

Quality of YouTube patient information on prostate cancer screening

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ABSTRACT

Social media is used by patients for health care information. We analyzed the quality of YouTube videos on prostate cancer screening. Most videos (71.1%) mentioned the potential harms of prostate cancer screening. There was no significant difference in risk-related information between videos published before and after the publication of US Preventive Services Task Force 2012 guidelines for prostate cancer screening. In conclusion, the quality of information of YouTube videos on prostate cancer screening is low and the content is potentially misleading.

KEYWORDS Patient information; prostate cancer screening; prostate-specific antigen; YouTube

The value of prostate-specific antigen (PSA) screening for prostate cancer has always been uncertain, as reflected by variable clinical guidelines. In 2018, the US Preventive Services Task Force (USPSTF) updated its 2012 statement against PSA-based prostate cancer screening.^{1,2} It is now recommended that men aged 55 to 69 years who are considering prostate cancer screening speak with their physician about both the benefits and the harms of prostate cancer screening. The USPSTF maintained its recommendation against PSA-based screening for prostate cancer in men 70 years and older. PSA screening might reduce prostate cancer mortality risk but could be associated with false-positive results, biopsy complications, and overdiagnosis.³

Social media has brought a new dimension to health care. Patients and health care professionals utilize Internet search engines and social media including YouTube, Twitter, and Facebook to get medical information and communicate about health issues with the possibility of potentially improving health outcomes.⁴ This study was designed to evaluate the content of YouTube videos posted in relation to prostate cancer screening. This particular disease entity “prostate cancer screening” was selected because of the important changes

made in screening guidelines. We analyzed the quality of videos before and after the position statement introduced in 2012 by the USPSTF.

METHODS

The terms “prostate cancer screening” and “prostate cancer awareness” were searched on the YouTube search engine on December 20, 2017. For each search, we screened the first seven pages of results with the highest views, assuming that users would be unlikely to scan beyond these pages. This generated 176 videos, of which 135 met the inclusion criteria. Videos that were not in English, were duplicates, continued discussions on the same topic, or had content unrelated to our objectives, such as the methods or outcomes of prostate cancer treatment and disease prognosis, were excluded from the study. Statistical analyses were performed with SPSS Version 21 (Mendeley software).

RESULTS

The interobserver agreement for quality of information was 76%, with a kappa coefficient of 0.71 ($P = 0.001$). All

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Table 1. Analysis of general attributes of videos from different sources

| Variable | | News reports | Personal experience | Professional societies | Individual physician/urologist | Lectures from medical institutions | Others |
|---|----------|--------------|---------------------|------------------------|--------------------------------|------------------------------------|--------------------|
| Number of videos (% of total) | | 27 (20%) | 21 (15.6%) | 29 (21.5%) | 22 (16.3%) | 27 (20%) | 9 (6.7%) |
| Number of views | | 1889 ± 2174 | 2595 ± 2326 | 3003 ± 4443 | 3997 ± 3852 | 64,712 ± 178,467 | 99,032 ± 1,069,123 |
| Days posted | | 1653 ± 917 | 1641 ± 855 | 1716 ± 885 | 1291 ± 834 | 1667 ± 960 | 1584 ± 828 |
| Opinion | Likes | 4.0 ± 5.1 | 11.7 ± 27.0 | 10.3 ± 18.9 | 7.6 ± 7.7 | 466.4 ± 1363.4 | 76.5 ± 556.7 |
| | Dislikes | 0.4 ± 0.9 | 0.33 ± 0.66 | 0.45 ± 0.69 | 0.32 ± 0.72 | 7.33 ± 17.69 | 14.36 ± 156.38 |
| Risk factors of prostate cancer mentioned | Yes | 19 | 13 | 20 | 10 | 16 | 4 |
| | No | 8 | 8 | 9 | 12 | 11 | 5 |
| Risks of prostate screening mentioned | Yes | 9 | 3 | 7 | 17 | 11 | 1 |
| | No | 18 | 18 | 22 | 5 | 16 | 8 |
| Length of videos (min) | <5 | 18 | 15 | 17 | 14 | 4 | 9 |
| | 5–10 | 4 | 3 | 9 | 7 | 4 | 0 |
| | 10–15 | 3 | 1 | 1 | 0 | 1 | 0 |
| | >15 | 2 | 2 | 2 | 1 | 18 | 0 |

videos included in the study had more than 500 views. With regards to screening modalities for prostate cancer, 103 (76.3%) videos mentioned the PSA test, 74 (54.8%) mentioned rectal examination, and 27 (20%) mentioned prostate biopsy. *Table 1* displays general attributes of the videos from different sources, including information on the quality of information perceived by the patients (likes and dislikes).

Table 2 summarizes differences in the information and sources before and after 2012. Ninety-six videos (71.1%) mentioned the harms of PSA-based prostate cancer screening. Although there was a decline in the percentage of videos that mentioned the harms of PSA-based screening from 76% before 2012 to 67% after 2012, that difference was not significant.

Videos were uploaded by professional societies (29; 21.5%), medical institutions (27; 20%), news reports (27; 20%), individual physicians or urologists (22; 16.3%), and patients (21; 15.6%) who shared their personal experiences on prostate cancer screening. The videos uploaded by medical institutions in the form of lectures generated the highest number of likes (64,712 ± 1785) and dislikes (1667 ± 960).

DISCUSSION

In our study, most YouTube videos mentioned the potential harm versus benefits of prostate cancer screening. There was no significant change in quality of the information on the risks versus benefits of prostate cancer screening after the USPSTF guidelines came out in 2012. Steinberg et al studied YouTube prostate cancer videos in 2010 and found that 73% of videos had fair or poor content, 69%

Table 2. Characteristics of 135 YouTube videos on prostate cancer screening before and after February 2012

| Variable | Overall | Cohort | |
|---|----------|-------------|------------|
| | | Before 2012 | After 2012 |
| Information on harms of prostate cancer screening ^a | | | |
| Yes | 96 (71%) | 47 (76%) | 49 (67%) |
| No | 39 (29%) | 15 (24%) | 24 (33%) |
| Information on benefits of prostate cancer screening ^b | | | |
| Yes | 53 (39%) | 21 (34%) | 32 (44%) |
| No | 82 (61%) | 41 (66%) | 41 (56%) |
| Source of video | | | |
| News reports | 27 (20%) | 12 (19%) | 15 (21%) |
| Personal experience | 21 (16%) | 11 (18%) | 10 (14%) |
| Professional societies | 29 (21%) | 15 (24%) | 14 (19%) |
| Individual physician/urologist | 22 (16%) | 6 (10%) | 16 (22%) |
| Lectures from medical institutions | 27 (20%) | 14 (23%) | 13 (18%) |
| Other websites | 9 (7%) | 4 (6%) | 5 (7%) |

^a*P* = 0.27. ^b*P* = 0.24.

were biased for cancer treatment or PSA testing, and none were biased against cancer treatment or PSA testing.⁵ We observed that most prostate cancer awareness videos were

produced by professional societies, news reports, and didactic lectures from reputable universities. A similar study published in 2017 found that most videos were published by consumers (45%) and medical or government professionals (30%).⁶

In 2012 the USPSTF recommended against PSA-based prostate cancer screening for men.⁷ Despite these guidelines, clinicians have been debating the pros and cons of this recommendation. In 2018, the USPSTF updated its 2012 position on prostate cancer screening, suggesting that clinicians should selectively offer or provide periodic PSA-based screening for prostate cancer for men between the ages of 55 and 69 to promote shared decision making.⁸

Our video analysis reflects the conundrum in scientific and lay communities. PSA-based screening is still controversial because there are both benefits and harms associated with such practice. The potential benefit of any cancer screening effort is multifold; that is, early detection can improve survival outcomes, impact personal and/or third-party cost of care for the duration of disease, reduce economic risk for patients, and improve quality of life for patients. There is a standard treatment for prostate cancer if it is detected at an early stage. The potential harms of PSA-based screening are overdiagnosis, unnecessary follow-up tests including biopsies, and anxiety or stress among patients. Prostate cancer detection by screening with PSA has been controversial primarily because of inadequate understanding of the natural history of disease and the lack of specificity of PSA to detect intermediate- and high-risk prostate cancers.

Our study has some limitations. First, the video information came from one point of time; thus, these results may have changed with time because some videos might have been added or removed. Second, because our analysis was performed in December 2017, we were not able to include videos uploaded after the updated USPSTF guidelines in 2018. Finally, though YouTube has become a major platform for delivery of health information, the information being shared has not been regulated or updated periodically.^{9,10}

We are concerned that we did not find a significant change in the quality of information posted in YouTube videos after the USPSTF recommendations in 2012. Free and unregulated information available widely on the Internet, without being targeted to a specific audience, could carry a potential hazard of misinformation. Lack of regulation and peer review for online video publications can lead to bias that will likely persist in the foreseeable future, rendering this type of publication an unreliable consumer informational source for medical decision making. Anticipation of self-

regulation by reputable institutions and qualified professionals on the issue of prostate cancer detection does not appear warranted because of past performance, lack of legislated incentive, and economic incentive. Nevertheless, we still recommend that YouTube videos be posted by reputable institutions and qualified medical professionals with updated information on PSA-based prostate cancer screening.

YouTube pays clients based on the volume of subscriptions and views. The financial motives of video uploaders, especially for YouTube videos, are questionable. Patients and families should practice caution in reviewing information driven by an economic incentive. With patients and family members becoming increasingly social media savvy, our professional physician societies should recognize this revolution for patient education and caution patients about potentially misleading misinformation.

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