Original Research Article

YouTube as an Auxiliary Source of Learning Clinical Skills for Dental Students in Qassim Dental College in Saudi Arabia.

Abstract

Background: Since year 2000 onwards, there is tremendous improvement in the areas of Dental education and also considerable improvement in E-learning. The current generation of students as well as the faculty mostly rely on the electronic gadgets, apps and most of the information is available on mobile with internet connection, which is feasible in developed countries educational institutes perspectives. Aim of the present study is to evaluate the YouTube usage, importance in the clinical procedures and attitude towards learning among the study participants.

Methodology: A cross sectional study was conducted among the dental students of college dentistry, Qassim university during the period from February 2022 to December 2022. A sample of 92 dental students were participated and questionnaire distributed through google form. Data entered and cleaned with Statistical package social sciences (SPSS). Chi square test applied for the categorical variables in the study.

Results: In the present study, about 92 dental students participated and questionnaire distributed to 130 students. In the current study, 52.2% were females and two thirds of students (66.3%) in the age group of 22-24 years. About 93.5% were using YouTube more than 5 years and 73.9% of them using you tube daily. Nearly 84.2% of 3rd year students used restorative procedure. There was statistically significant association was observed between YouTube users and types of dental procedures ($P<0.05$).

Conclusions : Based on the study findings, majority of the dental students were using YouTube. Of which, majority 3rd year students used YouTube for restorative procedure and their choice of use depends upon their necessity, understanding and also opined that their faculty to be posted their YouTube videos on the social media to get genuinely and credibility.

Key words: Dental students, YouTube use, type of clinical procedure, duration of YouTube use, evidence.

Introduction :

For the last two decades, there is tremendous changes in the teaching and learning atmosphere and also e-learning at the dental education settings and also in nonmedical educational institutes all over the world, especially in developed countries. Saudi Arabia has taken great initiative to implement novel teaching techniques to their students and faculty bit earlier. There were some changes in dental education over the past ever decades have included a shift in learning styles of dental students, coupled with an increased call for the integration of technological teaching methods and an aging cohort of dental educators [1-3].

In Saudi Arabia achieved 100 percent literacy among the general population and this is also one of the initiatives to accept any novel teaching methods in our medical, dental and other universities. As current dental students are predominantly of the millennial generation, they have high levels of familiarity with online resources and e- learning [4-7]. The visual demonstration of clinical procedures is considered a strength of e-learning. Several studies, in both dental and medical education, reported that YouTube is the most frequently used electronic resource/app by health [8-11].

YouTube (http://www.youtube.com, San Bruno, Calif) is a global phenomenon that can be used in 76 different languages via customized versions offered in more than 88

countries. With billions of users and hundreds of millions of hours of YouTube videos consumed every day, YouTube has established itself as an undoubtedly dominant site on the Internet for educational and other public awareness [12].

With the user capacity mentioned and the immense spectrum of videos available, YouTube can now be used as a readily accessible health database. Health-affiliated videos on the site deliver advice on prevention, diagnosis, treatment, and pathogenesis for a variety of conditions [12].

The option to watch educational videos at any time allows undergraduates to spend more time on clinical work, which is restricted to specific times of the day and can support independent learning dentistry is one of the health care fields where these technologies have been successfully applied [13-15].

In view of the above situations, to the best of our knowledge, there is a lack of published data in the literature evaluating the use of YouTube as a tool of information for learning clinical procedures in Qassim dental college in Saudi Arabia. Therefore, this study aims to assess this channel use among third, fourth- and fifth-years dental students to find the status, attitude and also for the improvement of academics.

Objectives :

To find the demographic characteristics, evaluate the use of YouTube as a learning tool for clinical procedures among third, fourth- and fifth-year dental students and their attitude towards e learning.

Methodology:

Study setting and target population:

The present study conducted at Colleges of Dentistry in Qassim university, Saudi Arabia. Target population for the current study included as 3rd year, 4th year and 5th year dental students.

Research design:

Cross-sectional study was conducted during the period from February 2022 to December 2022.

Sampling and selection criteria:

In the College of Dentistry at Qassim University, about total number of dental students from 3rd year to 5th year were 130 students. Information collected from the Dean office, circulated our questionnaire to all the 130 dental students through WhatsApp communication as a google form circulation. Consent form attached along with questionnaire in the google form, before proceed for the research participation in our study. About 92 dental students from the same 3rd year to 5th year students were participated. The response rate in the present study was 71% (92/130).

Research Tool Development:

During the review of literature search, very few studies were found similar to our research idea. One of the study conducted in New York city in United States of America published their research in 2020 and same 3rd, 4th and 5th year dental students were selected in their study [16]. Some of the variables taken from their study, cited the study and mail communication given to corresponding author.

In our study first part dealt with demographic variables namely age, gender and year of the student. Second part of the questionnaire included as general characteristics of students such as, are you a YouTube user, since how long you are a YouTube user and purpose of YouTube

use etc. will be taken. Some specific YouTube questions like YouTube videos helpful for learning clinical procedures, procedure for evidence, reflective manner and posting YouTube clinical procedures on social media etc.

Sampling and sampling methods:

In the present study, included all 3rd, 4th and 5th year dental students were included, which are close to 130 dental students. Circulated questionnaire to all the three years and responded about 92 students.

Data collection methods: Electronic version of semi structure self-administered questionnaire used in the study. Pilot study conducted on 10% of study population. After completion of the pilot study, questionnaire little refinement done with the supervisor and senior research faculty in the Department.

Inclusion criteria:

All the 3rd, 4th and 5th years students of college of dentistry, Qassim university both genders.

Exclusion criteria:

Dental students not interested in the study, 1st, 2nd year and intern students were excluded from the study.

Data analysis:

All collected data entered and analyzed by using SPSS software. The results of the descriptive variables presented in means and percentages. For the categorical variables in the study, chi square test used to draw the statistical inferences. Statistical significance was taken as probability (P) value is less than or equal to 0.05 with 95% confidence interval.

Results:

In the present study, about 92 dental students were participated including from 3rd year, 4th year and 5th year dental students. Questionnaire distributed to 130 students. The response rate in the study population was 71% (92/130). In the study population, about 52.2% were females and 47.8% were males. Majority of the study participants 66.3% (61/92) were in the age group of 22-24 years (Table 1).

Table: 1 - Demographic characteristics among the Dental students in the study population.

Demographic variables	Number of participants	Percentage
Age: 20-22	21	22.8%
22-24	61	66.3%
>24	10	10.9%

Gender: Female	48	52.2%
Male	44	47.8%
Education: 3rd Year	19	20.7%
4th Year	38	41.3%
5th Year	35	38.0%
Total	**92**	**100%**

Table. 2 – You tube general characteristics in the study population.

U tube characteristics	Number	Percentage
How long have you been a YouTube user?		
Less than 1 year	1	1.1%
3-5 years	5	5.4%
Over 5 years	86	93.5%
How often do you visit YouTube?		
Daily	68	73.9%
Weekly	19	20.7%
Monthly	5	5.4%
Primary usage of YouTube		
Educational purposes	17	18.5%
Entertainment	59	64.1%
I do not use YouTube	1	1.1%
Tutorials (not academic)	15	16.3%

Table 2 depicted that in the study population, about 93.5% were using YouTube more than 5 years and only 1.1% were using less than 1 year. Moreover, 73.9% of participants were using you tube daily. Only 18.5% of study participants were using YouTube educational purpose and majority (64.1%) were using YouTube for entertainment purpose.

Table. 3 - YouTube specific characteristics in the study population.

Variables	Number	Percentage
I find YouTube videos on clinical procedures to be a helpful learning tool.		
Agree	86	93.5%
Disagree	1	1%
Neutral	5	5.4%
If you want to prepare for a procedure in the clinic you prefer:		
Asking Doctors	6	6.5%
Lectures	16	17.4%
Text Books	4	4.3%
YouTube Videos	66	71.7%
How likely are you to refer to a YouTube video to prepare for a procedure that you have never done?		
Likely	39	42.4%
neither likely nor unlikely	15	16.3%
Unlikely	3	3.3%
Very likely	34	37.0%
Very unlikely	1	1.1%
How do you use YouTube as a learning tool for clinical procedures?		
YouTube is my main learning tool	10	10.9%
Adjunctive to lectures/labs, as a way to learn different approaches	67	72.8%
When I miss class/lab and need to learn a procedure	12	13.0%
English is my second language and I rely on YouTube to better understand the procedure.	3	3.3%
I watch YouTube video(s) as a learning tool before attempting a clinical procedure.		
Always, when I prepare for a clinical procedure	27	29.3%

When I need a refresher on a clinical procedure, I haven't done in awhile	23	25.0%
Only before my first time attempting a clinical procedure on a patient	40	43.5%
Never	2	2.2%

Table 3 stated that about 93.5% of students agreed as YouTube videos are helpful as a learning tool. For the learning procedures preferences in the clinic, 4.3% preferred text books, 6.5% asking doctors, 17,4% lectures and 71.7% students preferred YouTube videos. Nearly 72.8% of students considered as watching YouTube videos adjunctive to lectures/labs and also different learning approaches. Almost half of the people (43.5%) watching YouTube while attempting first clinical procedures.

Table 4. Status of YouTube usage in relation to types dental procedures:

What is the MOST type of dental procedure do you prepare for using YouTube?		
Restorative	35	38.0%
Fixed prosthodontics	28	30.4%
Removable prosthodontics	15	16.3%
Endodontics	11	12.0%
Oral Surgery	3	3.3%
What is the LEAST type of dental procedure do you prepare for using YouTube?		
Endodontics	7	7.6%
Fixed prosthodontics	7	7.6%
Oral Surgery	10	10.9%
Pedodontics	12	13.0%
Periodontics	13	14.1%
Radiographic Imaging	27	29.3%
Removable prosthodontics	6	6.5%
Restorative	10	10.9%

Table 4 showed that the about 38.0% were using YouTube for Restorative procedures, Fixed prosthodontics, Removable prosthodontics, Endodontics mentioned as 30.4%, 16.3% and 12.0% respectively. In the study group, about 29.3% of students gave least preference of YouTube for Radiographic Imaging.

Table: 5 - Attitude of participants towards the language, learning tool recommendation to classmates and status of faculty recommendation for learning process.

U tube language	Number	Percentage
Arabic Language	17	18.5%
English Language	75	81.5%
U tube recommendation to classmates		
No	1	1.1%
Unsure	5	5.4%
Yes	86	93.5%
Faculty Recommendation for learning process		
No	30	32.6%
Yes	62	67.4%

Table 5 depicted as 81.5% of students preferred English languages, 93.5% of the students recommended YouTube videos for classmates and 67.4% of faculty recommended YouTube for the learning process.

Table: 6 - opinions of students about clinical procedures of evidence, reflective manner and preferences of posting clinical procedures on social media.

Variables	Not evidence-based n (%)	Somewhat n (%)	Unsure n (%)	Very much so n (%)
Do you find YouTube videos as a tool for learning clinical procedures to be evidence-based				
Evidence	3 (3.3%)	46 (50.0%)	13 (14.1%)	30 (32.6%)
Do you find YouTube videos as a tool for learning clinical procedures to be reflective				
Reflective	no reflective n (%)	Somewhat n (%)	Unsure n (%)	Very much so n (%)
	1 (1.1%)	47(51.1%)	6 (6.5%)	38 (41.3%)
Your dental school to post tutorials on clinical procedures on social media				
Response	No preferences n (%)	Yes n (%)	Not answered	
	5 (5.4%)	85 (92.4%)	2 (2.2%)	

Table 6 showed that in the study population, nearly half of the people (51.1%) gave response as YouTube procedures as somewhat evidence-based. Majority of the students (92.4%) preferred posting clinical procedures on social media from the dental schools.

Table: 7 – Year of student according to the You tube video as a learning tool for clinical procedure, before attempting any clinical procedure and most common type of dental procedure in the study.

Variable	Most common dental procedure you will use You tube				
Year of student	Endodontics	Fixed prosthodontics	Oral Surgery	Removable prosthodontics	Restorative
3rd year	0 (0%)	2 (10.5%)	0 (0%)	1 (5.3%)	16 (84.2%)
4th year	4 (10.5%)	16 (42.1%)	1 (2.6%)	7 (18.4%)	10 (26.3%)
5th year	7 (20%)	10 (28.6%)	2 (5.7%)	7 (20%)	9 (25.7%)
X^{2}-24.99, 8df, P-0.002.					
Variable	You tube usage before attempting any clinical procedure				
Year of student	Always, when I prepare for a clinical procedure	Never	Only before my first time attempting a clinical procedure on a patient	When I need a refresher on a clinical procedure, I haven't done in a while	X^2 – test, P – Value X^{2}-7.51, 6df, P-0.276.
3rd year	9 (47.4%)	0 (0%)	4 (21.1%)	6 (31.6%)	
4th year	8 (21.1%)	1 (2.6%)	21 (55.3%)	8 (21.1%)	
5th year	10 (28.6%)	1 (2.9%)	15 (42.9%)	9 (25.7%)	
Variable	How do you use YouTube as a learning tool for clinical procedure				
Year of student	Adjunctive to lectures/labs, as a way to learn different approaches	English is my second language and I rely on YouTube to better understand the procedure	When I miss class/lab and need to learn a procedure	YouTube is my main learning tool	X^2 – test, P – Value X^{2}-3.65, 6df, P-0.723.
3rd year	12 (63.2%)	0 (0%)	4 (21.1%)	3 (15.7%)	
4th year	28 (73.7%)	2 (5.3%)	5 (13.2%)	3 (7.8%)	
5th year	27 (77.1%)	1 (2.9%)	3 (8.6%)	4 (11.4%)	

Table 7 showed that the type of dental procedure in relation to different years of students, the majority 84.2% of 3rd year students used restorative procedure. Close to half (42.1%) of the fourth year used YouTube videos for fixed prosthodontics, while fifth years about 28.6% used YouTube videos for fixed prosthodontics. There was significant association was observed between different levels of students versus YouTube used for types of dental procedures (P<0.05).

In the context of you tube usage among the dental students about first time attempting clinical procedure on patient, 21.1%, 55.3% and 42.9% of 3rd, 4th and 5th year students were used you tube respectively. The approximately two thirds of the third-year students (63.2%), fourth year students (73.7%) and fifth year students (77.1%) used YouTube videos as adjunctive to their lectures.

There was no significant association was observed with different years of dental students with YouTube use before attempting any clinical procedure and also YouTube as a learning tool for the clinical procedure (P-0.276 & P-0.723).

Discussion:

The present study conducted among the 3rd, 4th and 5th years dental students to explore the opinions and practice about YouTube usage for the improvement of clinical procedures in dental schools. In the current study stated that as 93.5% of students agreed as YouTube videos are helpful as a learning tool.

In this context, a study conducted by Burns le et al in United states of America (USA) mentioned as YouTube users among the students as 95% and their duration of usage was more than 5 years, its helpful tool for learning clinical procedures at the institute level [16]. A study conducted in the year 2021 and their study revealed as 96.7% of dental students used YouTube as a learning tool for dental procedures [17]. Almost similar observation with other studies conducted in different authors namely Pilcher es et al and LI ty, Gao x et al in

their published research in USA and University of Hong Kong mentioned as YouTube enhance their learning and the status of learning in clinical procedures reported was 89-95% [8,18].

In our study YouTube usage as 18.5% for education purpose and 64.1% was utilized by the dental students for their entertainment purpose. A study conducted by Sonny Rosenthal et al in the year 2018 from the Singapore stated that the YouTube content will be used for the variable benefit of the students from informal science learning to different other domains including entertainment. This study insisted to develop online videos as a venue and implications to improve daily science learning by promoting and appropriate use of the YouTube videos [19].

Another study conducted among the University of Malaysian students and revealed as YouTube is increasing and logistic regression analysis shown that increased YouTube used for the entertainment purpose rather than the information motivation of the students [20].

In our study, in relation to type of dental procedure of YouTube use among the dental students, about 38% were used restorative procedure, 30.4% were prosthodontics, removable prosthodontics about 16.3% and lastly 12% watched YouTube for endodontics procedure. Also stated in their study that clinical procedures learned by Bachelor Dental Surgery students through internet Digital Learning Objects were mainly restoration (49/97, 51%), tooth preparation for crown or denture (46/97, 47%), oral surgery (36/97, 37%), preoperative preparation (31/97, 32%), and impression or facebow record (29/97, 30%)[8].

When we compare the type of procedure versus YouTube use among the different levels of dental students, majority of the 3rd year students (84.2%) used restorative procedure and about 42.1% of the fourth year used YouTube videos for fixed prosthodontics. In our study there was statistically significant association was observed between different dental

procedure and different levels of dental students (P<0.05). Generally, as per dental colleges curriculum, third year dental students usually dealing with restorative procedures rather than other dental procedures. In our study, 47.4% of third year students using YouTube always when they prepare for a clinical procedure.

This could be due to, the 3rd year dental students little less confident about the procedure, when compare with the seniors. There is a need to observe and YouTube acts as a best learning material to watch, to get the perfection of the procedure. Another study conducted in the USA and their study stated that the 3rd year dental students were watched YouTube higher than the other years of dental students from the different universities and the association was statistically significant and not compared with different dental procedures in their study with different years [16].

In the current study, about 92.4% of dental students opined that faculty posted YouTube videos on social media. This is one of very important step for the learning and also their students gain some confidence about the procedure, credibility and trust upon the videos. Close to similar opinion observed by the different studies conducted at different dental universities mentioned as YouTube videos posted by the faculty generate the boost and confidence among the dental students [11,21,22].

Some of the limitations observed in our study as our sample is small and data collected from the google forms, there is remote possibility of misunderstanding of some questions. In relation to generalizability of the present study findings to the whole Saudi Arabia, need large scale studies at multiple sites are required for the substantiation of the present study findings.

Conclusions :

Based on the study results, majority of dental students were familiar with using YouTube videos to learn the clinical procedures. Dental college students need their faculty of dental schools to upload their YouTube videos will give the benefit for their better understanding, learning and credibility. In relation to type of procedure among the students, 3rd year students were watched restorative procedure and 4th and 5th year students were watched fixed prosthodontics. Watching YouTube for dental procedure choice depends upon the students' interest and their necessity; varies from different years of the students.

Recommendations:

Based on our study findings, Dental faculty to develop more YouTube to upload for the benefit of dental students learning and gains more confidence to their students.

Ethical approval and Consent

The study was approved by the Dental Ethics Committee at College of Dentistry, Qassim University, Kingdom of Saudi Arabia (ethical approval number: EA/6101/2021 dated on 17.04.2021). After obtaining the ethical committee approval from the university, current study initiated and started the data collection. Informed consent taken; confidentiality of the individual information maintained at all levels of the research.

Data and material availability statement: In case of any necessity, all data sheets and other analysis plans can be shared with you on a considerable request from the corresponding author.

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