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Original Article

A Content Analysis of YouTube™ Videos Related to Bladder Cancer

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ABSTRACT

Objective: We examined the content of YouTube™ videos on urinary bladder cancer education and evaluated their usefulness in promoting early detection of the cancer.

Material and Medthods: A systematic search of YouTube™ for videos containing knowledge information on bladder cancer was conducted using the keywords 'bladder cancer'. Details about demographics of videos, including type, length, source and viewers' interaction were evaluated and 2 researchers independently assessed the videos for usefulness in promoting knowledge on bladder cancer.

Results: A total of 100 YouTube™ videos (100 most viewed videos were reviewed and 48 videos were excluded including surgical technic videos, videos in non-English languages, patient testimonial videos and videos about complementary and alternative medicine. A total of 52 videos were analyzed. The highest number of videos were uploaded by medical websites (18, 34.6%), the mean number of views is highest in videos that were categorized as not useful (105,447), followed by very useful (74,940.6±120,980.8), slightly useful (46,219.6±101,261.4), moderately useful (34,941.0±35,413.1). The mean number of "likes" is highest in the very useful group (339.4±373.6), so is the "dislikes" (25.3±40.9).

Conclusion: YouTube™ contains a diverse source of information on bladder cancer. Most videos on bladder cancer may not be informative for health education. Medical professionals, medical institutions, and professional organizations should improve the content of videos about bladder cancer to provide patients with reliable and useful information.

Keywords: bladder cancer; YouTube™; social media

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INTRODUCTION

Bladder cancer is one of the top ten most common type of cancer in the world, with over 550,000 new cases diagnosed in 2018. The patients are mostly diagnosed after having painless hematuria. Some patients may have signs of bladder irritability such as impaired urine storage, increased urinary urge, frequency, and dysuria. Risk of developing bladder cancer is associated with cigarette smoking, occupational exposure to chemical carcinogen, previous radiation to the pelvis, chemotherapeutic agents such as cyclophosphamide, *Schistosoma haematobium* infection. There are many methods of treatment depending on the stage and muscle-invasiveness of bladder cancer such as transurethral resection of bladder tumor (TURBT), intravesical therapies by using Bacillus Calmette-Guérin (BCG) vaccine, radical cystectomy, chemotherapy, radiotherapy, and immunotherapy. Prevention of bladder cancer can be done by avoiding exposure to cigarette smoking as well as carcinogens.[1-4]

YouTube™ is among the most popular social media website with over 2 billion users.[5] With its large community of users, the website can be used for spreading health information. However, some may cause harm with misleading or invalid information.

Many authors have analyzed YouTube™ on various medical conditions such as prostate cancer, oral cancer and gallstone diseases.[6-8] In this study, we aim to examine the content of YouTube™ videos on bladder cancer and evaluate their usefulness as a source of information on bladder cancer. To our knowledge, this is the first study to evaluate the content of YouTube™ videos on bladder cancer.

MATERIAL AND METHODS

Search procedure

A YouTube™ search was performed on 3 June 2019 using the search term “bladder cancer”. The 100 most viewed videos were reviewed. The search was done using a cleared-cache web browser by using Firefox (version 6.0.5) on a personal computer.

Videos selection and analysis

Videos not in English, videos with no audio, surgicalprocedure videos, patient testimonial videos and videos concerning complementary and alternative medicine were excluded. A single reviewer (Wichaya Sunsuwan) independently reviewed and analyzed the selected videos. Demographics of the videos, including the type, length, source, and viewers were evaluated. To assess the quality of videos in providing information about bladder cancer, we devised a “usefulness score” to categorize the videos as "not useful", "slightly useful", "moderately useful", or "very useful". The highest possible score is 12 with two pointed awarded if the video mentioned smoking and hematuria, which we believe to be one of the most important risk factors and the most common presentation of bladder cancer. One point awarded if the video mentioned the main risk factors of bladder cancer (occupational exposure to carcinogen, radiation to the pelvis, cyclophosphamide, Schistosoma haematobium infection), signs and symptoms (bladder irritability), any of the diagnostic and treatment methods, and prevention of bladder cancer.

Statistical analysis

Statistical analyses were performed with RStudio (version 1.1.463). Differences between groups were compared with ANOVA, followed by Tukey’s post hoc comparisons. (Table 1)

RESULTS

Out of 100 videos, 48 videos were excluded including surgical technic videos, videos in foreign languages, patient testimonial videos and videos about complementary and alternative medicine. A total of 52 videos were analyzed. The mean length of the videos was 836 seconds, and each video was viewed an average of

48,839 times. The mean number of "likes" is 123.3 and "dislikes" is 12.0 S.D..

Video demographics according to the upload source are shown in Table 2. The highest number of videos were uploaded by medical websites 18 (34.6%). Sixteen videos (30.8%) were uploaded by medical professional or medical institute, 13 (25.0%) were uploaded by commercial website or news source and 5 (9.6%) were uploaded by civilian sources. There were no differences in the mean length of videos, number of views, "likes", and "dislikes" among each upload sources. All the very useful videos are from medical profession/institution and medical website source as well as moderately useful videos. Slightly useful videos came from every type of sources. The only not useful video is from an individual user channel.

Table 1 Usefulness score

Scoring item	Score
Video has mentioned the main risk factors for bladder cancer	
Smoking	2
Occupational exposure to carcinogens	1
Radiation treatment of the pelvis	1
Cyclophosphamide	1
Schistosoma haematobium infection	1
Video has mentioned the main signs and symptoms of bladder cancer	
Painless hematuria	2
Bladder irritability	1
Video has mentioned any of bladder cancer diagnostic methods	1
Video has mentioned any of bladder cancer treatment methods	1
Video has mentioned the prevention of bladder cancer	1
Total score	12

score 0 = not useful, scores 1–4 = slightly useful, scores 5–8 = moderately useful, scores 9–12 = very useful

Video demographics according to usefulness are shown in Table 3. Seven videos (13.5%) were categorized as very useful, eleven (21.2%) were moderately useful, thirty-three (63.5%) were slightly useful and one (1.9%) was categorized as not useful. The mean number of views is highest in videos that were categorized as not useful (105,447), followed by very useful (74,940.6±120,980.8), slightly useful (46,219.6±10,1261.4), moderately useful (34,941.0±35,413.1). The mean number of "likes" is highest with the very useful group (339.4±373.6) as well as "dislikes" (25.3±40.9). there were no significant differences between group of usefulness of information regarding the length of videos, number of views, number of "likes", and "dislikes".

DISCUSSION

This study evaluated the demographics and usefulness of the most viewed videos on bladder cancer. In this study, there are no differences in the mean length of video, number of views, "likes", and "dislikes" between each upload sources. Also, there were no significant differences between usefulness score regarding the length of videos, number of views, number of "likes", and "dislikes". This study found that videos from medical professionals and institutions have more mean views than other sources in contrast to other studies.[8,9] We found no difference between the total views and the usefulness score. In a study of gallbladder diseases videos on YouTube™ has similar results.[8] Our study found that videos that are very useful have more mean views than others except the only not useful videos in this study. In contrast to other studies showed that less useful videos have more views.[8–10]

This study has several limitations. First, the search of videos was cross-sectional. Video contents are added to YouTube™ all the time. Videos sorted by most views may change by the search date and time. Second, we analyzed the videos in English language only, as the incidence for bladder cancer is highest in North America and Europe.[1] Some nations with high incidence for bladder

Table 2 Video demographics according to the upload source

Video demographics	Upload source				Total	P-value
	Medical professional or medical institute	Medical website	Commercial website or news source	Individual user		
Videos, n (%)	16 (30.8)	18 (34.6)	13 (25.0)	5 (9.6)	52	–
Mean length (h:min:s)	0:14:52±0:19:47	0:14:25±0:16:39	0:13:29±0:18:02	0:10:26±0:12:12	00:13:56±00:17:14	0.43
Mean views (n)	85,836.4±140,383.3	18,031.9±11,597.1	49,119.4±89,292.2	40,624.4±38,434.3	48,839.0±92,758.1	0.47
Mean “likes” (n)	206.7±293.3	73.8±66.3	53.9±44.1	215.2±246.0	123.3±192.5	0.39
Mean “dislikes” (n)	16.1±28.8	6.8±9.8	15.8±22.4	8.0±7.28	12.0±20.4	0.42
Usefulness of information n (%)						
Very useful	4 (25.0)	3 (16.7)	0 (0.0)	0 (0.0)	7 (13.5)	–
Moderately useful	6 (37.5)	5 (27.8)	0 (0.0)	0 (0.0)	11 (21.2)	–
Slightly useful	6 (37.5)	10 (55.6)	13 (100.0)	4 (80.0)	33 (63.5)	–
Not useful	0 (0.0)	0 (0.0)	0 (0.0)	1 (20.0)	1 (1.9)	–

cancer but do not have English as a main language may be underrepresented. Third, we developed a novel score criteria to evaluate the usefulness of videos, as there are no validated tools for assessing videos on bladder cancer. Lastly, we did not include videos about alternative and complementary medicine and patient testimonials on bladder cancer for evaluation. Some of these videos can also be considered misleading.

Further studies could expand the sample size, analyzed videos in other languages than English, follow videos over time, and contained a more detailed analysis of the videos.

CONCLUSION

YouTube™ contains a diverse source of information on bladder cancer. Most videos on bladder cancer may not be useful for information regarding it. Medical professionals, medical institutions, and professional organizations should improve the content of videos about bladder cancer to provide patients with reliable and useful information sources.

Table 3 Video demographics according to the usefulness of information

Video demographics	Usefulness of information				Total	P-value
	Very useful	Moderately useful	Slightly useful	Not useful		
Videos, n (%)	7 (13.5)	11 (21.2)	33 (63.5)	1 (1.9)	52	–
Mean length (h:min:s)	0:18:47±0:10:57	0:22:45±0:25:56	00:10:13±00:13:54	0:06:01	00:13:56±00:17:14	0.43
Mean views (n)	74,940.6±120,980.8	34,941.0±35,413.1	46,219.6±10,1261.4	105,447	48,839.0±92,758.1	0.47
Mean "likes" (n)	339.4±373.6	137.9±152.0	70.3±111.0	200	123.3±192.5	0.42
Mean "dislikes" (n)	25.3±40.9	11.0±12.8	9.4±15.9	19	12.0±20.4	0.28
Upload source n (%)						
Medical professional and medical institute	4 (57.1)	6 (54.5)	6 (18.2)	0 (0.0)	16 (30.8)	–
Medical website	3 (42.9)	5 (45.5)	10 (30.3)	0 (0.0)	18 (34.6)	–
Commercial website and news source	0 (0.0)	0 (0.0)	13 (39.4)	0 (0.0)	13 (25.0)	–
Individual user	0 (0.0)	0 (0.0)	4 (12.1)	1 (100.0)	5 (9.6)	–

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