

Educational videos about dyspareunia and the assessment of their quality and reliability: An observational study

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Abstract

Objective: The aim of this study was to analyze the characteristics, availability, quality and reliability of the information found in educational videos about dyspareunia.

Methods: A systematic search was carried out on YouTube searching for educational videos about dyspareunia. Video quality scores were assessed with the DISCERN instrument, Global Quality Scale (GQS) and QUEST tool. Video popularity was evaluated with the Video Power Index (VPI). Interobserver agreement and statistical correlations of the assessment scores were also carried out.

Results: The first 150 videos that appeared were selected. The mean number of views was 35,513.1 views (SD 71,443.9), the mean video length was 05:39 (SD 04:38), the mean days online was 1,396.3 days (SD 706), the mean view ratio was 29.8 (SD 68.1), the mean Like count was 333 likes (SD 1000.6), the mean Dislike count was 13 dislikes (SD 25.3) and the mean VPI Index was 92.1% (SD 16.4%). The mean values for the DISCERN instrument were for Observer-1 40.9 points (SD 9.9) and for Observer-2 39.3 points (SD 8.5). Mean values for the GQS score were for Observer-1 3.1 points (SD 0.9) and for Observer-2 3.0 points (SD 0.8). Finally, mean values for the QUEST tool were for Observer-1 13.3 points (SD 4.1) and for Observer-2 13.1 points (SD 4.2).

Conclusions: The quality of the videos found on YouTube about dyspareunia, according to DISCERN, GQS, and QUEST scores, are average. Videos with high quality scores were produced by Academic Institutions, despite having lower frequency visit rates.

Keywords

Dyspareunia, education, information quality, internet

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Introduction

Dyspareunia, from the Greek *bed partners not fitting together*,¹ is a sexual disorder defined by the presence of pain or discomfort during sexual intercourse, and its associated with tempted or complete vaginal penetration.² Prevalence rates for dyspareunia range from 3% to 43% and vary within different cultures and settings.^{1,3} Specific pathological disorders, such as endometriosis, other comorbid conditions, myofascial contributors and central sensitization of the nervous system are common causes of dyspareunia.⁴

The lack of good quality education in women's health disorders could lead to misunderstanding and have both

sexual and emotional repercussions.³ It is a common mistake to accept that sexual intercourse can sometimes be painful, and many women are inclined to continue with coitus, if necessary, with their teeth tightly clenched. Women with dyspareunia therefore develop clinically relevant comorbidities, especially psychological, such as depression, anxiety, and erotophobia.^{1,3}

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Poorly understanding dyspareunia relates directly to the available information resources found on the internet. These resources are scarce and often don't follow quality standards. More so, people are inclined to draw upon search engines that don't filter resources based on their content's quality instead of scientific databases with filtered good-quality resources.

Up until December 31st, 2020, around 64.7% of the world's population has had access to the Internet, this accounts for 5,098,463,772 users.⁵ From all the different websites, YouTube is the second most accessed, counting with 34.6 billion monthly visits. It is the second trendiest search engine, following Google, and the biggest video archive website.⁶

Therefore, YouTube has become a relevant channel for shared information, especially involving health-related issues. Users refer frequently in order to search for information regarding the definition, diagnosis and treatment of many clinical presentations.⁷ Due to this matter, it seems important to consider the authorship, quality and validity of this information, because of its relevancy in patient's education and medical decision taking.⁸

This consideration becomes essential when there is no thorough editorial checking and quality assessment of every uploaded content to the website. Therefore, there is a necessity to be cautious with the information we are accessing, though it may be misleading or inaccurate.⁹

Therefore, the aim of this study was to assess the availability, characteristics and quality of the content found in YouTube relating dyspareunia that is accessible for the general population.

Materials and methods

Recruitment

On February 18th, 2021, a search was conducted in YouTube using the term *Dyspareunia*. *Dyspareunia* was chosen as the term to perform the research instead of other lay-person terms such as *painful sex* that could potentially present unrelated or scientifically inaccurate content, or other more specific terms such as *Genito-Pelvic Pain/ Penetration Disorder* that could be too specific and would not include relevant videos. A simple search strategy was used, trying to replicate the results any person could obtain that same day. No restrictions were applied by any filters, but as found by default, YouTube was allowed to sort out the videos by relevance according to the algorithm of that specific day. The first given 150 videos were selected.

The Uniform Resource Locator (URLs) of the videos were used for identification during the screening process. Videos were initially screened for duplicates as well as the inclusion and exclusion criteria. Exclusion criteria were videos in a different language from English, that had less than 1000 views, duplicated, unrelated medically to the

search term or videos that required age verification for their viewing.

Forty videos were finally screened and assigned to two different researchers that viewed, analyzed and assessed them during a 2-week period (Figure 1).

Based on their production source, videos were classified in either produced by an academic institution, health organization, media or and individual. Video country origin was also registered, and if no country information was given, origin was labeled as *unknown*.

Descriptive statistics of the videos were compiled and organized. "View count," "Likes," "Dislikes," "Days online," "Author," and "Duration" of each video were collected too. In order to assess the popularity of each video, the Video Power Index (VPI) and View Ratio were used.¹⁰ The quality of the videos as an educational source was also assessed using the DISCERN instrument,¹¹ the Global Quality Scale (GQS)¹²⁻¹⁵ (Figure 2) and the Quality Evaluation Scoring Tool (QUEST)¹⁶ (Figure 3).

The DISCERN Questionnaire consists of a total of 16 questions. This instrument was created in 1999 by the Division of Public Health and Primary Care at Oxford University in order to assess the quality of the information given for treatment choices in health problems.¹¹ The instrument contemplates 15 initial questions involving different quality criteria, and an additional last question rating overall quality. Questions are classified in three different categories (questions 1–8 in reliability, 9–15 in information quality and 16 in overall quality). Questions are rated in a 1–5 scale (1: Very poor, 2: Poor, 3: Average, 4: High and 5: Very High Quality). There is a total of 80 possible points, and the higher the result the better the quality.

The GQS is a scale used to assess the quality of online content. The scale has a grading from 1 to 5 points, being 1 the lowest and 5 the highest educational quality.¹² Each point has a brief description of the quality of content and a qualification is assigned according to this description.

Finally, each video was also assessed using the QUEST tool.¹⁶ QUEST measures six different aspects of the quality of online health information (authorship, attribution, conflict of interest, currency, complementarity, and tone). Attribution is measured through two items, so the tool consists of a total 7 items and a total of 28 points can be yielded. Each of the items is assigned a weighted score, being 28 the highest quality.

Statistical analysis

Descriptive statistics were obtained from each video calculating their mean average and establishing their minimum and maximum values along with their Standard Deviation (SD). The same values were obtained for the quality scales.

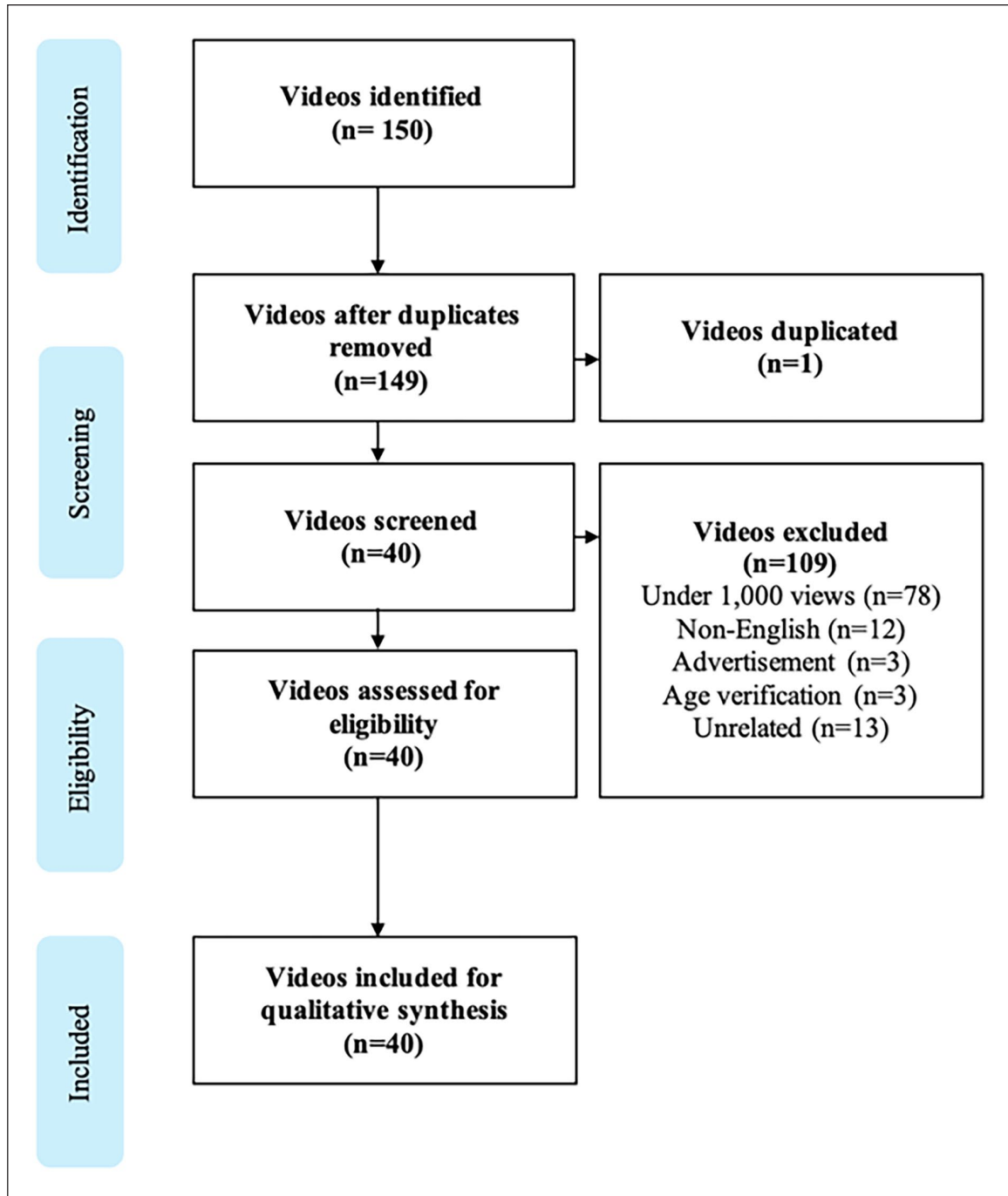


Figure 1. Video flow diagram.

The interrater agreement was determined using the kappa coefficient (κ), using $\kappa > 0.7$ to indicate high level of agreement; $\kappa = 0.5\text{--}0.7$ to indicate a moderate level of agreement; and $\kappa < 0.5$ to indicate a low level of agreement.

To determine how consistent repeated measures could be, to assess interrater concordance the Intraclass Correlation Coefficient (ICC) was used. ICC establishes a coefficient that ranges from 0 to 1, being 0 no correlation

and 1 the highest correlation possible. Scores ranging from 0 to 0.4 are considered to have low correlation, from 0.4 to 0.6 moderate correlation, 0.6–0.8 average correlation and scores above 0.8 show high correlation. Confidence intervals were established at 95% with a two-way random model, consistency type, and the level of significance was set at $p < 0.05$. Pearson's correlation method was also applied. This coefficient is a measure of the linear correlation between two sets of data, and shows results between

Grading	Description of Quality
1	Poor quality; is unlikely of be to use for patient education.
2	Poor quality; is of limited use to patients because only some information is present.
3	Suboptimal quality and flow; is somewhat useful to patients; important topics are missing, some information is present.
4	Good quality and flow; useful to patients because most important topics are covered.
5	Excellent quality and flow; is highly useful to patients.

Figure 2. Global quality scale.

−1 or 1, and the closest the value is to either of these two values, the higher the correlation.

Results

Video characteristics

Based on their production source, 37.5% of the videos were produced by Health Organizations, 32.5% by Individuals, 15% by Academic Institutions and 15% by Media (Figure 4). Based on their country origin, 67.5% of the videos were produced in the USA, 8% were produced in Australia, 5% were produced in the UK, 5% were produced in Canada, 5% were produced in India, 5% were produced in Nigeria, 3% were produced in Bosnia and 3% were produced in Switzerland (Figure 5).

Descriptive statistics

Descriptive statistics of the videos are shown in Table 1. The mean number of views was 35,513.1 views (Standard Deviation (SD) 71,443.9), the mean video length was 05:39 (SD 04:38), the mean days online was 1,396.3 days (SD 706), the mean view ratio was 29.8 (SD 68.1), the mean Like count was 333 likes (SD 1000.6), the mean Dislike count was 13 dislikes (SD 25.3) and the mean VPI Index was 92.1% (SD 16.4%). The level of agreement between the reviewers in the assessment was high ($\kappa=0.820$).

Descriptive statistics of the quality scales are shown in Table 2. The mean values for the DISCERN instrument were for Observer-1 40.9 points (SD 9.9) and for Observer-2 39.3 points (SD 8.5). Mean values for the GQS score were for Observer-1 3.1 points (SD 0.9) and for Observer-2 3.0 points (SD 0.8). Finally, mean values for

the QUEST tool were for Observer-1 13.3 points (SD 4.1) and for Observer-2 13.1 points (SD 4.2).

Reliability values are shown in Table 3. The DISCERN instrument showed correlation values of 0.837 in the ICC and 0.839 in Pearson's index, the GQS score 0.839 for the ICC and 0.841 for Pearson's index and the QUEST tool values of 0.982 for both the ICC and Pearson's index.

Evaluation outcomes

According to the DISCERN scores, 3% of the videos showed very poor quality, 25% of the videos showed poor quality, 50% of the videos showed average quality, 20% showed high quality, and 2% showed very high quality. GQS scores were like those of the DISCERN instrument.

Regarding the relationship between the quality of the videos, according to DISCERN, and their source of production, videos made by Academic Institutions showed the higher scores (45.1, SD 12.2), followed by Individuals (41.7, SD 8.9), Health Organizations (38.9, SD 8.2), and Media (41.7, SD 8.9). GQS scores show higher quality results in videos produced by Academic Institutions (3.2, SD 1.2) and Health Organizations (3.2, SD 0.8), followed by Individuals (3.0, SD 0.9) and Media (2.5, SD 0.8). Finally, the QUEST tool showed higher results in videos produced by Academic Institutions too (15.6, SD 5.1), followed by Health Organizations (14.0, SD 3.7), Individuals (12.7, SD 3.2), and Media (9.7, SD 4.6). Interestingly, the source of production showing the higher View Ratio was Media (104.6, SD 156.5), followed by Health Organizations (19.2, SD 27.3), Individuals (18.3, SD 24.3), and Academic Institutions (6.5, SD 12.3). Results can be found in Table 4. Mean scores from both observers were used in order to calculate values for DISCERN, GQS, and QUEST tools.

Authorship	(Score x 1)
0 – No indication of authorship or username	
1 – All other indications of authorship	
2 – Author's name and qualification clearly stated	
Attribution	(Score x 3)
0 – No sources	
1 – Mention of expert source, research findings (though with insufficient information to identify the specific studies), links to various sites, advocacy body, or other	
2 – Reference to at least one identifiable scientific study, regardless of format (e.g., information in text, reference list)	
3 – Reference to mainly identifiable scientific studies, regardless of format (in >50% of claims)	
For all articles scoring 2 or 3 on Attribution:	(Score x 1)
Type of study	
0 – In vitro, animal models, or editorials	
1 – All observational work	
2 – Meta-analyses, randomized controlled trials, clinical studies	
Conflict of interest	(Score x 3)
0 – Endorsement or promotion of intervention designed to prevent or treat condition (e.g., supplements, brain training games, foods) within the article	
1 – Endorsement or promotion of educational products & services (e.g., books, care home services)	
2 – Unbiased information	
Currency	(Score x 1)
0 – No date present	
1 – Article is dated but 5 years or older	
2 – Article is dated within the last 5 years	
Complementarity	(Score x 1)
0 – No support of the patient-physician relationship	
1 – Support of the patient-physician relationship	
Tone (includes title)	(Score x 3)
0 – Fully supported (authors fully and unequivocally support the claims, strong vocabulary such as “cure”, “guarantee”, and “easy”, mostly use of non-conditional verb tenses (“can”, “will”), no discussion of limitations)	
1 – Mainly supported (authors mainly support their claims but with more cautious vocabulary such as “can reduce your risk” or “may help prevent”, no discussion of limitations)	
2 – Balanced/cautious support (authors' claims are balanced by caution, includes statements of limitations and/or contrasting findings)	

Figure 3. QUEST tool.

Additionally, when analyzing the relationship between the quality of the videos, according to DISCERN, and their country of origin (Table 5), the video produced in Switzerland had the highest quality (48.0, SD 0.0), followed by videos produced in the UK (46.5, SD 6.4), Nigeria (46.3, SD 8.1), Australia (42.3, SD 1.5), a video from Bosnia/Herzegovina (42.0, SD 0.0), videos from Canada (41.0 ± 11.3), USA (38.8, SD 10.1), and India

(36.0, SD 2.8). GQS scores also show higher quality results in the video from Switzerland (4.0, SD 0.0), followed by videos from Nigeria (3.8, SD 0.4), Australia (3.3, SD 0.6), the video produced in Bosnia/Herzegovina (3.0, SD 0.0), videos from the USA (3.0, SD 1.0), Canada (3.0, SD 1.4), the UK, and India (2.5, SD 0.7 for both).

Finally, the QUEST tool showed higher results in videos from the UK (17.0, SD 0.0), followed by the video

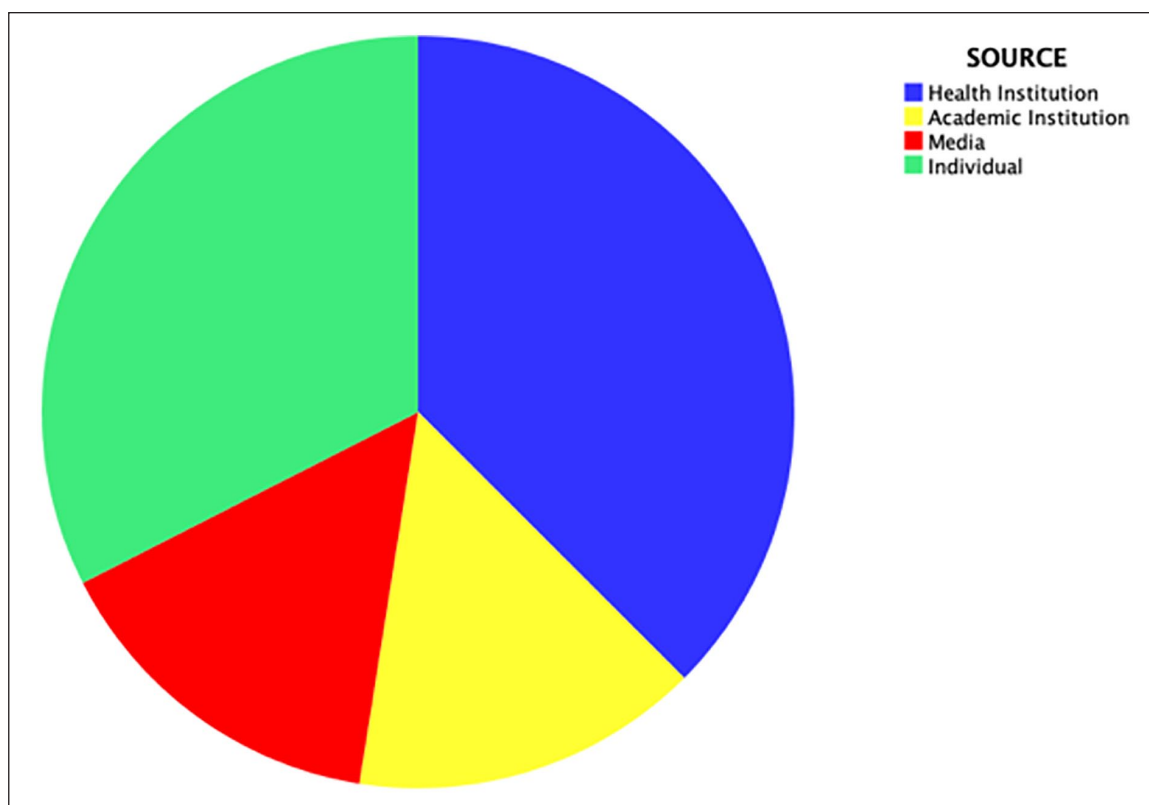


Figure 4. Graphical chart. Videos and source of production.

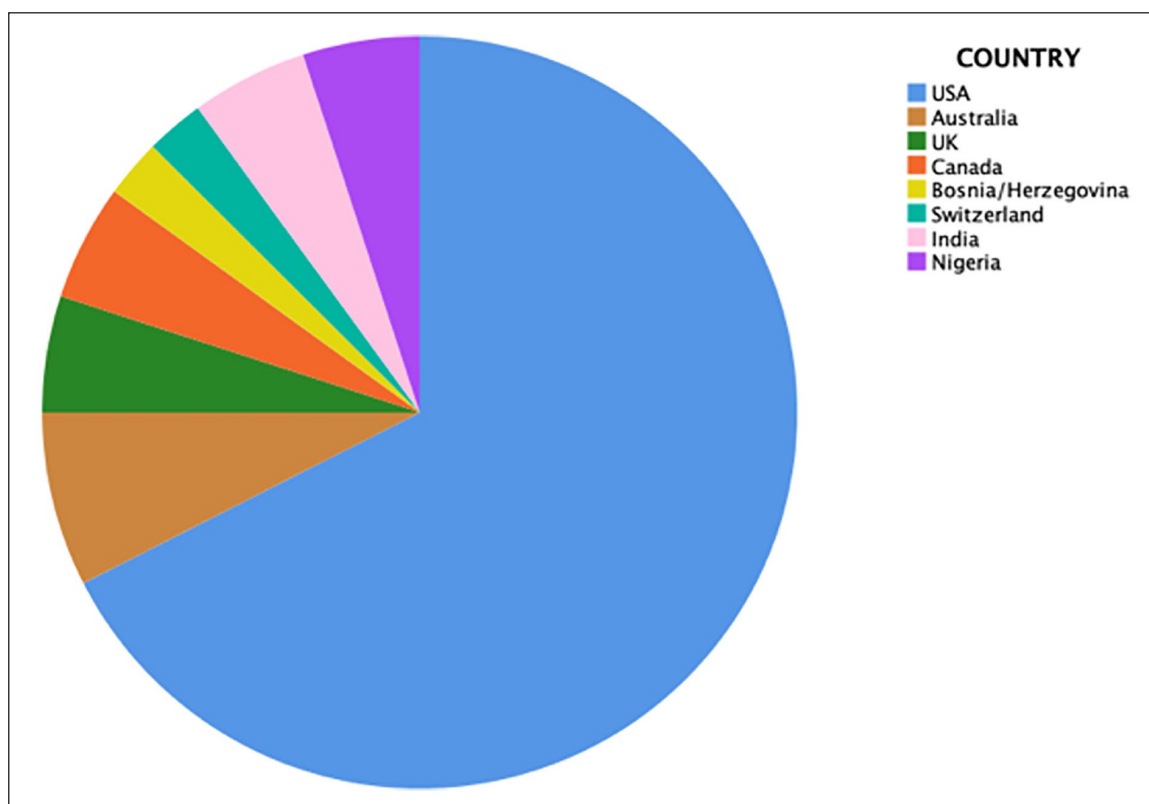


Figure 5. Graphical chart. Videos and country of origin.

Table 1. Descriptive statistics of the videos.

	Min	Max	Mean $\pm$ SD
View count	1.116	307.460	35,513.1 $\pm$ 71,443.9
Duration (min:s)	00:48	22:28	05:39 $\pm$ 04:38
Days online	276	2717	1,396.3 $\pm$ 706
View ratio (views/day)	0.5	385.6	29.8 $\pm$ 68.1
Likes	0	6077	333 $\pm$ 1,000.6
Dislikes	0	113	13 $\pm$ 25.3
VPI index (%)	0	100	92.1 $\pm$ 16.4

Table 2. Descriptive statistics of the quality scales.

	Min		Max		Mean $\pm$ SD	
	Observer 1	Observer 2	Observer 1	Observer 2	Observer 1	Observer 2
DISCERN	25	25	62	61	40.9 $\pm$ 9.9	39.3 $\pm$ 8.5
GQS	1	1	5	5	3.1 $\pm$ 0.9	3.0 $\pm$ 0.8
QUEST	5	5	24	24	13.3 $\pm$ 4.1	13.1 $\pm$ 4.2

Table 3. Reliability values.

	Intraclass correlation coefficient (ICC)	Pearson correlation index	p-values
DISCERN	0.837	0.846	<0.001
GQS	0.839	0.841	<0.001
QUEST	0.982	0.982	<0.001

Table 4. Information sources and video quality.

	DISCERN (mean $\pm$ SD)	GQS (mean $\pm$ SD)	QUEST (mean $\pm$ SD)	View ratio (mean $\pm$ SD)
Academic institution	45.1 $\pm$ 12.2	3.2 $\pm$ 1.2	15.6 $\pm$ 5.1	6.5 $\pm$ 12.3
Health organization	38.9 $\pm$ 8.2	3.2 $\pm$ 0.8	14.0 $\pm$ 3.7	19.2 $\pm$ 27.3
Media	34.7 $\pm$ 7.5	2.5 $\pm$ 0.8	9.7 $\pm$ 4.6	104.6 $\pm$ 156.5
Individual	41.7 $\pm$ 8.9	3.0 $\pm$ 0.9	12.7 $\pm$ 3.2	18.3 $\pm$ 24.3

from Switzerland (15.0, SD 0.0), videos from Canada (14.5, SD 2.1), the video from Bosnia/Herzegovina (14.0, SD 0.0), videos from the USA (13.3, SD 4.6), Australia (13.0, SD 3.0), Nigeria (10.8, SD 1.1), and India (8.5, SD 2.1). Videos showing higher View Ratios were the ones produced in Nigeria (45.0, SD 47.9), followed by the ones produced in Australia (36.1, SD 48.6), USA (33.9, SD 80.6), the video produced in Switzerland (29.6, SD 0.0), videos produced in India (16.3, SD 20.8), Canada (7.0, SD 2.9), the video from Bosnia/Herzegovina (2.4, SD 0.0) and videos produced in the UK (0.9, SD 0.6).

Discussion

The Internet has become a crucial information resource about health matters, both for patients and for professionals. But, along with its obvious benefits due to the exponential growth the Internet is experimenting, there are

certain risks that must be taken under account, concerning the lack of inspection a major part of the information is receiving. Consequently, this lack of scrutiny might lead to the transmission of wrong and potentially harmful information. Websites such as YouTube, even though being more commonly accessed, are not peer reviewed, and uploaded materials are not criticized before sharing, as they lack an objective evaluation process.¹⁴ This creates a controversy regarding the reliability of these videos.¹⁰

When analyzing the sources from where the videos were produced, we found out that 37.5% of the videos were produced by Health Organizations, which was the highest percentage, but despite this these videos weren't the ones that showed better quality results. In contrast, only 15% of the analyzed videos were produced by Academic Institutions, which showed the higher quality scores. This underrepresentation of Academic Institutions as information resources is in concordance with similar

Table 5. Country of origin and video quality.

	DISCERN (mean $\pm$ SD)	GQS (mean $\pm$ SD)	QUEST (mean $\pm$ SD)	View ratio (mean $\pm$ SD)
USA	38.8 $\pm$ 10.1	3.0 $\pm$ 1.0	13.3 $\pm$ 4.6	33.9 $\pm$ 80.6
Australia	42.3 $\pm$ 1.5	3.3 $\pm$ 0.6	13.0 $\pm$ 3.0	36.1 $\pm$ 48.6
UK	46.5 $\pm$ 6.4	2.5 $\pm$ 0.7	17.0 $\pm$ 0.0	0.9 $\pm$ 0.6
Canada	41.0 $\pm$ 11.3	3.0 $\pm$ 1.4	14.5 $\pm$ 2.1	7.0 $\pm$ 2.9
Bosnia/Herzegovina	42.0 $\pm$ 0.0	3.0 $\pm$ 0.0	14.0 $\pm$ 0.0	2.4 $\pm$ 0.0
Switzerland	48.0 $\pm$ 0.0	4.0 $\pm$ 0.0	15.0 $\pm$ 0.0	29.6 $\pm$ 0.0
India	36.0 $\pm$ 2.8	2.5 $\pm$ 0.7	8.5 $\pm$ 2.1	16.3 $\pm$ 20.8
Nigeria	46.3 $\pm$ 8.1	3.8 $\pm$ 0.4	10.8 $\pm$ 1.1	45.0 $\pm$ 47.9

studies,¹¹ and this reflects the lack of high-quality videos that can be found about dyspareunia, reinforcing the idea of potential misleading and harmful information.

Based on their country of origin, 67.5% of the videos were produced in the USA, but despite this, when analyzing the quality of these videos we found out that videos that were produced in the USA ranked seven-eighths in country origins. Again, we find that the highest percentage is not in accordance with the highest quality. Contrarily, videos produced in countries such as Nigeria showed higher quality scores, which can lead us to think that the country's developmental and economic situation is not directly related to their capacity to produce high-quality videos.

These results must be interpreted with caution, because the higher percentage in quantity of videos might lead to higher heterogeneity levels in quality scores, leading to overall reduced quality levels.

The average length of the analyzed videos was 5:39, being slightly inferior to lengths found in previous studies, that range from 6:17 to 10:35.^{11,17,18}

The ICC and Pearson's correlation indexes are widely used to analyze the reliability index between several scores. The inter-reviewer agreement scored reliability values that range from 0.837 to 0.982 in the ICC and 0.846–0.982 in Pearson's index, showing high reliability in every quality assessment tool used, so and Excellent reliability can be considered, according to previous studies.¹⁹

This study shows the result of the analysis of the content available at one precise moment, February 18th, 2021. This content could change overtime, so further analysis is to be done in order to obtain further conclusions. As well, because the *incognito* mode was not used, videos could've had browsing history and geographical location influence. Another limitation is the election of the search term. *Dyspareunia* was chosen as it is not a too colloquial term such as *painful sex* neither a too specific term such as *Genito-Pelvic Pain/Penetration Disorder*. Even though this term was opted to include as much relevant content as possible and filter unrelated content to the condition of interest, the election of the term by itself might've excluded

relevant videos that could've been included in the analysis. Further studies are encouraged to include these terms to broaden the analysis.

Conclusions

YouTube is one of the main accessed platforms found on the Internet. It is the biggest video archive, becoming a simple and attractive source of information when dealing with health issues. It has a tremendous potential to serve as an informative resource when patients and health-care professionals search for information.

People who access YouTube searching for information about Dyspareunia visit with the highest frequency videos produced by Health Institutions, but these videos are not rated as the ones to have the highest quality. Videos with high quality produced by Academic Institutions have low frequency visit rates.

The quality of the videos found about Dyspareunia on YouTube, according to the assessment's tools, is average. There is a need to produce better-quality videos about Dyspareunia. Because Academic Institutions are the ones that show the higher quality ratings, they should be the ones in charge of developing a larger number of videos, improving the quality content.

Future studies should assess the evolution of the development of high-quality videos on YouTube about Dyspareunia in order to improve the awareness the general population has on this condition.

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Ethics approval

Ethics committee approval was not required as public data was used in this study

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