Research Article

A cross sectional study into the use of YouTube™ as a source of patient education in orthodontic treatment risks

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ABSTRACT

Introduction: To investigate the quality of information offered by videos on YouTube™ for those individuals seeking information regarding risks associated with orthodontic treatment. The quality of information was compared the British Orthodontic Society (BOS) patient information leaflet 'Orthodontic treatment- what are the risks'.

Materials and Method: YouTube™ was searched systematically for videos on orthodontic treatment risks using the terms 'orthodontic risks' and 'braces risks'. Videos were selected based on a strict inclusion and exclusion criteria and demographics recorded. Completeness was assessed using a 8-point score based on the BOS patient information leaflet 'Orthodontic treatment- what are the risks'. Descriptive statistics and statistical analysis using correlation tests were generated.

Result: 19.2% videos met the specified criteria with 80.8% videos excluded. Videos varied in regards to completeness with the mean completeness score of 3 and only 13% meeting all criteria. The risk of pain and discomfort was most commonly included orthodontic risk 61%. No statistical significance was found for completeness of the video with viewers interaction (R = 0.2665, P=0.219897) viewing rate (R=0.1138, P=0.617326) or length of video (R=0.0062, P= 0.977601).

Conclusion: YouTube™ generally hosts videos with low completeness with regards to orthodontic treatment risks. Therefore, orthodontists should be aware of this resource and caution patients regarding the comprehensiveness of information. In addition to the potentially misleading content which is avail-able within YouTube™ videos.

KEYWORDS: Informed consent, Orthodontic treatment risks, Videos, YouTube™

INTRODUCTION

Orthodontic treatment has a plethora of benefits including aesthetic, function and psychological merits.[1] Though minimal risks exist, it is important patients are informed of the potential risks associated commonly including pain, discomfort, demineralisation, caries, root canal treatment, root resorption, relapse, mucosal damage, recession and inflammation.[2] In accordance with the General Dental Councils standards, informed consent must be obtained before a treatment plan is initiated.[3]

Informed consent is dictated by the individual patients needs. Information should be given in an appropriate language in a way the patient understands with enough time for them to fully consider their options.[4] Aids such as leaflets and videos can be utilised. Previous research dictates information is better retained when teaching is reinforced.[5] The British Orthodontic Society (BOS) provides written guidance to patients on the risks of orthodontic treatment which can be given to patients for this benefit. However, other mediums such as video have been shown to be more effective than written information alone.[6-8] With videos shown to be a useful supplementary tool in improving information retention and reducing patient anxiety.[9]

Technology advancement has influenced the methods

our patient use to access information. With the internet a preferred choice for the public accessing health information.[10] YouTube™ is accessed by over 23500 million users a day, it can be considered a source patients may use when researching orthodontic risks.[11,12] Currently, no studies have assessed the content of YouTube™ videos on the risks of orthodontic treatment. So the aim of this study was to determine the following:What does YouTube™ offer to patients seeking information about orthodontic risks and what is the complete-ness of YouTube™ videos for orthodontics risks in accordance with the British Orthodontic Society (BOS) advice sheet 'risks of orthodontic treatment guidance on informing patients'.

MATERIALS AND METHOD

A structured method was used systematically to search YouTube™ content adapted from similar studies.[13-15] Use of the Google trends' application,[16] allowed identification of the two most frequently searched terms, 'orthodontic risks' and 'braces risks'. These terms were then used to conduct a search using YouTube™ with default settings and no filters. Previous studies have described, the majority of YouTube™ users scan the first 30 videos several thousand times per day.[17] Therefore, only videos appearing on the first three pages (i.e the first 60 videos) were included per term searched. Videos were added to a numbered playlist and irrelevant videos were excluded by three researchers (CH, FE, VC).

Excluded videos included those aimed at professionals, featuring technical procedures, advertisements, conference lectures, personal vlogs, non-English language and duplicate videos.

The remaining videos were reviewed by the same researchers together to extract video demographics, including the video's length, date and source of upload, in addition to the number of views, likes, and dislikes. Furthermore, each video was assessed for completeness using a proforma described in Table 1, by each researcher individually. This was evaluated using a 8-point score based on the BOS patient information leaflet 'risks of orthodontic treatment'[2]. With each point attributing a binary score of 1 if included, or 0 if not included. Collected data was then compared, with any discrepancies between individual researcher score re-evaluated by all three researchers together. A final score was agreed for each video.

Table 1 : Proforma for assessing videos completeness.

Completeness term	Maximum score
Mucosal damage	1
Gingival inflammation Gingival recession or attachment loss	1
Demineralisation and caries	1
Need for root canal treatment	1
Idiopathic root resorption	1
Tooth movement (relapse)	1
Extended treatment duration	1
Pain and discomfort	1
Total	8

The following formulae were used:
Video engagement = (number of likes-number of dislikes/total number of views) x100%
Viewing rate = (number of views/number of days since upload) x100%

RESULT

120 videos were identified, 60 from each search term. From this 23 videos met the inclusion and exclusion criteria, 7 videos from 'orthodontic risks' and 16 from 'braces risks'. Descriptive statistics were consequently generated, and tested for correlations using SSPS (Table 2). The majority of the included videos were uploaded from the United States of America 65% (n=15) with 13% (n=3) from both United Kingdom and Australia and 9% (n=2) India. All accepted videos were uploaded by dental professionals and organisations. The mean video length was 3.30 minutes (with a range of 0.22-10.25). The number of views per video ranged from 42-14865588 with a mean of 4806 views.

Table 2: Video characteristics with means and standard deviations

Video characteristics	Mean and standard deviation
Number of likes	3574.7 ± 13471
Number of dislikes	301.7 ±1307.6
Number of views	718508.6 ± 3023415.9
Age in days	969.8 ± 677
Length in seconds	3.3 ± 2.6
Viewers engagement	0.6. ± 0.44
Viewing interaction	39.7 ± 99.5

Videos varied with regards to relevance to the BOS patient information leaflet with only 13% (n=3) meeting all criteria. The mean completeness score was 3, with a median of 2 and mode of 1, appearing 8 times. The risk of pain and discomfort was most commonly included in 61% (n=14) of videos, followed by relapse and demineralisation/ caries both with 43% (n=10). The risk of teeth becoming non-vital and requiring root canal treatment was least likely to be included in the videos 17% (n=4).

Importantly, 32% (n=38) of all videos were excluded due to irrelevant content, such as osteopathic treatment 2.5% (n=3). Indicative of the videos patients may frequent when looking for orthodontic treatment risk videos. The mean viewer's interaction was calculated at 0.59 with a mean viewing rate 32%.

Results were examined for statistical correlations with a statistical significance set at $p<0.05$. This showed no significance for completeness of the video with viewers interaction($R = 0.2665$, $P=0.219897$) viewing rate ($R=0.1138$, $P=0.617326$) or length of video ($R=0.0062$, $P= 0.977601$).

DISCUSSION

Informed consent is a process of communication[18] where important elements in consent are introduced and explored enabling the patient to make a voluntary and informed choice. Common practice dictates written and verbal information is provided. However, previous studies have identified difficulties in understanding and retention of orthodontic treatment risks.[19]. With the best predictors of patient comprehension and recall being educational level and 'state anxiety'.[20]. YouTube™ provides a format in which patients can explore health information including orthodontic treatment risks in their own time and space, therefore removing any anxiety surrounding surgery discussion. This format may be more conducive to understanding. Furthermore, by using a video format ensures patients readability and literacy levels will not impact on understanding of the content, and allows information to be repeated at leisure. Creating a positive patient journey, indicative of why all videos were uploaded by dental professionals or practices striving to best met their patients needs.

Overall, the content of YouTube™ on orthodontic treatment risks was variable. With only 3 videos achieving all 8 points as mentioned in the BOS patient information leaflet. These videos featured a health professional voice over covering a visual representation of the risks, which was clear to follow and concise.

Interestingly the videos with the highest completeness score had a higher viewing rate and viewer interaction, though not statistically significant. Meaning anecdotally, the best information is most accessed by those attempting to access orthodontic treatment risks.

Unfortunately, potentially misleading content was also detected. This included claims such as orthodontics treatment having no risks, and several videos using excessive jargon with terms such as 'periodontal disease' and 'plaque retention'.

Several previous studies have been conducted into the provision of health education on YouTube™.[13-15]. In solidarity to these previous studies, content shows considerable heterogeneity and generally low completeness scores with a mean of 3. This highlights areas for potential misinterpretation.

Limitations of the study include the exclusive use of a BOS based completeness criteria. Following the Montgomery vs. Lanarkshire Health Board case in March 2015, the Supreme Court's ruling outlined the importance of patient tailored consent.[21]. All the videos failed to outline the importance of patient specific risks. As individualisation of the risks to patients are not possible, it is important this method is used with care. Acting as a platform to signpost and invite follow up discussion with an appropriate professional.

Furthermore, The BOS 8 point completeness criteria is not extensive, adherence to this list leads to omission of areas such as diet and oral hygiene advice which would be useful in the consenting process, although not strictly risks. When assessed for these attributes only 26% (n=6) advocated the role of brushing and 21.7% (n=5) diet. Furthermore, only 13% (n=3) discussed the importance of regular adjustment of appliances and lack of compliance influencing outcome and length of treatment.

Finally, the fluid nature of YouTube™ permits regular upload and deletion of videos. Creating re-sults that are susceptible to time, date and YouTube™ trends. Future studies may consider a longitudinal approach to video searching.

In addition, the BOS website acts as a resource for patient and public information regarding ortho-dontic treatment. Displaying various patient information leaflets, patient accounts and patient information videos.[22].

Furthermore, the BOS hosts a YouTube™channel with 232 subscribers and 38 videos.[23]. Highlighting an area of possible expansion into providing high quality video information on the risks of orthodontic treatment.

Therefore, YouTube™ provides varied information in regards to content about orthodontic treatment risks. With overall low completeness scores with accordance to BOS advice sheet 'risks of orthodontic treatment guidance on informing patients'.

CONCLUSION

Inclusion of risks is paramount in obtaining informed consent. Generally, YouTube™ provides low value content videos in regards of patient orthodontic risks so should not be used as a trusted source for educating patients. Orthodontist should discourage the use of YouTube™ as an adjunct to discussion, due to its potentially misleading content.

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