ORIGINAL RESEARCH

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Evaluation of the Adequacy of Youtube Videos in Approach to Cardiac Arrest in Pregnant Women

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Abstract

Objective: Pregnant mortality is one of the important health indicators in the country. In the event of cardiovascular arrest, the necessary interventions should be performed in accordance with the guidelines to increase the chances of survival of both the mother and the fetus. The American Heart Association's (AHA) constantly updated cardiopulmonary resuscitation (CPR) guidelines guide us in this regard. YouTube is a frequently used video sharing website for obtaining information in the field of health as well as in many other fields. The aim of this study was to evaluate the adequacy of YouTube videos in terms of information content in the approach to pregnant patients experiencing cardiac arrest.

Materials and Methods: On February 13, 2024, the terms "cardiopulmonary arrest in a pregnant patient" and "basic life support" were entered into the YouTube search bar. The AHA cardiopulmonary resuscitation guideline recommendations for pregnant arrest were used as references. Journal of the American Medical Association (JAMA), Video Power Index (VPI), Global Quality Score (GQS), Quality Criteria for Consumer Health Information (DISCERN), and like rate were used as review criteria.

Results: A total of 87 videos published in English on YouTube about pregnant arrest were analyzed. Among the videos included in the analysis, 17 videos (45.9%) had a JAMA Score of 3 and GQS Score of 3 12 videos (32.4%) had. AHA CPR guidelines were analyzed.

Conclusion: Intervention for pregnant cardiac arrest patients and education on this subject have an important place. As a result of this study, it was concluded that there is not enough information available on YouTube regarding pregnant CPR training. We recommend that videos on pregnant CPR training posted on YouTube be reviewed and supervised by specialized healthcare professionals in accordance with current guidelines.

Keywords: Pregnant patient, basic life support, YouTube videos, resuscitation guidelines

Introduction

Globally, maternal mortality rates are one of the key parameters used to demonstrate the quality of a country's health system. In 2020, the maternal mortality rate in Organization for Economic Cooperation and Development (OECD), countries was set at 10.9 (per 100,000 live births). While this rate is 3 in countries such as Norway, Poland, and Israel, it is 173 in developing countries such as Indonesia. The rate in Türkiye was found to be higher than the OECD average (17.3) [1].

Management of cardiac arrest in pregnant patients should be aimed at successful rescue of mother and baby, and early perimortem cesarean section should be performed if necessary [2]. The success of the intervention in pregnant pregnancy is enhanced by the application of up-to-date guidelines and information. YouTube is one of the most frequently visited websites by patients and healthcare professionals worldwide. In 2024, YouTube ranked second in the ranking of the most frequently used websites in the world and in Türkiye [3]. In this study, we aimed to investigate the adequacy of the information published on YouTube, in the field of health, in terms of pregnant cardiac resuscitation.

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Materials and Methods

On February 13, 2024, a search of YouTube (https://www.youtube.com) was conducted by entering the terms "pregnant cardiopulmonary arrest", "CPR", and "basic life support (BLS)". The date of upload, duration, number of views, who uploaded the videos (1st healthcare organization, 2nd pharmaceutical company, 3rd website, 4th TV channel, 5th healthcare worker), liking or disliking rate, and the number of comments, written about the video were recorded on a prepared form. Global Quality Scale (GQS), Journal of the American Medical Association (JAMA), and DISCERN scoring mean values were calculated.

Video Power Index (VPI) values [(like rate x view rate)/100], like rate [number of likes x 100 / (number of likes + number of dislikes)], view rate (number of views/days) were calculated to determine the popularity of the videos [4]. The GQS defined by Bernard et al. [5] to assess the informativeness of a video was calculated for each video. The JAMA criteria proposed by Silberg et al. [6] and the Oxford University Consumer Health Quality Criteria (DISCERN) were used to compare the transparency and editorial information of each video [7]. No human or animal data were used in the study. In addition, as in other similar studies, no ethics committee application was made because the study utilized publicly available YouTube videos [8,9].

Video Exclusion Criteria

- Non-medical videos (advertisements, news and interviews)
- Videos made for advertising
- Videos published outside English
- Comedy and entertainment videos
- Duplicated images
- Non-educational videos with real-life examples
- Cardiopulmonary resuscitation images of animals
- Short duration videos

In line with the information in the CPR in the pregnant patient guideline updated by the American Heart Association (AHA), the appropriateness of the video content was evaluated under the following headings.

AHA Algorithm for Advanced Maternal Resuscitation [10]

(1) Ensuring the safety of the patient's area.

(2) Control of patient non-response.

(3) Ensuring airway patency and assessing respiration.

(4) Mobilization of the emergency unit via mobile phone.

(5) C-A-B sequence.

(6) Manual left lateral uterine displacement (one hand/two hands) to ensure blood flow to the heart.

(7) 30:2 chest compression.

(8) Chest compression depth at the desired level (2 inches).

(9) Use of AED to restart the heart use of AED (was AED mentioned in the video?).

(10) Chest compressions should be 100-120/min.

(11) Use of capnography to confirm ET tube placement and for monitoring.

(12) Advanced airway placement, continuous chest compressions with 1 breath every 6 seconds.

(13) Stabilization of the mother.

(14) Targeted temperature management.

(15) Monitoring of fetal heart rhythm in terms of bradycardia and other complications.

(16) Perimortem cesarean section (within 5 minutes of cardiac arrest).

(17) Internal eligibility for the AHA algorithm for advanced maternal resuscitation.

Journal of the American Medical Association Comparison Scoring (1 Point Per Question)

Authorship: Authors and contributors, their affiliations, and relevant credentials should be provided

Attribution: Fully cite the References and Sources cited in the video content and include the necessary copyright information

Disclosure: Website "ownership" must be prominently and fully disclosed, such as sponsorship, advertising, underwriting, commercial financing arrangements or support, or potential conflicts of interest

Currency: Indication of the time of publication of the content published in the video and the dates when it was updated.

Modified DISCERN Scale (Yes: 1, No: 0 Points for Each Question)

(1) Is the video clear, concise and easily understandable?

(2) Is it sourced from reliable sources?

(3) Is the information presented in an unbiased manner?

(4) Does it include additional sources of information for the patient to refer to if needed?

(5) Does the video address controversial or unclear issues?

Global Quality Scale Criteria

(1) Low quality content, poor site flow, majority of information missing, not at all useful for patients.

(2) Mostly poor quality and slow flow, some information listed but many topics missing, very limited for patients to use as an information resource.

(3) Moderate quality, incomplete flow and some important information is not sufficiently mentioned and the information that is mentioned is poorly discussed, may be of limited use to patients.

(4) Good quality and mostly good flow, most of the necessary information is mentioned but some topics are not covered, in this respect it may be useful for patients.

(5) Very good quality and excellent flow, useful for patients to be able to provide sufficient information for their use.

Statistical Analysis

Data processing was done using SPSS 17.0 software package. Continuous variables were expressed as mean ± standard deviation; categorical variables were shown as numbers or percentages. The Mann-Whitney U test was used to determine the significance of the difference between the means of the groups for continuous variables. The Mann-Whitney U test was used in groups that did not show normal distribution. The Spearman correlation test was used to determine the correlation between the continuous variables. A level of statistical significance was determined at $p<0.05$.

RESULTS

A total of 87 videos published in English on YouTube were analyzed in our study. Fifty videos that did not meet the inclusion criteria were excluded. Analysis of the DISCERN scores of the 37 videos included in the study revealed that more videos scored 1 or 4 points was higher than the others (Figure 1). Among the videos included in the analysis, 17 (45.9%) had a JAMA score of 3 and 12 (32.4%) had a GQS score of 3 (Figures 2 and 3). Of the 37 videos, the mean number of broadcast days was 871.27±661.54 (3-2230) and the mean broadcast duration was 11.04±11.99 minutes. The mean number of views was 57990.59±155671.22 (7-769249), the mean number of comments was 1305.03±4972.89 (0-28958); and the mean number of likes was 28.19±102.28 (0-603). It was observed that no video was disliked. Mean video popularity was 35.25±69.82 (0-345), and mean VPI was 57990.59±155671.22 (7-769249) (Table 1).

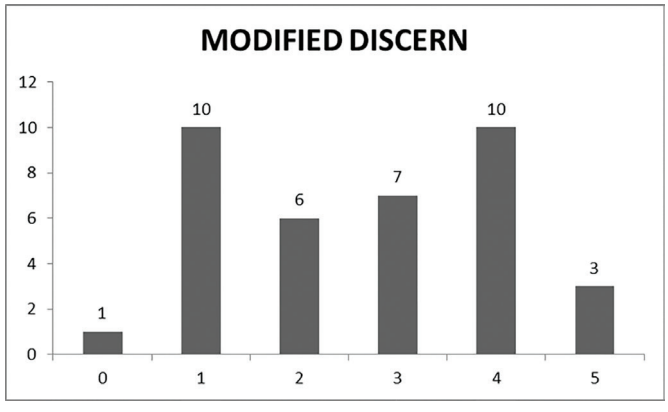

Figure 1. Modified Discern Scale

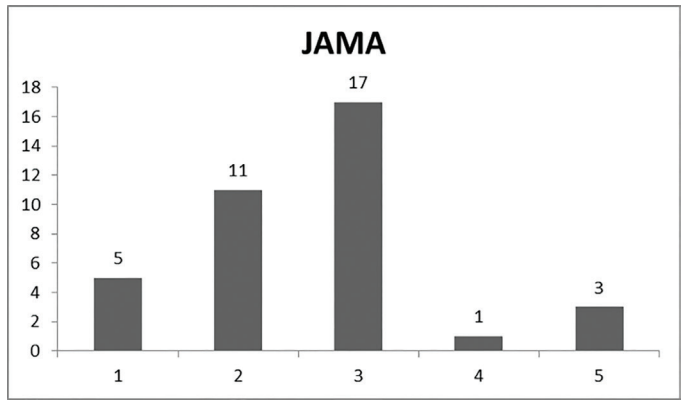

Figure 2. JAMA Scale

JAMA: Journal of the American Medical Association

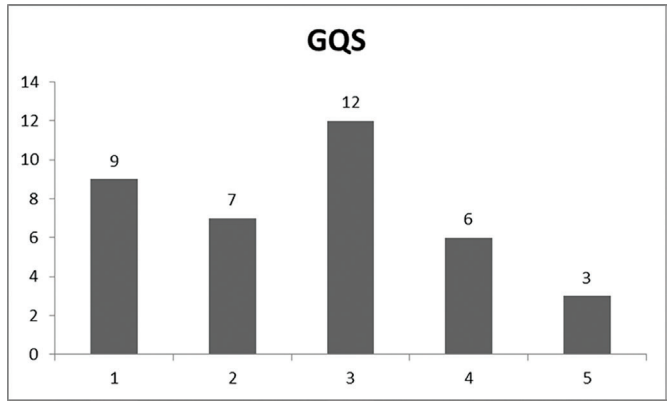

Figure 3. GQS Scale

GQS: Global Quality Score

Sixteen of the videos (43.24%) were uploaded by official institutions and organizations (Table 2). In the majority of the videos, 22 videos comprising 59.46%, slides were used as auxiliary material, and only 8 videos (21.6%) used realistic simulation (Table 3).

The parameters by which we evaluated the scope of the videos and which were determined according to the AHA CPR guideline are given in Table 4. In this table, it was seen that the title of the topic and the self-introduction section of the author. It was observed that 75.08% of the videos included manual left lateral uterine displacement, 30:2 chest compressions, 97% adherence to the C-A-B sequence, and emphasis on the chest compression depth required for 100-120 beats per minute (81%). However, we concluded that other parameters we evaluated in the AHA guideline were largely lacking. The rate of AED use was very low in these videos. Information on the use of capnography was included in only 18% of the videos. Perimortem cesarean section recommended in the guidelines was included in only 9 (24%) of the videos, while maternal stabilization after CPR, fetal heart rhythm monitoring, and body temperature monitoring were not mentioned frequently (Table 4).

Table 1. Characteristics of YouTube videos in terms of publication content

	n	Minimum	Maximum	Mean	Standard deviation
Number of broadcast days	37	3	2230	871.27	661.54
Duratıon (minutes)	37	1	47	11.04	11.99
Number of vıews	37	7	769249	57990.59	155671.22
Number of comments	37	0	28958	1305.03	4972.89
Liking rate	37	0	603	28.19	102.28
Video popularity	37	0	345	35.25	69.82
Video Power Index	37	7	769249	57990.59	155671.22

Table 2. Distribution of videos according to upload source

	Number	Percentage
Medical personel (doctor, paramedic, etc.)	11	29.73%
Laypeople	4	10.81%
Official institution or association	16	43.24%
Via TV show	3	8.11%
Shooting at BLS course	3	8.11%

BLS: Basic life support

Table 3. Distribution of videos according to resource usage

	Number	Percentage
Realistic simulation	8	21.62%
Writing board	4	10.81%
Model	18	48.65%
Slide	22	59.46%

Table 4. Parameters by which we evaluate the coverage of the videos

		No		Yes	
	n	Number	Percentage	Number	Percentage
Video title	37	1	2.70%	36	97.30%
The author of the video introduces himself (professional/student)	37	8	21.62%	29	78.38%
Do audio and video conflict?	37	17	45.95%	20	54.05%
Are there subtitles?	37	20	54.05%	17	45.95%
Ensuring environmental safety	37	20	54.05%	17	45.95%
Control of patient unresponsiveness	37	18	48.65%	19	51.35%
Ensuring airway patency and assessing breathing	37	18	48.65%	19	51.35%
Activating the emergency medical system with mobile 911	37	15	40.54%	22	59.46%
C-A-B sequence	37	1	2.70%	36	97.30%
Left lateral uterine displacement by hand (one hand/two hands)	37	9	24.32%	28	75.68%
30:2 chest compressions	37	2	5.41%	35	94.59%
Appropriate chest compression depth (2 inches)	37	7	18.92%	30	81.08%
AED use	37	26	70.27%	11	29.73%
Chest compressions should be 100-120/min.	37	7	18.92%	30	81.08%
Capnography	37	30	81.08%	7	18.92%
Maternal stabilization	37	23	62.16%	14	37.84%

Table 4. Continued

		No		Yes	
	n	Number	Percentage	Number	Percentage
Targeted temperature management	37	30	81.08%	7	18.92%
Fetal heart rhythm monitoring	37	28	75.68%	9	24.32%
Perimortem cesarean section	37	28	75.68%	9	24.32%

AED: Automatic external defibrillator, min.: Minimum

DISCUSSION

Maternal mortality is one of an important health indicators of a country. Advanced life support states that the first priority is to save the mother's life; however, measures should be taken urgently to ensure the highest chance of survival for both mother and baby. In particular, physiologic and anatomic changes during pregnancy require special attention during cardiopulmonary resuscitation. It should be kept in mind that the uterus should be shifted to the left lateral side during chest compressions, that there may be a difficult airway, and that postmortem cesarean section preparation should be performed to reduce pressure on the venous system and increase return of spontaneous circulation [10-13].

Since 2005, YouTube, a video sharing site, has been used as a source of information by patients and healthcare professionals [14]. Especially during the COVID-19 pandemic, video sharing sites such as YouTube have become an important source of medical information that can be accessed by a wide audience for free. The presence of low-quality videos containing misleading or incomplete information on YouTube, during the pandemic, has shown the need for videos prepared by experts on the subject [14].

Scales such as JAMA and DISCERN are used in the evaluation of visual publications on the Internet [15]. Therefore, we used the VPI value, GQS, DISCERN, and JAMA scales in our study.

In the study by Tutar et al. [16] very few videos were identified using the descriptive terms "CPR" and "BLS", and the reliability, quality, and information content of the videos were inadequate according to the CPR training guidelines. In the same study, it was found that 36% of all videos listed in a search using descriptive words were completely irrelevant to the field of CPR and BLS [16]. In the evaluation of pediatric CPR and BLS by Tosun et al. [16] only 16.5% of YouTube videos were suitable for inclusion in the study and 83.5% were found to be off-topic. It was concluded that this situation could limit viewers' access to up-to-date information and lead to misleading information [17]. Similarly, in this study, very few videos were found in a search using descriptive terms, and 57.5% of these videos contained inappropriate content.

When we look at the use of automatic external defibrillators (AEDs) in out-of-hospital cardiac arrest patients in public areas, the rate of AED use in our study was 29.73%, while AED use in the study by Tutar et al. [16] constituted only 5.1% of all videos. Although this rate is thought to be relatively high in our study, it was concluded that AED use has not yet been addressed sufficiently given the time elapsed.

In contrast to the previous study [16] based on the AHA 2015 CPR guidelines, our study was based on the AHA 2020 CPR guidelines, and it was found that the AHA 2020 CPR guidelines were followed and that there was sufficient information on adequate chest compression depth and compression-to-ventilation ratio. However, the videos we reviewed did not include information on the use of capnography, perimortem cesarean section, maternal stabilization, fetal heart rhythm, and temperature monitoring. This led to the conclusion that information on resuscitation of the pregnant woman was provided only as normal CPR and that information necessary for the survival of both the mother and the fetus was missing. In a study by Lynes et al. [18] in 2020, which analyzed 638 videos, only 1.6% of the videos included a female mannequin. The same study found that there was 1 high-quality video teaching a woman modern, hands-only CPR. The results of this study showed that there are few CPR training videos specific to women and that the barriers to providing the necessary training videos should be removed to prevent gender inequality in CPR [18]. There are very few studies in the literature examining the level of knowledge in YouTube videos about resuscitation for pregnant women. In this context, we believe that this study will contribute to revealing the deficiencies in the resuscitation of pregnant women and to their elimination.

Study Limitations

Limitations of our study included the exclusion of video sharing sites other than YouTube and the exclusion of non-English videos.

Conclusion

According to the AHA's current CPR guidelines, it was determined that the videos on YouTube contained incomplete information. This situation limits the use of YouTube videos

as a source of information on the approach to performing CPR during pregnancy. CPR performed during pregnancy in accordance with the guidelines will increase the chances of survival for both the mother and the baby. We believe that YouTube videos regarding pregnancy CPR training should be revised with the help of the updated guidelines.

Ethics

Ethics Committee Approval: Our study was conducted by examining digital data and was analyzed by examining digital data using objective scales and criteria. There are no data sharing or treatment interventions regarding any person or patient. No animals or plants were used for research purposes. For all these reasons, ethics committee approval is not required.

Informed Consent: Patient consent was not required as the study involved no human participants, identifiable data, or interventions.

Footnotes

Authorship Contributions

Surgical and Medical Practices: A.Y., Concept: A.Y., Design: A.Y., Data Collection or Processing: A.Y., Analysis or Interpretation: C.K., Literature Search: C.K., Writing: A.Y., C.K.

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

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