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Original Research Article

Evaluation of Quality of Videos About MRONJ on YouTube™

YouTube™'daki MRONJ ile İlgili Videoların Değerlendirilmesi

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ABSTRACT

Aim: The present study aimed to analyze YouTube™ videos about medication-related osteonecrosis of the maxilla and mandibula (MRONJ), related topics and possible complications. To our knowledge, no study has yet evaluated the content of YouTube™ videos on MRONJ. **Materials and Method:** A YouTube™ search for MRONJ was performed in English language. 63 of 100 videos met the inclusion criteria. The videos were viewed and analyzed by two different researchers. Interactions were calculated based on interaction index and viewing rate. **Results:** Although, majority of the videos had some information about MRONJ, less than 20 included symptoms, differential diagnosis and other issues related MRONJ. According to quality assessment, the videos uploaded by universities and hospitals had significantly high scores than uploaded videos by other sources. In addition both VIQI (Video Information and Quality Index) and QAS (Quality Assessment Score) values of the videos that were uploaded from the US were significantly lower than that of the videos uploaded from other countries. **Conclusion:** This study revealed that most videos lacked critical information regarding MRONJ. These omissions could significantly impact the quality of information available to the public.

Keywords: Awareness; Internet; Knowledge; Osteonecrosis; Quality

ÖZET

Amaç: Bu çalışmada YouTube™'daki MRONJ, MRONJ'la ilişkili durumlar ve komplikasyonlarla ilgili videoların içerdiği bilgileri değerlendirmeyi amaçlamaktadır. Mevcut literatür taramasında daha önce yapılmış benzer bir çalışmaya rastlanmamıştır. **Gereç ve Yöntem:** Araştırma İngilizce dilindeki videolar üzerinden gerçekleştirildi. İlk 100 videodan 63 tanesi çalışmaya dahil edildi. Videolar 2 araştırmacı tarafından değerlendirildi. Değerlendirmeler etkileşim indeksi ve görüntülenme oranına göre hesaplandı. **Bulgular:** Videoların çoğunluğu MRONJ ile ilgili temel bilgilere sahip olsa da 20'den azı ayırıcı tanı, semptomlar ve ilişkili diğer konularla ilgili bilgiler içermektedir. Üniversiteler ve hastaneler tarafından yüklenen videolar değerlendirmelerde diğer kaynaklardan yüklenen videolara göre daha yüksel puan almıştır. Ek olarak Amerika Birleşik Devletleri'nden yüklenen videolar hem Video Bilgi ve Kalite İndeksi hem de Kalite Değerlendirme Puanı değerlendirmesinde diğer ülkelerden yüklenen videolara önemli ölçüde daha düşük puan almıştır. **Sonuç:** Yapılan bu çalışma videoların çoğunun içeriğinde MRONJ'la ilişkili önemli bilgilerin büyük oranda eksik olduğunu göstermiştir. Bu eksiklikler internetten düzgün bilgi almak isteyen insanlar için önemli bir rol oynamaktadır.

Anahtar Kelimeler: Bilgi; Farkındalık; İnternet; Kalite; Osteonekroz

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INTRODUCTION

Globally, osteoporosis and cancer represent significant public health issues. Treatment for a number of bone-resorbing disorders, including osteoporosis, cancer, multiple myeloma, Paget's disease, and osteogenesis imperfecta, involves the use of antiresorptive drugs. Neuroendocrine tumors, renal cell carcinomas, gastrointestinal tumors, and other cancers are treated using antiangiogenic medications.[1]

Worldwide, one of the most frequently prescribed drugs is bisphosphonates (BPs). Every year, nearly 200 million prescriptions for BPs are filled. Although most side effects of BPs are well tolerated, they may be unpleasant. These include esophagitis, musculoskeletal pain, hypocalcemia, ocular inflammation, osteonecrosis of the maxilla and mandibula. Numerous cases resembling the initial 2003 report of BP-related osteonecrosis of the jaw (BRONJ) have been documented. Osteonecrosis of the jaw has been seen more recently in conjunction with antiangiogenic medicines and other treatments, including denosumab.[2]

In order to include all the medications that have been linked to the development of osteonecrosis of the jaw, the American Association of Oral and Maxillofacial Surgeons (AAOMS) has proposed changing the nomenclature of associated with BP use osteonecrosis of the jaw (BRONJ) to medication-related osteonecrosis of the maxilla and mandibula (MRONJ).

Three criteria form the basis of the current definition of MRONJ:

- Antiresorptive or antiangiogenic agent treatment, either current or past
- Bone exposed or accessible through an intraoral or/and extraoral fistula in the maxillofacial area that has remained stable for more than eight weeks
- There is no evident metastatic illness to the jaws or history of radiotherapy to the maxilla and mandibula.[3]

Necrotic bone is frequently observed during a patient's clinical examination, along with purulent discharge, fistulas, and symptoms of inflammation (redness, swelling). Patients may experience pain and have trouble speaking, eating, swallowing, or chewing, particularly if the necrotic mass contacts nerve structures or is large enough to impair normal oral functioning. Fractures are also possible.[4]

The development of MRONJ appears to be linked to a number of risk factors. Systemic and local elements comprise this group of factors. Treatment duration and medication potency are examples of systemic variables. Dental extractions, implant placement, periapical surgery, and periodontal surgery are examples of local variables.[5]

Although several explanations have been put out, the pathophysiology of MRONJ remains unclear. The most significant factor is the suppression of osteoclasts.[6] Various theories have been put forth to explain why MRONJ is specifically localized to the jaws. These theories include changes in bone remodeling or excessive inhibition of bone resorption and angiogenesis, persistent microtrauma, suppression of innate or acquired immunity, deficiency of vitamin D, toxicity to soft tissues from blood pressure, and inflammation or infection.[3]

According to the AAOMS, the goal of the current MRONJ treatment is to minimize or completely eradicate patient complaints. However, this treatment plan may not always produce the desired outcomes. Thus, in addition to the medical and/or surgical treatments for MRONJ, novel approaches and substances that are believed to have a beneficial effect on bone and soft tissue healing are being studied.[3,7]

Information on healthcare is traditionally provided to patients by healthcare organizations and professionals. However, due to the Internet's increased accessibility, patients' desire for greater information, and the cheaper cost of web-based counseling in comparison to in-person healthcare consultation, there has been a significant increase in the public's use of the Internet for medical information over the past ten years. In addition to seeking information from medical professionals, patients use the Internet to gain insight into their diagnosis and even treatment.[8]

The online video-sharing website YouTube™ was founded in 2005. At the moment, YouTube™ is the second-most popular website globally.[9] It's fairly typical for people to use internet resources to obtain medical information. Numerous medical specialties have researched using videos from YouTube™ for

patient education and health promotion.[10]

Since YouTube™ videos are not impartially assessed, viewers may discover inaccurate or deceptive information in these videos.[10] Studies on several health conditions, including oral leukoplakia, oral cancer, Sjögren's syndrome, Covid-19, and Alzheimer disease, have recently assessed the quality of YouTube™ videos.[11]

To our knowledge, no research has examined the content of YouTube™ videos on MRONJ. Since it is simple to obtain information of any kind and in any context via online videos, evaluate the credibility, adequacy, and correctness of YouTube™ videos connected to this topic in order to create an opinion regarding the precision of the knowledge that individuals have obtained.

MATERIALS AND METHOD

YouTube Search

In January 2021, the YouTube™ website was searched for videos on "MRONJ" by using the website's default configuration. Most viewers conducting an online search scan the first 60 to 200 videos, but the first 30 videos were typically scanned by the majority of YouTube™ viewers. The first 100 relevant videos were viewed and analyzed.

Selection of Videos

Initial screening of videos was evaluated to exclude videos in languages other than English, duplicate videos, videos without sound or a title, videos about alternative MRONJ treatments, satirical videos, irrelevant videos, and advertisements. 37 such videos were, therefore, excluded. The remaining videos were analyzed in terms of the accuracy and quality of the information they contained.

Analysis of Videos

A total of 63 videos were selected for analysis. The videos were viewed and analyzed independently by two researchers. (1) Number of views, (2) total video duration, (3) total number of comments, (4) likes and dislikes, (5) date of upload, (6) target audience and (7) country of origin were recorded for each video. Viewers' interactions were calculated based on the (8) interaction index (number of likes-number of dislikes/total number of views) and the (9) viewing rate (number of views/number of days since upload).

For each video, the source of upload was recorded and categorized as healthcare professionals, health companies and websites, individual viewers, universities, and hospitals.

In addition, each video was assessed in terms of the definition of MRONJ, risk factors, symptoms, differential diagnosis, prognosis, treatment, new therapeutic approaches, and complications and scored 1 or 0 whether each video addressed these or not. These scores were used to calculate the Video Information and Quality Index (VIQI). Also, all videos were rated between 1 to 5 about the flow of information, information accuracy, quality, and precision evaluations for calculation as Quality of Assessments (QAS).

Statistical Analysis

The NCSS (Number Cruncher Statistical System) 2007 (Kaysville, Utah, USA) was used for statistical analysis. The Shapiro-Wilk Test and descriptive statistical techniques (mean, standard deviation, median, frequency, ratio, minimum, and maximum) were used to assess data distribution. The quantitative data of two groups that do not exhibit a normal distribution and the quantitative data of three or more groups that do not exhibit a normal distribution were compared using the Mann-Whitney U test and the Kruskal -Wallis test, respectively. Paired data between two researchers were assessed for statistical significance using the Wilcoxon test. To ascertain the relationship between quantitative data, Spearman's correlation analysis was employed. The study has been examined through the significance thresholds were set at $p<0.05$ and $p<0.01$ for better evaluation of its accuracy.

RESULTS

After the initial analysis, 63 videos were included in the study. Many videos (38.1%, n=24) were uploaded by health companies and websites, and 23.8% (n=15) were uploaded by each of healthcare professionals and individual users, equally.

Most videos were uploaded by users from the United States (74.6%), and the rest were from other countries.

Although more than half of videos (55.6%) included definitions of MRONJ, indications of BPs and similar drugs (60.3%), medications that may cause MRONJ and and other risk factors for MRONJ (79.4%), less than 20 out of 63 videos included symptoms (33.4%), differential diagnosis (9.5%), contraindications (25.4%), prognosis (23.8%), treatment options (30.2%), and new therapeutic approaches for MRONJ (14.3%).

The length of the videos ranged from 2.00 to 6754 seconds, while the number of likes were between 0 and 1000 and the dislikes ranged from 0 to 17. The range of the number of viewings was 4 to 54000. The mean value of VIQI was 10.5 (SD=5.1), and the mean value of QAS was 3.8 (SD=2.7). Other statistics are shown in Table 1.

There were statistically significant differences between the sources of the videos and both the total video duration and loading time.

Total video duration of the videos uploaded by healthcare professionals was significantly longer than that of the videos uploaded by individual users and shorter than that of the videos uploaded by universities and hospitals (p=0.001). The total video duration of the videos uploaded by health companies and websites was significantly longer than that of the videos uploaded by individual users (p=0.001). In addition, the total video duration of the videos uploaded by individual users was significantly longer than that of the videos uploaded by universities and hospitals (p=0.001) (Table 2).

The loading date of the videos that were uploaded by healthcare professionals and health companies and website users was significantly older than that of the videos that were uploaded by individual users (p=0.013). Also, the loading date of the videos that were uploaded by universities and hospitals was significantly older than that of the videos that were uploaded by individual users (p=0.013) (Table 2).

There was a statistically significant correlation between the source of the video and the total quality assessment score (p=0.047). The total QAS value of the videos both uploaded by healthcare professionals and individual users was lower than that of the videos uploaded by universities and hospitals (p=0.001) (Table 3).

There was a statistically significant relationship between the country of origin of the video and both total video duration and loading date. The total video duration of the videos that were uploaded from the United States was significantly shorter than that of the videos uploaded from other countries (p=0.004). However, the loading date of the videos that were uploaded from the United States was significantly older than that of the videos uploaded from other countries (p=0.005) (Table 4).

There was a significant correlation between the country of origin of the video and the quality, total VIQI, and QAS scores (Table 5).

The quality score of the videos that were uploaded from the United States was significantly lower than that of the videos uploaded from other countries (p=0.012). In addition, both total VIQI and total QAS values of the videos that were uploaded from the United States were significantly lower than that of the videos uploaded from other countries (Table 5).

Table 1. The evaluation table of the videos

	Mean±SD*	Min-Max (Median)
Number of views	3195.4±8400.6	4-54000 (645)
Number of likes	45.3±144.4	0-1000 (6)
Number of dislikes	1.0±2.9	0-17 (0)
Number of comments	2.8±7.9	0-49 (0)
Total video duration (seconds)	1262.5±1663.8	2-6754 (558)
Loading time (days)	1348.1±1016.2	42-3896 (1088)
Interaction index	1.8±2.8	0-19.05 (0.89)
Viewing rate	300.7±784.3	0.77-5362.46 (81.29)
Total VIQI	10.5±5.1	0-20 (10)
Total QAS	3.8±2,7	1-10 (3)

*SD: Standard deviation

Table 2. Comparison of information and quality index of videos according to source of video

	Source of videos	N	Mean±SD*	Min-Max (Median)	p
Number of views	Healthcare professionals	15	4265.8±8133.3	381-31320 (1586)	0.098
	Health companies and websites	24	4434.7±11861	18-54000 (220)	
	Individual users	15	1639.7±2081.3	51-7912 (1005)	
	Universities and hospitals	9	699.3±900.7	4-2846 (293)	
Number of likes	Healthcare professionals	15	108.2±252.6	1-1000 (17)	0.070
	Health companies and websites	24	40.7±115.4	0-548 (7)	
	Individual users	15	11.4±17.4	0-53 (5)	
	Universities and hospitals	9	9.56±10.6	0-27 (5)	
Number of dislikes	Healthcare professionals	15	0.6±1.4	0-5 (0)	0.576
	Health companies and websites	24	1.79±4.34	0-17 (0)	
	Individual users	15	0.67±1.45	0-4 (0)	
	Universities and hospitals	9	0.22±0.44	0-1 (0)	
Number of comments	Healthcare professionals	15	8.47±14.4	0-49 (1)	0.131
	Health companies and websites	24	0.92±1.82	0-8 (0)	
	Individual users	15	1.47±3.82	0-15 (0)	
	Universities and hospitals	9	0.56±1.33	0-4 (0)	
Total video duration (seconds)	Healthcare professionals	15	610.5±419,1	102-1410 (481)	**0.001****
	Health companies and websites	24	1806.4±2102.5	2-6754 (875.5)	
	Individual users	15	495.7±1005.9	20-3897 (131)	
	Universities and hospitals	9	2177.2±1714.1	363-4997 (1773)	
Loading time	Healthcare professionals	15	1226.9±673.1	194-2117 (1088)	**0.013***
	Health companies and websites	24	1015±890.7	42-3231 (756.5)	
	Individual users	15	2163.1±1177.3	312-3896 (2483)	
	Universities and hospitals	9	1079.6±903,5	93-2517 (806)	
Interaction index	Healthcare professionals	15	2.18±1.99	0.18-7.36 (1.44)	0.071
	Health companies and websites	24	2.19±4.13	0-19.05 (0.8)	
	Individual users	15	0.74±0.96	0-3.38 (0.51)	
	Universities and hospitals	9	1.51±1.08	0-3.55 (1.77)	
Viewing rate	Healthcare professionals	15	468.8±799.9	26.14-3091.81 (136.31)	0.243
	Health companies and websites	24	376.4±1083.9	5.02-5362.46 (90.65)	
	Individual users	15	125.0±221.0	2.3-857.14 (47.44)	
	Universities and hospitals	9	111.7±125.2	0.77-395.47 (109.33)	

Kruskal Wallis Test; *p<0.05, **p<0.01. SD = Standard deviation

Table 3. Comparison of the quality assessment scores by the source of the video

	Source of videos	N	Mean±SD*	Min-Max (Median)	p
Flow of information	Healthcare professionals	15	2.93±1.1	2-5 (3)	0.260
	Health companies and websites	24	2.96±1.3	1-5 (3)	
	Individual users	15	2.33±1.45	1-5 (2)	
	Universities and hospitals	9	3.33±1.22	1-5 (4)	
Accuracy of Information	Healthcare professionals	15	3±1.31	1-5 (3)	0.129
	Health companies and websites	24	3.08±1.32	1-5 (3)	
	Individual users	15	2.27±1.39	1-5 (2)	
	Universities and hospitals	9	3.56±1.33	1-5 (4)	
Quality	Healthcare professionals	15	2.27±0.96	1-4 (2)	0.144
	Health companies and websites	24	2.63±1.1	1-5 (2)	
	Individual users	15	2±1.2	1-5 (2)	
	Universities and hospitals	9	3.11±1.54	1-5 (3)	
Precision	Healthcare professionals	15	2.27±1.22	1-5 (2)	0.096
	Health companies and websites	24	2.46±1.32	1-5 (2)	
	Individual users	15	1.8±0.94	1-4 (2)	
	Universities and hospitals	9	3.22±1.48	1-5 (3)	
Total VIQI	Healthcare professionals	15	10.47±4.1	5-17 (10)	0.135
	Health companies and websites	24	11.04±5.17	0-19 (10)	
	Individual users	15	8.2±5.06	1-17 (8)	
	Universities and hospitals	9	13.22±5.31	4-20 (14)	
Total QAS	Healthcare professionals	15	3.4±2.35	1-9 (3)	**0.047***
	Health companies and websites	24	3.92±2.75	1-10 (3)	
	Individual users	15	2.8±2.15	1-8 (2)	
	Universities and hospitals	9	6.11±2.85	1-10 (7)	

Kruskal Wallis Test; *p<0.05, **p<0.01 SD = Standard deviation

Table 4. Comparison of the video information, and quality indexes by the country of origin of the video.

	Country of origin	N	Mean±Sd*	Min-Max (Median)	p
Number of views	United States	47	3378.5±8696.5	18-54000 (931)	0.212
	Other	16	2657.5±7703.7	4-31320 (310)	
Number of likes	United States	47	35.6±87.9	0-548 (8)	0.590
	Other	16	74.1±247.7	0-1000 (5)	
Number of dislikes	United States	47	1.28±3.3	0-17 (0)	0.284
	Other	16	0.25±0.58	0-2 (0)	
Number of comments	United States	47	2.28±5.71	0-27 (0)	0.922
	Other	16	4.31±12.35	0-49 (0)	
Total video duration (seconds)	United States	47	995.1±1510.4	2-6754 (363)	**0.004****
	Other	16	2048.3±1887.7	184-6465 (1325.5)	
Loading time	United States	47	1549.5±1055.2	140-3896 (1446)	**0.005****
	Other	16	756.3±594.1	42-1513 (736)	
Interaction index	United States	47	1.28±1.49	0-7.36 (0.66)	0.108
	Other	16	3.12±4.83	0-19.05 (1.64)	
Viewing rate	United States	47	292.3±803.7	2.3-5362.46 (79.27)	0.439
	Other	16	325.4±748.8	0.77-3091.81 (114.29)	

Mann Whitney-U Test; *p<0.05, **p<0.01 SD = Standard deviation

Table 5. Comparison of the quality of assessments scores by the country of origin

	Country of origin	N	Mean±Sd*	Min-Max (Median)	p
Flow of information	United States	47	2.72±1.26	1-5 (3)	0.184
	Other	16	3.25±1.34	1-5 (3)	
Accuracy of information	United States	47	2.74±1.36	1-5 (3)	0.055
	Other	16	3.5±1.27	1-5 (4)	
Quality	United States	47	2.26±1.17	1-5 (2)	**0.012***
	Other	16	3.06±1.06	1-5 (3)	
Precision	United States	47	2.19±1.25	1-5 (2)	0.055
	Other	16	2.88±1.31	1-5 (3)	
Total VIQI	United States	47	9.77±4.98	0-19 (10)	**0.044***
	Other	16	12.8±4.74	4-20 (13.5)	
Total QAS	United States	47	3.3±2.39	1-9 (3)	**0.010***
	Other	16	5.44±2.94	1-10 (5.5)	

Mann Whitney-U Test; *p<0.05 SD = Standard deviation

Although there was no statistically significant difference between researchers' evaluations of videos' quality assessment scores (p>0.05), total QAS value had statistically significant difference between the first and second researchers (p<0.01) (Table 6).

The number of views had different correlations with all variables and these relationships were statistically significant (p<0.01), except total video duration, interaction index, flow of information, information accuracy, quality, precision, total VIQI and total QAS values.

Number of likes had significant positive correlations with the number of dislikes, number of comments, interaction index, and viewing rate (p<0.01).

There were moderately strong, significant positive correlations between the number of dislikes and both the number of comments and viewing rate (p<0.01).

There was weak and significant positive correlation between the number of comments and interaction rate, as well as moderately strong and significant positive correlation with the viewing rate (p<0.01).

There was a moderately strong, statistically significant negative correlation between total video duration and loading date (p<0.01). In addition, total video duration had a significant correlation with the rest of the parameters (p<0.01) except for the viewing rate.

Table 6. Comparison of the quality assessment scores of the videos assessed by the study researchers

	1st researcher	2nd researcher	p
Flow of information	Mean±SD*	2.86±1.29	2.9±1.21	0.491
	Min-Max (Median)	1-5 (3)	1-5 (3)	
Accuracy of information	Mean±SD*	2.94±1.37	2.89±1.3	0.491
	Min-Max (Median)	1-5 (3)	1-5 (3)	
Quality	Mean±SD*	2.46±1.19	2.49±1.2	0.617
	Min-Max (Median)	1-5 (2)	1-5 (2)	
Precision	Mean±SD*	2.37±1.29	2.41±1.27	0.083
	Min-Max (Median)	1-5 (2)	1-5 (2)	
Total VIQI	Mean±SD*	10.54±5.06	10.7±4.64	0.426
	Min-Max (Median)	0-20 (10)	4-20 (10)	
Total QAS	Mean±SD*	3.84±2.68	4.35±2.33	**0.001****
	Min-Max (Median)	1-10 (3)	1-10 (4)	

Wilcoxon Test; **p<0.01 SD = Standard deviation

Loading date had significant, negative and different levels of correlation with interaction rate, flow of information, accuracy of information, quality, precision, total VIQI and QAS score ($p<0.05$).

There were significant positive correlations between the interaction rate and viewing rate, flow of information, accuracy of information, total VIQI and QAS values ($p<0.05$).

There was no significant correlation between the viewing rate and the other scores.

Flow of information had significant, strongly positive correlations with the accuracy of information, quality, precision, total VIQI, and QAS scores ($p<0.01$).

There were significant, strongly positive correlations between the accuracy of information and quality, precision, total VIQI, and QAS scores ($p<0.01$).

Quality had significant, strongly positive correlations with precision, total VIQI, and QAS values ($p<0.01$). The same relationship also existed between precision and both total VIQI and QAS scores ($p<0.01$). Total VIQI score had a strongly positive correlation with total QAS score ($p<0.01$).

DISCUSSION

Social media platforms are used by many people to reach information about their health-related concerns, treatment alternatives, and different healthcare professionals, hospitals and companies dealing with the disorders. The same platforms are also used by healthcare providers, companies, or individual users to inform or warn people about common health problems in a similar way.[12-14] YouTube™ is one of the most popular social media platforms and used by many people to share videos about literally everything.[15]

Despite developing technology, the lack of control mechanisms on misinformation spread on this platform may cause confusion among people. Inexperienced users might be misled by a huge amount of data and lack of control.[16-20]

Although there are various studies on YouTube™ videos about heart failure, asthma, mammography, prostate diseases, maxillofacial diseases, and other disorders, there is still no accepted standardized research and evaluation method available for these kinds of studies.[10,21-24]

MRONJ is term or a condition defined by AAOMS, which is caused by long-term use of certain drugs like BPs, denosumab, and other antiangiogenic drugs. These drugs can be prescribed for patients suffering osteoporosis, Paget's disease, and some types of cancers.[2] In addition, the incidence rate of these diseases has been increasing. A parallel increase has also been witnessed in the number of prescriptions of such medications. This means that patients need to have more clear information and awareness of the risk and possible complications of the use of these medications.[25,26] In addition, YouTube™ is mostly the preferred platform to search for information about oral mucosa diseases by less or non-experienced clinicans and common users.[11, 27,28]

Although there are numerous studies about oral diseases on YouTube ™, only the present study evaluated the quality and quantity of videos on MRONJ.

The purpose of this study was to assess the usefulness, content quality, information level, and other properties of the videos about MRONJ on YouTube™ website.

The first most viewed 100 videos on YouTube™ were chosen for analysis; 37 of them were excluded because of exclusion criteria. Even 100 is a small number compared with other previously analyzed topics on YouTube™, such as oral lichen planus, oral leukoplakia, and oral cancer.[11, 27,29]

The present study showed that more than 50% of the videos included knowledge about MRONJ, indications of the relevant drugs, induced medications and risk factors despite the fact that the majority of the videos did not include any information about symptoms, differential diagnosis, drug contraindications, prognosis, available treatments, and new therapeutic approaches of MRONJ. The missing contents may play an important role for providing accurate information.

The present study indicated that less than 50% of videos were uploaded by healthcare professionals or universities and hospitals. Our interpretation is that physicians working in hospitals or universities have no time to create and publish such videos owing to their workload.

Despite a lower number of video uploads by healthcare professionals, their videos got the highest number of views and likes. The videos with the longest total duration were uploaded by universities or hospitals while the shortest ones were uploaded by individual users. This indicates that universities and hospitals may have greater resources to prepare videos. In line with this information, although there was no statistically significant difference, the videos uploaded by hospitals or universities had the best flow of information, accuracy of information, quality, precision, and VIQI compared with other uploaders. Romano *et al*.[27], who studied the quality of YouTube™ videos on oral lichen planus, reported that university channels provided higher quality videos than others, as indicated by the present study and other studies. [27-30]

Providers from the US started to upload videos before other providers; they also uploaded most of the available videos. But the total duration of their videos were significantly shorter compared with that of other video providers. This suggests that providers from the US knew and warned about the risks of MRONJ previously than other providers; however, providers from the US uploaded shorter videos and had videos with lower total VIQI and QAS scores than other providers' videos. In addition to that, the videos uploaded by universities or hospitals had higher total QAS scores than those of the videos uploaded by other providers such as healthcare professionals, health companies and websites, and individual users. This suggests that professional institutions can convey correct information more properly than others.

There was a negative correlation between loading date and total VIQI and QAS scores. This may suggest that these scores are getting higher with developing technology and increasing knowledge and awareness about MRONJ. There was a positive and strong relationship between video quality and total VIQI and QAS scores. Additionally, and unsurprisingly, a similarly strong positive relationship was observed between total QAS and VIQI scores.

CONCLUSION

The present study indicated that social media platforms can be used by both healthcare professionals to reach a larger audience with relevant information, and by the public to obtain information on topics of interest. Particularly for media aimed at providing medical information, there is a need for a control mechanism. Lack of control mechanism may cause people to upload inaccurate and insufficient information as pointed out by similar studies. As healthcare workers, we should be careful about sharing medical videos by keeping ourselves up-to-date with the most recent approaches on technology and medicine.

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