

## Quality of information in YouTube videos on prostate fusion biopsy

Prostat füzyon biyopsisi ile ilgili YouTube videolarındaki bilgilerin kalitesi

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### Özet

**Amaç:** Bu çalışmanın amacı, MRI-TRUS prostat füzyon biyopsisi ile ilgili YouTube'daki videoların kalitesini değerlendirmektir.

**Gereç ve Yöntemler:** 16 Mart 2022 tarihinde "MRI-TRUS prostat füzyon biyopsisi" başlığı ile YouTube taraması yapılmıştır. İlk 70 video, sıralama kriteri olarak "alaka düzeyi" seçilerek değerlendirildi. Video içeriklerinin kalitesi, uluslararası geçerliliği olan Journal of the American Medical Association Benchmark Score (JAMAS) ve Global Quality Score (GQS) kullanılarak değerlendirildi. Araştırmacı ayrıca videoların teknik içeriğini değerlendirmek için MRI-TRUS Prostat Füzyon Biyopsi Skorunu (MTPFBS) geliştirdi. Videoların yüklenme kaynağı ve uzunluğu, izlenme sayısı, beğeni ve beğenmeme oranları, video güç indeksleri (VPI) değerlendirildi.

**Bulgular:** Akademik merkez kaynaklı hazırlanan video içerikleri, bilimsel toplantı veya özel kurum videolarına kıyasla anlamlı olarak daha yüksek GQS puanlarına sahipti. Özel kurum kaynakları tarafından hazırlanan video içeriklerinin MTPFBS ve JAMA puanları diğer videolara göre anlamlı derecede düşüktü ( $p<0.05$ ). Bilgi aktarımı türüne göre hem sesli hem de yazılı olarak yüklenen videoların JAMAS ve MTPFBS'nin tek başına sesli videolara göre anlamlı olarak daha yüksek olduğu görülmüştür ( $p<0.05$ ). Videoların uzunluğu JAMA ve MTPFBS ile pozitif korelasyon gösterdi. VPI ve beğeni sayısı güçlü bir korelasyon gösterdi. VPI veya beğeni sayısı GQS, JAMAS ve MTPFBS puanları ile herhangi bir korelasyon göstermedi.

**Sonuç:** YouTube'daki MRI-TRUS prostat füzyon biyopsisi videolarının kalitesi belirgin düzeyde düşüktü. Uzman hekimler ve akademik merkezlerce hazırlanmış video içerikleri ile daha kaliteli bilgiler aktarılabilir. Bu nedenle güncel veriler sonucunda video içeriklerinin izlenmesi önerilmeyebilir.

**Anahtar Kelimeler:** multiparametrik manyetik rezonans görüntüleme, prostat, internet

### Abstract

**Objective:** The aim of this study is to evaluate the quality of videos on YouTube related to MRI-TRUS prostate fusion biopsy.

**Material and Methods:** A YouTube search was made on March 16, 2022, for the videos related to "MRI-TRUS prostate fusion biopsy". The first 70 videos were ranked during this study by choosing "relevance" as a criterion. Video content quality was evaluated using the internationally validated Journal of the American Medical Association Benchmark Score (JAMAS) and Global Quality Score (GQS). The researcher also developed MRI-TRUS Prostate Fusion Biopsy Scoring (MTPFBS) to evaluate videos' technical content. The upload origin and length of video view count, like and dislike ratios, and video power indexes (VPI) were all evaluated.

**Results:** Video content from academic center sources had significantly higher GQS scores than scientific meetings or private institution videos. Video content prepared by private institution sources had significantly lower MTPFBS and JAMA scores than other videos ( $p<0.05$ ). According to the type of information, videos uploaded with voice and writing had significantly higher JAMAS and MTPFBS than voice alone ( $p<0.05$ ). The length of videos showed a positive correlation with JAMA and MTPFBS. VPI and the number of likes showed a strong correlation. However, VPI or the number of likes did not correlate with GQS, JAMAS, and MTPFBS scores.

**Conclusion:** Evaluated on YouTube, the MRI-TRUS prostate fusion biopsy videos were low quality. In that regard, videos prepared by specialists and academic centers should be standardized to transfer better quality information. According to current data, watching these video contents may not be recommended.

**Keywords:** multiparametric magnetic resonance imaging, prostate, internet

All research was performed in accordance with relevant guidelines/regulations.

## INTRODUCTION

Prostate cancer is the second most common cancer in the male population in the world and ranks sixth in cancer-related deaths (1). Further examinations and evaluations have been increased among men with high PSA values. The evaluation of the prostate with multiparametric magnetic resonance imaging (MRI) is being used in men with persistent elevation in PSA value and a history of negative conventional transrectal ultrasound (TRUS) guided biopsy with the suspicious digital rectal examination (2). After evaluating MRI images following the Prostate Imaging-Reporting and Data System (PIRADS) scores, TRUS-guided images are matched, and at least 4 core biopsies are recommended for each target lesion in addition to the standard 12 core biopsy (3). A prostate biopsy can be performed under local or general anesthesia, or it can be performed transrectal or perineal route. Before the prostate biopsy procedure, there are some basic preparatory steps such as appropriate antibiotic prophylaxis, bowel cleansing, and discontinuation of anticoagulants. There are risks such as bleeding, infection, inability to urinate, and insertion of a catheter after the procedure (4).

Founded in 2005, YouTube is the world's most widely used video sharing site. As of 2021, it is estimated that there are 2.24 billion YouTube users worldwide. The platform's user base consists of more men than women (5). In recent years, the use of social media and the internet in the field of health and medicine has been increasing dramatically (6-8). However, information pollution is still a major handicap, and there are deficiencies in accessing accurate and quality content, including urology (9, 10). Only one study published in 2018 evaluated the YouTube videos on conventional TRUS-guided prostate biopsy; within this study, the patients' enlightenment was found insufficient (11). Although the MRI-TRUS prostate fusion biopsy has become prevalent in recent years, the videos related to MRI-TRUS prostate fusion biopsy on YouTube have not been evaluated previously. This study aims to evaluate the quality of MRI-TRUS prostate fusion biopsy videos on YouTube with validated scoring systems and the scoring system prepared with essential steps of the procedure.

## MATERIAL AND METHODS

A YouTube search was done on March 16, 2022, for the videos related to "MRI-TRUS prostate fusion biopsy". During this study, the first 70 videos evaluated were ranked by choosing "relevance" as a criterion. Non-relevant videos uploaded by manufacturers with a commercial aim, non-English, and with no voice were excluded from this study. The remaining 60 videos were evaluated using the internationally validated Journal of the American Medical Association Benchmark Score (JAMAS) and Global Quality Score (GQS). JAMAS has four questions, each 0-1 point (maximum of 4 points), to assess the content's validity, effectiveness, and reliability (12). The GQS is a five-point (1-5) Likert-type scale to determine whether the content is understandable for patients (13). The researcher developed MRI-TRUS Prostate Fusion Biopsy Scoring (MTPFBS) to evaluate from the technical aspect of interventional procedure with 9 criteria each calculated as 0 or 1 (Table 1).

The videos were categorized into groups in terms of country of origin, upload source (academic center, scientific meeting/webinar, personal doctor account, and private institution), transfer of video content (voice or voice plus written), and terms of the type of content (informative or technical). The qualifications of each video, such as length, view count, like and dislike ratios, and video power indexes, were all noted and evaluated. Like ratio (like/like + dislike) and view ratio (number of views/duration on YouTube) were also calculated. The video power index was calculated with a pre-described calculation (VPI: like ratio x view ratio / 100) (14). Since YouTube is an open online platform, we did not involve human participants. In that regard, ethics committee approval is not required for this study, and all procedures were conducted per the Helsinki Declarations of 2004.

The data were analyzed by GraphPad Prism version 9 (GraphPad Software, California, USA). The Shapiro-Wilk test was used for the normality and the distribution of variables. The chi-square and Fisher's exact tests were used for comparison between cate-

gorical variables. Numerical variables were compared using independent samples t-test or a Mann-Whitney U test. The Kruskal- Wallis and/or ANOVA tests were used to compare different score groups. Spearman correlation coefficient was used to explore the relationship between the continuous variables. A  $p < 0.05$  value was considered statistically significant.

## RESULTS

The numerical distribution of the evaluated 60 videos is shown in Table 2. The majority of videos were informative (%76.7), the target population was patients (%58.3), the transfer of information type was alone with voice (%51.7), country of origin was USA (%85), and uploaded from doctor accounts (%24). The median length of videos was 393 seconds. The median number of views, likes, and VPI were 5137, 18, and 0.037, respectively. The median GQS, JAMAS, and MTPFBS were 2, 2, and 3 respectively. The median values with

interquartile ranges were also shown in Table 3.

Video contents prepared by academic center sources had significantly higher GQS scores than scientific meetings or private institution videos. Video contents prepared by private institution sources had significantly lower MTPFBS and JAMAS than other videos ( $p < 0.05$ )(Figure 1)(Table 4). Considering the type of transfer of video content uploaded both as voice and writing had significantly higher JAMAS and MTPFBS than voice alone ( $p < 0.05$ )(Figure 2). The length of videos showed a positive correlation with JAMAS and MTPFBS. VPI and the number of likes showed a strong correlation. GQS, JAMAS, and MTPFBS also showed a correlation between them. However, neither VPI nor the number of likes did not show any correlation with GQS, JAMAS, and MTPFBS scores (Pearson correlation coefficient  $r > 0$ )(Figure 3). In Figure 3, the  $r$  values were given in boxes, and red circles indicate  $p$ -value  $< 0.05$  as significance.

**Table 1.** MRI-TRUS Prostate Fusion Biopsy Scoring (MTPFBS)<sup>a</sup>

Pre-biopsy evaluation
Demographic informations (ie. age, PSA, comorbidities/anticoagulant usage) about the case/patient stated in the video
The patient's PIRADS score stated in the video
The pre-biopsy preparation (i.e. antibiotic prophylaxis/bowel preparation) procedures stated in the video
During biopsy
The instruments/software used stated in the video
The type of anesthesia (sedoanalgesia/local anesthesia) stated in the video
The number of the cores taken from each lesion stated in the video
After biopsy
The hospitalization period or discharge time stated in the video
The information on possible post-biopsy complications stated in the video
The pathology result stated in the video

**MRI-TRUS:** Magnetic Resonance Imaging – Transrectal Ultrasonography, **PSA:** Prostate specific antigen,

**PIRADS:** Prostate Imaging-Reporting and Data System

<sup>a</sup> One point for 'yes' for each statement.

**Table 2.** The numerical distribution of videos

<b>N=60 (%)</b>	
<b>Video content</b>	
Informative	46 (76.7)
Technical	14 (23.3)
<b>Target Population</b>	
Physicians	25 (41.7)
Patients	35 (58.3)
<b>Transfer of information</b>	
Voice	31 (51.7)
Voice plus writing	29 (48.3)
<b>Country of Origin</b>	
USA	51 (85)
Europe	6 (10)
Asia	3 (5)
<b>Upload Source</b>	
Academic center	14 (23.3)
Scientific meeting	11 (18.3)
Doctor	24 (24)
Private Institution	11 (18.3)

*N=number of video*

**Table 3.** The characteristics of the videos

<b>Variable</b>	<b>Median (IQR)</b>
Length of video (seconds)	393 (189.3-932.8)
Time since upload (days)	1372 (877-2146)
Number of views	5137 (79-13779)
Number of like	18 (5.25-51)
Number of dislike	0
VPI (like ratio x view ratio /100)	0.037 (0.011-0.114)
GQS	2 (2-3)
JAMAS	2 (1-2)
MTPFBS	3 (1-4)

*Values median and IQR(Interquartile Range),*

**VPI:** Video power index, **GQS:** Global Quality Score,

**JAMAS:** Journal of the American Medical Association Benchmark Score,

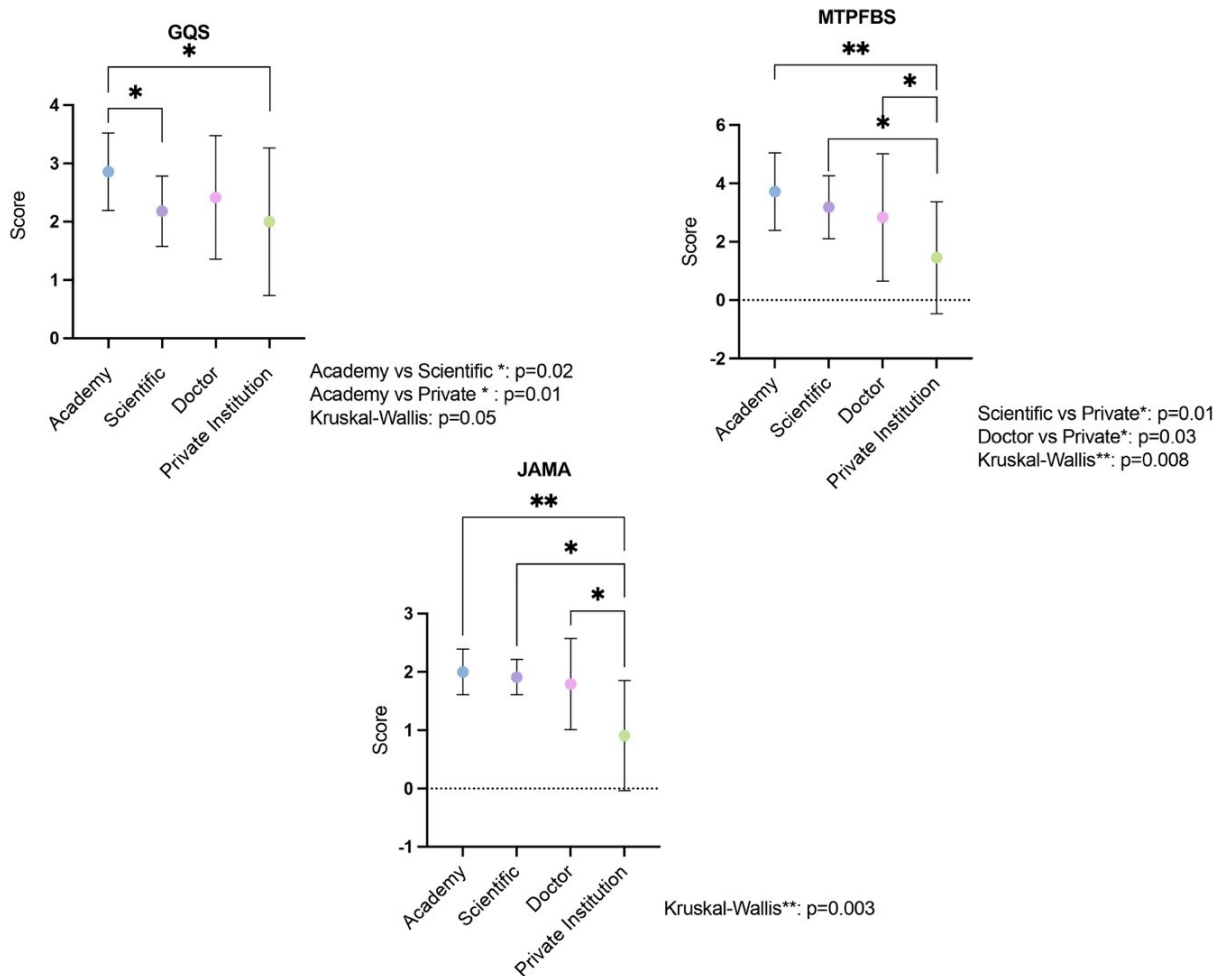
**MTPFBS:** Prostate Fusion Biopsy Score.

**Table 4.** The comparison of scores according to the upload sources

	Academic Center (n=14)	Scientific Meeting (n=11)	Doctor (n=24)	Private Institution (n=11)	p value
<b>GQS</b>	3 (2-3)	2 (2-3)	2 (2-3)	2 (1-3)	0.05
<b>JAMAS</b>	2 (2-2)	2 (2-2)	2 (1-2)	1 (0-1)	0.003*
<b>MTPFBS</b>	3 (3-5)	3 (2-4)	2 (1-4)	1 (0-3)	0.008*
<b>VPI</b>	0.044 (0.016-0.51)	0.011 (0.005-0.087)	0.03 (0.01-0.251)	0.058 (0.018-0.131)	0.477

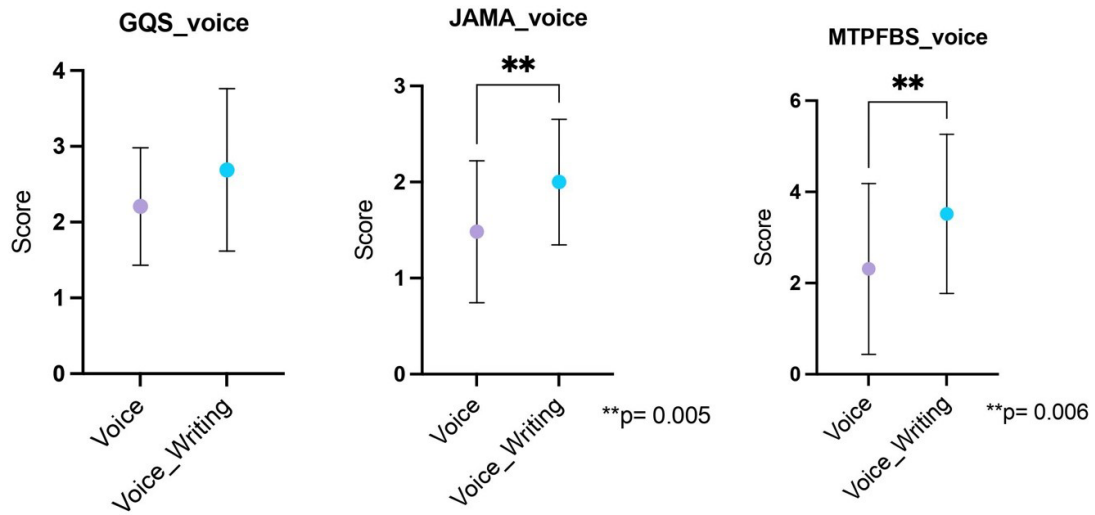
Values median and IRQ (Interquartile range). **VPI:** Video power index, **GQS:** Global Quality Score, **JAMAS:** Journal of the American Medical Association Benchmark Score, **MTPFBS:** Prostate Fusion Biopsy Score. Groups compared by Kruskal-Wallis test. \* $p < 0.05$  significant.

**Figure 1.** The comparison of validated scores according to video upload sources



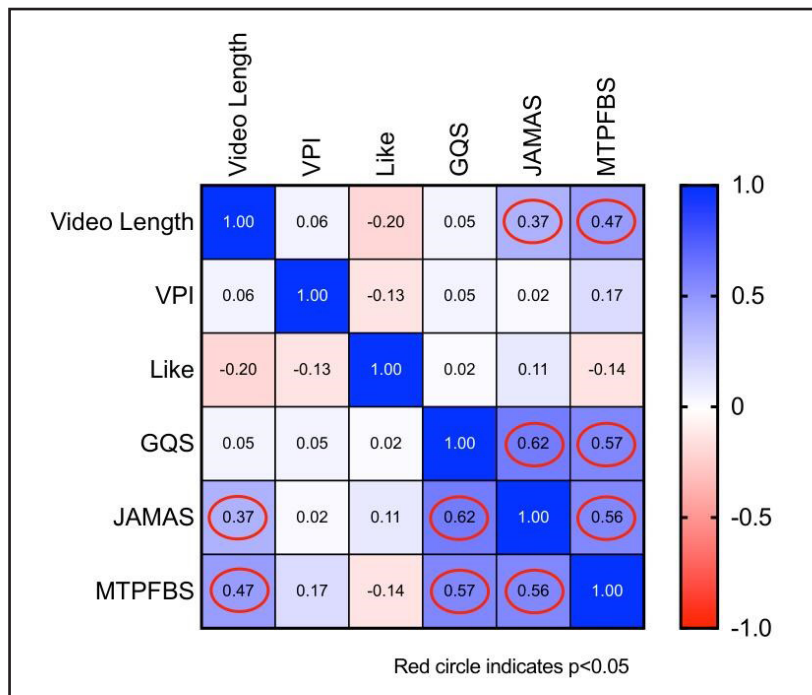
**GQS:** Global Quality Score, **MTPFBS:** MRI-TRUS Prostate Fusion Biopsy Scoring, **JAMA:** Journal of the American Medical Association Benchmark Score.

**Figure 2.** The comparison of validated scores according to transfer of video content as voice +/- writing



**GQS:** Global Quality Score, **JAMA:** Journal of American Medical Association Benchmark Score, **MTPFBS:** MRI-TRUS Prostate Fusion Biopsy Scoring.

**Figure 3.** The correlation of video length, number of like and VPI with validated scores



**VPI:** Video power index (like ratio x view ratio / 100), **Like:** Like ratio (like / like + dislike), **GQS:** Global Quality Score, **JAMAS:** Journal of the American Medical Association Benchmark Score, **MTPFBS:** MRI-TRUS Prostate Fusion Biopsy Scoring



## DISCUSSION

Prostate cancer is a common fear among aging men. The social media and internet search regarding screening protocols and diagnostic techniques have been increasing worldwide (15). Jain et al investigated YouTube as a source of patient information for TRUS guided biopsy of the prostate in 2017 with the evaluation of a total of 41 videos (11). However, the MRI-TRUS prostate biopsy videos were excluded from this study that was conducted in 2017. Independent three authors evaluated the content of videos based on the written information form for patients prepared by the British Association of Urological Surgeons (BAUS). The majority of videos were rated as very poor (n=32), and none of the videos were accepted as excellent quality. The BAUS criteria included pre-biopsy preparation steps, description of steps of the procedure, possible side-effects, recovery, and post-interventional periods. Depending on BAUS criteria, the authors discovered that the video contents mainly lacked information on alternatives to TRUS biopsy, repetition of PSA test, MRI-TRUS evaluation, post-interventional fever, and hematuria with management (11). The validated international scores such as GQS, JAMAS, or DISCERN were not used (12, 14, 16). However, we believe the combination of validated international scores and a separate scoring system containing the essential steps of the process shall be better for evaluation.

The minimum and maximum duration of the videos were 46 and 2965 seconds, respectively. The median duration of videos was 393 seconds, and it was previously mentioned in the previous TRUS biopsy study that videos longer than 600 seconds can deter viewers (11). Video duration of fewer than 120 seconds or more than 600 seconds included in the evaluation could be a limitation. However, there is a positive correlation between video length with JAMAS and MTP-FBS (Figure 3). So, it can be said that a certain period is required to give an adequate and understandable message.

We discovered that MRI-TRUS prostate biopsy YouTube video contents were mainly lacking in providing information on PIRADS scoring sensitivity and specificity or time interval of pathological examination

and other possible scenarios after pathology results. Pure scientific content and content provided by private institutions do not meet patients' expectations (Figure 1), which may result in the fact that videos uploaded by scientific meetings/webinars are mainly difficult to understand by the population. Moreover, videos uploaded from private institutions generally lack basic information, while partly due to commercial concerns, it does not present the steps of the procedure one by one in the light of possible complications and risks. Considering the target audience, which is the elderly male population, the videos with voice and written information can be more understandable (Figure 2). Like ratios or VPI did not show any positive correlation with validated scores, so the number of likes or views should not be evaluated as the quality of the video content. By taking into consideration all data, it is necessary to increase the consciously selected and uploaded content instead of the uploaded videos regardless of what they contain.

Today, more than 1600 studies on literature are related to certain medical contents of YouTube videos (17). In the discipline of urology, more than 90 YouTube publications exist in the literature (18). Although most studies concluded that the quality and content of YouTube videos seemed inadequate, there are. However, a few studies indicated that YouTube video contents were adequate (19-23). Experts should prepare the contents and accessibility of the society to accurate and understandable information should be supported (22, 23). In these studies, which support the acceptable content of YouTube, topics such as non-invasive procedures, examination, and therapy methods seem to be in the foreground. We believe that there is a need for an understandable step-by-step transfer of the content about interventional procedures such as biopsy and surgical techniques by experts. Our results show that the overall scores seem low; however, video content prepared by academic centers or specialists looks more informative for patients.

## CONCLUSION

The overall video quality on MRI-TRUS prostate fusion biopsy on YouTube was low. When internet search and social media users are becoming more and more widespread, better quality and standardized con-

tent should be prepared by experts about MRI-TRUS prostate fusion biopsy for the prospective patients to be better informed about the procedure. Only then could it be advisable to watch these videos.

### Conflict of Interest

The authors declare to have no conflicts of interest.

### Financial Disclosure

The authors declared that this study has received no financial support.

### Informed Consent

Patient data did not use in the study.

### Ethical Approval

The design of the study does not require ethical committee approval. The study protocol conformed to the ethical guidelines of the Helsinki Declaration.

### Author Contributions

Conception and design: TBA, Data acquisition: TBA, Data analysis and interpretation: TBA, Drafting the manuscript: TBA, Critical revision of the manuscript for scientific and factual content: TBA, Statistical analysis: TBA.

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