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# Dental App as a Customer Relationship Management (CRM) Strategy for Relational Capital Within the Orofacial Harmonization

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**Abstract:** This article aims to describe the creation of an information management system called Dental App as a customer relationship management (CRM) strategy to identify through the acquisition of photographic images and video signs and characteristics, needs and expectations of the structures of the stomatognathic system of clients-patients (relational capital). The central argument is that with the arrival of teleodontology, which is immersed in the tools of dynamization of relational marketing, greater openness can be generated, in terms of information transmission, reception and evaluation of data, transforming the new specialty of orofacial harmonization in dentistry. For this we used a methodological strategy of documentary-style using the methods both descriptive and analytical and descriptive in nature through an exploratory study using as the main instrument, the survey through a form in google drive with the intention of understanding of the knowledge possessed by their customers-patients on the confluence between the aesthetic procedures that converge in the new specialty from the local context in Venezuela, in the year 2021, with a sample of 169 customer-patients of the dental center face of the author, using in its design a total of 15 questions. This allowed to verify that the creation of the app dental is a tool that generates greater accessibility to information, fosters a feedback mutual as a supporting tool in the diagnosis and future treatment plan in the harmonization orofacial, in turn, works as a support in the service of information with respect to trends, prices and location bringing modernization of the society.

**Keywords:** Clients, Teleodontology, Orofacial

## 1. Introduction

On a daily basis, specialists in the different areas of dentistry need to use new technologies to access a series of tools that complement the management of their dental clinic more effectively. In this perspective, applications or apps have evolved to be more accessible when using. So, to optimize the dynamics in terms of diagnosis and treatment plan can be implemented new trends aimed at the use of the teleodontología that form part of telemedicine, which is immersed in the strategies of customer relationship management (CRM), with which it is possible to perform queries distant, share digital information, among others [28]. It should be added that it is a support to the health system that allows to selectively expedite face-to-face clinical assistance, so that the client-dental patient, user who requests and receives oral health services that includes from the diagnosis, treatment and prevention of diseases of the stomatognathic apparatus to accommodate the altered functions, and whose key to the good management of the relationship with him, it is in the capacity of the dentist to manage their wishes and concerns regarding the product or service offered to them [24] obtain a space that more than attractive achieves advantages based on key criteria such as: functionality, comfort, accessibility, biosecurity and privacy.

It should be noted, that the use of technology and telecommunications is a vital part of the social fabric, but in the area of health, specifically in dentistry happens to be essential during the pandemic affecting the world today, what has caused you to be more selective clinical procedures to be

performed with strict biosecurity protocols established by the world organization (WHO) and global partnerships in the area of oral health [42], knowingly, that different users have resisted because it is not guided by the same bioethical principles that will safeguard their bio psychosocial integrity and privacy. Even so, today's consumers have increased the search for Apps in different spaces, with features that make them feel safe in terms of expressing their wishes and concerns through a video or through photographs in order to achieve proximity without having to attend the place, making known features of his face and his body, in order to achieve what he wants to achieve.

In this regard, it is already in practice in some specialties of dental health, so using this tool in the area of Orofacial Harmonization, will optimize the flow of information and feedback through the analysis obtained from each client-patient. In short, the creation of a dental app will guide professionals in this specialty to consolidate communication with their relational capital, focusing on knowing, characterizing and protocolizing in a presumptive way their aesthetic and functional needs virtually, thus being a complementary method to reach the definitive or final diagnosis.

## 2. The Teleodontology

Today, applications are changing the way health organizations operate and grow around the function of the same. These become a driver of strategies that allow enabling completely new services to existing or emerging markets. Thus, according to the American Telemedicine Association (ATA), telemedicine is defined as the exchange of medical information between two sites through electronic communications in order to improve the health status of a client-patient (relational capital) that is an element of intellectual capital [2]; which includes a variety of services that use videoconferencing, email, smartphones, wireless communications and other forms of telecommunications technology [19]. On the other hand, the World Health Organization, the conceptualized as the provision of health care, where distance is a critical factor, by all healthcare professionals using information technologies and communication for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, all in the interests of advancing the health of individuals and their communities [32].

It means, then, that telemedicine also known as telehealth, e-health or virtual medical care, is supported in the CRM that is one of the tools of Relationship Marketing (RM) [21] is described with special emphasis on the relationship that exists between the company and the client or a provider. It is a strategic approach established by the theory of relational marketing [30] that is based on the management of customer relationships that investigates the process to attract, retain, recover customers, and to create loyalty to the brand and the organization over time, covering software, hardware, communication networks, among others. Taking into account the personalization of the client, that is, to discover and get to know him in detail. CRM is a global strategy that allows the company to identify, acquire, retain and nurture profitable users, by building and maintaining long-term relationships with them. In this regard, information and communication technologies are key to success [23].

However, its remote application in the dental field has been more deficient, which has led some professionals to be no exception [33]. In such a way, that in some consultations of clients-patients, specialists and /or providers its implementation is giving results, thus, teleodontology is a subcategory of telemedicine that allows the exchange of digital information [28-31]. Therefore, it is defined as the use of electronic information, image and communication technologies, which include interactive audio, video and data communications, as well as storage and forwarding technologies, to provide and support the provision, diagnosis, consultation, transfer of dental information and education about dental care [3]. In this sense, teleodontology could extend its potential beyond the pandemic, which will allow optimizing remote dental care with the client-patient, being used as the first line of action in cases where face-to-face contact is not possible, therefore, its technological support allows the screening and symptomatic management of susceptible cases, and even the identification of cases that will require face-to-face care, using all available communication and technology resources.

It should be noted that, there are different types of virtual consultation, the asynchronous when the client-patient or your caregiver contact the professional to request your evaluation, or point of view, which requires a waiting time between the submission of the question or request and the response of the specialist; the synchronous-that is, when the virtual consultation is in real-time via phone call or preferably by video conference, to interact with the specialist and finally the mixed use asynchronous as synchronous. However, in all cases, the specialist is required to structure a virtual file where he stores all the communications, and visual supports such as photos, videos, and X-rays to support himself in the management of the case [5]. In other words, the technology in teleconsultation and telediagnosis in this area is produced through methods such as dental photography that reduces time by simplifying the transmission, processing and review of dental images, and interactive videoconferencing that provides a level of evaluation comparable to the visual oral examination, increasing the adoption and acceptance of the mobile teleodontology model [17].

In this perspective, teleodontology has had an impact on different specialties, such as endodontics where they help to seek expert advice in time and thus formulate a treatment plan, for the diagnosis of periapical lesions [12] where the method includes digital information for each tooth of interest. Within the field of pediatric dentistry, previous experiences are reported in which caries diagnosis and treatment recommendations have been made with the use of remote dentistry, through the use of intraoral cameras or images obtained through smartphones [5]. On the other hand, in the

periodontics where video conferencing in real time, allows you to communicate with each other through a digital screen to display a video image using a video camera and speaker phones for real time exchange of information and thus be able to detect and diagnose quickly and effectively injuries that can shorten the life of the teeth in the oral cavity [6] so that, they can be used therapies periodontal support that can be given to customers-patients across geographic distances.

Likewise, it has been put into practice within the area of orthodontics to assess its requirement or need and to provide instructions to client-patients undergoing dental appliance treatment [14]. That is, teleorthodontics as delivery of health information over distances encompassing diagnosis, treatment, monitoring, prevention and continuing education [4]; likewise, digital orthodontic treatment (clear aligners) is included since with the use of these parameters it becomes clinically effective on the correction of dental alignment problems [1]. On the other hand, its use in oral and/or maxillofacial surgery could be a way to improve access to care in this area since, the quick and clear access to digital images sent by phones or e-mails, allows the surgeon free mobility, not restricted by the limitations of a personal desktop computer [8-17-20]. It is worth considering that, among its benefits are the improvement of the relationship with the client-patient, the support to diagnoses, the incidence in prevention and the monitoring of postoperative conditions of immediate surgical treatments, where the contact with specialists allows the recording of a pain score during postoperative evaluations without the need to attend a dental office, It should be noted that thanks to the collection of photos, it is possible to analyze the surgical site, oral hygiene and improvement of oral functions [22-31], so its use is aimed at complementing the best diagnosis and thus to provide a more timely and effective guidance [39].

In short, just as there are applications or apps for exercise, organization, reminders or makeup, among many others, which have become essential elements of our lives, there are also devices and countless apps that are part of the growing movement called teleodontology. Thus, we can mention some of them that are very useful: Dental Expert (to solve doubts about tooth care); Toothbrush Timer (which guides the user during the brushing process, indicating the area to brush); Virtual Tooth (For the youngest members of the household, where they will learn about oral health); 3D Teeth (with a three-dimensional gallery with abundant information for clients-patients, professionals to students); epocrates Rx, Dental Patient Education, DDS GP, Dentists Pro, Clinic Cloud, which has odontodiagram; Dentistry IQ to obtain content on dentistry, Toothpic which is a Teledentistry application, Teledentists, among others [16].

# 3. Orofacial Harmonization

This being the case, scientific research has made it known that dentists are not only limited to studying, understanding and treating the oral area; but we can take a set of actions aimed at restoring the aspects of balance, beauty and youth encompassing the treatment of teeth, skin, muscles, muscle-aponeurotic system, fat and even bone tissue of the facial area. Taking into account, the etiology which may be related to aging, which is a multiple process that includes extrinsic and intrinsic factors that affect not only one tissue, but multiple facial structures, and leave sequels of different nature [26]. In this sense, dentistry has acquired the right to act in the region between the hyoid bone and the hairy area of the forehead, and between the lines passing over the anatomical point of the tragus on each side of the face [27-29].

Thus, the new specialty that encompasses the above described is referred to as Orofacial Harmonization, which is defined as a set of both therapeutic and aesthetic procedures that aim to aesthetically and functionally harmonize the mouth and face [35]. On the other hand, it is specified as an approved specialty in Brazil and Venezuela that opens the way for dentists to perform a series of aesthetic and functional treatments; in addition, the emphasis on the oral system is the real area of action of the professional [7], which will allow the dentist completed the cases of rehabilitation in a comprehensive way, combining aesthetics and function by resetting the signs of youth that is dissipated during the step of aging, adding, the bone remodeling that may exist due to the lack of elements dental [18]; making the thirds of the face more aesthetically acceptable through procedures such as: facial filling with biomaterials, application of botulinum toxin, bichectomy, cervical liposuction, rhinomodulation, among others [37]. This means that the latest and most advanced techniques related to that harmony, symmetry and orofacial aesthetics, show us that today it is possible to complete aesthetic treatments with the necessary refinement [10].

And as for the friendliness and naturalness, is the constant search of the client-patient, in this new area of dentistry is what we want to achieve is to provide a beauty orofacial smart, which is defined as the harmonious balance and symmetrical, which is provided to the organ complex members in the system orofacial, which are the unit nerve, anatomical and physiological, located in the territory skull facial cervix, constituted by their different structures, which by means of intelligent products and technologies, both minimally invasive and multifunctional, will allow achieving large doses of perfection based on the stimulation of the cellular rhythm, in order to combat the causes of aging under a philosophy based on preventing, correcting and preserving [25].

For this it is necessary, the facial analysis and the identification of the clinical factors or elements that can affect such as age, race, sex, body habits, and the personality of the individual that will influence the interpretation and the success of the results to be achieved [9]. Therefore, within dentistry, the study of soft tissues and facial support is a skill that involves an active and interconnected mechanism that must be evaluated in its entirety, not only in individual parts, and both aesthetic and myofunctional balance must be understood [36], that is, the characteristics of the facial biotype, the contour of the structures, the shading of the skin surface, the depth of the static and dynamic lines, among others, must be clinically evaluated; for the proper selection

of the necessary procedures that will result in treatment success and client-patient satisfaction [15].

Hence, radiographic studies such as lateral teleradiographs, CT, among others, can be used; which can be made elementary for the analysis of the vertical dimension, which has an intimate relationship with the facial biotype, facial alterations, which makes their clinical and cephalometric determination a challenge in terms of the diagnosis of facial alterations. [11-40]. For their part, the photographs currently represent a complement in this analysis, which will allow comparing the various phases of treatment in order to demonstrate the evolution of clinical approaches at each stage of the procedure. In addition, it is an effective tool that sets trends to evaluate and verify by a greater number of people. This photographic protocol in orofacial harmonization is a priority not only for the initial registration of the client-patient's condition, but for a better assessment of the areas with loss of depth and volume, facial measurements, hemifacial symmetry and tissue displacement [36], since a very visual discipline and professional performance is in favor of facial health and harmony [38].

# 4. Dental App

Of the aforementioned approaches, a documentary-type methodological strategy was used using both descriptive and analytical and descriptive methods with an exploratory study using as the main instrument the survey through a google drive form from the local context in Venezuela, in the year 2021, using a sample of 169 clients-patients of the author's facial dental center. Obviously, it was possible to specify with the study that clients-patients claim to know that there are facial aesthetic procedures that help improve the harmony of the face with the smile, but many do not perform it. Additionally, they claim that they would like to change, improve or modify their teeth, face and smile through minimally invasive treatments that include orofacial harmonization techniques. In effect, it becomes evident that the dental modern evolves with the merger of dental aesthetics and facial, which is a novel way to get the beauty's face a dream, because, brings together both techniques as methods to highlight the friendliness of each individual item facial next to their proportions, through treatments with high levels of security to achieve rejuvenate, to modify, to give harmony to the face and give a smile in a natural way.

So, to describe the creation of an information management system called App and dental care as a strategy of customer relationship management (CRM) to identify through the obtaining of photographic images and video signs and characteristics, needs and expectations of the structures of the oral system of the customers-patients (capital relational) is my main objective in this article, taking as a central argument for the arrival of the teleodontología, which is in the midst of the tools of promotion of the relationship marketing. In other words, this information management system aimed at dental clients-patients based on the analytical balance from the OROFACIAL HARMONIZATION offers the benefits that it facilitates when making an online evaluation. That is, easy access, easy registration, of how you should register your images and video to send. In turn, it informs each registered user how dentistry has turned towards a new paradigm within aesthetics. Additionally, it explains the responsibility of the personal data that the user provides, expressing that they will be used for the purpose of creating the clinical history, forming part of the security measures, in addition that your data will not be used without your consent for dissemination or promotion in the media and social networks.

### *4.1. Purpose of the Odontological App*

Contribute to the specialist from anywhere in the world in the revitalization of the capital, relational (customer-patients) through communication, knowledge and the immediate response generated by the exchange of information through this technological tool, in order to optimize the functionality of management to the routing of the organizations dental revealing a different way to manage customers-patients within the harmonization orofacial.

### *4.2. Structure of the Dental App*

This tool is a repository of a set of data, that is to say, it is a centralized space where it stores, organizes, maintains, and disseminates digital information; used by the dentist-harmonizer to perform a preliminary analysis that will support the presumptive diagnosis; and for this the APP ODONTOLOGICA have the following structures:

### *4.3. Tickets of the Dental App*

i. Start session or user registration: Contemplates the user's name and a password to be created. If you are a new client-patient, you must create the account in the registration section with the following data: ID, user, first name, last name, e-mail, password, repeat password, telephone, date of birth, sex (See figures 1-2).
ii. Client-patient personal data privacy note: Complying with the Rules of Bioethics based on informed consent that is used as a written instrument that manifests the expressed wills: the client-patient's right to responsible choice and respect for their own freedom over their body and their health, focusing on clinical practice, ethics and morality in dental offices [13] (See Figure 3).
iii. Initial questions to the client-patient: This section contemplates two questions, one to inquire and the other to find out: who recommended you to the facial dental center? Do you know dentists who correct imperfections in the structure of the face in addition to the teeth? Consider as answer options: Yes and No (See Figure 4).
iv. Model for sending images of your smile: Here the client-patient is asked to send three photos of his smile, showing a graphic representation of these, in the front, ¾ right profile and ¾ left profile positions in jpg or png format (See Figure 5).
v. Model of sending an image of your face from the front: Here the client-patient is asked to send a photo without smiling to evaluate the balance and facial symmetry of

the face in jpg or png format (See Figure 6).

vi. Model for sending images of your facial profile: Here a photograph of the right and left profile is requested according to the graphic representation indicated in this section in jpg or png format (See Figure 7).

vii. Guidelines on how to make a short video answering three questions: To get closer to the client-patient in order to understand their personal linguistic interpretation about their beauty, which is why a video with a maximum duration of 1 min is requested, specifying that the light be projected onto their face and answer the following questions (See Figure 8).

1) What's not to like about your face?
2) What motivates you to improve your beauty?
3) Say three words that define you?

viii. Schedule your appointment: This section allows the client-patient to pre-schedule their appointment indicating the day, month and year of the possible face-to-face consultation; this date will be confirmed later by the dentist. Also, other means of contacts with the dentist are indicated here, such as: email, Instagram and telephone (See Figure 9).

ix. Verification of the information received: for management control, the dentist has a section for storing information with a menu of options including: users, patients, reports and view appointments; in turn, another section where you can verify the data received from each client-patient: personal data (yellow button), photographic and video data (blue button) and delete data (red button); and by clicking on the yellow button a window with personal data can be displayed and edited by the dentist-administrator of the app (See Figures 10-12).

x. Verification of the images and video of each registered user: clicking on the blue button opens a storage window where the photographs and videos of each client-patient are verified and located (See Figures 13-14).

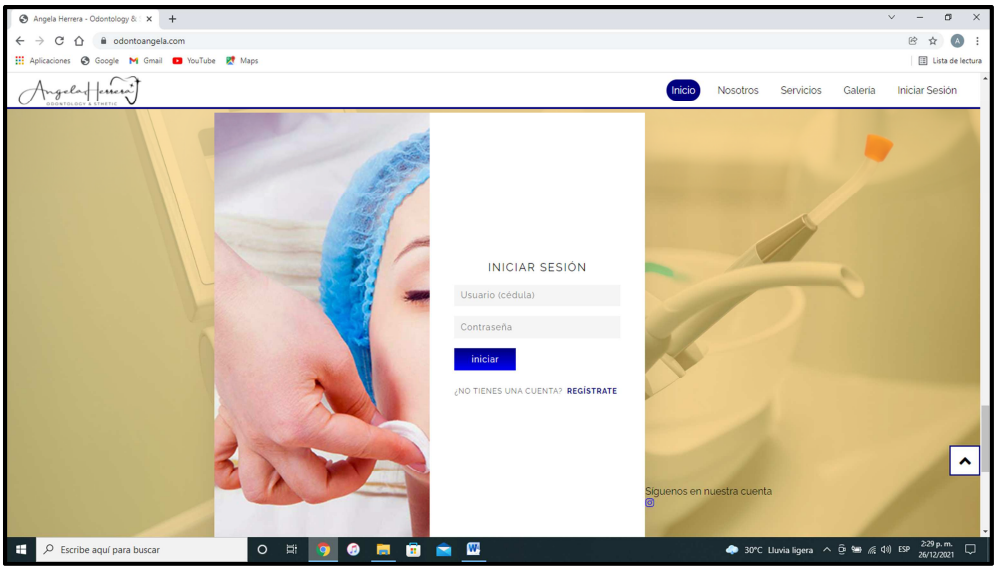


***Figure 1.*** *Login or user registration.*

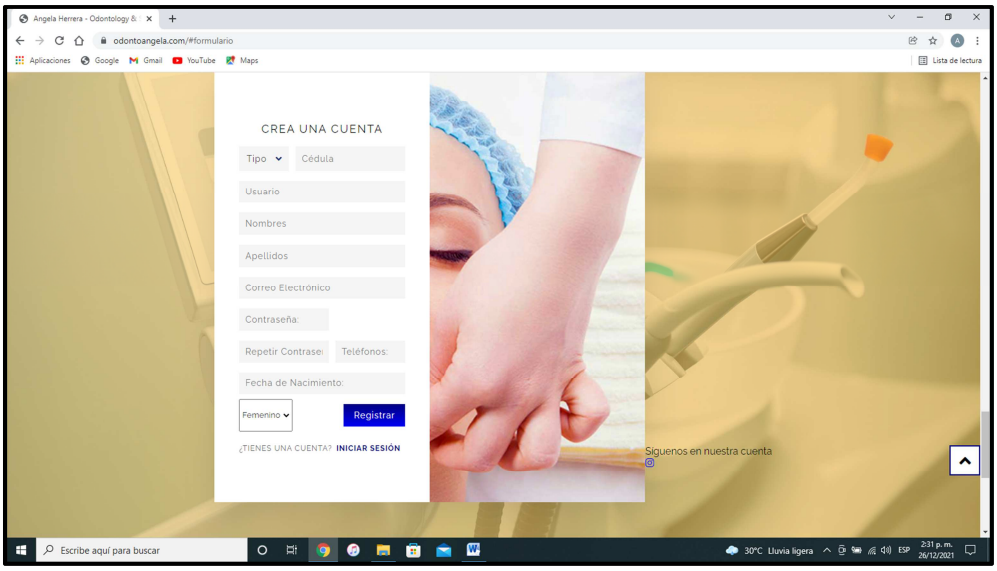


***Figure 2.*** *Creation of the dental client-patient account.*


***Figure 3.*** *Client-patient personal data privacy notice.*

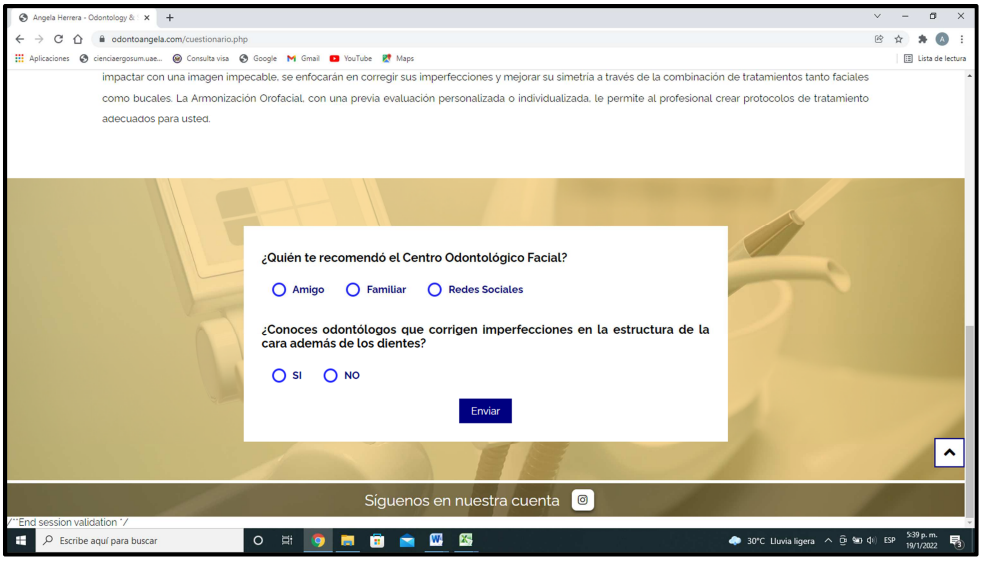


***Figure 4.*** *Initial questions to the client-patient.*

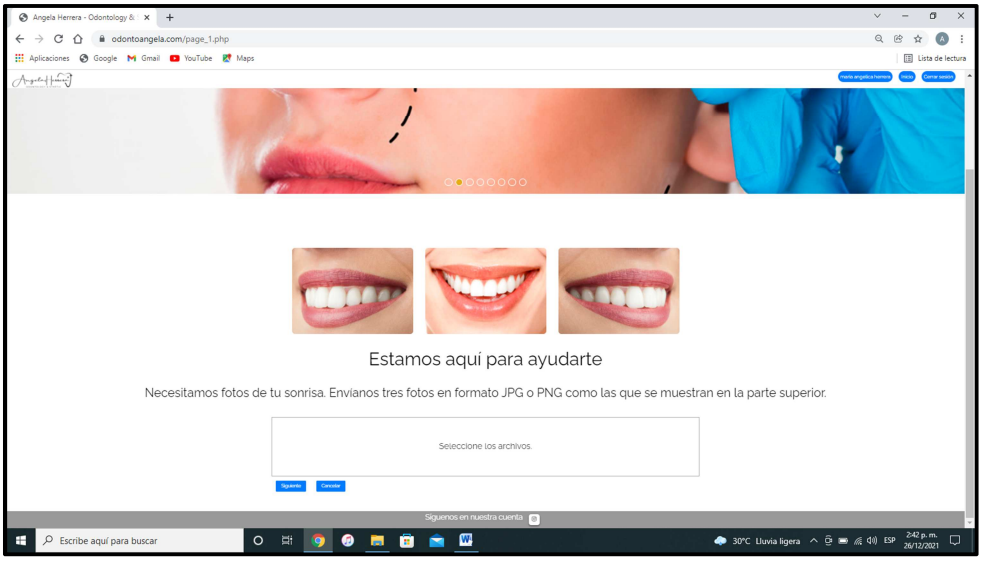


***Figure 5.*** *Guidelines for sending images of your smile.*

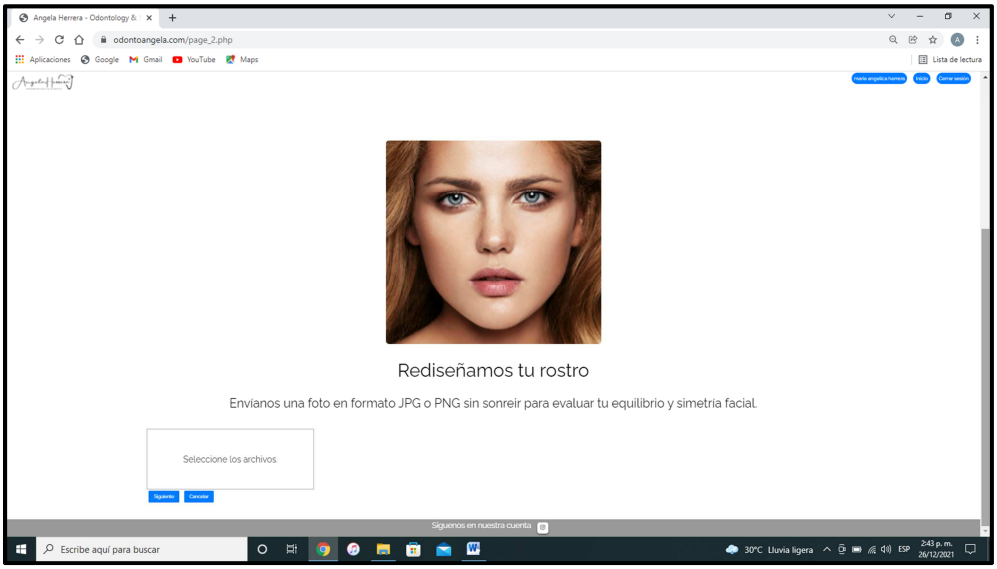


***Figure 6.*** *Guidelines for sending an image of your face from the front.*

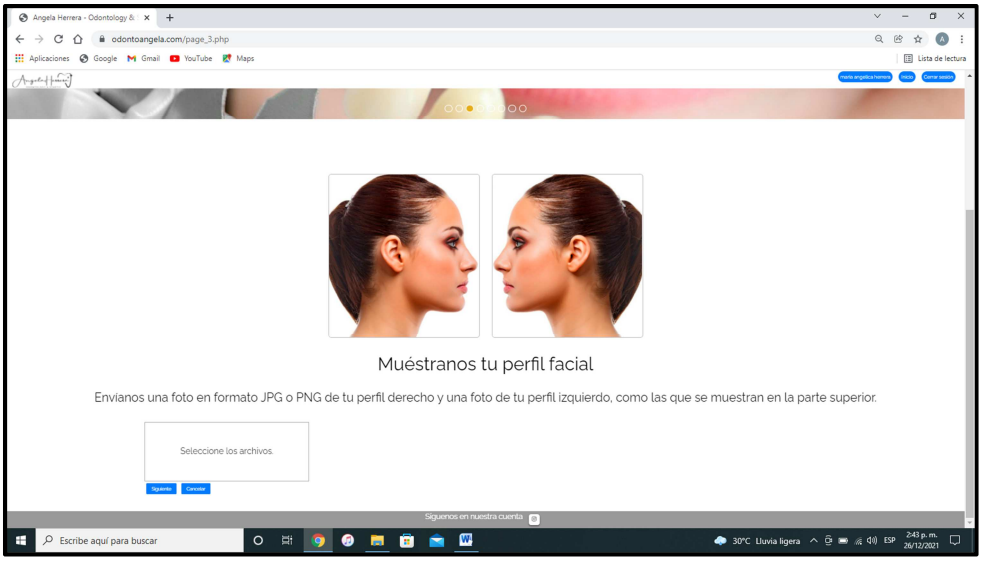


***Figure 7.*** *Guidelines for sending images of your facial profile.*

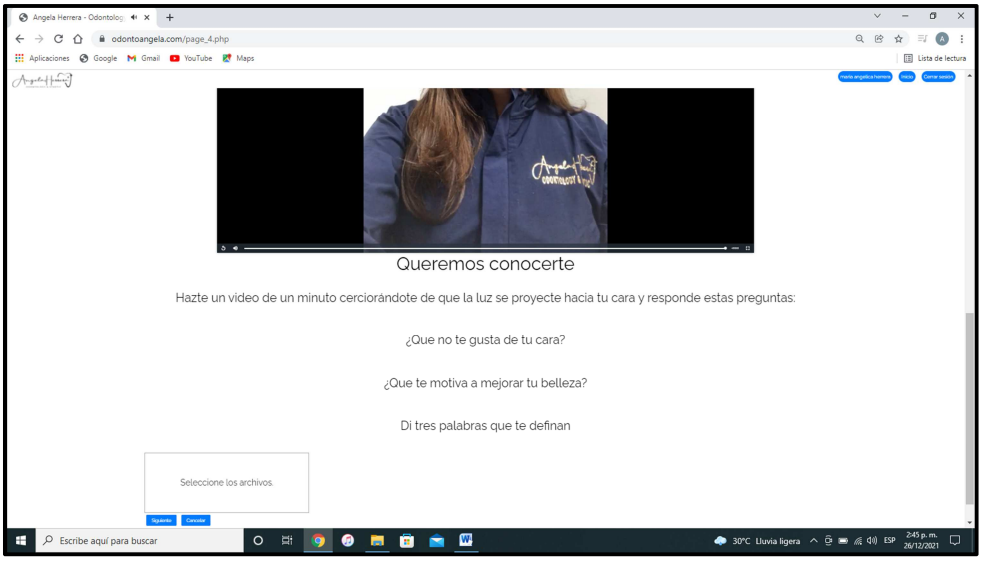


***Figure 8.*** *Guidelines on how to make a short video answering three questions.*

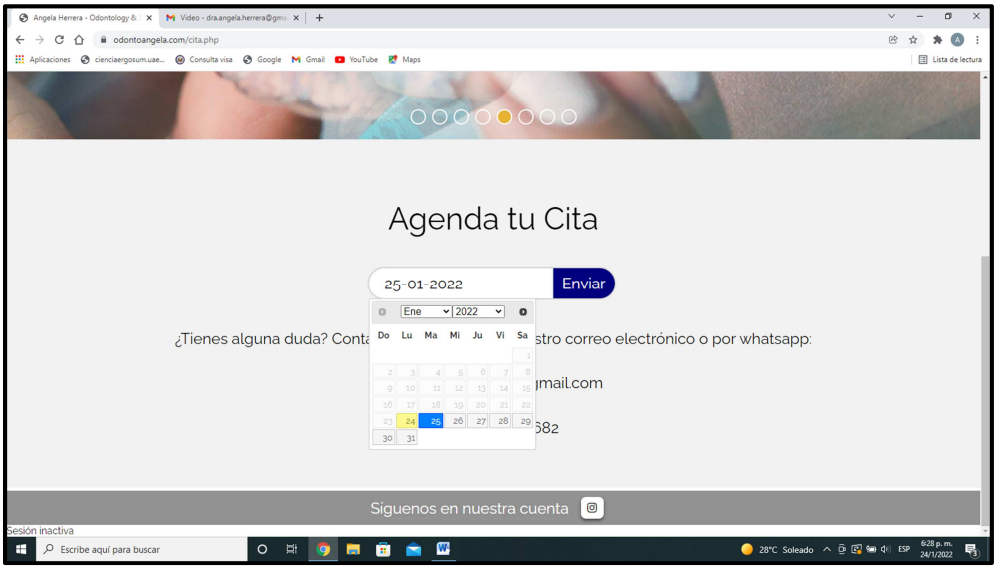


***Figure 9.*** *Schedule your appointment.*


***Figure 10.*** *Verification of the information received.*

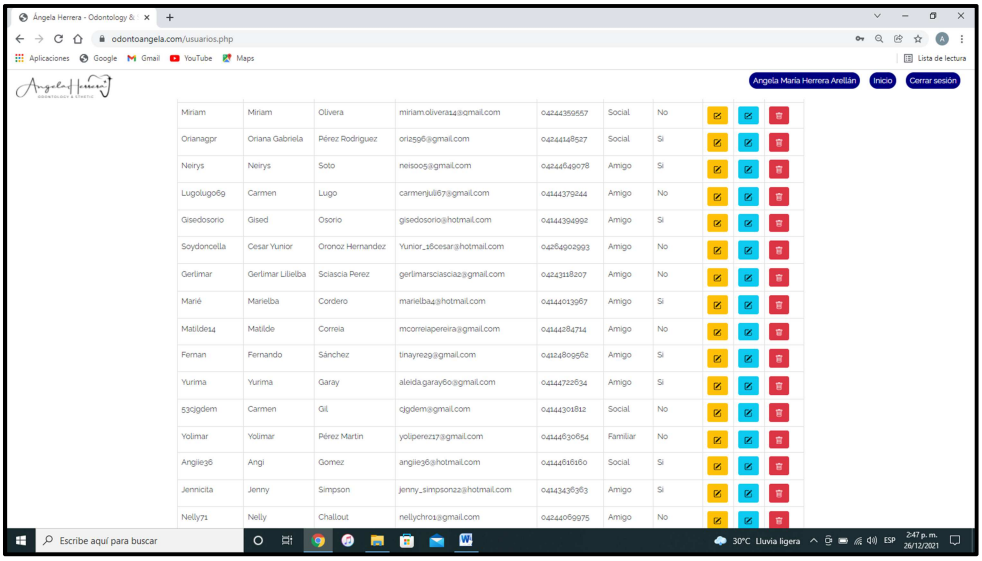

***Figure 11.*** *Data received by each client-dental patient.*

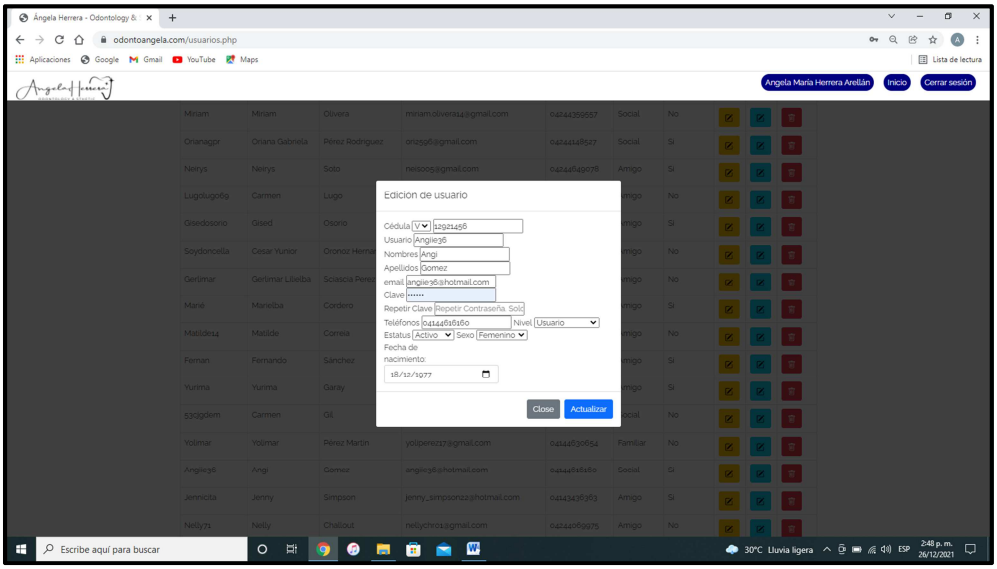


***Figure 12.*** *Verification of the personal data obtained.*

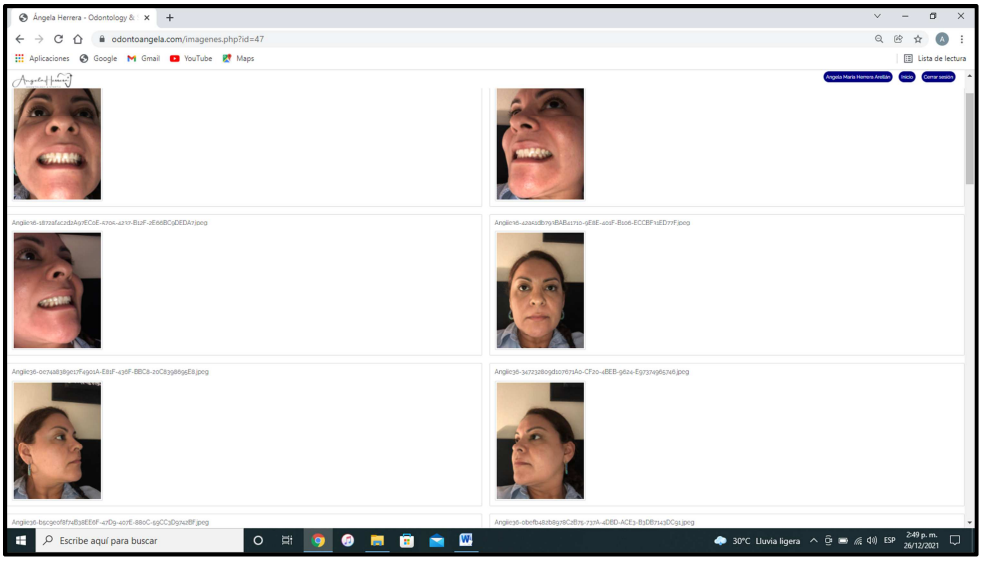


***Figure 13.*** *Verification of the images requested from each registered user.*

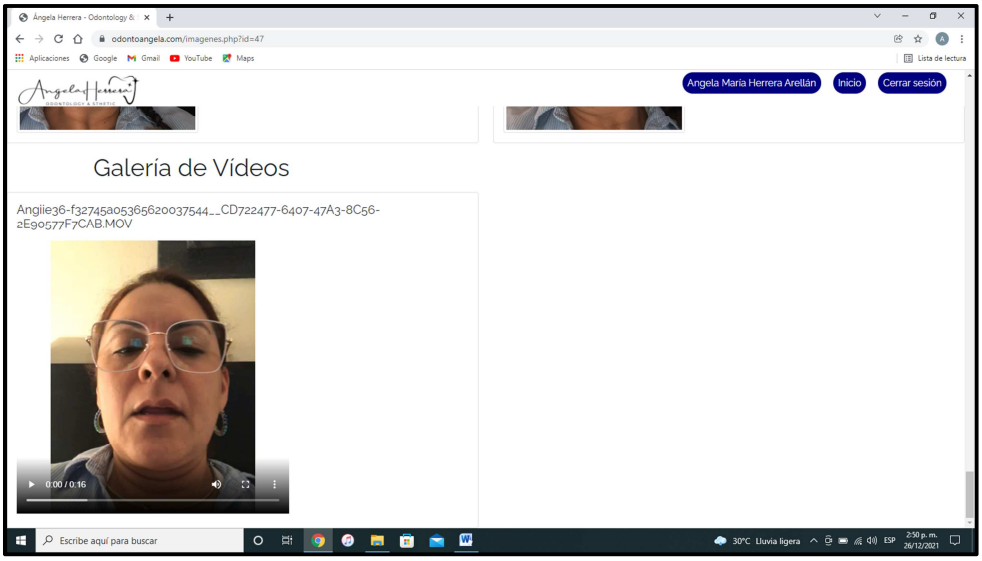


***Figure 14.*** *Verification of requested Video.*

After the above, it should be noted that there was a pilot test phase, with the purpose of having a reference on the behavior of the ODONTOLOGICA APP, corroborating that it is appropriate and reliable, therefore, it becomes definitive. Then, through this simulation, valid conclusions were discovered for the theoretical approach of this study. In its testing phase this software application was applied to 50 subjects by 53 clinical articles. Subsequently, its analysis was validated based on an analytical paperback where the study of the clinical characteristics visible in the photographs of each client-patient was carried out, likewise, a semantic analysis was applied using ATLAS.ti version 9 based on recorded responses where each client-patient expressed their feelings regarding their wishes and concerns based on the three questions answered in the video.

## 5. Discussion

After all the description and analysis of the creation of the dental App, which originated at the time of the high transmissibility of the etiological agent SARS-CoV-2, to minimize the risk of contagion, it can be deduced that the clients-patients are open to the use of internet and new technologies either by taste or by necessity, therefore providing them with a mobile application in this XXI century, makes the dentist have the plus to differentiate his address in a fast growing and highly competitive sector. However, the creation and implementation of a relational marketing system that manages the dental client-patient (relational capital) based on the analytical balance from the OROFACIAL HARMONIZATION makes the use of this tool unprecedented in the fusion of the field of dentistry and facial aesthetics, that influence the managerial functionality for the direction of dental organizations to the information management system, which is based on a set of elements in technology that interact with each other in order to collect and present data to support the actions of the company or organizations [34]; which makes it possible to establish a more complex and complete vision. Therefore, the objective of a management information system is to make managers' decision making more productive and efficient [41].

## 6. Conclusion

The dental App as a CRM (customer relationship management) strategy promotes mutual feedback as a method of support in the diagnosis and future treatment plan in the area of orofacial harmonization, in turn, works as a support in the information service regarding trends, prices and location providing modernization of society. This type of tool allows the existence of a strategic knowledge of the clients-patients and their preferences, as it is an instrument based on the management of the relationship with the client. This makes it one of the first options to be used to have that first approach with the client-patient in a virtual way, prior to the face-to-face consultation, making known characteristics of their structures and their most evident signs through images, in addition to understanding them through a video that they send to the specialist regarding their wishes and concerns. Finally, this strategy is focused on achieving a new long-term competitive advantage, oriented to any organization, regardless of size or dedication.

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