The Role of Digital Media in Prosthetic Dentistry in Egypt and EU Countries:

A Comparative Analytical Study

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Abstract

After the dot-com bubble burst "Web 1.0" at the turn of the century, the World Wide Web underwent significant changes. These changes led to the adoption of and the referral to the new Web as "Web 2.0." The Web 2.0 has led to dramatic changes primarily as a result of decentralization of communications and interactivity, with information provided by users as contributors of content such as user-generated ads content and so on. It has led to the development of many new media. For example, forums and chat rooms, social networking sites, blogs, virtual/augmented reality, Really Simple Syndication (RSS), QR codes, e-commerce, etc. That vast range of new media allowed the user interactivity and provided a room for user-generated content from all fields. It's worth to mention that one of the advanced users of such new media are dentists. Dentistry has received an unexpected, however welcomed influx of digitization that allowed an easier utilization for such new media. For example, dentists can generate digital smile designs in addition to other digital equipment that overwhelmed the dental appliances; such as, 3D printers, Computerized-Aided Design/Computerized-Aided Manufacturing (CAD/CAM), and oral scanners. All of such digitized output is easily shared now by dentists to show their clinical cases and promote their profession through social media; This study aimed at exploring how digital media influenced the dental profession marketing in Egypt and EU. Within the framework of the Uses and Gratification Theory, the researchers conducted intensive interviews with Egyptian and European dentists to shed light on how such new media changed their approach towards their profession, and further inspect the differences between the Egyptian and European experiences. Results have shown well-defined differences between Egyptian and EU dentists in their use for digital media. Egyptian dentists tend to be more money-oriented than the EU dentists who behold more value for the educational aspects that each can get from the digital media; however, the ethical implications overwhelm the situation while dealing with digital media. Nevertheless, the study has further shown some drawbacks for the use of digital media in the educational field.

Introduction

After the dot-com bubble burst "Web 1.0" at the turn of the century, the World Wide Web underwent significant changes. These changes led to the adoption of and the referral to the new Web as "Web 2.0." The Web 2.0 has led to dramatic changes primarily as a result of decentralization of communications and interactivity, with information provided by users as contributors of content such as user-generated ads content and so on (Belch &Belch, 2018). It has led to the development of many new media. For example, forums and chat rooms, social networking sites, blogs, virtual/augmented reality, Really Simple Syndication (RSS), QR codes, e-commerce, etc (Lupton, 2016). That vast range of new media allowed the user interactivity and provided a room for user-generated content from all fields. It's worth to mention that one of the advanced users of such new media are dentists. Dentistry has received an unexpected, however welcomed influx of digitization that allowed an easier utilization for such new media. For example, dentists can generate digital smile designs in addition to other digital equipment that overwhelmed the dental appliances; such as, 3D printers, Computerized-Aided Design-Computerized-Aided Manufacturing (CAD-CAM), and oral scanners (Hancocks, 2017). All of such digitized output is easily shared now by dentists to show their clinical cases and promote their profession through digital media. While these changes are generally positive, they pose potential threats to patient rights and privacy if appropriate protection measures are not taken.

It is the aim of this study to shed light on how dentists in Egypt compared to EU countries use digital media in their profession and how it affects their profession under the ethical constrains implied from both sides; digital media legislations as well as their professional integrity.

Theoretical Framework
Uses and Gratification Theory:

Its assumptions pertain a psychological communication perspective where the individuals' use of mass media is examined. It is a theoretical framework that is based on mainly the audience, who selects the media and its content for satisfying his/her wants and needs, which become motives to adopt specific use of media. These needs are attached to the psychological and social dispositions of the individual (Stacks, Salwen, Eichhorn, &Papacharissi, 2019).

It is obvious that the growing adoption of the internet as a novel communication tool has changed the way of interaction of people; particularly

in recent developments related to new media and the use of social networking sites (Raacke, & Bonds-Raacke, 2008).

Ruggiero (2000) asserted that computer-mediated communication has rejuvenated the importance of the uses and gratifications theory. Communication scholars are giving more attention to the online audiences due to the nature of such new media which allows interactivity between the sender and the receiver unlike the traditional media. These new media enjoy main three characteristics that traditional media mostly lacks: interactivity, demassification, and asynchroneity (Ruggiero, 2000). (1) Interactivity: interactivity is not limited to obtaining information, watching videos, or online shopping, but it offers wide range of new communication means which consequently increased the activity of the users (Ruggiero, 2000). (2) Demassification: demassification is the aptitude of the users of media to choose from a broad range of choices. New media have enabled users to choose the medium that appeals to them from numerous. These new media facilitated the process of selecting the desired messages by users according to their needs (Liu, 2015). (3) Asynchroneity: refers to the ability of users of access messages with differences in time. Both the sender and the receiver can read or access the content of media according to their time preferences. They can consume media content or send messages at their convenience. Unlike traditional media, new media allowed users to store, print, send, or copy text or graphics (Liu, 2015). This can greatly apply in new digital media where users can share, store, and produce their own content.

With the introduction of the digital media and its usage by different audiences with different backgrounds and professions, the uses and gratification theory has been revived while asking the same questions: what gratifications would the audience receive from digital media? And why do people use such new media? So, for purpose of this study, the researchers are exploring what kind of digital media the dentists are using, and the gratifications they are awaiting to receive from it.

Literature Review
Web 1.0 Vs. Web 2.0:

Web 1.0 is generally referred to as the first decade or so of the World Wide Web, ending with the "bursting of the dot-com bubble." For the most part, Web 1.0 consists mainly of static sites resulting in a one-way flow of communication. Web 1.0 is the terminology used to refer to the early

evolution of the World Wide Web in which users could view web pages and interface with them, but could not contribute to the content of the web page (Belch &Belch, 2018). For example, sponsorships, pop-ups and pop-unders, interstitials, paid searches, behavioral targeting, contextual ads, and rich media. The JavaScript technology was then introduced in 1995 (Haverbeke, 2018). JavaScript technology is a computer programming language that is characterized by dynamism, and lightweight. It is used mostly in webpages that allows user interactivity. It has object-oriented potentials (Tutorial Point, 2015).

With the introduction of the JavaScript technology, Web 2.0 has come to life. Web 2.0 has led to dramatic changes in the World Wide Web, primarily as a result of decentralization of communications and interactivity, with information provided by users as contributors of content such as user-generated ads content and so on. The birth of Web 2.0 has led to the development of many new media. These new media are designed for a number of purposes and contain a wide variety of materials for consumer use (Belch & Belch, 2018). For example, forums and chat rooms, social networking sites, online gaming, virtual/augmented reality, content aggregators, blogs, portals, QR codes, Really Simple Syndication (RSS), and social news sites.

The Web 2.0 spots the start of new model and shape of communication which changed the its nature from interactivity to interaction, which indeed contributed to the formation of networks that are based on sharing of knowledge rather than a simple exchange of information. That is, it changed the structure of communication from one-way to two-way of communication (Erragcha &Romdhane, 2014). It is not just adding information, but people are creating a whole communities made of self-built worlds which are established on common learning, interests, or socialization for the purpose of creating information exchange (Harris & Rea, 2009).

Prosthetic Dentistry

Losing parts of the human body is a common incident that can be as a result of accidents, illness, or surgeries. Replacing the lost parts with the best substitute or alternative is a mandatory, not just to restore function but also restoring well-being of the subject. Here comes the role prosthodontics which is the art and science of dealing with replacing of lost parts of human body. In the same concept comes prosthetic dentistry in replacing lost parts of the face such as eyes, noses, ears and intra orally such lost teeth, tongue,

mandible and maxilla. Prosthetic dentistry is one of the largest branches of dentistry dealing with replacing lost stomato-gnathic structures (Oral parts) and craniofacial structures (skull and face) (Abbas, 2008). The restoration of lost teeth needs to go across exhaustive techniques in order to get an outcome which is both functionally and morphologically satisfactory. The traditional treatment protocol includes taking impression, getting the diagnostic models that denotes the defect accurately, making the prosthesis, definitive prosthesis fitting, and doing a subjective evaluation. Unfortunately, this method is time-consuming, and demands numerous clinic visits at least 5 visits. Beside to high level of human errors is expected as the fabrication of a prosthesis pass through a lot of phases and steps, there are clinical steps done by the doctor and laboratory steps done by the dental technician.

The new advancements in the digital technologies positively affected the progress made in maxillofacial prosthetics use. Patients' expectations have been changed in regard to the functional and the esthetic outcomes of treatment. The patient can see the digital workflow of the treatment for approval or modifications suggestions, providing the patient with an enhanced gratitude of the results (Elbashti, et. al., 2019). Progressively increased digital applications are employed in dentistry and became essential tools in the field of training, education, and research related to clinical and dental practice. Examples of the various digital applications are the digital photographs, radiographs together with the use of virtual articulators and digital face bows for planning and fabrication of prosthesis, or for processing of restorations with the use of CAD/CAM technology, stereolithography, rapid prototyping, etc. (Sakr, et. al., 2017).

Using special software, dentists now are able to design a mimic of the final prosthesis, and show a virtual end product to patient for approval before starting with the treatment plan. For example in fixed prosthesis, in the conventional way, there was a first visit for diagnosis, impression and teeth preparation, then second visit for try-in of the prosthesis, and then a third visit for insertion. Considering phases of fabrication with errors might occur, the number of visits might increase to have satisfactory results for the patient. With digitally driven fabrication of prosthesis with CEREC, now the patient can receive his prosthesis in the first visit with higher accuracy and satisfaction (Kurbad and Schnock, 2009).

Also computer guided implant surgery is now possible, allowing implant insertion, without damaging of the anatomical structures as in the conventional

way, also higher accuracy of the insertion more than the free-hand insertion technique (Tahmaseb et. al., 2014).

Use of Digital Media by Medical Professionals

The medical field has been greatly affected the digital media, the most visible is the ability of the patients to communicate with physicians and other patients. This can be seen in examples such as: virtual patient communities, online medical information, emergency calls during natural disasters, and so on (Von Muhlan & Ohno-Machado, 2012). Dentistry, as the case with other professions, has received an unexpected, however welcomed influx of digitization that allowed an easier utilization for such new media (van der Zande, Gorter, Aartman, Wismeijer, 2015).

Von Muhlan & Ohno-Machado (2012) contended that the use of social media by clinicians in healthcare has increased dramatically with respect for privacy, but it is still unknown whether the use of social media will continue to be an "adjunct" technology or not. There are some cases where the use of technology is necessary such as, personal health records; however, this is not adopted by clinicians on a broad scale. Social media can fall in this category. Understanding the effect of social media on the clinical context may take several years (Von Muhlan & Ohno-Machado, 2012). Social media has been said to enable clinicians to market and further interact with their patients. Determining the appropriate content for social media and evaluating its success are still among the difficulties. Research has proven that in USA 52% of dental practitioners mostly use social media especially Facebook, among which 91% use it for marketing purposes. It has been visible that dentists aged 45 or older tend to use social media less than the ones younger than 45 years old (Henry, Molnar & Henry, 2012). On the other hand, in Netherlands, dentists who use technology in their practices tend to be those who work with more staff than those who work in small contexts. Similar to the US case, dentists who are low technology users tend to be older and work fewer hours than those who use technology more. There are the users seem to be intermediates in technology use, who averagely work, and has average number of patients and staff (van der Zande, Gorter, Aartman, Wismeijer, 2015). There is a limited use of social media by the Sate Dental Boards in USA; nevertheless, they highlighted some incidents of online unprofessional behavior came to the attention of the board in various ways and various consequences (Staud, 2016). Brazilian future dentists have proved to use digital media in education and

research. The use of new media and technological tools for conducting an online academic journey provides very important resources for disseminating quality academic content, not only for local users at the host institution but also others who are geographically distant (Souza, et al., 2017).

There are ethical standards for managing privacy in the new media context, such as: policies, regulations, and acts. Collecting personal information, and the protection of such information are to be considered when using social media. Appropriate requirements for privacy protections depend on the social network uses and types (Sharma & Baoko, 2012). It has been claimed that previous research has focused on privacy issues and general strategies to protect privacy when sharing clinical photographs for educational purposes, nevertheless, there is no published recommendations for developing a functional, privacy-compliant institutional framework for the capture and storage of clinical media. Stieber, Nelson, & Huebner (2015) proposed a framework for identifying the patients' rights. A four-part-privacy-compliant framework was developed for media patient. (1) Identifiable photograph: this is any photo where the individual can be identified directly or through any logical basis by which the individual can be identifies. This image represents Protected Health Information (PHI) if the individual can identify himself. (2) Non-identifiable photograph: this is a photo which does not describe the characteristics of the identified photo. (3) De-identified photograph: this is an originally identified photo that has gone some alteration to become non-identifiable. (4) Re-identifiable photograph: this is a de-identified photo that has been restored to the original form so it became identifiable (Stieber, Nelson, & Huebner (2015).

Research Questions
The study desires to answer the following questions:
1. How dentists in Egypt and EU Countries use digital media?
2. What are the different forms of digital media consumed by dentists in Egypt and EU countries?
3. How has digital media changed the dentists' approach towards their profession in Egypt and EU countries?
4. What are the ethical constrains that dentists face in Egypt and EU countries?
5. How has digital media contributed to the marketing of the dental profession in Egypt and EU countries?

Research Methodology

This research aims at exploring the use of digital media in the prosthetic dentistry in Egypt and EU countries. For this research purpose, the researchers used structured intensive interviews which is based on one-to-one interview in which the interviewer goes to the interviewee's (respondent) place or the interviewer invites the respondent to a field service location or research office. It can be either structured interview in which standardized questions are asked in a predetermined order, or unstructured interview in which broad questions are asked that allow interviewers freedom to determine what further questions to ask to obtain the required information. For the purpose of this research, the researcher conducted structured interviews with a total of 23 scholars and dentists in the field of dentistry.

The sample used was *purposive sample* as the interviewees were chosen according to some qualifications and characteristics that they possess, which are mainly being dental practitioners who have access to digital media from Egypt and European countries including Germany, Italy, Belgium, and France. The sample included 23 dentists, 13 of which are from Egypt, and 10 from EU countries. The ages of the interviewees ranged from 25 to 35 years old. Some of them are academic faculty members in different universities, some others are dental practitioners in private or public hospitals, or working only in their private clinics.

The researchers then used the comparative approach which is Comparative method consisted of classifying customs—whether burial rules or kin terms—by the (remote) inspection of similarities and differences.

This comparison of one's own present society with either the past of that country or with another country is an entirely reasonable procedure.

For the purpose of this research, the researchers used the comparative approach to inspect the differences between Egypt and EU countries in the ways dentists use digital media in their profession.

The ethical standards such as acts, regulations and policies that manage privacy, the collection of personal information and the protection of a user's personal information are important when
using social networks. The applicable privacy requirements will depend on the types and uses of social network. The rapid development of social networking and the online sharing
and posting of information have changed the way of communication

Results

This study aimed at exploring the role of digital media in promoting the dental profession in Egypt and EU countries. The researchers intensively interviewed a total of 23 dental practitioners; 13 of them are from Egypt, and 10 from EU countries including: Germany, Italy, France, and Belgium. There are five main questions that this study focused on: (1) How dentists in Egypt and EU countries use digital media? (2) What are the different forms of digital media consumed by dentists in Egypt and EU countries? (3) How has digital media changed the dentists' approach towards their profession in Egypt and EU countries? (4) What are the ethical constrains that dentists face in Egypt and EU countries? (5) How has digital media contributed to the marketing of the dental profession in Egypt and EU countries? The results of which are as follow:

(1) The use of digital media by dentists from Egypt and EU countries:

Egyptian dentists assured their use of digital media as a marketing tool, in which they can show their work on such platform so they can get known by patients or by other dentists who may refer other cases to them. The dentists here are motivated by their needs for financial security and esteem which are reflected in their usage for the medium mainly as channel to show off, and to be exposed thus grab more patients.

Respondent A (EG) *"I do post cases and photos on my fb to attract patients that I'm so good. Also to attract doctors to refer cases to me."*

Respondent B (EG) indicated, *"Through using social media to get noticed."*

Respondent C (EG) also confirmed on using digital media for promotional purposes, *"through Facebook and Instagram ads...and through pages on Facebook and Instagram for demonstration of cases or using different posts to keep close to costumers."*

whereas dentists from EU countries affirmed that digital media is mainly used for educational purposes, where they join forums and social media groups to get exposed to educational content. They tend to be motived by their theoretical values that focuses on acquiring more knowledge along with their needs for self-development and fulfillment. Hereby, their uses for the new media focuses on knowledge acquisition, and sharing of knowledge for maintaining mutual benefit.

Respondent A (EU) asserted, *"I use it with my students, to learn and update my knowledge."*

Respondent B (EU) postulated, *"To share useful information with patients, offer dental tips on oral hygiene use video for demos of some dental care procedures."*

Respondent C (EU) also supported this point, *"I use social media to share my cases and discuss other colleagues' cases; I also use social media to keep me update about clinical and extra-clinical issues in my profession. I do not use social media for marketing or promotion."*

Respondent D (EU) contended regarding the use of digital media in his profession, *"Mainly for educational purposes."*

(2) The different forms of digital media consumed by dentists in Egypt and EU countries:

The digital media that are mainly consumed by dentists in Egypt and EU countries is the social networking sites in particular, Facebook, Instagram, and YouTube respectively, in addition to dental forums. Their selection for the media they use is based on the benefit they are searching for. So the Facebook is the most common as it combines the characteristics of different new media.

Respondent C (EU) asserted, *"I follow some Facebook groups (Odontoiatria Italia, Endodonzia Italia, Endo Talks, Radio Endo, Discovery Odonto) for dental cases and updates."*

(3) The way digital media changed the dentists' approach towards their profession in Egypt and EU countries:

Egyptian Dentists tend to see the difference that digital media offered for their profession mainly in being an easy and cheap tool for promoting for their clinics as a primary opportunity. Comes next is the educational and knowledge benefits. This new media changed the perspectives of dentists towards their profession as they find a cheap platform for exposure and knowledge as well.

Respondent D (EG) contented, *"I've reached more people through social media marketing plus it has made my patients management much easier as they come to the clinic ready to receive their ttt (time to treatment)."*

Respondent E (EG) also added, *"branding, upgrading my skills and knowledge because there's a huge platform, you're subject to criticism so you have to be up to date and fully equipped."*

Respondent F (EG) specified, "Increase patient flow for the clinic."

Respondent G (EG) agreed that, *"Approaching the patient faster and easily."*

Whereas, the European dentists focus only on the educational and developmental advantage that they get from the different tools of digital media.

Respondent C (EU) argued, *"I am happy about my social media use since I receive feedbacks about my mistakes or acquire some tricks for my everyday profession."*

Respondent A (EU) supported this view, *"By making it easier to see more, nowadays you can see a lot of work and different approaches in the blink of an eye."*

Respondent E (EU) also agreed on that point, *"Parents became more knowledgeable when it comes to preventive dentistry which allowed easier understanding and simpler communication."*

(4) The ethical constrains that dentists face in Egypt and EU countries:

Dentists in Egypt and EU countries agreed that there are some ethical implications that they have to hold while dealing with posting of patients' data and photos.

Respondent C (EU) articulated, *"I never share data of my patients. I always use fake patients' names and never share their faces. I post cases only after receiving permission from the patient."*

Respondent F (EU) asserted, *"Being careful with patient privacy protection and applying HIPAA policies."*

The HIPAA is the Health Insurance Portability and Accountability Act that was passed by former President Bill Clinton on 1996. The HIPAA Privacy Rule establishes national standards to protect individuals' medical records and other personal health information and applies to health plans, health care clearinghouses, and those health care providers that conduct certain health care transactions electronically (Azar, 2018).

Respondent A (EG) contented, *"We should respect the patient's privacy & have his permission before uploading his photos or videos on social media."*

Respondent C (EG) supported the same argument, *"privacy of patients is to be respected."*

(5) The extent to which digital media contributed to the marketing of the dental profession in Egypt and EU countries:

The researchers have found that Egyptian dentists owe much to digital media for promoting their clinics because it is user friendly, cheap, and can help greatly in increasing flow of patients to clinics. Egyptian dentists tend to see the cost and availability of the medium as perceived values that created an attractive medium.

Respondent B (EG) signified, *"you're now closer to your costumers, easy to find, and new contacts can always be found."*

Respondent F (EG) claimed, *"In my opinion it is an important way for marketing of dental field. People are holding their phones for the whole day. That is why if we need to sell anything to them we should stand in their phones for the Whole day as well. The more they see you, the more they will trust you."*

Respondent J (EG) also shared same meaning, *"Increasing flow, and introducing my professional work to others."*

Respondent C (EG) contended, *"Digital media plays an important role nowadays specially for advertising (it's easy and free)."*

On the other hand, EU dentists agreed that digital media is there for educational purposes, for self-development, and creating educational spheres. They believe it may be beneficial for patients who can see different diagnostic structures and understanding. The gratifications that EU dentists got are concentrated on the educational side, they also highlighted the gratifications that the patients themselves can get from such new media as a source of information.

Respondent C (EU) believed, *"I feel that digital media created a connected world with a larger marketplace where patient can see our work, but their judgment often lacks critical analysis. I am little scared about."*

Respondent B (EU) also supported the argument, *"Not significant. I use it mainly for educational purposes rather than a marketing approach."*

Respondent E (EU) asserted, *"Great effect on patients regarding treatment options, costs and prognosis."*

Respondent A (EU) added, *"Make the dentists-patients relationship in updating consequences and knowing the recent treatment options availability."*

Discussion

This research paper attempted at exploring the role the of digital media in the promotion of the prosthetic dentistry field in Egypt in comparison with EU countries including Germany, Belgium, Italy, and France. The researchers conducted intensive interviews with 23 dentists; 13 of them were from Egypt, and 10 from EU countries. The results of the interviews were then compared to assess the differences between the two experiences. The study has revealed the uses that dentists from Egypt and EU countries get from the digital media in accordance to the gratifications they are seeking. It was obvious to the researchers that Egyptian dentists are motivated primarily through their security and esteem needs, where they focus on using the digital media to either to get themselves exposed to the patients and other dentists for further cases referral. So they hold economic values, in which they seek money acquisition and financial security. On the other hand, the EU dentists are motivated by their self-actualization needs, where they seek knowledge to further self-development. It is clear that they hold theoretical value pertaining to the continuous sought knowledge and development. The study has shown that the Egyptian dentists tend to use the digital media mainly for promotional reasons, where they use it to directly advertise for their clinics. Even though they post their patients' cases for the

purpose of promoting their expertise rather than being an educational resource. In Egypt, most of the dentists believe in the power of digital media for getting more money; nevertheless, they believe in abiding by the ethical implications of using such platforms for advertising. They are highly aware of the patients' right for free consent, and privacy, so they do not post any photo or video without getting the patient's consent for publication. They cannot show the patients' eyes. The case in Egypt highly resembles the case in USA, because it has been shown in (Henry, Molnar & Henry, 2012) that 91% of dentists use the digital media for marketing purposes, and dentist-patient interactions. This can be pertained to the capitalist system that overwhelms in the USA. Egyptian dentists believe that digital media has provided an added value for their profession due to the maximum exposure that they get. Some of their ads turned to be a highly circulated video and created a huge buzz.

On the other hand, EU dentists have shown a different perspective for the use of digital media in their profession. EU dentists focus on the educational benefit that all sides can get; the dentist, and the patient. Digital media is used by EU dentists for educational purposes. They share their cases for other dentists to get exposed for new techniques and technologies, thus adding new experiences for them. EU dentists tend to participate in dental forums, and dental groups on social media to keep tuned for any updates in the field, which agrees with (Elbashti, et. al., 2019). They believe that patients can get all information regarding their cases as well. This coincides with the Brazilian path, as shown in (Souza, et al., 2017), who believe that digital media provides a valuable source for the academic journey of dentists. The ethical implications rise clearly in the EU countries vision. Dentists of EU countries totally abide by the ethical constrains proclaimed by the HIPAA. They are cautious when dealing with photos of patients. Nothing is to be published without the patients' consent. EU dentists believe that digital media has provided patients a tool for getting dentists databases, the different ways of prognosis and prescriptions, as in (Sakr, et. al., 2017) who assured that digital media provides an assistance for educating patients about the esthetic treatment planning. Digital software enables visualizing the effect of treatment, different forms, shapes, colors, size, etc. of tooth. It is also used in a number of web-based studies to investigate opinions of dentists and non-dentist population. Therefore, the educational benefit still beats over the marketing purposes that dentists can get. This harmonizes with (Bhambhani, Bhattacharya, & Sen, 2013) who asserted that digital databases have overcome the problem associated with the restricted space available for

storing records of patients. The patients casts can be converted plaster to virtual 3D models, which indeed facilitated the communication and conferencing among the team working on the cases using the new communication methods.

In the teaching process, before the introduction of digital media, there was a problem for the academic instructor and demonstrator in delivering live prosthetic demonstration on patients to a large number of students; students near the demonstrator were the best spectators to the procedure, whereas students away didn't have the same privilege. With the introduction of digital media, demonstrations are now prerecorded and are shown on large screens, allowing large number of students in viewing the content with the same quality and best spectating position. Also, videos of the demonstration can be uploaded to YOUTUBE, permitting students of watching the demonstration more than one time. The following picture is retrieved from a prerecorded demonstration in MSA University Fig.1.

Clinical complete PRS412 Secondary impression

Fig 1. Showing a screenshot of a prerecorded demonstration video of secondary impression making

Digital media exposed students to a lot procedures and expertise from all around the world in dentistry generally and in prosthodontics specially. They became aware with different aspects before it's taught to them, such as dental

implants, attachments, and denture fabrication techniques…. etc. Although it can be considered an advantage as educational content has never been this close to the students, but sometimes such videos on YOUTUBE, FACEBOOK, and INSTGRAM may contain misleading information as the source of the information might be anonymous. That is why some universities such as Cairo University and MSA University have opted to make their own videos of demos, as it's carried by its own academic staff, so quality of the content can be guaranteed. This corresponds with (Sakr, et. al., 2017) who found that the application of a virtual reality computer-assisted simulation system (VRCAS), namely, the DentSim technology (DentX Ltd., Australia), showed effective capability in evaluating students' preparation through computer tracking. Students learn their procedures at a faster rate and proved to acquire their skills in significantly shorter time compared to traditional procedures. Also (Harris & Rea, 2009) contended that Web 2.0 technologies has changed the world to be a classroom, and further enlarged the classroom to be the virtual world. Anyone can open the lesson; that is, it is not limited to a specific group of students or a single class. Indeed, this enabled students worldwide to cross the boundaries and interact with other students with different backgrounds, values, and cultures.

The uses and gratifications theory thereby can provide an explanation for such benefit that the sender and the receiver may get from new media. The uses can be recapitulated in three terms: promotion, education, and information. New media can provide three gratifications for both the dentists and the patients; for dentists, they can generate their own content to promote their profession, or they join forums and groups for educational purposes. For patients, here comes the informative side, where they get informed about the different ways of dental treatment, cost, and prognosis.

Conclusion

It was clear to the researchers that there are well-defined differences between Egyptian and EU dentists in their use for digital media based on the gratifications sought. Egyptian dentists tend to be more money-oriented than the EU dentists who behold more value for the educational aspects that each can get from the digital media; however, the ethical implications overwhelm the situation while dealing with digital media. Nevertheless, the use of digital media has its drawbacks in the educational field.

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