Original Article

Evaluation of YouTube Videos as a Source of Information About Oral Self-examination to Detect Oral Cancer and Precancerous Lesions

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Objectives: The aim of this study was to investigate quality, reliability, and comprehensiveness of YouTube videos about oral self-examination to detect oral cancer and precancerous lesions and to assess whether the source, duration, quality, reliability, and/or comprehensiveness of videos influence their visibility and popularity. Materials and Methods: Videos on YouTube were searched using eight keywords similar to oral self-examination. The first 100 videos for each search term were included. Strict inclusion and exclusion criteria were adhered to, and videos were assessed for quality, reliability, and comprehensiveness. Upload date, views, likes, dislikes, duration, and source of the videos were noted. Viewing rate and interaction index were calculated for each video. Results: A total of 800 videos were analyzed, 24 of which met the inclusion criteria. Majority of videos (87%) were uploaded by the healthcare group. The visibility, quality, reliability, and comprehensiveness were higher in videos uploaded by the healthcare group when compared with the non-healthcare group, but not at a level of statistical significance. The mean interaction index score of the non-healthcare group was found to be higher than the healthcare group, with statistically significant difference. Duration of videos showed an impact on the comprehensiveness of the videos. Conclusion: There are relatively few videos on oral self-examination on YouTube, and most do not have satisfactory quality, reliability, and comprehensiveness. There is a potential to increase public awareness about oral self-examination by utilizing this tool. Videos with complete and accurate information regarding oral self-examination must be uploaded to YouTube, which is currently an important source of information for the general public.

Keywords: Cancer screening, Internet, mouth cancer, oral cancer, patient education, self-examination, YouTube

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INTRODUCTION

Oral cancer is one of the most common head and neck cancers and is the sixth most common cancer globally, with approximately 529,000 new cases and 300,000 deaths every year.¹ The majority of patients with oral cancer are detected at an advanced stage, undergo morbid treatments, and have a poor prognosis.² Early detection of oral cancer is of the utmost importance, and this facilitates diagnosis, treatment, and monitoring of the disease.³ Screening aids in the detection of early stage oral cancer, which significantly improves patient prognosis and reduces mortality by 34%. Although screening has been proved to be an effective early detection approach, it is only economically feasible in high-risk populations.⁴

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Oral cavity cancer frequently develops in easily accessible areas, making it easy to identify early with a visual inspection and palpation. As a result, oral self-examination is a convenient, non-invasive, and low-cost strategy for early diagnosis of oral precancerous lesions that does not require the assistance of a healthcare expert. It can also lead to a self-perception of the need for immediate professional help. As a result, it should be strongly promoted to the general population, particularly to high-risk individuals. Furthermore, it is an effective technique of raising oral cancer awareness and should be made a part of oral care behaviors.

Since the first web browser was developed in 1990, fast and easily accessible Internet has become the world’s major and widespread source of information. Along with cellular data, it has provided patients with easy access to information about their diseases. YouTube has been frequently preferred in recent years as an educational tool and a source of information, with its varied video content for both the general population and patients.

Consumers, in contrast, can be misled if inaccurate or misleading information is presented to them. In the past, studies have analyzed usefulness of YouTube videos in providing information on the sign, symptoms, and risk factors of oral cancer and leukoplakia. Essen et al. and Selvi et al. assessed YouTube videos as a source of information about breast self-examination and testicular self-examination, respectively.

To the best of our knowledge, no study has evaluated this platform as a source of information about performing oral self-examination to detect oral cancer and precancerous lesions. Therefore, the primary objective of the study was to evaluate the quality, reliability, and comprehensiveness of the YouTube videos related to oral self-examination. The secondary objective was to assess whether the source, duration, quality, reliability, and/or comprehensiveness of videos influence their visibility and popularity. The hypothesis is that few high-quality videos on oral self-examination might be found in YouTube.

**Materials and Methods**

This was an analytical cross-sectional study. On September 10, 2021, videos on YouTube were searched using the keywords “oral self-examination,” “oral self examination,” “oral self-exam,” “oral self exam,” “mouth self-examination,” “mouth self examination,” “mouth self-exam,” “mouth self exam.” We used YouTube default sorting option “sort by relevance,” which may be the most commonly used option in the algorithms for YouTube sorting (relevance, upload date, views count, rating). All the advertisements in the search results and in the beginning of video were ignored. Videos were searched after clearing of cache and using a new YouTube account to minimize results biased by cookies, personal settings, and browser history.

More than 90% of YouTube users clicked only the first 60 videos of search results to receive the desired information. The first 100 videos for each search term were included in this study with the assumption that users would not go beyond the first 100 videos of search results. Our methods were previously used in multiple studies that assessed YouTube as a source of patient education. So the selection processes yielded a total of 800 videos.

All videos in English with information about oral self-examination for lay person were included. The following exclusion criteria were applied:

- Videos in other languages
- Irrelevant videos that defined as those in which there was no information of oral self-examination for lay person were excluded
- Repeated videos

Uniform resource locators (URLs) for all selected video samples included in the study were saved for data archiving and future reference.

Videos were classified according to the source. The source represents the person or group that uploaded the video and were classified into:

- Group 1: Healthcare group: healthcare professionals, medical centers, professional organizations, and healthcare foundations.
- Group 2: Non-healthcare group: company advertisement and lay persons.

The following information was extracted from each video: upload date, number of views, number of likes, number of dislikes, and duration. Based on these data, viewer interaction (i.e., visibility and popularity) was calculated by using the following formulas:

- **Viewing rate**: number of views × 100/number of days since upload
- **Interaction index**: (number of likes−number of dislikes) × 100/number of views

The quality of videos was subjectively classified according to Global Quality Scale (GQS) as follows:

- **1** = Very poor quality, poor flow, lack of information, nothing useful for patients;
= Generally poor quality, low level of flow, some information is listed, but there are many important topics of very limited use for patients;
3 = Moderate quality, flow below ideal, some important information is adequately discussed, but other pieces of information are poorly discussed, somewhat useful for patients;
4 = Good quality, generally good flow, most of the relevant information is listed, but some topics are not addressed, useful to patients; and
5 = Excellent quality, excellent flow, very useful for patients.

For the evaluation of the reliability of the video, 5-point DISCERN tool[8,10,16] was used. For each aspect addressed, videos received 1 point, with possible score ranging from 0 to 5 points. The criteria used in this analysis were as follows:

(a) Are the objectives clear and achieved?
(b) Are the sources of information used reliable?
(c) Is the information presented balanced and unbiased?
(d) Are additional sources of information listed for patient reference?
(e) Are areas of uncertainty mentioned?

In DISCERN scoring, videos with a score less than 3 should be considered bad reliability and should not be used by patients. Videos with a score of 3 are considered medium reliability and require additional sources of information. Videos with scores 4 and 5 are reliable videos and contain useful information for the patient.

The evaluation of comprehensiveness of the videos was based on the amount of information about oral self-examination. As there is no standardized system for evaluating the content of the oral self-examination videos, a comprehensiveness analysis was devised by referring to the scientific articles[17,18] and guidelines by recognized health organizations[19,20] containing 12 questions shown in Table 1. With each question, the answer “no” was scored 0 point and the answer “yes” was scored 1 point. Based on the sum of points, the videos were scored in terms of comprehensiveness as not at all useful (scores 0–3), somewhat useful (scores 4–6), moderately useful (scores 7–9), and very useful (scores 10–12).

All the videos were reviewed by two researchers (PRT, SDD) and scored. When the difference was noted for a point or step, the researchers reanalyzed the video together along with third researcher (MNG) to determine the final score. The total content score for each video was counted.

Data entry and analysis were performed using SPSS 23.0 statistical software (Statistical Package for Social Sciences, IBM, Armonk, NJ). Data distribution was assessed using a Shapiro–Wilk test. Independent t-test was used to assess the influence of source and duration of videos on visibility, popularity, quality, reliability, and comprehensiveness. The mean of duration, GQS, DISCERN, and comprehensiveness score was used as cut-off points to evaluate the influence of these variables on the visibility and popularity of the videos. A P-value <0.05 was considered significant.

TABLE 1: Comprehensiveness analysis

| Scoring items                                      | Score |
|---------------------------------------------------|-------|
| Important points related to oral self-examination |       |
| a. Is the demonstrator standing in front of mirror in well-lighted area or using a torch? | 1     |
| b. Is it advised viewers to remove any dentures before oral self-examination? | 1     |
| c. Has it mentioned which findings should be defined as alert findings? | 1     |
| Has it properly demonstrated the viewer about following steps of oral self-examination? |       |
| d. Extra-oral examination                        | 1     |
| e. Neck examination                              | 1     |
| f. Examination of lip mucosa                     | 1     |
| g. Examination of gingiva                        | 1     |
| h. Examination of buccal mucosa                  | 1     |
| i. Tongue examination                            | 1     |
| j. Examination of floor of mouth                 | 1     |
| k. Examination of palate                         | 1     |
| l. Examination of oropharynx                     | 1     |
| Total                                            | 12    |

RESULTS

As shown in Figure 1, 100 videos were screened for each of the eight search terms (total = 800). According to exclusion criteria, 776 were discarded, 24 unique videos met the inclusion criteria.

Tables 2 and 3 show the characteristics of the sample and overall performance of the video was evaluated. The average duration of the videos was 3 min 89 s, ranging from 1 min 1 s to 12 min 1 s. In the visibility assessment, the most seen video had 237,056 views and the least seen video had 40 views. The most popular video received 1453 likes and the most unpopular received 127 dislikes. The mean GQS, DISCERN, and comprehensiveness score of evaluated videos were 3.71 ± 1.30, 3.71 ± 0.75, and 9 ± 1.89, respectively, indicating YouTube videos are moderately useful as a source of information on oral self-examination to detect oral cancer and precancerous lesions.

Instructions regarding proper examination of the tongue, examination of buccal mucosa, and instructing viewers about alert findings were correctly displayed most of the

[Table 1: Comprehensiveness analysis]

[Table 2: Sample characteristics]

[Table 3: Overall performance of the video]
Table 2: Characteristics of selected YouTube videos

| Variable                        | Source, no. (%) |  Upload since (days) | Duration (min:sec) | Views | Likes | Dislikes |
|---------------------------------|-----------------|----------------------|-------------------|-------|-------|---------|
|                                 | Healthcare group| Mean (SD) 1419.04 (1093.02) | Min–Max. 135–3471 | Mean (SD) 32,034.79 (68,968.82) | Mean (SD) 144.96 (365.09) | Mean (SD) 12.21 (29.84) |
|                                 | Non-healthcare group | Mean (SD) 3.89 (3.42) | Min–Max. 1.01–12.01 | Mean (SD) 40–237,056 | Mean (SD) 1–1453 | Mean (SD) 0–127 |

Table 3: Video analysis according to different variables

| Variable      | Mean (SD) | Min–Max. |
|---------------|-----------|----------|
| Viewing rate  | 4384.82 (12,707.16) | 28.37–54,459.33 |
| Viewers’ index| 1.09 (1.80) | 0.09–8.33 |
| Quality       | 3.71 (1.30) | 1–5 |
| Number of videos according to quality, n (%) | 2 (8.3%) | 1 (4.2%) | 9 (37.5%) | 2 (8.3%) | 10 (41.7%) |
| Reliability   | 3.71 (0.75) | 2–5 |
| Comprehensiveness score | 9 (1.89) | 5–12 |

Table 2 shows the 10 best videos, based on the sum of the values obtained from the different evaluation criteria used (i.e., GQS, DISCERN, and comprehensiveness score). Only one video reached the best indices according to different evaluation criteria, totalling 22, and was the only video classified as very useful.

Out of 24, 21 videos (87.5%) were uploaded by healthcare group, while 3 videos (12.5%) were uploaded by non-healthcare group. Analysis of videos with respect to sources of upload is shown in Table 6. In general, the visibility, quality, reliability, and comprehensiveness were better in videos uploaded by healthcare group as compared to non-healthcare group, but not at a level of statistical significance. The mean interaction index score of non-healthcare group was found to be higher than healthcare group, with statistically significant difference.

Table 7 shows that videos duration had positive impact on the comprehensiveness of the videos, however it did not show influence on visibility, popularity, quality, and reliability. It was also observed that the quality, reliability, and comprehensiveness of videos did not show influence on their visibility and popularity [Tables 8–10].

**Discussion**

YouTube can reach a huge section of the general population and convey information about a variety of topics related to dentistry.[21–24] The videos examined in this study had mean views more than 30,000, suggesting that people do watch videos related to oral self-examination on YouTube. The analysis of video performance using various criteria showed that there are relatively few videos on oral self-examination on YouTube, and most do not present satisfactory quality, reliability, and comprehensiveness. Results indicate that there is strong need for high-quality videos to provide valuable information on this topic.

According to the comprehensive analysis, the number of videos with high content was very limited. We found that only one of the surveyed videos provided viewers with correct information about oral self-examination. The instructions in the rest of the videos either did not use a proper technique or they showed only a few steps of the oral self-examination.

The most commonly missed instruction was about informing the viewer, the removal of any denture before conduction of oral self-examination. Long-term irritation has been linked to a higher risk of developing oral cancer.[25,26] Chronic irritation can be caused by poor oral hygiene, poor dentition, missing teeth, and ill-fitting dentures.[27] The use of dentures alone was correlated to a higher risk of having cancer, whereas ill-fitting dentures appeared to significantly raise the chance of acquiring cancer by almost four times.[28] Thus, it is important to

![sign.png]
inform viewers about the removal of the denture before conduction of oral self-examination and inspect the denture-bearing area.

It was concerning to find that the quality, reliability, and comprehensiveness of videos do not influence their visibility and popularity, suggesting that the users probably cannot judge the quality of information on YouTube. The mean interaction index score of the non-healthcare group was found to be higher than the healthcare group. This could be possibly attributed to less complexity of the videos that were uploaded by the non-healthcare sources.\[29\] As a result, in order to increase visibility and audience interaction, healthcare professionals should use more engaging and easily understood language in their videos.

Analyzing the length of videos, the duration of videos had a positive impact on the comprehensiveness of the videos. This implies that the length of a video should be long enough to allow for content development, but not so long that the user’s attention is lost.\[13\]

There is mixed opinion in the literature on the educational value of YouTube about medical conditions and the ability of YouTube videos to educate people.\[30\] Some research has determined that YouTube is beneficial, whereas others have questioned its utility. Selvi et al.\[12\] investigated the content of YouTube videos about testicular self-examination. In terms of all of the steps related to how testicular self-examination should be done, they found YouTube to be of excellent quality, reliability, and comprehensive content. However, Esen et al.\[11\] conducted a study to evaluate the YouTube videos as a source of information on breast self-examination. They concluded that the majority of breast self-examination videos were misleading. Our study result lies somewhere between these studies. Some videos provided important and correct information on oral self-examination,

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**Figure 1**: Flow chart of the search results and screening process

**Table 4: Performance of top 10 videos according to quality, reliability, and comprehensiveness**

| Title-channel                                      | Source | Upload since days | Duration (mins) | Quality | Reliability | Comprehensiveness score | Total |
|---------------------------------------------------|--------|------------------|-----------------|---------|-------------|------------------------|-------|
| Importance of oral cancer screenings              | PO     | 1363             | 9.32            | 5       | 5           | 12                     | 22    |
| How to screen for oral cancer at home             | HP     | 562              | 4.53            | 5       | 5           | 11                     | 21    |
| Mouth cancer awareness: watch your mouth          | PO     | 1145             | 4.25            | 5       | 5           | 11                     | 21    |
| CDHO seven-step oral cancer self-exam             | MC     | 2015             | 2.48            | 5       | 4           | 10                     | 19    |
| Self-examination for mouth cancer                 | HF     | 2277             | 3.47            | 5       | 4           | 10                     | 19    |
| Oral cancer prevention— intra-oral self-exam      | HP     | 3160             | 2.34            | 5       | 4           | 10                     | 19    |
| Oral cancer screening easy steps                  | MC     | 135              | 8               | 5       | 4           | 10                     | 19    |
| C.O.P.E. with cancer: oral health self-exam       | HP     | 1648             | 6               | 5       | 4           | 10                     | 19    |
| Oral cancer self-exam                             | HP     | 1670             | 1.25            | 4       | 4           | 10                     | 18    |
| Be mouth aware — head and neck cancer self-exam   | LP     | 203              | 11.29           | 3       | 4           | 11                     | 18    |

HP = healthcare professionals, MC = medical centers, PO = professional organizations, HF = healthcare foundations, LP = lay persons
whereas the rest of the videos had inaccurate or limited information.

Oral self-examination is relatively quick, inexpensive, and simple to perform. Although some studies have found that oral self-examination has no benefit in detecting oral mucosal lesions, including oral cancer,[4] other authors have concluded that despite its low sensitivity, oral self-examination may be effective in raising awareness of oral cancer and detecting lesions early.[8] Furthermore, oral self-examination can also be very useful in treating oral cancer patients for evaluating disease status.[6] In contrast, oral self-examination alone, without the knowledge about its importance and risk factors for oral cancer, would not be effective.[31] Hence, health education on oral self-examination is essential which unfortunately is still not being advocated in developing countries where the incidence of oral cancer is quite high.[18]

Today, a significant portion of the world’s population has access to numerous websites and social media platforms that provide healthcare information.[32] Patients usually prefer using YouTube when searching for health information because this medium provides visual and audio information.[33] More than two billion users visit YouTube each month, and people watch more than one billion hours of videos, which are viewed billions of times, and 500 h of videos are added to YouTube.

| Title—channel                                      | Source   | Upload since (days) | Duration (mins) | Views   | Likes | Dislikes | Viewing rate | Viewers’ interaction |
|----------------------------------------------------|----------|---------------------|-----------------|---------|-------|----------|--------------|---------------------|
| Importance of oral cancer screenings               | PO       | 1363                | 9.32            | 26,767  | 178   | 7        | 1963.83      | 0.64                |
| How to screen for oral cancer at home              | HP       | 562                 | 4.53            | 187,449 | 1453  | 67       | 33,353.91    | 0.74                |
| Mouth cancer awareness: watch your mouth           | PO       | 1145                | 4.25            | 4808    | 33    | 4        | 419.91       | 0.6                 |
| CDHO seven-step oral cancer self-exam              | MC       | 2015                | 2.48            | 7144    | 46    | 0        | 354.54       | 0.64                |
| Self-examination for mouth cancer                  | HF       | 2277                | 3.47            | 11,984  | 28    | 1        | 526.31       | 0.23                |
| Oral cancer prevention— intra-oral self-exam       | HP       | 3160                | 2.34            | 56,681  | 76    | 17       | 1793.70      | 0.1                 |
| Oral cancer screening easy steps                   | MC       | 135                 | 8               | 520     | 4     | 1        | 385.19       | 0.58                |
| C.O.P.E. with cancer: oral health self-exam        | HP       | 1648                | 6               | 14,191  | 68    | 5        | 861.1        | 0.44                |
| Oral cancer self-exam                              | HP       | 1670                | 1.25            | 3531    | 12    | 0        | 211.44       | 0.34                |
| Be mouth aware—head and neck cancer self-exam      | LP       | 203                 | 11.29           | 96      | 8     | 0        | 47.29        | 8.33                |

HP = healthcare professionals, MC = medical centers, PO = professional organizations, HF = healthcare foundations, LP = lay persons

Figure 2: Analysis of instructions of oral self-examination
every minute. Because YouTube is getting increasingly popular, why not use it to raise awareness among various populations? Indeed, new training and informational tools could help medical fields investigate new prevention methods. Healthcare professionals should be more encouraged to upload oral self-examination-related videos with accurate information to promote people for oral self-examination and direct them to specific highly accurate videos.

Strength of our study is that videos were found in a way that patients might also look for them; therefore, it reflects daily practice. While providing an overview of videos available for oral self-examination, it has certain limitations. Search results from YouTube and other search engines are inconsistent, as new videos are added, or old videos deleted, every day. Also, the order of search results changes over time and by interaction. Therefore, a limitation of the current study was that the data collection method was instantaneous, as for similar studies. The use of a prolonged study period can often generate an overwhelmingly large volume of social media data, which becomes unmanageable and difficult to analyze.

Furthermore, this study, which only contained English-language videos, was primarily posted from native English-speaking countries, posing a geographical limitation; yet, English is a global language, and information in English may be accessed from anywhere in the world.

### Table 6: Video classification according to the upload source

| Variables          | Healthcare group (n= 21) | Non-healthcare group (n= 3) | P-value |
|--------------------|--------------------------|-----------------------------|---------|
|                    | Mean (SD)                | Median P25–P75              | Mean (SD) | Median P25–P75 |         |
| Views              | 36,466.76 (72,835.91)    | 3531                        | 1011 (1175.67) | 600           | 0.42    |
|                    | 466.5–20,479             |                             | 96–2337   |               |         |
| Viewing rate       | 4990.57 (13,513.28)      | 266.81                      | 144.52 (133.73) | 89.23         | 0.55    |
|                    | 91.88–1327.4             |                             | 47.29–297.03 |               |         |
| Likes              | 164.52 (387.38)          | 16                          | 8 (7)     | 1–15          | 0.5     |
|                    | 5–72                     |                             |           |               |         |
| Interaction index  | 0.82 (0.99)              | 0.47                        | 3.03 (4.59) | 0.60          | 0.04*   |
| Quality            | 3.90 (1.22)              | 4                           | 2.33 (1.15) | 3             | 0.05    |
|                    | 3–5                      |                             |           |               |         |
| Reliability        | 3.76 (0.70)              | 4                           | 3.33 (1.15) | 4             | 0.36    |
|                    | 3–4                      |                             |           |               |         |
| Comprehensiveness score | 9.14 (1.74)     | 10                          | 8 (3)     | 5–11          | 0.34    |
|                    | 8–10                     |                             |           |               |         |

*Significant difference at P < 0.05

### Table 7: Comparison of videos according to duration (min:s)

| Variables          | Up to 3.89 (n= 15) | More than 3.89 (n= 9) | P-value |
|--------------------|--------------------|------------------------|---------|
|                    | Mean (SD)          | Median P25–P75         | Mean (SD) | Median P25–P75 |         |
| Views              | 19,815.73 (50,617.19) | 2374 | 52,399.89 (91,898.35) | 4808 | 0.27    |
|                    | 600–9261           |             | 356–107,108          |       |         |
| Viewing rate       | 3908.14 (13,991.37) | 170.11 | 5179.27 (10,978.08) | 419.91 | 0.82   |
|                    | 75–354.54          |             | 96.94–5676.1         |       |         |
| Likes              | 91.80 (290.70)     | 11                  | 233.56 (470.32)      | 33    | 0.37    |
|                    | 2–28               |                       | 8–256                |       |         |
| Interaction index  | 0.55 (0.62)        | 0.38 | 2 (2.68) | 0.64 | 0.05    |
| Quality            | 3.33 (1.35)        | 3                  | 4.33 (1)             | 5     | 0.07    |
|                    | 3–5                |                       | 3–5                  |       |         |
| Reliability        | 3.53 (0.64)        | 4                  | 4 (0.87)             | 4     | 0.14    |
|                    | 3–4                |                       | 3–5                  |       |         |
| Comprehensiveness score | 8.13 (1.81)     | 8                  | 10.44 (0.88)         | 10    | <0.01*  |
|                    | 8–10               |                       | 10–11                |       |         |

*Significant difference at P < 0.05
Finally, people need to be aware that although YouTube can act as an important platform where they can get information about oral self-examination, it is not by any means a substitute for regular screening by dental or medical professionals.

**CONCLUSION**

On YouTube, there are only a few videos about oral self-examination, and most do not have satisfactory quality, reliability, and comprehensiveness. YouTube due to its popularity could be quite useful in educating people about oral self-examination for early detection of oral cancer and precancerous lesions. It is the obligation for healthcare professionals, academic institutions, and professional organizations to improve YouTube content and refer patients to scientifically reliable content sources.

**FUTURE SCOPE**

Research, specifically randomized controlled trials, is required to further determine the effectiveness of YouTube videos on the person’s willingness and ability to perform oral self-examination.

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**CONFLICTS OF INTEREST**

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

**AUTHORS’ CONTRIBUTIONS**

NDG: project administration, writing original draft. PRT: investigation, data analysis. SDD: investigation, data analysis. MNG: investigation, writing review, and editing. RNG: study conception, experimental design. SJK: data interpretation, statistical analysis. All authors have read and approved the manuscript.

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**Table 8: Influence of videos quality on their visibility and popularity**

| Variables         | GQS 1, 2, 3 (n=12) | GQS 4, 5 (n=12) | P-value |
|-------------------|-------------------|-----------------|---------|
|                   | Mean (SD)         | Median          | Mean (SD)         | Median          |         |
|                   | P25–P75           | P25–P75         | P25–P75           |                  |         |
| Views             | 37,735.50 (83,905.72) | 2221.5          | 26,334.08 (53,242.37) | 5976             | 0.69    |
| Viewing rate      | 5424.38 (15,670.21) | 123.32          | 3345.25 (9471.53)  | 402.55           | 0.70    |
| Likes             | 129.92 (331.63)   | 9.5             | 160 (410.16)       | 30.5             | 0.85    |
| Interaction index | 1.38 (2.36)       | 0.47            | 0.81 (1.02)        | 0.59             | 0.45    |

**Table 9: Influence of reliability on their visibility and popularity**

| Variables         | DISCERN 1, 2, 3 (n=9) | DISCERN 4, 5 (n=15) | P-value |
|-------------------|------------------------|---------------------|---------|
|                   | Mean (SD)              | Median              | Mean (SD)              | Median              |         |
|                   | P25–P75                | P25–P75             | P25–P75                |                  |         |
| Views             | 28,472 (78,267.80)     | 2337 (356–5817.5)   | 34,172.47 (65,582.28) | 4808 (520–26,767)  | 0.85    |
| Viewing rate      | 1146.62 (3091.42)      | 108.75 (71.98–218.46) | 6327.73 (15,780.64) | 385.19 (137.89–1793.7) | 0.34    |
| Likes             | 47 (107.82)            | 11 (6–19.5)        | 203.73 (449.96)       | 28 (4.76–1560.55)  | 0.32    |
| Interaction index | 1.23 (1.4)             | 0.47 (0.19–2.59)   | 1.01 (0.25)           | 0.55 (0.23–0.64)   | 0.55    |

**Table 10: Influence of comprehensiveness of videos on their visibility and popularity**

| Variables         | Poor content 1–8 (n=8) | Rich content 9–12 (n=16) | P-value |
|-------------------|------------------------|---------------------------|---------|
|                   | Mean (SD)              | Median (P25–P75)          | Mean (SD)              | Median (P25–P75) |         |
|                   | P25–P75                |                          | P25–P75                |                  |         |
| Views             | 25,764.25 (68,595.81)  | 2221.5 (347.25–2763.25)  | 35,170.06 (71,177.96) | 5976 (439.75–23,623) | 0.76    |
| Viewing rate      | 6915.03 (19,210.99)    | 123.32 (44.47–265.3)     | 3119.71 (8380.91)      | 369.87 (87.26–1560.55) | 0.50    |
| Likes             | 148.25 (400.76)        | 8.5 (1–14)               | 143.31 (359.75)        | 25.5 (8–74)       | 0.98    |
| Interaction index | 0.66 (0.77)            | 0.47 (0.22–0.59)         | 1.31 (2.13)            | 0.59 (0.22–1.21)  | 0.42    |
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