Research Article
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Assessing the credibility and quality of Urdu Youtube videos on diet and type 2 diabetes

Abstract

Background: High-quality and reliable online videos are an effective source of health education. No information is available on the general and educational quality of online YouTube videos in the Urdu language.

Objectives: The main objective of this research was to assess the content and production values of type 2 diabetes (T2D) and nutrition videos available in Urdu on YouTube.

Methods: Using a set of keywords, we searched for videos on YouTube on nutrition and diet in T2D. For the final analysis,144 videos in Urdu were considered. We used the Journal of the American Medical Association (JAMA) score, the Global Quality Score (GQS), the DISCERN score, and the diabetic diet score (DDS) to assess the quality and reliability of the information presented in the videos.

Results: the mean (std) video views were 28527.1 (4211.4), and the video power index was 24.2 (5.2). Academic and research institutions accounted for the largest share of contributors (19.4%), while 'diabetes-specific information' was the most popular type of uploaded content (44.4%). Video reliability was low in 22.2% of cases, educational quality was low in only 5% of cases, general quality was excellent in 6.9% of cases, and diabetic specific nutrition education quality was poor in the vast majority (73.6% of cases) based on the JAMA, GQS, DISCERN, and DDS scoring systems. For video messaging purposes, logical appeals were more prevalent than emotional appeals. In addition, the 'prevention' frame was the most common among the available video frames. Finally, comments on videos were mostly in the Urdu language, with almost equal prevalence of negative and positive comments.

Conclusion: While nutrition-specific T2D videos have a substantial viewership, most of these suffer from low reliability and quality. There is an urgent need to work on how to access the most reliable videos on nutrition for diabetes from more reputable sources that guarantee standardization of video quality and take into account the simplification of information transmission in order to reach lay audiences.

Keywords: diabetes, diet and nutrition, youtube videos, urdu, patient education

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Iftikhar Alam,[1] Ali Madi Almajwal,[2] Falak Zeb,[3] Qazi Noorul Wahab,[4] Muhammad Muzaffar Ali Khan Khattak,[5] Qamar Uddin Ahmed,6 Alfan Al-Ketbi[7]

[1]Department of Human Nutrition and Dietetics, Bacha Khan University Charsadda, Pakistan
[2]Department of Community Health Sciences, College of Applied Medical Sciences, King Saud University, Saudi Arabia
[3]Research Institute of Medical and Health Sciences, University of Sharjah, United Arab Emirates
[4]Department of Human Nutrition, the University of Agriculture, Pakistan
[5]Food Security and Public Health Nutrition Research Group (Foster), Department of Nutrition Sciences, Kulliyyah of Allied Health Sciences, International Islamic University Malaysia, Malaysia
[6]Drug Discovery and Synthetic Chemistry Research Group, Department of Pharmaceutical Chemistry, Kulliyyah of Pharmacy, International Islamic University Malaysia (IIUM), Malaysia
[7]University of Sharjah, UAE Institute of Public Health, College of Medicine and Health Sciences, United Arab Emirates University, UAE

Correspondence: Professor Dr. Muhammad Muzaffar Ali Khan Khattak, Department of Nutrition Sciences, Kulliyyah of Allied Health Sciences, International Islamic University Malaysia, Kuantan, Pahang Darul Makmur, Malaysia

Co-correspondence: Associate Professor Dr. Iftikhar Alam, Department of Human Nutrition and Dietetics, Bacha Khan University Charsadda, KP, Pakistan

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Introduction

People-to-people interaction has greatly improved in the last few decades.[1,2] People are now able to easily reach one another because of the widespread availability of the internet.[1–4] Given this context, in particular, more people are sharing health-related information through social media and other online channels.[4] The video-sharing website YouTube (https://www.youtube.com) has millions of users across the globe. Over 2 billion videos are seen every day on YouTube, and a new video is published to the platform every minute.[5] The Health Information National Trends Survey (HINTS) found that people nowadays are more likely to look for health-related information online than they were in the past.[6] Atkinson[7] and Rutten et al.[8] found that eight out of ten internet users rely on online resources for health information.[7,8]

Diabetes type 2 is a widespread disease worldwide. Currently, millions of individuals all over the world cope with the health effects of Type 2 Diabetes (T2D) in several diverse ways to avoid T2D and manage it in its early stages. The treatment of diabetes includes medical nutrition therapy.[9] Nutritionists and dietitians who specialize in diabetes management are vital because a diabetic dietitian assesses the client's eating habits, portion sizes, and nutritional knowledge to design a personalised eating plan that will help manage the disease.[9]

Innovative treatment and advising strategies are emerging regarding diabetes treatment and control. YouTube has become a popular source for both patients and doctors looking for quick answers to their questions.[10]Access to information is made simpler on these platforms for everyone, including those with diabetes and many other disorders. Here, we attempted to assess the reliability and quality of diabetes and diet-related videos available on YouTube. Recent research, however, has highlighted issues and concerns about the quality, validity, and accountability of online health information.[4,11,12] Due to the increased possibilities afforded by technology, information exchange may have both beneficial and harmful outcomes. YouTube's growing popularity among healthcare professionals and students makes it a valuable visual resource; nevertheless, it also increases the risk of misinformation and incomplete teaching.[13] False information presented in online videos has the potential to harm the doctor-patient relationship and lead to poor decision-making on the part of patients.[14]

Even though there has already been a huge volume of internet videos available on the nutritional care of diabetes, most of these are in languages other than Urdu, particularly in English. Urdu is spoken and understood by a huge number of people all over the world. There is also a growing trend of educational videos in the Urdu language being uploaded in thousands every week. That's especially true for a global platform like YouTube. However, no data is available on the

educational quality of these videos. We hypothesized that most of these videos would be of low quality since there is no tradition of scientific researchers or professional nutrition experts to make educational videos, mainly due to the lack of technical expertise in video making. There is an urgent need to check these videos' educational and scientific quality, as the overall health of a large portion of the world population depends upon the accuracy and quality of these videos. Therefore, we conducted this study to investigate the quality attributes of Urdu language videos on YouTube on diabetic nutritional care.

Methods

Video inclusion and exclusion criteria

The videos are eligible for inclusion if they fit all three of the following criteria: (1) they are in URDU; (2) they will be accessible in 2020; and (3) they are on the diet and nutrition for T2D. Videos that (1) were not in URDU, (2) lacked sound, (3) had commercials, (4) were either animations or movie clips, or (5) were either completely or partially duplicates were excluded. Videos that were part of a series or had many sections were added together. All the videos that were eligible for inclusion were downloaded, and a document containing their names and unified resource locators (URLs) was also stored. Three members of our investigation team conducted all of the preliminary searches independently for maximum accuracy and comparability.

Video search

During the month of October 2020, a search was conducted on YouTube. Videos uploaded to YouTube (https://www.youtube.com) involving nutrition for diabetes were systematically searched using techniques developed before,[1] and the MeSH tool was used to choose keywords for YouTube to analyse the diet-related videos. We searched videos that contained the keywords "Diet", "nutrition", and "diabetes" in the title and at least one of the following terms: "diabetic diet, nutrition of diabetic patients, blood glucose, hypoglycemia, low-sugar-diet, diabetes-education" In addition to the common limiters (see eligibility below), we applied the OR and AND Boolean operators to restrict the keyword searches. As we were only interested in 'Urdu' language videos, we also tried using these words and phrases in Urdu text (or Roman Urdu) for searching YouTube videos based on our observation that most of the videos uploaded with Urdu commentary had a title of the video in English as well as Urdu (or Roman Urdu) or only in Urdu (or Roman Urdu). The search terms were selected by the research team based on their experience of teaching nutrition and practice as clinical dietitians. The search and the consequent authenticity process of the potential videos to be selected was completed by a total of five members of our research team: three members independently searched the 'YouTube' videos using the above terms, and in case of disagreements, two additional researchers were consulted. Each member of the research team made a full record on an MS Word Excel sheet with these entries: (1) Serial Number (SNo); (2) URL; (3) Number of Views; (4) Likes; (5) Number of Comments; (6) Subscribers; (7) Video Authorship Type e.g., individual, organization) (8) Video Publishing Date; (9) Video Duration (in Minutes); and (10) Country of Origin. The URL field was kept at the beginning of the data entry by each member and was made unique for all the entries. YouTube videos were selected as per our inclusion/exclusion criteria (Figure 1). YouTube's relevancy criteria were used to determine the order of all videos. For each term, the top 100 videos were chosen on the assumption that visitors wouldn't scroll beyond the fifth page of search results.[1,2,13] Initially, a list of 200 potential videos was prepared. However, a final total of 144 videos were evaluated for further analysis after excluding those not in Urdu (n=21), not related to nutrition (n=20), and duplicates (n=15) (Figure 1). Because only publicly available data was used, the need for ethical approval from the institution's Institutional Review Board was deemed to be not necessary for this research.

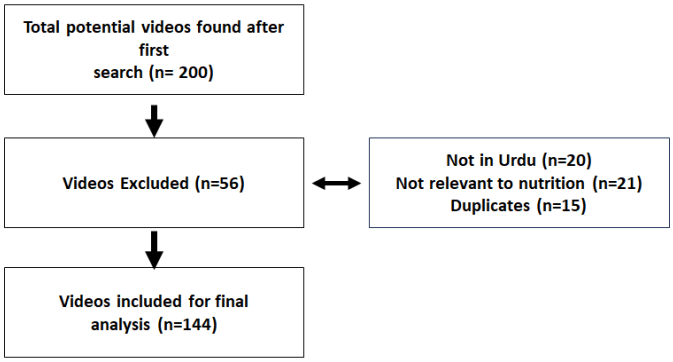

Figure 1 Video Selection Process.

POSITIVE		NEGETIVE	
Good	زبردست	Bullshit	دھوکے باز
Great	قابل تعریف	Cheater	کھو جانا
Appreciated	قابل تعریف	Loss	بکواس
Alhamdulillah	الحمدللہ	Nonsense	میرا نقصان
Mashallah	ماشاللہ	Annoying	پریشان کن
Nice	اچھا	Stop	رک جاؤ
Informative	معلوماتی	Boring	بورنگ
Awesome	پیارا	Time waste	وقت کا ضیاع
Wow	زبردست	NoInterest	کوئی دلچسپی نہیں
Thanks	شکریہ	Old	پرانا
Welcome	خوش آمدید	Messy	گندا
Excellent	بہترین	Go School	سکول جاؤ
GreatJob	بہت اچھا کام	ForGodSake	خدا کے واسطے
GoodJob	بہت اعلی	ShutDown	شٹ ڈاؤن
MySalute	مائی سیلیوٹ	Get Loss	باہر نکل جاو
GoodAdvice	اچھی نصیحت	Hell	ہیلو
GreatInitative	عظیم اقدام	mad	پاگل
Interested	دلچسپی	irritating	پریشان کن
Again	دوبارہ	Problem	مسئلہ
Love	محبت	garbage	ردی کی ٹوکری
Satisfied	مطمئن	Crazy	پاگل
VeryTrue	بالکل سچ	non scientific	غیر سائنسی
MyGod	میرے خدا	dont care	پرواہ نہیں
Hallo	ہیلو	NEUTRAL	
Hello	ہیلو	SoSo	کچھ خاص نہیں
Wonderful	کمال ہے۔	OK	ٹھیک ہے
Aha	آہا	But	لیکن

Figure 2 Sentiment words and phrases.

Video characteristics

Consistent with other studies,[1,2] we recorded the following video attributes for each eligible and included video: "Title", "Play Time", "Views", "Source", "Content Type", "Days Uploaded", "Views Per Day", "Likes Per View", "Dislikes Per View", "Likes Per View", "Views Per Like", and "Views Per Dislike". The like ratio was calculated as follows: Number of likes *100/(number of likes + number of dislikes).[1,2] "Video Power Index" (VPI) was calculated as; VPI = Like Ratio * View Ratio / 100. As an indicator of video popularity, VPI shows how well-liked a video is in comparison to its view count.[1,2]

Videos upload sources

Academic instructors, teachers and professors (relating to authors/uploaders affiliated with research groups or universities/colleges), medical doctors/physicians (independent physicians or physician groups without research or university/college affiliations), non-physician (health professionals other than licensed medical doctors/hakeems (traditional herbal medicine practitioner, specially of Unani medicine) and herbal medical experts), physical trainer, and physiotherapists (contains medical information) were the categories used to classify video sources.[1,2] The identity of the video speaker was assessed based on the self-introduction of the video speaker in the video, supported by the comments on the video. In most cases, the video uploaders were the video-speakers, and in such cases, it was easy to identify the video-speakers and hence their qualification and expertise in the field. One reviewer chose a primary source to help classify videos that could fit into more than one category; a second reviewer checked 30% of these videos for accuracy to determine whether the sources of information or evidence contained in the videos were primary, secondary, or tertiary. These categories are based on whether the content is already published elsewhere, as well as its closeness to the source or origin.

Video content

Dietary preparation, diabetes-specific information, diabetic patients' experiences, nutritional management, nutrition plus lifestyle management, etc., were some of the primary video content categories[1,2] identified and categorized. One reviewer chose a major content category to help classify films that may fit into many categories; a second reviewer verified the correctness of the classification of 30% of these movies at random

Video analysis

The study of the films was carried out by three academics. Each video was seen and rated separately by the researchers. The analysis was finished because of the factors listed in Table 1.

Table 1 Video analysis scheme

Parameters	Analysis methods and procedures
Video Reliability	Journal of the American Medical Association (JAMA) standards were used to evaluate the credibility of the videos.[8] This generic instrument provides an objective evaluation of four factors: originality, accuracy, timeliness, and transparency (all of which are covered in S1). Each requirement is worth one point, up to a maximum of four. The literature has already utilised this grading approach to assess the trustworthiness of YouTube videos.[5,14]
Video non-specific overall educational content quality	The films' generic educational content was evaluated using the Global Quality Score (GQS).[16] The GQS (detailed in S2) is a system for rating the quality of educational materials on a scale from 1 (very low quality) to 5 (very high quality).
Video Quality of Information	As previously reported, the DISCERN score was used to assess the films' level of informational quality.[10]
Video Educational Quality	Based on basic dietary recommendations and the Diabetes Canada Clinical Practise Guidelines, Batar et al.[10] created a "YouTube-based diabetes diet scoring system (DDS).[10]After reviewing the diabetes recommendations, the study team settled on 10 characteristics that should be included into diabetic diets. Each of the ten factors was worth a maximum of 10 points. In the appendices, we discuss the scoring methodology used.
Analysis of Video messaging appeals and frames	According to previous reports, researchers evaluated the video's potential appeal by considering both its emotional and rational aspects.[17]Some films might use both emotional and rational arguments. A video could use both an emotional appeal based on empathy and an informed logical appeal, for instance. The raters recognised the statement's appeal to sympathy.
Comments on Video' Analysis	The processed remarks were analysed for sentiment, emotion, and intent.[18] To achieve this goal, we imported all the comments into an Excel spreadsheet and created a database. The comments were then compiled into a word cloud, with good, negative, and neutral responses represented. The numbers represent the reported frequency. Most of the replies were written in Urdu. Comments were sorted into three groups based on their intentions: feedback, marketing, and enquiry; and commenters' emotions were categorised as joyful, furious, sad, enthusiastic, sarcastic, and fearful; and the frequency of each was recorded.[18] Figure 2 displays the aggregated positive, negative, and neutral sentiments identified by hand analysis of the comments.
Video usage of the most dominant terms related to nutrition	It was crucial to evaluate the frequency with which certain terms related to 'nutrition for diabetes' were used in these films. The techniques proposed by Zhu et al.[16] were used to generate video-based word clouds.[16] In a nutshell, we used internet speech-to-text tools to turn the films' audio into text, then used morphological analysis to pull out relevant keywords, and then used those words to populate a word cloud.

The processed comments were analyzed for sentiment, emotion, and intent. A database of all comments was created, and the audience's sentiment was then categorized into three categories using a word cloud of comments: neutral, negative, and positive

Statistical analysis

The statistical work was done in SPSS 20 (SPSS Inc., Chicago, IL, USA). We calculated the frequency, percentage, minimum-maximum values, mean, median, and standard deviation for the quality and reliability attributes of the videos. The Shapiro-Wilk test was performed to see whether all data and subgroups were normally distributed. We also used the Spearman correlation to examine relationships between our independent variables, and the Kruskal-Wallis test to compare the DISCERN, JAMA, GQS, Usefulness, DDS, Video power index, and view ratio scores for each of our video sources. If there was a significant difference between the groups, the Mann-Whitney U test was used to determine it. For the analysis of differences, the significance threshold was set at 0.05, whereas for the analysis of correlations, it was set at 0.01. The Bonferroni Adjustment was used. Since there are more than 2 raters, we utilized the Fleiss Kappa Coefficient to determine whether there was substantial agreement between them. In terms of agreement, a coefficient of 0 indicates no consensus at all, a value of 0.1 indicates moderate consensus, a coefficient of 0.4 indicates good consensus, a coefficient of 0.6 indicates significant consensus, and a coefficient of

1.0 indicates almost perfect consensus.[15] Microsoft Excel was used to compute the Fleiss Kappa Coefficient.[15] Three raters, including the first author, evaluated the videos separately, and their average ratings were consistent within a 90% margin of error.

Results

Video characteristics

The 72 videos' shared qualities show that the Mean (std) video length was 11.3±2.6 minutes, while the mean video views ratio was 27.1±7.8, and the mean video power index was 24.2±5.2 (Table 2).

Table 2 Video characteristics (n=72)

Characteristics	Mean (Std)	Minimum	Maximum
Video Duration (minutes)	11 (2.6)	8.1	15
Time Since Uploaded (days)	1055 (453.1)	563	1232
Total Views	28527 (4211.4)	5789	46748
Likes	8269 (322.9)	0	12222
Dislikes	987 (232.1)	0	434
View Ratio	27 (7.8)	0	32
Like Ratio	89 (23.1)	0	95
Video Power Index (VPI)	24 (5.2)	0	38

VPI: Popularity of a video was measured by its view count and video power index (VPI). According to Erdem et al., the VPI was computed as follows: [like ratio view ratio/100], where the like ratio was computed as follows: (like 100/[like -dislike]), and the view ratio was computed as follows: [amount of views/time since upload].[10,13]

Video content categories

The content categories of analyzed videos are presented in Figure 3A. The content category was 'diabetic-specific information (44.4%), followed by 'diet preparation' (20.8%) and 'nutritional management' (16.7%). Video uploading sources are summarized in Fig. 3B. The most common uploading source was people from 'academic and research (20.8%), followed by 'dietitians' (19.4%), 'commercial promotions (16.7%), and non-physician/hakeems (16.7%).

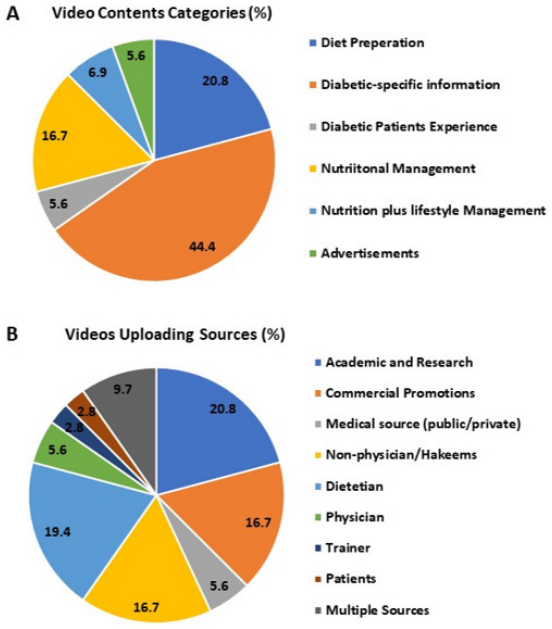

Figure 3 Content categories and uploading sources of videos.

Quality assessment of the videos

Figure 4A displays the video reliability scores based on the JAMA benchmark criteria. Most people got a 0 (30%), then 3 (30%), then 2 (20%), and then a 1 (10%). Figure 4B displays the GQS-obtained video instructional quality scores. Only 6% of the videos got a perfect score of 4 stars, while 33% got a 1-star rating (very bad quality). Unfortunately, there was no video worthy of a perfect score of five stars. Additionally, videos organised according to DISCREN criteria are shown in Figure 4C. Videos were mostly of 'very poor quality' (48.3%), with just 6.9% being of 'great quality. Using the DDS score, we can see the relative quality of diabetic foot-focused teaching videos (Figure 4D). Most videos (73.6%) were rated as having a grade of 1-3 out of 10 (poor quality), while only 37.5% were rated as having a quality of 4-6 (good). Only 2.8% of all videos were worthy of a perfect score of 10 (Figure 4).

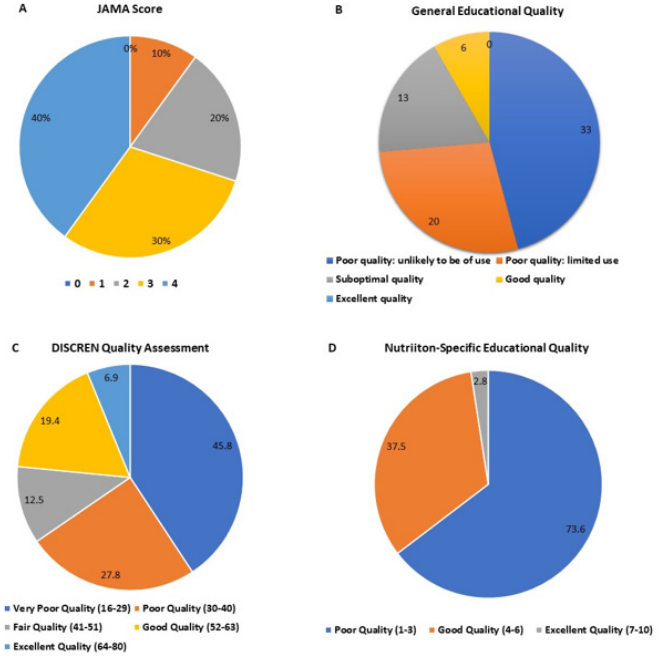

Figure 4 Quality assessment of the videos.

General and educational quality stratified by uploaded source and video content

Table 3 displays the median JAMA, GQS, DISCERN, and DDS scores, broken down by video uploader and video content. The means for the JAMA (1.3), GQS (2.5), DISCERN (35.1), and DDS (4.0) are as follows. When looking at all four metrics (JAMA = 1.7, GQS = 3.8, DISCERN = 54.2, and DDS = 6.8), videos uploaded by 'dietitians' performed the best. Results from a one-way ANOVA showed that there was a statistically significant difference between-group effect of upload source for JAMA Score ($p = 0.010$), with videos uploaded by dietitians receiving a significantly higher score than those uploaded by 'patients' sources receiving a significantly lower score ($p = 0.004$, 95% CI 0.15-4.21). Also, the DISCERN, GQS, and DDS scores for 'dietitians' supplied videos were significantly higher than those of other video sources (p, for all trends 0.05). For all four measures (JAMA = 1.6, GQS = 3.8, DISCERN = 52, and DDS = 6.1), videos that included information relevant to diabetes care performed the best.

Table 3 General and educational quality stratified by uploaded source and video content

	JAMA Score	GQS Score	DISCREN Score	DDS Score
Uploading Sources				
Overall	1.3	2.5	35.1	4.0
Academic and Research	1.6	3.8	45.8	4.6
Commercial Promotions	1.2	2.1	23.4	3.2
Medical source (public/private)	1.1	2.2	36.9	2.4
Non-physician/Hakeems	1.1	1.5	21.2	2.4
Dietitians	1.7	3.8	54.2	6.8
Physicians	1.2	2.4	41.5	5.4
Trainers/Physiotherapists	1.2	2.1	32.1	3.5
Patients	1.1	2.1	23.7	3.1
Multiple Sources	1.4	2.7	36.8	4.9
Video Contents				
Diet Preparation	1.2	2.1	27.9	3.9
Diabetic-specific information	1.6	3.8	52.2	6.1
Diabetic Patients Experience	1.1	1.5	26.8	2.1
Nutritional Management	1.7	3.5	46.9	5.2
Nutrition plus lifestyle Management	1.1	2.1	35.7	3.7
Advertisements	1.2	2.2	21.7	2.6

JAMA: DISCREN score, GQS, and the Journal of the American Medical Association Score Diabetic Food Points Scale

Correlation analysis

A correlation analysis between video characteristics and evaluation criteria is shown in Table 4. Views per index, likes per index, time per index, JAMA score, GQS score, DISCERN score, and DDS score were all shown to be significantly related to one another. There was no correlation between VPI and any of the other measures (DISCERN, JAMA, GQS, usefulness, or DDS) ($p>0.05$).

Table 4 Relationships between variables

Variables	VPI	JAMA	GQS	DISCERN	DDS
View ratio	**.767****	0.28	0.291	0.182	0.112
Duration	0.152	**.398****	**.627****	**.634****	**.743****
Likes	**.8918****	0.126	0.219	0.021	0.181
VPI	-	0.176	0.191	0.178	0.113

JAMA: the DISCREN score; the Global Quality Score; the Diabetic Diet Score; and the Journal of the American Medical Association Score. The significance level of the correlation is 0.01; Video popularity was measured by both the video power index (VPI) and the number of times the video was seen. Following the method outlined by Erdem et al., we computed the VPI as follows: [like ratio view ratio/100], where like ratio = (like 100/ [like + dislike]), and view ratio = [amount of views/time since upload]. There have been other studies on this topic.[13]

Video messaging appeals

Video messaging appeals are presented in Figure 5A. Throughout the videos, a total of 67 emotional appeals were used. The 'Empathy' appeal was used the most (21.1%), followed by 'Fear' (18.3%), Threat' (16.9%), 'Promise' (12.7%), and so on, while the 'humor appeal' was the least used (2.8%). A total of 86 logical appeals were used in the videos (Figure 5B). The informative appeal was used most often (31%), followed by 'Loss' (18.3%), "Gain' (16.9%), and 'self-reference' (14.1%). Each of the rest was used <10% (Figure 5).

Video frames

Video usage of frames results is presented in Figure 6. The 'prevention' frame (nutrition and lifestyle habits to prevent diabetes) was the most common (95.8%), followed by 'nutrition education' (47.9%), 'Local Foods/recipes' (47.8%), and 'social obligations' (15.5%). The rest of the frames were used <15%. It should be noted that values add up to more than 100% as each webpage was coded for multiple frames.

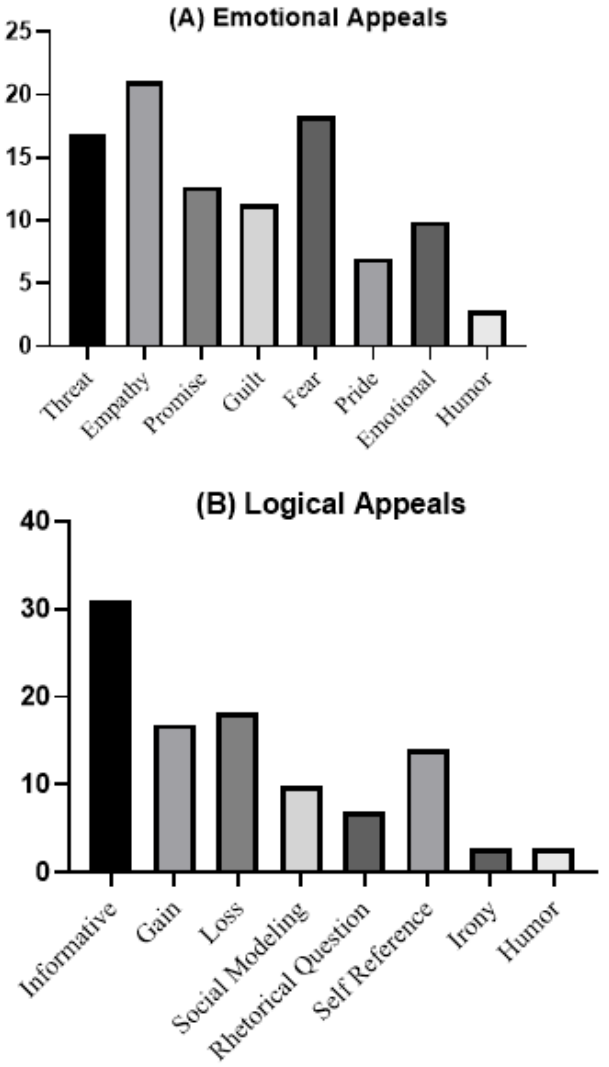

Figure 5 Messaging appeals used in the nutritional care of diabetic YouTube videos.

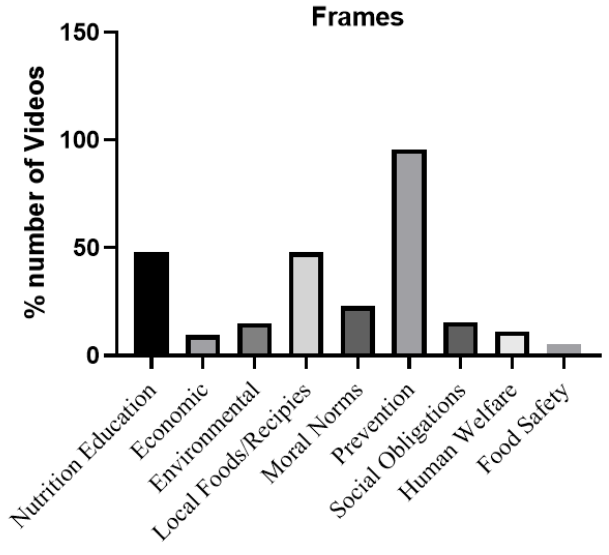

Figure 6 Frames used in the nutritional care of diabetic YouTube videos.

Word cloud depicting most of the words/phrases used in the nutritional care for diabetic YouTube videos

By using online tools (WordClouds.com), we were able to transcribe the videos into text, then use morphological analysis to pull out relevant keywords, and finally make a word cloud out of all of those terms and words following the previous procedure.[16] Common nutrition-related terms and phrases used in online video content are highlighted in Figure 7. Dietitian, "Calories," carbs, Insulin, balanced diet, fibber, etc. were the most often occurring terms in both Urdu and English. Values sum to greater than 100% since each page was built to accommodate numerous user actions. Videos and websites were examined for predetermined frames in addition to message appeals.

Figure 7 Word cloud depicting most of the words/phrases used in the nutritional care for diabetic YouTube videos.

Word cloud of viewers' comments on floating agriculture in the Urdu language

The comments were analysed for sentiment, emotion, and purpose. The audience's reaction was captured in a word cloud and divided into good, negative, and neutral categories. Word cloud representation of phrases and words from video commentaries is presented in Figure 8. The comment area was dominated by those commenting in Urdu. The analysis showed the prevalence of terms in diabetes-related YouTube material. Great effort, well done, thank you, Masha'allah, salute, etc. were among the most often used (positive) terms. The frequency of each emotion expressed in comments was recorded, including joyful, angry, sad, thrilled, sarcastic, and fearful.

Figure 8 Word cloud of viewers' comments on floating agriculture in the Urdu language.

Citation: Alam I, Almajwal AM, Zeb F, et al. Assessing the credibility and quality of Urdu Youtube videos on diet and type 2 diabetes. *Adv Obes Weight Manag Control.* 2026;16(1):1–9. DOI: 10.15406/aowmc.2026.16.00418

Discussion

The main purpose of this research was to identify the characteristics of high-quality diabetes-related videos uploaded to YouTube by the general audience. While the selected videos did well in terms of overall views, they fell short in terms of both instructional quality and depth. Many uploaders were faculty and researchers, whereas the minority were patients and teachers. Most videos had poor factual accuracy, credibility, and instructional value. The most common topic was "diabetes-related facts and figures," while "diabetes patients' stories" ranked last. Almost all videos performed poorly and received low marks across all four of the evaluation scales (JAMA, GQS, DISCERN, and DDS) utilized in the research. Many viewers were interested in videos that provided information on managing diabetes.

Others have noted that the videos supplied are of low quality and lack any real instructional value. Similar findings have been found in previous studies of YouTube information pertaining to different illnesses and treatments.[19–21] We also observed that a notably greater proportion of videos were made by non-physicians/Hakeems. Professionals in the medical area (doctors, dietitians, medical researchers, etc.) are thought to produce higher-quality and more trustworthy videos than the public. However, it seems that this is not the case here.

Our research also revealed that videos with the greatest ratings in all four categories (JAMA, GQS, DISCERN, and DDS) were originally uploaded by dietitians. Inconsistent and potentially misleading content quality was detected among previously recognised health education videos for people with T2D.[22] Health organisation and universities produced equally high-quality and helpful videos; so, health organisation should find ways to improve the quality of YouTube videos for individuals with diabetes.[23]

There has been a dramatic growth in the number of patients who get counselling through the internet in recent years. YouTube is a website that allows users to quickly and easily have access to valuable educational materials.[24] The purpose of this research was to assess the reliability and quality of diabetes and diet-related YouTube videos. Every day, more and more people turn to YouTube, the most popular video-sharing site, to disseminate health-related information. The lack of sufficient and high-quality information should be considered alongside the educational potential of videos in the treatment and prevention of T2D. Because of this, the doctor-patient interaction is essential, and the internet cannot replace it.[25] It may also be more challenging to advise patients accurately if they have been exposed to misleading material online. Because YouTube is one of the most visited websites in the world, false information regarding healthcare has a high chance of spreading to patients, according to research on health data on YouTube done by Madathil et al. The ease with which patients may get this false information has been criticized.[6]

Findings from this research also showed the usage of video message appeals, with 'empathy' rated as the most popular and 'humour' as the least. For the same reason, the 'informative appeal was the most prevalent in the logical' subcategory. The 'prevention' frame also dominated the pool of accessible video images. The following is an example of an informative logical appeal seen in this study's videos: "Asians, in general, and Pakistanis, in particular, are prone to the disease of diabetes, which can be disabling or fatal, but probably the most painful statistics are those that deal with a life-long burden". The worrying part is that people seeking alternative treatments from medical professionals neglect the significance of food and nutrition, which are the only genuine medicines, as stated by the World Health Organisation. Influencing public opinion requires careful consideration of how information is presented and communicated.[26] The findings for covert material demonstrated that rational arguments prevailed over emotional ones. This may reduce the videos' impact, since studies have shown that viewers respond better to and recall emotional than rational argument.[27] Despite recommendations from previous communications research, the prevalence of logical appeals in 'nutrition-for-diabetic' awareness messages may hinder the effectiveness of the videos, as individuals rely on more than logic for decision-making.[28–30]

The feedback of the viewers is crucial for the development of the instructional videos. It should come as no surprise that many comments in the current study's video comment sections were written in Urdu. In a similar vein, the text generated from the video transcriptions identified the following terms and phrases as the most often occurring: dietitian, calories, carbs, insulin, balanced diet, fibre, etc. This technique may be used to evaluate a video's overall quality. YouTube's comment area has made it a popular platform for people to share their thoughts and opinions with others. The research looked at both positive and negative comments to give weight to the feedback of the viewers, in this case on YouTube videos about floating agriculture, where positive comments from happy viewers like "informative," "nice," "profitable," "understandable," "thank you," and so on inspire content creators to work on new and unique content to compete in the content market, and where negative comments like "be modern," "messy," and so on help to correct the lacking in the future. In addition, unsatisfied viewers' unfavourable remarks (such as crap and nonsense) might discourage and demotivate newbies, leading them to put in less effort and energy than they otherwise would. YouTube has become a troll site in many instances, and many content producers have abandoned the network because of the harassment they've experienced there. The researchers also found neutral remarks, such as so and alright, which supplied an opinion of nothing worse, considering an indication of performing better in future work.

This study has limitations due to its focus on a limited time frame and set of keywords. Second, we only identified the top 144 videos and only included Urdu-language videos; so, our findings may not be representative of the quality of all accessible videos to patients and viewers. Although the spoken Urdu and Hindi languages are quite close in sound, they vary in writing style; we did not take into account videos that were accessible in the Hindi language. The DISCERN instrument and the JAMA benchmark were not designed to evaluate videos like those seen on YouTube,[31] and an appropriate instrument for evaluating. YouTube should include any criteria to determine whether or not a video is instructionally beneficial. Azer[31] suggests evaluating videos based on their (i) scientific accuracy of content, (ii) clarity of the message given, (iii) authority (creator), (iv) pedagogy and educational basis, and (v) technical design, including quality images and good visuals, production style, quality scripts, clear sounds, and no noises in the background.[31] The visual and auditory quality of a video is crucial to its ability to leave a lasting impact on its viewers and keep their attention. To assist researchers in improving their research articles and guarantee that sufficient and correct data have been gathered and analysed, a standardised process needs to be established. Such a step will aid scholars in doing reviews and meta-analyses of YouTube videos, as well as in building the appropriate literature in this field. Major requirements include (1) using live people, models, and drawings to teach difficult subjects; (2) using clear imagery; (3) mentioning the inventor and/or organisation; (4) presenting the topic clearly; and (5) being scientifically accurate. The minor requirements are as follows: (1) the video is on the subject stated in the title; (2) it is appropriate for undergraduate students in the medical and health sciences; (3) the audio is audible, and the backdrop

is free of distracting noises. (6) Educational goals are specified; (4) download time is fair; (5) author information is current; (6) download time is acceptable.

Finally, the video speaker's identity must be taken into account. Videos uploaded by anonymous speakers may question the authenticity of the video quality, particularly the videos with some instructions or educational purposes. There are clear instructions of copyright issued by YouTube which say that, "Creators should only upload videos that they have made or that they're authorized to use. That means they should not upload videos they didn't make or use content in their videos that someone else owns the copyright to, such as music tracks, snippets of copyrighted programs, or videos made by other users, without necessary authorizations [https://www.youtube.com/howyoutubeworks/policies/copyright/]." Nevertheless, there is a warrant that video speaker identity must be considered in future research on YouTube videos as a quality criterion.

Conclusion

The quality of online information on diabetic nutrition provided by YouTube is generally poor. YouTube users generally preferred to watch lower-quality patient-based and more commercial videos.

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Authors' contribution

IA and FZ conceptualized and designed the research; IA, AMA, QNW and FZ searched the videos and collected related field data. IA, AMA, FZ,QA,AA and MMAKK did the statistical analysis and wrote the initial manuscript draft. All authors did a comprehensive review of literature for drafting the manuscript, helped in data analysis, and quality assurance measures. All authors reviewed the manuscript draft, put their inputs in the manuscript drafting and/ or revision, and final approval of the manuscript.

Conflicts of interest

The authors declare that they have no conflicts of interest.

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