The reliability of national videos related to the kidney stones on YouTube

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ABSTRACT

Objective: Kidney stones are one of the most common disorders of the urinary tract. With increasing awareness, a larger proportion of patients are seeking medical knowledge from the Internet. In present study, the features, reliability and efficacy of videos on YouTube related to the treatment of kidney stones were evaluated.

Material and methods: In December 2014, YouTube was searched using keywords “nephrolithiasis”; “renal calculi”; “renal stones”; and “kidney stones” for videos uploaded containing relevant information about the disease. Only videos in Turkish were included in the study. Two physician viewers watched each video and classified them as useful, partially useful and useless according to European Association of Urology (EAU) Guidelines. The source, length, number of views, number of favourable opinions, and days since uploaded date of the all videos were evaluated.

Results: A total of 600 videos were analysed. The median length of videos was 6.7±10.4 (median: 3, IQR: 0.03-58) minutes. Each video was viewed at an average of 2368 (min: 11, max: 97133) times. Most of the videos (32.8%) were created by academicians and physicians. Nearly half (47.4%) of the videos were uploaded in 2014. The majority of the videos (62.5%) contained information for treatment. Percutaneous nephrolithotomy and ureterorenoscopy were the most common treatment modalities (32.8% and 28.0%, respectively) in these videos. A statistically significant difference was not detected between view numbers and source of videos (p=0.87). However, there was a statistically significant difference between usefulness to the viewers and source of videos. Hospital-based videos were detected to be more useful (p=0.000).

Conclusion: As a result, videos that would be prepared in internet environment by professional individuals or organizations in a way which would attract attention and be easily comprehended by the public could contribute to the knowledge and education of our society about the stone disease which is commonly seen in our country.

Keywords: Education; internet; kidney stone; nephrolithiasis; YouTube.

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Introduction

Urinary system stone disease -known for nearly 5000 years- is the third pathological condition which affects urinary system following urinary tract infections, and prostatic pathologies. Urinary stones can be seen on any location from kidneys down to external urethral meatus, however it has been reported that more than 90% of them are localized in the kidneys (nephrolithiasis), and cause clinical symptoms. Although prevalence of nephrolithiasis varies among geographical regions of the world, generally its prevalence, and incidence in adults have been detected as 4- 20%, and 0.03-0.1%, respectively.^[1] Life-long risk of developing stones among adult white men, and women is 20%, and 5-10 %, respectively. Men have generally a higher risk of suffering from recurrent renal stone disease. In other words, recurrence

rates within the first 1-2, 5, and 10 years after diagnosis of renal stone disease are 10-25%, 35%, and 60%, respectively.^[2] According to the guidelines of European Association of Urology (EAU), in the management of renal stones, treatment alternatives include watchful waiting, extracorporeal shock wave lithotripsy (ESWL), retrograde intrarenal surgery (RIRS), percutaneous nephrolithotomy (PNL), and open nephrolithotomy.^[3] In addition to complaints of severe pain, stress, and anxiety because of development of renal failure, and pyelonephritis, urinary system stone disease can incur serious economic losses.^[4]

Our country is among endemic countries for urinary system stone disease, and so cases of nephrolithiasis are frequently encountered in our emergency services with significant morbidity rates.^[1,4] However, increasing knowl-

edge level about stone disease, life-style modifications, and early detection of symptoms may change this condition.^[5] Thanks to current technological developments in communication tools, and facilities, people rapidly arrive at information they are interested in. When they become sick, they can get lots of information with the aid of online search motors, and evaluate diverse treatment modalities. YouTube is one of these prevalent, and use-friendly websites. Videos uploaded in this website can be repetitively watched, and transfer information can be transferred to many people free of charge. From its first formal introduction to common use in November 2005, very large number of people can access into YouTube thanks to rapidly increasing use of smart phones. Every day nearly 65.000 new videos are uploaded, and approximately 100 million videos are watched by its fans.^[6] However validity, reliability, scientific or cultural background of these videos are not known. In the literature limited number of research studies have investigated videos available online related to nephrolithiasis generally with promising results.^[5] In this study, characteristic features, reliabilities, and utilities of videos related to nephrolithiasis uploaded online in YouTube have been investigated.

Material and methods

The videos in YouTube were screened in December 2014 with key words of “renal stone”, “urinary system stone”, and “nephro-lithiasis”. All screened videos were subjected to preliminary examination. All non-medical videos not related to “kidney stone”, videos created in other languages or those about methods of alternative medicine, television programs or advertisements, funny or recurrent (the same videos repetitively uploaded to YouTube by different people) videos were not included in the study.

The contents of the videos compliant with the study criteria, the person who uploaded, its duration, number of images, and whether it contained animation were investigated. Later on all videos were watched, and evaluated by two independent urologists. Specialists evaluated whether videos contained erroneous information according to the European Association of Urology, EAU) 2015 Guideline^[3], and their usefulness (if any) for those who watched them (useful, partially useful, not useful) in three categories. Parametres used in this classification were determined based on the contents of the videos (information given on the disease, its diagnosis, and treatment), conformity of these information to the guidelines, presentation of these information in a language understandable by lay people, and visual characteristics of the video.

In case of discrepancy between evaluations of two specialists, videos were evaluated by other experienced researchers (professors), and final decision was made.

Statistical analysis

All study data were recorded, and analyzed using Windows Statistical Package for the Social Sciences 17.0 (SPSS Inc.; Chicago, IL, USA), and MedCalc programs. Numerical values were expressed as mean, median, interquartile range (IQR), and percentages (%).

Intergroup comparisons for numerical, and categorical variables were performed using Kruskal-Wallis, and chi-square tests, respectively. Interobserver agreement was analyzed using kappa test. In all hypotheses critical alpha value of 0.05 was deemed to be significant.

Results

As a result of scanning YouTube sources using the key word of “kidney stone” a total of 600 videos found in the first 30 pages were subjected to a preliminary evaluation. Researchers excluded 368 (61.3%) videos from the study. Exclusion criteria were given in Table 1.

Among excluded videos, alternative medicine videos on the treatment of kidney stones consisted the largest third group (17.1%). Alternative medicine videos had been uploaded increasingly within the previous 3 years (2012; n=13, 20.6%), (2013; n=19, 30.2%), (2014; n=31, 49.2%). Alternative medicine videos were visited an average of 9079 times (min: 40, max: 23759).

General characteristics of 232 alternative medicine videos are given in Table 2. Mean duration of the videos was 6.7±104 mins (median: 3, IQR: 0.03-58). Nearly half (47.4%) of the videos were uploaded in the year 2014. Videos were frequently uploaded by specialists or academicians (32.8%) (Table 2).

Information about the contents of the videos is given in Table 3. Most (62.5%) of the videos contained information about treatment. Among most frequently reported treatment modalities, PNL, and ureterorenoscopy (URS) ranked on top of the list (32.8, and 28.0%, respectively) (Table 3).

Videos were watched an average of 2368 times (min: 11, max: 97133). A significant difference was not detected between the number of visits to the uploaded videos according to the person who forwarded them to YouTube (p=0.87). User-friendliness demonstrated significant differences based on the person who uploaded the videos, and videos uploaded by hospitals were found to be more useful (p<0.001) (Table 4).

In analysis performed to detect the differences in assessments made by two researchers, interobservers' kappa value was determined as 0.811 (95% CI: 0.693-0.920).

Table 1. Exclusion criteria of videos

	n (%)
Nonmedical videos unrelated to renal stone disease	96 (26.1)
Videos in a foreign language	6 (1.6)
Videos on alternative medicine	63 (17.1)
Television program or newscast	57 (15.5)
Advertisements	21 (5.7)
Funny videos	6 (1.6)
Repeat videos	119 (32.3)
Total	368 (100.0)

Table 2. Basic characteristics of the videos included in the study

	n (%)
Uploaded on	
2011	5 (2.2)
2012	31 (13.4)
2013	86 (37.1)
2014	110 (47.4)
Uploaded by	
Specialists, academicians	76 (32.8)
Others	35 (15.1)
Private hospital	75 (32.3)
Website	43 (18.5)
University hospital	3 (1.3)
Does it contain animation?	
Yes	23 (9.9)
No	209 (90.1)
Does it contain videos of live surgery or intervention?	
Yes	84 (36.2)
No	148 (63.8)
Is it a sound video?	
Yes	75 (32.3)
No	157 (67.7)
Total	232 (100.0)

Discussion

In this study which was realized by searching the key words “nephrolithiasis”, “renal calculi”, and “kidney stone” in the YouTube, these videos were watched an average of 2368 times.

Table 3. Contents of the videos evaluated in the study

	n (%)
Does it provide general information about renal stones?	
Yes	112 (48.3)
No	120 (51.7)
Does it provide diagnostic information about renal stones?	
Yes	44 (19.0)
No	188 (81.0)
Does it provide information about the treatment of renal stones?	
Yes	145 (62.5)
No	87 (37.5)
*Treatment alternatives described by the video presentations	
PNL	76 (32.8)
URS	65 (28.0)
SWL	31 (13.4)
Medical treatment	6 (2.6)
Percutaneous surgery	6 (2.6)
Open surgery	4 (1.7)
**Does it contain false information noncompliant with EAU guideline?	
Yes	25 (10.8)
No	207 (89.2)
Total	232 (100.0)

*Videos demonstrating more than one treatment method are available, and percentages represent rates based on total number of videos (n=232).
**European Association of Urology 2015 Guideline. PNL: percutaneous nephrolithotomy; URS: ureterorenoscopy; SWL: shock wave lithotripsy

Therefore these videos have been attracting the attention of considerable number of people. However the number of viewers of videos on alternative medicine which we haven't included in our study was nearly 4-fold higher relative videos on medical treatment (n=9079). Generally our people are presumably more inclined to use treatment modalities of alternative medicine, and their preference for these therapies have been also demonstrated for the management of stone disease. Widespread use of alternative medicine for the treatment of different diseases, and pathologies is a globally recognized fact.

Nephrolithiasis is a prevalent problem in all the world with a prevalence of 1-5% in Asia, 5-9% in Europe, and 13% in Northern America. In the USA its prevalence has been reported as 7-12 cases per 10,000 individuals.^[7-9] Stone disease is known to have a higher prevalence in the provinces of Mediterranean, Black Sea, and South Eastern Region of Anatolia as is the case in the world. Consequently, in a study

Table 4. Usefulness, compliance with the EAU 2015 Guideline, and number of relevant website accesses according to the decision of the person who uploaded the videos

Uploaded by	Usefulness to the visitors %	Rate of misinformation according to criteria of EAU Guidelines %	Number of mean (min, max)
Specialists, academicians	14.7	7.6	2815 (14-62944)
Other professionals	8.6	13.3	2188 (11-35268)
Hospital	21.5	11.4	2698 (18-97133)
Website	16.3	11.6	1243 (11-11449)
EAU: European Association of Urology			

from Turkey Turkey performed by Akıncı et al.^[10] overall prevalence of the stone disease was reported as 14.8 percent. In a survey performed in the year 1989 where 1500 individuals from 14 regions all over Turkey were questioned if they had ever suffered from stone disease at least once, its incidence was reported as 2.2 percent. As indicated in many reports, stone disease is most frequently seen in the third, and fourth decades of life, and it is 1.5-fold more common in men. Besides, it is more prevalent among people with lower socioeconomical status, and educational level. However any difference in the prevalence of stone disease between individuals living in cities or rural areas was not reported. In a study performed in Tokat province where 1095 participants were examined between the years 2005-2006, 11.42 % of the participants had given an anamnesis of stone disease, and US detected stone disease in 4.02% of them.^[11] In relevant studies performed, the prevalence of urinary system stone disease has been reportedly ranged between 2, and 20 percent.^[1-3,7-9] The reason for discrepancies between data on the prevalence of stone disease can be explained by inclusion of participants living both in urban, and rural areas in the study, higher number of male participants over a certain age, and conduction of the study in selected groups. In a study performed by Stamatelou et al.^[9] in USA, in the years 1976-1980, and 1988-1994, a total of 15,364, and 16115 cases were investigated respectively, and increases in the prevalence of stone disease in all decades were reported.

Most of the videos related to kidney stones were loaded by urologists or academicians (32.8%). Although a statistically significant difference was not observed among these videos, it can be said these videos contain minimal amount of misinformation according to EAU guidelines. Besides, higher number of visitors

when compared with ratings of other video sources is promising with respect to the use of YouTube sources as an informative, and an educational tool. In our study generally we determined PNL, and URS as the most frequently mentioned treatment methods From the first open renal stone surgery which dated back to 500 years ago up to now dramatic improvements have been achieved about our knowledge concerning stone disease, and its treatment in parallel with technological advancements. Accordingly, in cases who are not suitable or responsive to stone fragmentation, open surgery is replaced by percutaneous nephrolithotomy or RIRS which are known as endoscopic or minimally invasive interventions. Thanks to developments in PNL, and URS, in major stone treatment centers, open stone surgery may be required only in 1-5.4% of the cases.^[3,12-14] PNL has opened a new era in the treatment of stone disease, and it has become a treatment alternative currently applicable for all renal stones with its advantages including higher treatment success, rates, shorter hospital stay, early return to one's work after the intervention, shorter surgical incision, and almost lack of postoperative scar tissue. In the presence of intractable bleeding diathesis, pregnancy, active urinary tract infection or ortopedic deformity which will restrict appropriate required positioning of the patient PNL procedure is contraindicated.^[15,16]

In recent years many studies have been performed which investigated the accuracy, and reliability of videos in YouTube related to health issues. Even though data of these investigations are contradictory, everyone has arrived at a consensus which generally indicates that Internet sites as YouTube play an important role in the informing, and educating people.^[6,17,18] In this study utility of these videos for online visitors was evaluated, and videos uploaded by hospitals were found to be more useful. We think that preparation of these videos by professionals with much endeavour, using lots of animations, and use of a simple language have been effective on these outcomes. Videos loaded by specialists, and academicians have been usually prepared unprofessionally, and mostly contain images of live surgery or interventions. Generally medical jargon is used which is not comprehensible by the lay person. Therefore these videos have a limited usefulness. We couldn't encounter any video on renal stones prepared by an official institute or association in YouTube where every day visited by thousands of persons. According to us this should be thought as a major deficiency In our country which is situated among endemic countries as for urolithiasis, informing the people carries utmost importance. A similar study concerning resuscitation has demonstrated that videos prepared by official authorities have been visited more often, and they contain more accurate information.^[6]

In conclusion, easily comprehensible online videos prepared by professional persons or organizations which will attract the attention of the public may contribute to the knowledge, and

training of our people about renal stone disease frequently seen in our country.

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