variables and Mann-Whitney U test was used for non-normal distributions. The differences between two groups in terms of demographic and hematological parameters were determined by backward stepwise logistic regression analysis. $P<0.05$ was considered significant in all tests.

Table 1. The parameters used to assess the reliability of videos

Parameter	Score
A1. Does the video mention the importance of anaphylaxis?	1
A2. Does the video mention when should apply an epinephrine auto-injector?	1
A3. Does the video mention the importance of epinephrine auto-injector? (the importance of the necessity to be done)	1
A4. Does the video describe the application of epinephrine auto-injector?	1
A5. Does he/she pull the cover?	1
A6. Does he/she show the location where to apply epinephrine auto-injector in the outer-mid-thigh?	1
A7. Does he/she inject black portion into the thigh?	1
A8. Does he/she press to activate?	1
A9. Does he/she keep epinephrine auto-injector for ten seconds?	1
A10. Does he/she suggest calling emergency?	1

Results

The search yielded a total of 619 videos on 31 webpages, each webpage including 20 videos. Four hundred and ten videos were excluded according to exclusion criteria. Unrelated videos (n=141) and repetitive videos (n=79) were excluded. A total of 210 videos were included in this study (Table 2).

It was found that 63 of 210 videos were uploaded by government agencies. The uploaders of 114 videos were unclear. The mean number of views was 10704 (min-max=3-413682) and the mean video length was 2.8 seconds (min-max=0.01 to 26.23). Most of the videos (n=48) were uploaded in 2015 and only one video was uploaded in 2006. It was found that auto-injector application was shown on real people in 156 videos and the application scores were given in Table 3.

Eighty-six (41%) videos obtained a full score. The mean score of the videos was 7.6±1.6. Thus, it was identified that a video with a score of 10 was reliable. When we use this value as a statistical cut-off, it was found that there was a significant relationship between uploaders, length of video, upload date, application model and reliability ($p<0.05$). However, there was no significant relationship between the number of views and reliability ($p=0.885$).

When we divided the videos into two groups according to the uploaders (government agencies and physicians in the first group and uncertain agencies in the second group), there was a statistically significant relationship between the groups in terms of reliability and video length ($p<0.05$ and $p<0.05$). There was no statistically significant relationship between groups in terms of the number of views, upload date and application model ($p=0.129$, $p=0.635$, $p=0.064$, respectively).

Table 2. Exclusion criteria for videos

Reason for exclusion	n	%
It is medical, but not related to epinephrine auto-injector	141	22.8
There is expression, but no application	18	2.9
Language is not English	12	1.9
It is not related to education	86	13.9
Funny video	73	11
Repetitive video	79	13.6
Do not exclude	210	33.9
Total	**619**	**100**

Table 3. Upload date, uploaders, application models and application scores

Date	**n**	**%**
2006	1	0.5
2007	2	1
2008	6	2.9
2009	13	6.2
2010	10	4.8
2011	19	9
2012	22	12.9
2013	42	20
2014	42	20
2015	48	22.9
Uploader	**n**	**%**
Official institutions (like AHA/ERC or University...)	63	30
Healthcare professional(s)	17	8.1
Individual with credentials unspecified	114	54.3
News program	16	7.6
Application model	**n**	**%**
No application	33	15.7
Human	156	74.3
Manikin	2	1
Both	19	9
Score	**n**	**%**
A1 correctly applied	105	50
A2 correctly applied	118	56.2
A3 correctly applied	119	56.7
A4 correctly applied	166	79
A5 correctly applied	205	97.6
A6 correctly applied	190	90.5
A7 correctly applied	202	96.2
A8 correctly applied	200	95.2
A9 correctly applied	184	87.6
A10 correctly applied	114	54.3
Total	**210**	**100**

AHA: American Heart Association, ERC: Europen Resuscitation Council

Discussion

As a result of our study, we found that 40% of the videos on YouTube scored above average and we found that the steps related to the application were useful in terms of training because of the high rate of 90%.

The way to reduce anaphylaxis-induced mortality and morbidity depends on effective treatment on time. The increasing incidence of anaphylaxis in recent years has gained importance. For this reason, a premeasured epinephrine preparation (epipen or Auvi-Q) should be provided for emergency use in the treatment of anaphylaxis (3). YouTube and other social networks are widely used to enable people to share information in a very fast and uncontrolled way (4). Uncontrolled, widespread and rapid dissemination of data is extremely important in terms of access to information sharing. However, if there is doubt about the accuracy of the information, this means the rapid dissemination of incorrect information. In their study, Akgun et al. (5) evaluated electrocardiography videos on YouTube and found that these videos were not useful and safe. Beydilli et al. (6) examined the accuracy of the videos on YouTube about pediatric resuscitation [cardiopulmonary resuscitation, basic life support (BLS) etc.] and reported that only 232 of the 1200 videos were related to BLS and CPR, and that 15% were reliable. Similarly, Yaylacı et al. (2) investigated accuracy and reliability of 1994 YouTube videos on adult cardiopulmonary resuscitation and basic life support. They stated that 209 videos were in line with the guidelines and that videos are partially useful for training. In our study, we found that search for "epinephrine auto-injector" yielded 619 videos and that 210 of them were associated with epinephrine auto-injector. Thirty-nine point eight percent of them were rated above average and these videos were found to be beneficial for education. It was found that there was a significant relationship between the reliability of the videos and uploaders, upload date, the length of videos and application model. We believe that it is extremely important to emphasize the significant relationship between reliability and uploaders.

We could not find any studies in the literature on epinephrine auto-injectors on YouTube or similar social networks. Therefore, we believe that this study is important because it is the first study in the literature. Two studies were found on epinephrine auto-injectors, but they were not related to education. In a trial conducted with students at the primary school and secondary schools, 20.6% of participants correctly applied epinephrine auto-injector including all 4 steps of the procedure (grey cap removal, place the injector on the middle of the outer thigh, push down to activate and hear the click sound, wait for at least 10 seconds). In a study conducted with medical students, it was determined that 2% of participants applied the 6 steps of the procedure correctly (introduction of epinephrine auto-injector, remove the gray cap, place the injector on the middle of the outer thigh, push down to activate, hear the click sound, wait for at least 5 seconds) (7,8). Our study found that the steps of application were correctly described in the videos, but the importance of anaphylaxis and recommended steps for contacting emergency services were less accurate. It was observed that most of our videos were uploaded in 2015 and approximately one third of them were uploaded by relevant institutions or healthcare professionals and physicians. Güneş et al. (9) examined YouTube videos on varicose veins in their study and found that the number of views of videos uploaded by related institutions was higher than that uploaded by healthcare personnel who uploaded 32.7% of the videos. However, in our study, no significant relationship was found between the number of views and uploaders.

Conclusion

In conclusion, we think that social networks such as YouTube are especially useful for medical education. However, in order to avoid misinforming the society, we believe that official institutions or physicians should share videos on YouTube and other social networks or the uploader should be presented in more detail in the video.

Ethics

Ethics Committee Approval: N/A.

Informed Consent: N/A.

Peer-review: Internally peer-reviewed.

Authorship Contributions

Concept: E.T.A., Design: E.T.A., Data Collection or Processing: E.T.A., Ö.D.A., E.A., Analysis or Interpretation: E.T.A., Ö.D.A., E.A., Literature Search: E.T.A., Ö.D.A., E.A., Writing: E.T.A.

Conflict of Interest: No conflict of interest was declared by the authors.

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