Original Article :

YouTube as a source of patient information for Diabetes: Evaluation of Arabic content

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Abstract

Background & Aims:

We aimed in this study to evaluate the Arabic content related to diabetes mellitus, assess its accuracy, and viewers' responses.

Methods:

Using the search term "diabetes mellitus" in Arabic with the filter by relevance function, a YouTube search was performed on May 15, 2018. The first 200 videos were retrieved, and video demographic assessment was recorded (likes, dislikes, and upload dates). The content of videos was classified in three groups as 1) reliable, meaning scientifically accurate for diabetes; 2) misleading, which means the information contained scientifically inaccurate or unproven information; and 3) patient experiences, where the content pertained to the personal experiences of patients and did not provide diabetes medical information.

Result:

A total of 1,27000 videos were retrieved, the first 200 videos were evaluated, and 71 videos were excluded. In the classification for accuracy, the researchers showed a very good inter-rater agreement (k = 0.84).

الملخص

الخلفية و الاهداف :

تهدف الدراسة لتقيم لمجتوى العربي المرتبط بمرض السكري في موق اليوتيوب وتقييمه واستجابة المشاهدين له .

طريقة البحث :

باستخدام كلمة البحث « السكري « باللغة العربيه باستخدام الفلتر في اليتيوب بتاريخ ١٤ مايو ٢٠١٨م تم استخراج أول ٢٠٠ فيديو (٢٠ فيديو/ ١٠ صفحات) وتم تقسيم الفيديوهات الى ثلاث مجموعات ١. صحيح او دقيق والتي تحتوي على معلومات صحيحة او علميه موثوقه ,٢. غير صحيح او اغير دقيق وهي تحتوي على معلومات علميه غير موثوقه او مغلوطه ,٣. وتجربة المريض والتي لها علاقة بتجربة المرض فقط ولاتستخم معلومات طبيه .

النتائج :

١٢٧٠٠ فيديو استخرجت في البحث تم اختيار اول ٢٠٠ فيديو وتقييمها استبعد ٧١ فيديو اكثر من نصف الفيديوهات اعتبرت صحيحه (٧٨-٦١٪) , ٤٧ غير دقيقه (٣٦٪), ٤ فيديوهات كتجربة مريض (٣٪). بالنسبة للفيدوهات الغير دقيقه علاج السكري باستخدام الطب البديل بنسبة عالية من المستخدمين ٧٤٪ , ٣٠ فيديو ٢٣ منهم تطرقوا الى العلاج بالاعشاب .

الإستنتاج :

هذه الدراسة تدعم أن الفيديوهات العربيه الوجوده في اليوتيوب ليس ذو قيمة وفائدة كبيره . الفيديوهات المصنفه انها صحيحه او دقيقه

Overall, more than half were considered reliable (n = 78; 61%), (n=47; 36%) were determined misleading, and (n= 4; 3%) videos as patient experiences. Regarding misleading videos, the treatment of diabetes using alternative medicine comprised the largest group of users at 74.5%, n=30. Of those, 23 of the misleading videos promoted herbal medicine.

Conclusion:

This study supports that YouTube videos in Arabic are not very helpful. Overall, reliable content videos received fewer views than those determined to be misleading. Professional institutions, health care providers, and academic sources need more encouragement to develop and upload videos on the management and evidence-based treatment of diabetes.

Keywords:

Diabetes mellitus, Arabic, YouTube, patient.

حصلت على نسبة مشاهدة اقل من تلك المصنفه انها غير دقيه . ان دور المؤسسات الصحية ومقدمي الخدمة والممارسين الصحيين والخبراء والمؤسسات الأكاديميه مهم في تطوير وتقديم فيديوهات لها علاقة بالسكري وعلاجه

Introduction

People diagnosed with diabetes mellitus (DM) has risen dramatically over the last two decades. More than 382 million cases worldwide have been reported, with 90% of those diagnosed with type-2 diabetes mellitus. [1] In Arab countries, of the 35 million people diagnosed, North Africa and the Middle East lead the world in the highest type-2 diabetes mellitus, where one in 10 people live with the disease. By 2035, the number of people with diabetes is expected to increase by 96.2%.[1] The advent of social media becoming increasingly popular provides a quick and convenient source for patients looking for health-related news and information. Recent studies have shown that the Internet serves as a primary outlet for patients seeking medical-related knowledge and information. Patients' browsing habits show that 80% of their online activity is seeking knowledge, medical support, and information.[2,3] YouTube serves as the second most popular website visited around the globe and in Arab countries.[4] Unfortunately, after evaluating its content, studies have concluded that YouTube consists of faulty and misleading medical-related content, with the majority of researchers agreeing that patients could be misled or misinformed about their health in accessing the site.[5–11] The Internet poses a major source for diabetic patients to self-educate[12] and is an ev-

er-growing outlet for health organizations and hospitals to inform patients on health-care issues. The quality of those sources, though, is not congruous to the availability of these videos. The enormity in the number of educational videos uploaded to YouTube daily oftentimes makes these videos inaccessible to users.

If diabetes-related material could be presented on YouTube in the Arabic language, it could educate Arabic patients and caregivers in a more meaningful and more widely- understood format. [13] To the best of our knowledge, no studies exist that assess Arabic content provided by YouTube on the subject of diabetes. This study aimed to analyze Arabic content on YouTube for accuracy and assessed viewers' responses as it pertains to diabetes videos.

Methods

A YouTube search was performed on May 15, 2018, using the search term "diabetes mellitus" in Arabic with the filter by relevance function. Excluded were non-Arabic videos, duplicate videos, and those without audio functions or unrelated to our focus. Cookies and the computer's history were cleared to have no effect on the search results. Overall, 1,27000 videos were found. The first 200 (20 videos/page, ten pages) videos were retrieved as a sample, assuming that most users would not venture beyond this point. Furthermore, similar sample sizes were used in previous work of qualitative methods assessing YouTube videos compared to our analysis.[14–16]

The video demographic assessment recorded likes, dislikes, upload dates and source information, video length, and the number of views. To assess the number of mean views per day, a calculation was determined to divide the total amount of views by the number of days since the videos had been uploaded online. Classifications were assigned to identify the upload source. These included health care professionals (HCP), personal users, academic/hospital/professional institutions (PA), and others by using information from their YouTube profile in the "about" listing. Independent two researchers watched each video and made determinations regarding their scientific merit and accuracy (Alnughaymishi and Algeffari). A third independent researcher (Diabetologist Consultant) was used to resolve any disputes between the two researchers on the content of the videos and served as the final decision maker (Almogbel). Three groups of classifications resulted from viewing the contents of the videos as 1) reliable, meaning scientifically accurate for DM; 2) misleading, which means the information contained scientifically inaccurate or unproven information; and 3) patient ex-

periences, where the content pertained to the personal experiences of patients and did not provide DM medical knowledge. If a video content included two categories, reliable and misleading information, "misleading" was used as the default. The videos were further broken down into seven different diet, complications, interviews, education, management, symptoms, and general information.

Descriptive statistics were given for all variables. Interrater agreement was calculated using the Cohen kappa test. The kappa value was classified as a poor agreement when <0.20, fair when 0.21–0.40, moderate when 0.41–0.60, good when 0.61– 0.80, and very good when >0.81.[17] Differences between groups were compared using one-way analysis of variance (ANOVA). A p-value of less than 0.05 was considered significant. All statistical analyses were done on version 20 (SPSS Inc., Armonk, NY: IBM Cor.).

Result

The initial search using the term "Diabetes Mellitus" in Arabic resulted in finding 1,27000 videos. Out of the first 200 videos (20 videos/page, ten pages), 129 was the final number included in the analysis after 71 videos were excluded (Fig. 1).

Figure 1: Flow diagram showing search strategy:

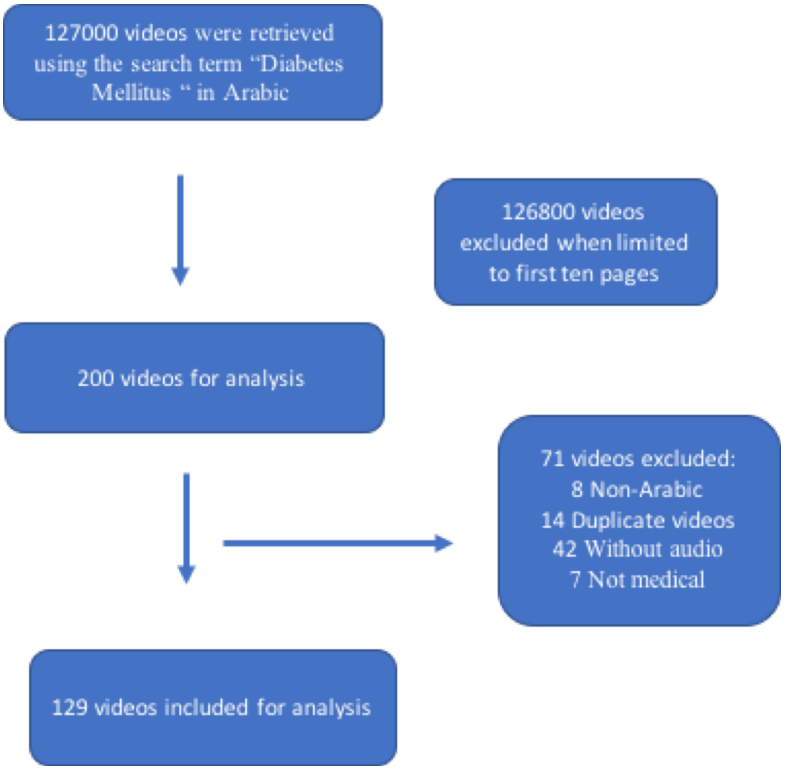


Table 1 provides a list of characteristics for the 129 videos deemed eligible for the analysis. In terms of time, the videos ranged from 40 seconds to two hours long. The median runtime was determined to be 4.1 minutes. The median total number of views was 29,464. The range for the number of views ran between 40 to 3,234,372.

Table 1: Descriptive results of the entire sample (n=129)

	Mean	Standard deviation	Min	Max
Days since upload	888	726.2	33	4004
Views	227620	558295.9	40	3234372
Likes	2317	6582.2	0	37000
Dislikes	174	482.9	0	2800
Video duration (min)	9.4	15.7	0.4	121.4
views per day	484	1460.2	0	9827

In the classification for accuracy, the researchers showed a very good inter-rater agreement (k= 0.84). Six videos produced a dispute among the two researchers that resulted in a resolution by virtue of discussion. Table 2 refers to the accuracy of the video.

Table 2: Basic video descriptors by the accuracy of the contents.

Descriptor	Reliable (n=78)	Misleading (n=47)	Patient Experiences (n=4)	P
Total views	12482917	16358514	521536	
Mean views (SD)	160037(528287.7)	348053(611310.6)	130384(216865.6)	0.178
Mean days since upload (SD)	901)706)	831.2(750.8)	1287.8(894.1)	0.469
Mean views per day (SD)	2781047.9))	856.3(1966.6)	131.5(221.7)	0.088
Mean video duration, min (SD)	7 (10.4)	12.0(21.1)	17.5(24.6)	0.169
Mean likes	1632(6039.2)	3412.5(7444.1)	3070.3(5953.6)	0.363
Mean Dislikes	92 (360.2)	320.3(632.6)	95.3(169.5)	0.041

Upload source	Reliable (n=78)	Misleading (n=47)	Patient Experiences (n=4)
PI	8(10.3%)	1(2.1%)	0(0.0%)
HCP	6 (7.7%)	2(4.3%)	0(0.0%)
Personal	27 (34.6%)	33(70.2%)	1(25.0%)
Other	37(47.4%)	11(23.4%)	3(75.0%)
Video content	Reliable (n=78)	Misleading (n=47)	Patient Experiences (n=4)
Education	19(24.4%)	1(2.1%)	0(0.0%)
Diet	16(20.5%)	2(4.3%)	0(0.0%)
Interview	2(2.6%)	1(2.1%)	2(50.0%)

Upload source	Reliable (n=78)	Misleading (n=47)	Patient Experiences (n=4)
Complications	10(12.8%)	1(2.1%)	0(0.0%)
Symptoms	9(11.5%)	2(4.3%)	0(0.0%)
Management	3(3.8%)	32(68.1%)	0(0.0%)
General Information	19(24.4%)	6(12.8%)	2(50.0%)

Overall, more than half were considered reliable (n=78; 61%), (n=47; 36%) were determined misleading, and (n= 4; 3%) videos as patient experiences. Regarding the total number of views, 16,358,514 viewed misleading videos, 12,482,917 viewed reliable videos, and patient experiences were viewed 521,536 times. The highest mean number of views belonged to misleading videos (348053± 611310.6), followed by reliable videos (160037± 528287.7), and patient experiences videos at 130384± 216865.6 (ANOVA, p=0.178). The mean number for "likes" of reliable videos was 1632 ± 6039.2, a lower amount than misleading videos at 3412.5 ± 7444.1, and patient experiences videos at 3070.3 ± 5953.6. Correspondingly, significant differences in the mean number of "dislikes" (ANOVA, $p < 0.041$) compared to lower numbers for reliable videos. Patient experiences videos regarding length were longer (17.5 ± 24.6 min) in comparison to reliable videos (7 ± 10.4 min) and misleading videos (12.0 ± 21.1 min).

Personal users uploaded many of the videos (47.3%, n=61). 27.1%(n=35) of that videos contain information on the management of diabetes. Personal users mostly uploaded misleading videos (70.2%, n=33), followed by other users at 23.4%(n=11). Regarding misleading videos, the treatment of diabetes using alternative medicine comprised the largest group of users at 74.5%(n=30). Of those, 23 of the misleading videos promoted herbal medicine, 5 advocated hydro-thermal therapy, and two proposed Ruqya Al Shariah therapy. A trend in alternative medicine video uploads increased over the previous two years, with 2017 figures at 37% (2017; n=11, 37%) and 2018 at 47% (n=14). The highest number of mean views belonged to alternative medi¬cine at 402,483 times compared to other videos at 25,2000 times.

Discussion

Health education today comes from many resources. Internet videos are used frequently, with YouTube leading the pack. As of June 2018, YouTube consisted of over 5,000,000,000 videos and over 1,000,000,000 hours watched daily by users.[17] The usefulness of videos relative to any given field and the sources used the most have been the subjects of many studies. This study assessed the accuracy and

scientific proven material and information available on YouTube regarding diabetes. Despite different entities increasingly using the Internet to relay medical information, Arabic information related to diabetes on YouTube has not been inspected for accuracy. From our results, we conclude that less than two-thirds of diabetes videos on YouTube provide reliable information. Reliable videos resulted in 60.5%, which is about what previous studies determined in evaluating YouTube videos on medical information in other fields. The range of reliable videos in these studies was between 54.9% to 63.6%, including topics such as gallstone disease [18], kidney stones [19], on hypertension [20], and dialysis [21].

The videos determined to be misleading – many of which associated with alternative medicine, endorsed known myths and inaccurate information about the management of diabetes. Interestingly, those videos earned more YouTube views than reliable videos. The data about these investigations and studies point to a contradiction in results; nevertheless, most researchers agree that websites such as YouTube play a critical role in educating and informing the public.[19,22,23] This inclination also applies to YouTube videos that pertain to medical-related issues.[18,20,21] The popularity of videos being used as a source of information cannot be denied, regardless of factors leading to contributions in the number of views or the content. The study presented here highlights that many of the misleading videos include alternative medicine information. Regardless of the lack of evidence or effectiveness alternative medicine provides, these videos were viewed widely all over the world. The reported prevalence in the use of alternative therapies for diabetes was pointed out in Kamel et al. as 64% in Saudi Arabia.[24] Given the popularity, YouTube users in Saudi Arabia are more likely to view alternative medicine videos classified as misleading.

In another study referencing cervical cancer, Adhikari et al.[25] found that most of the videos were being uploaded by physicians. Additionally, Gunes et al. [7] found that videos on varicose veins were mostly being uploaded by professional health providers. In this study, a very small amount of content was attributed to the hospital or academic professionals. The impact of what healthcare professionals contribute on YouTube is quite small and possibly intentional, given the amount of erroneous information on this platform. These results show consistency with other research and suggest that the impact is minor when healthcare professionals and organizations become involved in the manufacturing of YouTube content on health-related matters.[26] Personal uploads and news sourc-

es were uploaded more than professional or academic sources. Personal stories, alternative medicine information, or entities selling or advertising services on the management of diabetes were shown to be more popular in uploads from independent users. This warrants discussion.

The limitations of our research include first the ever-changing Internet media environment concerning the date and time of performing searches. Second, this study used keyword searches on YouTube (diabetes mellitus in the Arabic language) using the first ten pages (20 videos/page) as its sample. The videos were then sorted by relevance, a default setting on YouTube's platform that might have affected the results due to advertisements. Although this could factor in, the results showed consistency compared to other research on health-related content and information. It also points to an unlikely event that missing variables have any real effect on outcomes.

Conclusion:

To conclude, this study supports that YouTube videos in Arabic are helpful. However, some of them have misleading information. Overall, reliable content videos received fewer views than those determined to be misleading. Professional institutions, health care providers, and academic sources need more encouragement to develop and upload videos on the management and evidence-based treatment of diabetes. The popularity of the YouTube platform warrants further efforts to increase accuracy and promote science-based information on diabetes.

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