

EVALUATION OF ARABIC YOUTUBE™ VIDEOS AS A SOURCE OF INFORMATION ABOUT SPACE MAINTAINERS

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ABSTRACT

Objectives: *The aim of this study was to evaluate the content of Arabic YouTube videos as a source of information regarding space maintainers (SM).*

Methodology: *The terms (space maintainer, space maintainer for teeth, and space maintainer for children) in Arabic were used to search YouTube™. The author initially screened 78 videos representing all Arabic videos. After exclusion, the demographic data of 45 videos were recorded, and two independent evaluators analysed the videos and scored them from zero to seven, to calculate the usefulness score. Based on the total score, videos were categorized as inadequate or acceptable quality videos. Collected data were entered in SAS 9.4 software for data analysis.*

Results: *The mean usefulness content score of the videos was 3.11 ± 1.15 , and the majority (77.78%) the videos were considered as inadequate-quality videos. The content score of videos was only positively correlated with video length ($r = 0.393$; $p = 0.008$). The quality of the videos was not significantly associated with, the source of uploading, the country of origin, or the presence of representative pictures of SM.*

Conclusion: *The study concluded that, Arabic YouTube videos regarding SM lack in quality. Most of the videos provide only basic knowledge covering the benefits, timings, and definition of a SM. Professional organizations should take the lead and provide high-quality content videos that can be useful for the patients and professionals.*

Key Words: *Space Maintainers, Child, Internet, Pediatric Dentistry, Social Media*

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INTRODUCTION

The premature loss of primary teeth might have detrimental effects on the development of normal occlusion. The displacement of adjacent primary and permanent teeth into the empty space resulting from premature tooth loss can impede the proper eruption of the succeeding teeth.¹ Nevertheless, early placement of a space maintainer (SM) appliance that can be either fixed or removable, unilateral or bilateral, can effectively preserve arch length and reduce the development of malocclusion. The appropriate selection from different types of SM depends on several factors including the child's stage of dental development, the dental arch affected, the number of teeth, and the type of teeth that have been lost.¹ The placement of SM in a child adds significant responsibility on the dentist to monitor the

development of the dental arch and occlusion over the years.²

Parents may express concerns regarding the application of SM to their children. Therefore, the dentist is obligated to explain the benefits of SM, the types, the fabrication process, the side effects, and the need for future follow-up. Furthermore, the dentist must explain to the parents that the SM will only preserve arch length for the appropriate eruption of the successor tooth and will not correct the existing malocclusion if present.³ However, with the increasing popularity of the Internet, the information provided by dentists is no longer sufficient for patients to accept treatment.⁴

Nowadays, there is a significant increase in Internet use to obtain health information. Healthcare providers and laypersons use the Internet and social media to share knowledge and experience. It makes access to the information easier and faster.⁵ Social media provide a convenient platform for patients seeking access to medical information. YouTube is the most commonly used platform to share videos, and has been ranked as the second search engine site after Google in 2023,

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with more than 2.7 billion views per day.⁶ Research on the use of YouTube videos as a source of medical and dental education for patients is extensive, and number of studies have analysed the content and quality of these videos.^{5,7-9}

In the pediatric dentistry, various studies have been conducted to assess the quality of YouTube videos in different aspects, such as early childhood caries (ECC),¹⁰ⁿ⁼¹⁸ dental trauma,¹¹ oral habits,^{12v} "Thumb Sucking," "Tongue Thrust," and "Finger Sucking" relevant terms oral habits were searched on YouTube™. The videos sorted by view count were screened and evaluated. The following exclusion criteria were defined as; non-English videos, unrelated to a topic, poor audio-video quality, and duplication. A hundred videos were analyzed for general video characteristics (number of views, likes, dislikes, number of comments, and uploaded date stainless steel crowns (SSC),¹³ and zirconia crowns.¹⁴ The results of these studies demonstrate that the quality of the available videos is poor and provide insufficient knowledge. A similar result was obtained from three studies conducted to evaluate the quality of YouTube videos regarding SM.^{2,4,15} These studies limited their data to English-language videos and excluded non-English videos as part of their study designs. No published studies are available on evaluating the content of YouTube videos related to SM in Arabic language.^{2,4,15} Therefore, this study aims to evaluate the content of Arabic YouTube videos regarding space maintainers.

MATERIALS & METHODS

Ethical Approval

The research proposal of this cross sectional study was registered in the College of Dentistry Research Center (CDRC) [FR 0689] at King Saud University, Riyadh, Saudi Arabia. There was no requirement for ethical committee approval as the data used in this investigation were publicly available.

Search Strategy

The terms in Arabic (space maintainer, space maintainer for teeth, space maintainer for children) were used to conduct a search on YouTube™ (www.YouTube.com). The search was conducted on August 20, 2023 to assess the uploaded videos about space maintainers. The search results were filtered using "sort by relevance" feature. All Arabic-language videos related to the search words were saved on YouTube by creating a playlist, and the source locator (URL) of the videos was saved for initial screening.

Video Selection & Assessment

The author initially screened 78 videos presenting

all Arabic videos. The inclusion criteria were: 1) the video was in Arabic, 2) the primary subject of the video must be SM, and 3) the video's quality was acceptable. The exclusion criteria were: 1) video language was not Arabic; 2) video was not related to the subject, 3) conference/dental lectures, 4) video demonstrating laboratory fabrication techniques, 5) videos without sound or merely musical without written/verbal explanation, and 6) repeated videos. Twenty-three videos were excluded, and the remaining 45 videos were analysed.

Content Evaluation

The following demographic data were recorded for each video: video length (in seconds), date of upload (in days), country of origin, source of upload (universities/professional organizations/health information websites, dentist/specialist, private dental clinics, and layperson), total numbers of views, likes, dislikes, and comments. The interaction index [(number of likes-number of dislikes/total number of views)*100%] and viewing rate [(number of views/number of days since upload)*100%] were further calculated.¹⁶ Two evaluators (senior faculty members in pediatric dentistry) watched the videos independently and scored them from 0 to 7 to evaluate the usefulness content score.¹⁵ This score was given for each video based on the amount of information (number of items) presented in the video. The seven items used to evaluate the usefulness contents of the videos were modified from the original parameters created by Yilmaz and Aydin (2020). These items included: 1) definition of SM, 2) time of application, 3) benefit, 4) types of SM, 5) application procedure, 6) side effects, and 7) follow-up. Each item was scored zero (the item was not presented in the video) or one (the item was presented in the video). The scores were summed to obtain a total score out of #7. Inter-examiner disagreements about the scores were resolved by discussing the content to reach a consensus.¹⁶ Videos with a total score of 4 or more were categorized as acceptable-quality videos, and those with a total score of less than 4 were categorized as inadequate-quality.¹⁵

Statistical Analysis

All the data were entered into a Microsoft Excel spreadsheet and analysed using SAS 9.4 software (SAS Institute, Inc., Cary, NC, USA). Descriptive statistics were presented as means and standard deviations (SD) for continuous variables; and frequency (n), and percentages for categorical variables. Fisher exact test was used to assess the association between the quality of the videos and categorical variables. Spearman correlation coefficient was used to assess the correlation between videos' usefulness scores and the length of the videos, interaction rate, and viewing rate. The significance level for all tests was set at $p \leq 0.05$. Intra-examiner reliability was determined using Kappa statistics,

which yielded an average of 0.93, indicating excellent reliability.

RESULTS

The Arabic keyword searches for SM yielded 78 videos that were initially screened. Thirty-three videos were excluded, and the remaining 45 videos were analysed (Fig 1).

Table 1 presents the demographic descriptive statistics of the videos. The mean length of SM related videos was 113.24 ± 95.56 seconds. The mean number of views was 11506.98 (range: 1–228000), and the mean viewing rate was 5200.05 views/day (range: 0.33–190000). The mean number of likes was 80.3, ranging from 0–1300, and there were no dislikes. The mean number of comments was 16.36 (range: 0–335), and the mean interaction index was 2.87 likes/view (range: 0–16.47).

Majority (53.33%) of the videos were posted by users in Egypt, followed by Saudi Arabia (22.22%), and other Arab countries (24.45%) [Table 2]. Regarding the source of upload, dentist/specialist or private dental clinics accounted for 46.67%, whereas universities/professional organizations/health information websites only uploaded 6.66% videos. More than half (55.56%) of the videos showed a picture of SM. The most frequently addressed contents in the videos were the benefits (97.78%), timing (82.22%), and definition (77.78%) of SM, while the follow up (17.78%) and side effects (4.44%) of SM were the least mentioned.

More than three-quarters of the videos (77.78%) scored less than four of the total content score, and were defined as inadequate-quality videos, while the remaining 22.22% were labelled as acceptable-quality videos (Table 3). The country of origin, source of upload, and presence of SM images in the videos were insignificantly related to the video quality. The mean

usefulness content score was 3.11±1.15. The content score of videos was positively correlated with video length (r = 0.393; p = 0.008), while neither the viewing rate nor the interaction index were significantly correlated (Table 4).

DISCUSSION

The Internet has become a massively popular source of knowledge; however, the scientific accuracy and quality of health-related material on the Internet vary.⁵ As the published information is not subject to any control process, the accuracy of the information is dependent on the uploaders.¹⁷ The findings of systematic reviews conducted on health-related content published on YouTube indicate that this platform is an unreliable source of information.^{5,8} Additionally, studies conducted on YouTube videos related to various oral health issues among children, including space maintainers, provide inadequate information and low quality content.^{2,4,10–15n = 18} Previous studies have mostly concentrated on assessing the YouTube videos on space maintainers in English language excluding other languages; hence, this study was conducted to examine YouTube videos in Arabic language on the use of space maintainers in pediatric dental patients.^{2,4,15}

The selection of SM as an area of study is attributed to the fact that the concept of SM in pediatric dentistry can be hard for patients and parents to understand. This is because SM requires that pediatric dental patients and parents to undergo unusual steps such as taking impression, laboratory work to fabricate SM, a second visit for cementation/insertion of SM, the need for regular check-ups to evaluate the integrity of SM and side effects, and long term follow-up to remove the SM when the successors teeth erupt. Furthermore, the design and various shapes of SM raise parental concerns about how the child is going to tolerate them.¹⁵ Consequently, parents may seek the Internet to learn more

TABLE 1: DEMOGRAPHIC CHARACTERISTICS OF THE YOUTUBE VIDEOS

Variable	Minimum	Maximum	Mean	SD
Length of videos (seconds)	10	377	113.24	95.56
Days since upload (days)	120	2520	690.00	559.06
Number of views	1	228000	11506.98	40145.26
Number of likes	0	1300	80.31	272.91
Number of dislikes	0	0	0	0
Number of comments	0	335	16.36	58.44
Interaction index	0	16.47	2.87	3.74
Viewing rate	0.33	190000	5200.05	28433.03
Total usefulness content score	1	7	3.11	1.15

TABLE 2: DISTRIBUTION OF THE YOUTUBE VARIABLES

Variable	n	%
Country of origin		
Egypt	24	53.33
Saudi Arabia	10	22.22
Others	11	24.45
Source of upload		
Universities/ professional organizations/ health information web sites	3	6.66
Dentist/specialist	21	46.67
Private dental clinic	21	46.67
Content Parameters	YES (the item presented) n (%)	NO (the item not presented) n (%)
Definition	35 (77.78)	10(22.22)
Timing	37 (82.22)	8 (17.78)
Benefit	44 (97.78)	1 (2.22)
Types	7 (15.56)	38 (84.44)
Procedure	7 (15.56)	38 (84.44)
Side effect	2 (4.44)	43 (95.56)
Follow up	8 (17.78)	37 (82.22)

about the topic of their concern, and watch YouTube videos as a visual aid for understanding the idea.¹⁸

The mean length of videos and the mean number of views reported in this study were less than those reported by Yilmaz and Aydin (2020), and Çapan (2021). However, the mean viewing rate and interaction index were higher than 1157 and 0.884 as rereported by Yilmaz & Aydin (2020), respectively, and than 10.9 and 1.02 as reported by Çapan (2021), respectively.^{4,15} The viewing rate measures the views/day and the interaction index measure likes/view to rank the videos. The Arabic YouTube videos regarding SM have higher viewing rate and interaction rate.

The results of the present study have indicated that the users in Egypt posted half of the videos, with Saudi Arabia and other Arabic countries contributing the other half. Some countries exhibit greater rates of activity on certain social media platforms. The majority of videos in this study were uploaded by dentists or private dental clinics, which is consistent with previous studies; however, in contrast to the previous studies, no layperson or unrecognized source of upload was noticed in this study.^{2,4,15} The contribution of the private dental clinics to the health education of the patients on social media as part of marketing is acceptable as long as the content is accurate, and there is no misleading information for patients.⁴ The videos uploaded by universities and professional organizations in this study were quite minimal compared with earlier research, emphasizing the importance of such organizations becoming more involved with new trends and become active on social media, to fill the gap of and provide high quality vid-

TABLE 3: ASSOCIATION BETWEEN QUALITY OF THE VIDEO AND CATEGORICAL VARIABLES

Variable	Inadequate-quality videos 35 (77.78%)	Acceptable-quality videos 10 (22.22%)	P value
Country of origin	n (%)	n (%)	
Egypt	17 (70.83)	7 (29.17)	0.169
Saudi Arabia	10 (100.00)	0 (0.00)	
Others	8 (72.73)	3 (27.27)	
Source of upload			
Universities/professional organizations/ health information web sites	2 (66.67)	1 (33.33)	0.120
Dentist/specialist	14 (66.67)	7 (33.33)	
Private dental clinic	19 (90.48)	2 (9.52)	
Pictures			
Yes	17 (68.00)	8 (32.00)	0.1474
No	18 (90.00)	2 (10.00)	

TABLE 4: CORRELATION BETWEEN USEFULNESS SCORE AND LENGTH OF VIDEO, INTERACTION INDEX, AND VIEWING RATE

Spearman Correlation Coefficients, n = 45	
Variable	Total content score
Length of video (seconds)	0.393
P value	0.008*
Interaction index	0.086
P value	0.575
Viewing rate	0.204
P value	0.180

* Statistical significance (p < 0.05)

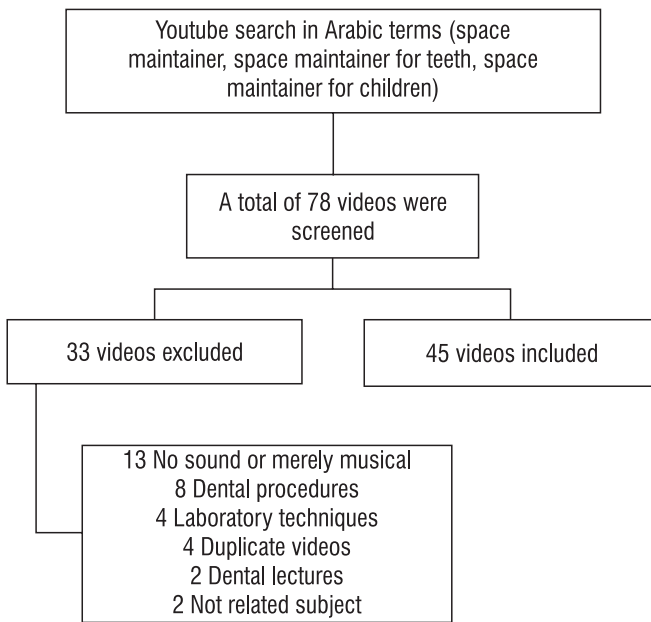


Fig 1: Flowchart diagram of YouTube selection process

eos.^{2,4,15} Only about half of the videos in the present study used a representative picture of SM, indicating a shortcoming in the videos by ignoring visual aids and the value of the images.⁴ Additionally, based on cut-off points, the inadequate-quality and acceptable-quality accounted for 77.78% and 22.22%. The quality of the videos was not significantly associated with the source of uploading, the country of origin or the presence of a representative image; the results agreeing with the previous studies.^{4,15}

Consistent with previous reports, the present study also showed that the benefits of SM, timing, and definition were the most common shared components in most of the videos, with less attention given to the procedures, types, side effects, and follow-up.^{4,15} As mentioned earlier, the least presented items were those that

usually raise the concern of the parents, and need to be presented before starting the treatment. Consequently, it becomes the treating dentist's primary responsibility to provide all necessary details. In this study, the mean usefulness score was 3.11, which is comparable to 2.89 as reported by Yilmaz and Aydin (2020), and lower than 4.4 Çapan (2021) study, respectively.^{4,15} Consistent with previous studies, usefulness scores only positively correlate to video length rather than with viewing rate or interaction index,^{2,4,15} implying that the longer the video duration, the more information, and content are covered.

The present study has raised some concerns regarding Arabic YouTube videos about SM, including the fact that most of the videos focus on the detrimental effects of premature extraction of primary teeth, and the need for SM, and do not address aspects such as SM fabrication, various types of SM, the adverse effects, and when to remove SM. The videos lack the flow and script that allow the speech to flow smoothly and the readiness to present in front of a camera. The decision to give medical/dental advice to the public requires organization of scientific facts, rehearsals, and revision of the content before it is publicized.

All Arabic YouTube videos were reviewed in this study. However, it is well known that YouTube is a dynamic platform where videos are posted and deleted on a daily basis. Another limitation was the search words used in this study; as different terminology may be used in other Arabic countries. It is also worth mentioning that the usefulness score in this study was based on the pediatric dentist's prospective, which may be different from that of the parents. Nevertheless, it is expected that the results of the present study will prompt more studies on the subject and encourage production of high quality videos on this subject.

CONCLUSIONS

- The Arabic YouTube videos regarding SM have a low usefulness score.
- The usefulness score positively correlates with video length, indicating that longer videos cover more information and content.
- Most videos provide basic information on the benefits, timing, and definition of SM only.
- Professional organizations need to produce high quality videos on the subject for the guidance of pediatric dental patients and their parents.

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