# The Reliability of Turkish "Basic Life Support" and "Cardiac Massage" Videos Uploaded to Websites

## İnternet Kaynaklı Türkçe "Temel Yaşam Desteği" ve "Kalp Masajı" Videolarının Güvenilirliği

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## Abstract

**Objective:** In this study, the reliability of Turkish cardiac massage and Basic Life Support (BLS) videos, which have already been downloaded from three website such as YouTube, Google, Yahoo following the publication of 2010 cardiopulmonary resuscitation (CPR) guideline and their suitability to the same guideline were researched.

**Materials and Methods:** The videos uploaded to the three website to search videos on internet were queried by using the keywords "cardiac massage" and "basic life support". Videos that had been uploaded between January 2011 and July 2014 were analyzed and scored by two experienced emergency specialists.

**Results:** A total of 1126 videos were obtained. 1029 of the videos (91.4%) were excluded by researchers. 97 videos were detected to accord with study criteria. Despite most of the videos were found on Google website by keywords, the enormous part of videos proper to criteria were sourced from YouTube website (n=65, 67.0%). One fourth of the videos (24.7%) were observed to not be suitable for 2010 CPR guideline. AED usage was mentioned slightly in the videos (14.4%). Median score of the videos is 5 (IQR: 4-6). The rate and scores of the videos uploaded by official institution or association were significantly higher than others (p=0.007 and 0.006, respectively). Moreover, scores of the videos compatible with guidelines uploaded by official institution or association and medical personal were also found higher (p=0.001).

**Conclusion:** Eventually, all the data obtained in this study support that Turkish videos were not reliable on the subject of BLS and cardiac massage. It is promising that videos with high follow-up rates also have been scored higher.

**Keywords:** Internet, YouTube, cardiac massage, resuscitation

## Öz

**Amaç:** Bu çalışmada 2010 kardiyopulmoner resüsitasyon (KPR) kılavuzu yayınlandıktan sonra YouTube, Google, Yahoo gibi üç büyük siteye yüklenen Türkçe kalp masajı ve temel yaşam desteği videolarının güvenilirliği ve 2010 KPR kılavuzuna uygunluğu araştırıldı.

**Gereç ve Yöntem:** İnternette video aramak için kullanılan üç büyük siteye (YouTube, Google, Yahoo) yüklenen videolar "kalp masajı" ve "temel yaşam desteği" anahtar kelimeleri ile tarandı. Ocak 2011-Temmuz 2014 tarihleri arasında yüklenmiş tüm videolar deneyimli iki acil tıp uzmanı tarafından analiz edildi ve skorlandı.

**Bulgular:** 1126 videoya ulaşıldı. Bu videoların 1029'u (%91,4) araştırmacılar tarafından dışlandı. Çalışma kriterlerine uygun 97 video olduğu belirlendi. Anahtar kelimeler ile en çok video Google sitesinde bulunmuş olmasına rağmen, çalışma kriterleri uygun videoların büyük kısmı Youtube kaynaklı idi (n=65, %67,0). Videoların dörtte birinin (%24,7) 2010 KPR kılavuzuna uygun olmadığı belirlendi. Videoların çok az bir kısmında AED kullanımından bahsediliyordu (%14,4). Videoların medyan skorları 5 (IQR: 4-6) idi. Dernek ve resmi kurumlar tarafından yüklenen videoların skorları ve aynı zamanda izlenme sayıları diğerlerine oranla yüksekti (sırasıyla p=0,007 ve 0,006). Ayrıca, dernek, resmi kurumlar ve sağlık çalışanları tarafından yüklenen videoların aldıkları skorlar diğerlerine oranla yüksekti (p=0,001).

**Sonuç:** Sonuç olarak bu çalışmanın verileri Türkçe videolarının temel yaşam desteği ve kalp masajı konusunda çok güvenilir olmadığını destekler niteliktedir. Yüksek izlenme oranlarına sahip videoların aynı zamanda yüksek puan almış olması umut vericidir.

**Anahtar Kelimeler:** İnternet, YouTube, kalp masajı, resüsitasyon

## Introduction

Early diagnosis and treatment of sudden cardiac arrest can improve a victim's chance for survival [1]. Basic life support (BLS) is to achieve the assessment of patient initially, the activation of pre-hospital health system, and the initiation of cardiopulmonary resuscitation systemically. The main modification in Cardiopulmonary Resuscitation (CPR) guidelines of 2010 American Heart Association (AHA) is intended to encourage the people who are uneducated and laypersons to perform the cardiac massage. Cardiac massage is only applied for a short while of witnessed cardiac arrest [2, 3].

Training of the public to perform the application of BLS may increase the possibility of intervention. Reaching the qualitative videos designed for that reason may make a difference.

People might attain the unknown and wondered subjects by means of search engines rapidly. Access to YouTube is simple and it may transmit the free information to many people. YouTube has reached more users with the rapid utilization of smartphone gradually since its official start in November 2005 to this day. Every day, 65,000 new videos are uploaded and 100 million videos are watched [4].

In the literature, there are limited studies to query the videos related to basic life support and resuscitation on internet and the consequences of these studies are generally promising [5-8]. In this study, the reliability of Turkish cardiac massage and BLS videos, which have already been downloaded from three main website such as YouTube, Google, Yahoo following the publication of 2010 CPR guideline and their suitability to 2010 CPR guideline were researched.

## Materials and Methods

The videos uploaded to the three largest websites (YouTube, Google, Yahoo) were queried by using the keywords "cardiac massage" and "basic life support" in July 2014. Primarily, "cardiopulmonary resuscitation" keyword had been used in the study instead of "cardiac massage", however, there were no relevant Turkish videos with that keyword. Therefore, "cardiac massage" was decided to be used as the keyword in the study. Videos that had been uploaded between January 2011 and July 2014 were analyzed and scored by two experienced emergency specialists. The following were used as the video exclusion criteria:

Videos irrelevant to CPR and BLS, out of the field of medicine 2. Videos relevant to CPR and BLS without any demonstration or application 3. Videos related to pediatric CPR Videos including real life events without an educational format.

Videos content advertisement 6. Videos content funnies 7. Duplication of videos (same video had been uploaded by different user to the same website or different website) 8. If the language of video is not in Turkish.

The raw data collected in the study included the sources of the uploaded videos, the record time, length of video, the number of viewers and inclusion of human or manikins. Two experienced emergency specialists that are unaware of each other analyzed all enrolled videos. The videos were scored between 0 and 7 points. Disputes of the scores between two researchers were adjusted by another independent researcher. The criteria of score by considering 2010 CPR guideline were composed as below (Table 1). Additionally, researchers also rated the videos whether they displayed the correct order of resuscitative efforts in concordant with 2010 CPR guideline or not (e.g., airway (A), breathing (B), circulation (C) sequence vs. CAB).

### Statistical Analysis

Numerical variables were given as median and interquartile range (IQR), while categorical variables were given as

**Table 1. The criteria of score according to 2010 CPR guideline**

| Task | Score |
|---|---|
| Provide scene safety | 1 |
| Check responsiveness & consciousness | 1 |
| Call an ambulance | 1 |
| Check accurate hand positioning before initiating compressions | 1 |
| Is the depth of compressions adequate? | 1 |
| Is the rate of compressions right? | 1 |
| Is the ratio of compressions/ventilations right? | 1 |
| CPR: cardiopulmonary resuscitation | |

frequencies (n) and percentages (%). The group comparisons for numeric variables were performed by Kruskal Wallis test and Chi-square for categorical variables. Post-hoc analysis was performed by Mann-Whitney U test with Bonferroni correction. The data were evaluated by using the Statistical Package for Social Sciences 17.0 (SPSS Inc.; Chicago, IL, USA). All hypotheses were constructed as two tailed and an alpha critical value of 0.05 was considered as significant.

## Results

As a result of searching three internet sources with the keywords (basic life support and cardiac massage), 1126 videos were obtained. 1029 of the videos (91.4%) were excluded by researchers. The most common reason for the exclusion was being irrelevant to BLS and resuscitation (41.2%). Due to records in languages other than Turkish, 158 (15.4%) videos were excluded. Other exclusion criteria are shown in Table 2.

Ninety-seven videos were compatible with study criteria. Although most of the videos were found on Google by keywords, the enormous part of videos proper to criteria were sourced from YouTube (n=65, 67%). General flow chart of research is shown in Figure 1.

Characteristics of 97 videos included in the analysis are shown in Table 3. Median duration of the videos was 159 (IQR: 117.5-310.0) seconds. An increase in the number of uploaded videos for the following year was observed. As the source of videos, television programmes had frequently been uploaded (33.3%). Most of the videos (84.5%) included applications performed on manikins. About one fourth of the videos (24.7%) were found inappropriate according to 2010 CPR guideline. Only in 14.4% of the videos, using of automated external defibrillators (AED) was mentioned (Table 3). Median score of the videos was 5 (IQR: 4-6). Distribution of scores of the videos and download rates with respect to source of upload are demonstrated in Table 4. The rate and scores of the videos uploaded by "official institution or association" were significantly higher than others (p=0.007 and 0.006, respectively; Table 4). Moreover, the rate of the videos compatible with guidelines uploaded by official institution or association and

**Table 2. Reasons of exclusion of the videos left out of the analysis**

|  | n (%) |
|---|---|
| Irrelevant to BLS and CPR | 424 (41.2) |
| Relevant to BLS and CPR without application | 63 (6.1) |
| Recorded in a language other than Turkish | 158 (15.4) |
| Related to pediatric CPR | 29 (2.8) |
| It includes real life events without formal education | 81 (7.9) |
| It contents advertisement | 20 (1.9) |
| It contents funnies | 79 (7.7) |
| Duplication of videos | 175 (17.0) |
| Total | 1029 (100.0) |
| BLS: basic life support; CPR: cardiopulmonary resuscitation | |

**Table 3. Characteristics of the videos included in the analysis**

|  | n | % |
|---|---|---|
| Date (year) uploaded | | |
| 2011 | 15 | 15.5 |
| 2012 | 23 | 23.7 |
| 2013 | 39 | 40.2 |
| 2014 (first six months) | 20 | 20.6 |
| Individual or institution uploaded the item | | |
| by medical personnel (doctor, paramedic etc.) | 20 | 20.6 |
| by laypersons | 19 | 19.6 |
| by official institution or association | 9 | 9.3 |
| Via TV programme | 25 | 25.8 |
| Filming on BLS course | 17 | 17.5 |
| Unclassified | 7 | 7.2 |
| The demonstration/application was performed on. | | |
| Manikin | 82 | 84.5 |
| Human | 11 | 11.3 |
| Both | 4 | 4.1 |
| AED use (mentioned AED in video?) | | |
| Yes | 14 | 14.4 |
| No | 83 | 85.6 |
| Compatibility with 2010 CPR guidelines | | |
| Yes | 24 | 24.7 |
| No | 73 | 75.3 |
| Total scores received | | |
| below 5 | 35 | 36.1 |
| 5 and higher | 62 | 63.9 |
| Total | 97 | 100.0 |
| CPR: cardiopulmonary resuscitation; AED: automatic external defibrillator | | |

medical personnel were also found higher compared to others ($p=0.001$; Table 4). There was no remarkable difference between the scores of videos according to uploading years (0% vs. 26.1% vs 25.6% vs 40%; respectively; $p=0.058$). The uploading rate of videos whether consistent with the guidelines or not were searched and more videos were found to be consistent with the guidelines [1005.5 (IQR: 388-2152) vs 678 (IQR: 180-1458); $p=0.042$].

Sources of video sharing website, respectively, YouTube, Google or Yahoo, were not shown to have any significant effect on the compatibility to guidelines (20% vs 30.8% vs 50% $p=0.188$) and on the scores received [5 (IQR: 4-6) vs 5 (IQR: 3.75-5) vs 4 (IQR: 2.75-5.25); $p=0.387$] and download rates [740 (IQR: 185.5-3175.0) vs 675 (IQR: 438-1597.7) vs 464.5 (IQR: 76.2-848); $p=0.522$].

## Discussion

In this study, videos about BLS in Turkish that were uploaded to the three greatest and most frequently visited websites by internet users were examined, unfortunately, we determined that three-fourth of them were not compatible with the latest guideline and comprised only rate limiting information such as "Look-Listen-Feel, rescue breaths". Only one-fourth of the videos represented BLS information according to the principles of CAB and the using of AED was mentioned in just 14% of them. There was no significant difference in terms of the presence of high-scored videos according to website; however, most of the videos compatible with the criteria of our study were sourced by YouTube (67%). In the literature, there were limited studies searching the videos related to training of BLS and most of them inquired the videos sourced by YouTube [5, 7, 8]. One study investigated videos on YouTube, Google and Yahoo so far: Liu at al. [6] queried the videos involving BLS by using the same keywords in Spanish and it was declared that 16% of them were considered to have an optimal quality.

In our study, videos uploaded by official institution and association were more visited by users and their scores were recorded higher than others. In addition, we realized that videos proper to guidelines were chiefly sourced by "official institution-association" and "medical personal". These results are promising. In the research regarding YouTube by Yaylaci at al. [5], videos uploaded by "official institution-association" (AHA, European Resuscitation Council (ERC) etc.) on internet attracted more attention by users. It was indicated that they include much more accurate and current information. In particular, the arrangement of such instructional videos for the public and then upload-
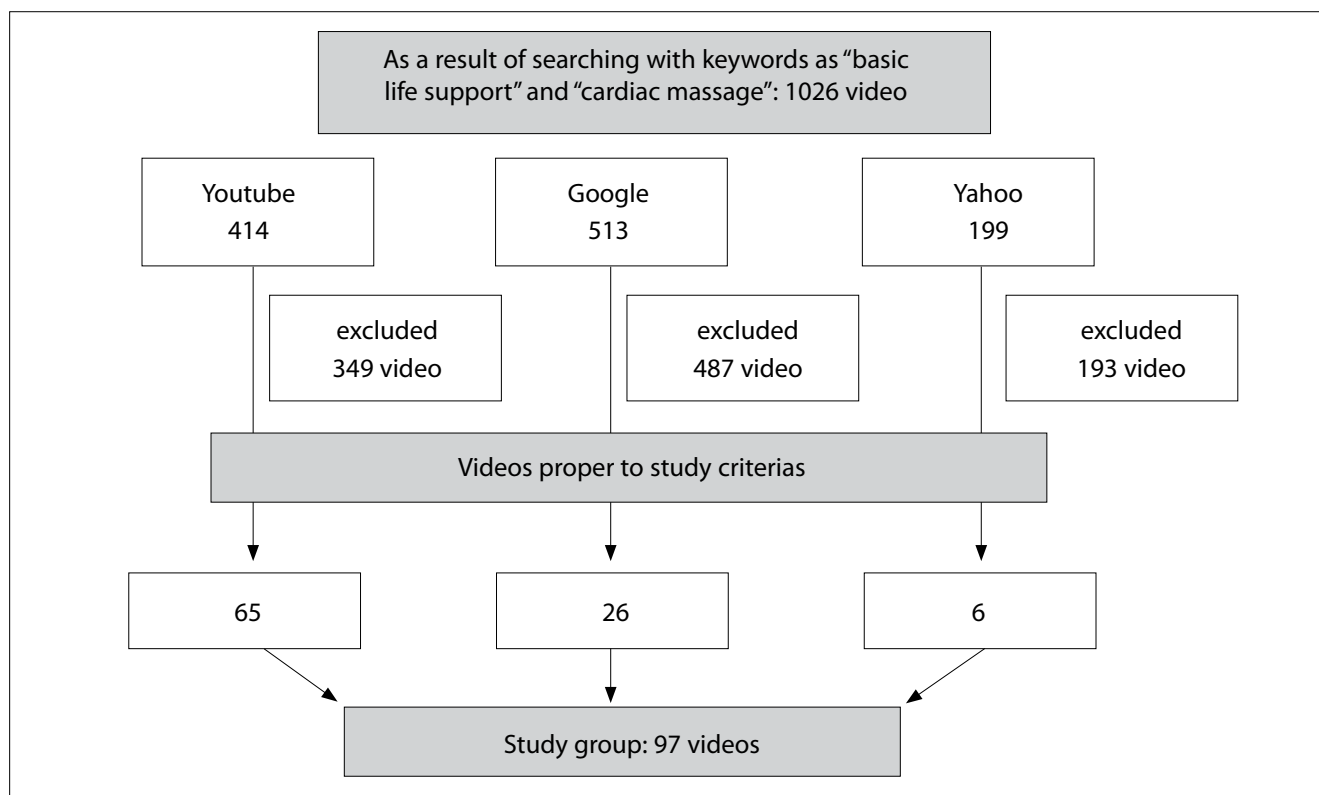
**Figure 1.** *Video flow chart.*

**Table 4. Distribution of the scores of the videos and download rates with respect to source of upload**

| Individual or institution uploaded the item | Download rates median (IQR) | Compatibility guidelines (%) | Score median (IQR) |
|---|---|---|---|
| by medical personnel (doctor, paramedic etc. ) | 882 (391-1550) | 55.0 | 5,0 (3.5-6) |
| by laypersons | 672 (164-4041) | 10.5 | 4.0 (2-6) |
| by official institution or association | 4168 (1830-10197) | 66.7 | 6.0 (5.5-7) |
| Via TV programme | 635 (165-764.5) | 12.0 | 5.0 (4-5.5) |
| Filming on BLS course | 715 (178-1462) | 11.8 | 5.0 (3-6) |
| Unclassified | 706 (179-3759) | 0 | 3.0 (3-5) |
| | p value = 0.007* | p value = 0.001** | p value = 0.006*** |

IQR: interquartile ratio
*The post-hoc analysis revealed that official institution-association is significantly different from others on download rates. **Official institution-association and medical personal are significantly different from others on the compatibility guidelines. ***The post-hoc analysis revealed that official institutions-association is significantly different from others on median score.

ing them to most visited internet resources by "official institution-associations" may help raising the awareness of people regarding this issue. The utilization of AED should be placed and taught on such kind of videos. YouTube can play an effective role on the training and for the awareness of public who were expected to be the user of AED. De Vries at al. [9] performed web based interactive programme that instructed the use of AED and BLS upon sixteen volunteers, consequently it was demonstrated that the application achieved 100% on the using of AED, 59% on the depth of chest compression, 67% on the rate of cardiac massage successfully.

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IQR: interquartile ratio
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As there is no limitation and debugging during the installation process of the videos, their contents related with CPR and BLS depend on the installer. Their educational and scientific value is uncontrolled. As a recommendation, showing a notice or a symbol about whether or not using the videos on YouTube as educational material may alert users, and also motivate them with respect to learning. Moreover, a new separate search field may be created as "*YouTube academic*" that analyzes the videos uploaded by academic institutions or academicians on this website.

### Study Limitations

It should not be left out that the content of internet has been changing according to the date and time of searching. This study was achieved via instant information on the internet during the study was carried out.

In conclusion, all the data obtained in this study support that videos in Turkish are not reliable on the subject of BLS and cardiac massage. Nevertheless, it is a fact that the arrangements of this type of internet resources can be used in public education. It is promising that videos with high follow-up rates also have scored higher.

**Ethics Committee Approval:** Due to nature of this study, ethics committee approval was waived.

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