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Risk Perception on Covid 19 and Biosecurity Practices in Private Dental Practice

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ABSTRACT

The arrival of SARS-COV-2 brought new positions on biological risks in dental practice, based on emerging and preconceived perceptions about the risk of cross-infection and COVID 19, as well as on the sociopolitical conditions of each context. The objective of the research was to understand the perception of risk regarding SARS-COV2, and to show how this influenced biosafety protocols in private dental practice. A qualitative study was carried out with individual interviews with ten dentists, which were audio recorded and later transcribed to perform content analysis from the theoretical contributions of risk anthropology. Fear sustained the perception of professional risk, which becomes more complex in the context of a lack of awareness about cross-infections in general, the multiplicity of sources of information and the divergent interests that move the flow of information around the subject, situations of which derives from the implementation of costly strategies, not always useful and occasionally unnecessary, whose practice also contributes to the vulnerability of the user population.

Keywords: Risk Taking; Biological Risk Containment; Pandemics; COVID-19; Community Dentistry

Introduction

Stomatology is one of the professions most at risk of get contagied from micro-organisms with the capacity to cause infectious diseases such as influenza, pneumonia, tuberculosis, herpes, hepatitis, HIV and more recently COVID 19, however the vulnerability faced respect to this disease, is greater than to other types of cross-infections, as it is not limited to contact with hematic material, saliva or secretions, but also includes exposure to aerosols that are produced and released through speech, coughing and sneezing; droplets of which are deposited on surfaces that can easily come into contact [1]. To the above should be added the socio-political response that framed the pandemic in its early stages, where inaccessibility to personal protection devices prevailed [2], and there were delays in access to immunisation, given the prioritisation of other professions for access to it, under the argument that odontologist were not in the front line of attention to COVID, invisibilizing that they were first contact professionals, with the social and ethical obligation to guarantee the right to health, both to those who are known to be ill and to those who do not know their diagnosis or are asymptomatic [3]. With the above against them, professionals were forced to implement adjustments to their biosafety protocols, and there was a delay in the issuance of specific biosafety protocols for odontology [4], which became particularly serious if we consider that prior to the pandemic, the existence of weaknesses in the implementation of biosafety measures for cross-infection control and/or difficulties in the integration of knowledge and the adequacy of practices had been documented [5].

In the context of the pandemic, particularly during the first and second waves, several studies were conducted to explore the adequacy of health wokers knowledge to estimate risk and adjust practice, generally documenting that the level of knowledge was at an acceptable average and even high and very high level [6,7], however, others stated that while the level of knowledge was acceptable, there was limited understanding of additional biosecurity precautions [8], also that, regardless of the knowledge level scores achieved, this did not translate into the successful implementation of biosecurity practices [9]. Now, while it is true that there was a delay in issuing specific biosafety protocols, it is pertinent to note that the American Dental Association [ADA] has written enough, -prior to and during the pandemic- that biosecurity includes the proper and strict use of protective equipment, as well as the rigorous implementation of asespsis techniques, sterilisation and regular biological controls, in this context, however, it is necessary to recognise that despite the specificity of these guidelines, studies on biosecurity continue to document weaknesses related to an over-reliance on professionals, and with the circulation on the market of ineffective disinfectants or inappropriate practices, such as the reuse of equipment and materials that are designed to be disposable. Among the weaknesses pointed out, the relaxation of sterilisation procedures was particularly relevant, especially in relation to regular verification processes to ensure the correct functioning of the equipment [10].

In San Luis Potosi, Mexico, we have been working for the last 20 years on a line of research of sterilisation techniques and the effective use of biological indicators to verify these procedures, noting, among other things, the lack of interest of personnel in training on the subject, the underestimation of the risks of cross-infection, and the refusal to invest in the purchase of biological indicators, as well as the presence of errors in the handling of the equipment [11]. In long-term follow-up, we have also documented that sterilisation procedure failures have a tendency to remain and not improve [12] With the emergence of the pandemic, we witnessed the adaptation of biosecurity protocols, and wondered to what extent this experience would benefit compliance with sterilisation-related actions. Our research complements other research carried out due it is based on a different paradigm of approach, the qualitative one. In addition, we draw on the theoretical contributions of the anthropology of risk to explain the findings, since, by researching along these lines, we have been able to identify that the estimation of risk and the adoption of strategies to contain it, are based both on a global perspective and on personal experience, because, as this theoretical proposal states, risk does not exist objectively per se, but emerges as a social construction, «risks are socially constructed by each society, so the presence or absence of risks and their acceptance depend on the characteristics of each social group» [13]. Based on the above, the purpose of this research was to explore dental professionals's perceptions of risk of cross-infections and how they frame the biosecurity practices that they implement in their private practices in times of pandemic.

Material and Methods

Qualitative research was carried out, based on the consideration that this paradigm makes it possible to explore, describe and interpret the social and cultural life of people, the social significance from the actors' own perspective and of the phenomena that can only be understood in the context of the interaction itself [14]. The context were private dental practices in a city in north-central Mexico, the informants were constituted on the basis of purposive sampling, inviting the participation of professionals that offer services in private practices and in which they were responsible for the implementation of disinfection and sterilisation strategies. The invitation to participate was made in person and in the consulting room, where the informed consent form was read and signed, and later, it was in this same space that the individual interviews were conducted based on a previously designed semi-structured interview script. Both the number of participants and the number of interviews were determined based on the criterion of data saturation, which occurs when no new data emerges, the development of theories is dense and the relationships between categorisations are well established and validated [15]. The interviews lasted approximately 60 minutes, and at the same time the observation technique was implemented and recorded in the field notes, which was used as a tool for data triangulation. The interviews were recorded and then transcribed in full for analysis. The analysis was carried out by constantly comparing, giving significance to the segments to discover categories and in this way coding with the purpose of obtaining significance, ideas, hypotheses and relevant concepts to analyse from the theoretical proposal of the anthropology of risk. The protocol was reviewed by the Research Ethics Committee of the Faculty of Nursing and Nutrition of the UASLP, where it was approved and assigned the registration number CEIFE- 2022-411. The study was classified according to the Mexican General Health Law with a risk level I, i.e. no risk, given that no intervention or intentional modification is made on the physiological, psychological and social variables of the individuals participating in the study. The anonymity of informants has been respected at all times and all information shared has been handled under strict confidentiality, with audios destroyed as soon as they have been transcribed, and real names replaced by fictitious ones.

Results

Characterisation of the Informants

The group of professionals at the time of the interview had an average age of 35 years, with a minimum of 29 and a maximum of 54. Most of them had postgraduate studies [speciality or master's degree], and their working experience ranged from five to 24 years. The narratives were organised into two categories for analysis,

1. Experiences influencing risk perception, and
2. Adequacy of biosecurity practices. Each one was formed by its own subcategories for the configuration of the central

emerging category «One's own risk is made visible, the risk of others is normalised and becomes quotidian». Table No. 1 shows an outline of this configuration.

Emerging Core Category «Fear of Self-Contagion as a Basis for Risk Perception»

Although informants acknowledge that they have had previous experience with cross-infections within their practices, they acknowledge that they have never been so aware of the phenomenon within the practice, and this awareness generated emotions of uncertainty and above all fear. «Maybe it made me a little bit more afraid, because otherwise I would have continued handling it the way I did before...little by little you start implementing [new measures], you become a little bit more afraid». «You tell them [patients] not to minimise, for example, if a child has a fever, runny nose or discomfort, that's a reason not to go to the consultation, unless it's an emergency" «The most important thing is to make them [users] aware that they can't take it lightly, and that, just as they have been infected, they can also infect others...they should think about it». According to the narratives, prior to the pandemic, infections and the risk of infection was conceived as an individual, everyday phenomenon in the clinic setting, even if an infection was suspected to have originated in care, it never led to changes in biosecurity protocols. «Sometimes when we didn't disinfect with care, the same [infections] would appear in several patients, coughing and so on, we tried to be more careful in cleaning, sometimes we would tell the patients, but sometimes we didn't even know if it was from the office or not, we just stayed out of it». By viewing risk as an individual matter, the user was seen as the one responsible for the occurrence of these infections and, secondarily in the procedures, in their narratives, the prevailing need to exempt themselves from risk is evident «The patient who arrives doesn't know that has an infection, and you take care of them, let's say, in a normal way, that's the cause, the lack of knowledge of the patient and then of us". «I had seen a number of patients on those days and two weeks later I found out that several of them tested positive [for COVID 19], but I didn't test positive, I was left wondering if it was because of some contact between them here, because two of them did test positive on the same dates».

Category 1. Experiences that Influenced the Perception of Risk

Lack of Empowerment to Recognise and Act on Risk

Some of the informants indicated that their first knowledge about cross-infections was obtained at undergraduate level, however, this remained at the level of mere information, since when they described their performance in the professional practice clinics, it did not transcend and there was no reinforcement of the subject at the operational level. «I think that because of the rush at university we didn't even disinfect, we didn't even have the culture, since university you went and grabbed this and then the other, there were a thousand hands and a thousand saliva with which you had contact, and you grab the pen and touch the patient again...».

«Before, I wasn't very used to it, in my degree or in my social service I didn't change the handle of the dentist's chair very often, nor the light of the lamp, nobody told you anything». «Once when I came out of surgery at university, I didn't realise until I got home that I had a stain of blood on my lens, and nothing, it was just me as if nothing had happened».

Marketing Influence and Social Media

Some of the informants reported being updated on disinfection, sterilisation and cross-infection prevention from information shared through social media, none spoke of searching for scientific articles as a source of information to make decisions on the subject. Other actors who reported being actively involved in providing them with information on risk confrontation, and more specifically on COVID 19, were the laboratories that trade useful supplies for these purposes. «I know about this because I have had sales agents from certain commercial houses come to give me demonstrations». «I saw this on Amazon, it's sold by a laboratory, and it comes with instructions, and with God's blessing, that's all there is». «On TV I heard a little bit about some kind of, I don't know, diffusers or something like that, they're like for the concentration [of CO2] in the office, but I don't know how feasible they are or how much use they could be".

Category 2. Adequacy of Biosecurity Practices

Biosafety and Social Vulnerability

They considered it necessary to implement strategies to reduce the likelihood of becoming infected and to avoid the risks of cross-infection. We identified, however, that some of these strategies have affected one of the most disadvantaged population groups, the poorest sick people. One of the strategies consisted of denying care, some only attended to what they considered to be an emergency situation, however, this became a criterion determined by the subjectivity of the person who would provide the consultation or by establishing very rigid criteria for accessing care. «They are told not to minimise, for example, talking about private consultations, if a child has a fever, runny nose or discomfort, they should not go to a consultation unless it is an emergency". «The most important thing is to make them aware that they can't take it lightly, just as they have been infected, they can also infect others". «But I do put a lot of emphasis on that... this and well, these are the precautions I take, they fill out a questionnaire and a message is sent to them before confirming the appointment, telling them that if they have any kind of symptom, they should not go to the consultation».

They even spoke of the mistrust they had when questioning the patient and knowing that the patient could falsify information so that the care would not be denied «To do the correct or well, you try to do the correct anamnesis, but it depends on whether or not they tell us

the truth or not [laughs]». Another issue that could have put the users in vulnerability was the restriction of accompaniment, although in some cases it was specified that, in the case of children and teenagers, exceptions had to be made. Finally, the use of Kn95 masks was also a requirement, which was not a possibility for all users, especially the poorest ones. «From the waiting room, don't have so many patients waiting there without putting distance, demand that if they go to the dentist's office, they don't go with a normal three-layer mask, but with a kn95».

Economic Impact of Personal Protection Measures

The informants said that the pandemic brought a series of investments that they did not face before, which became more complex in a context in which they also contemplated the suspension of consultations as the safest strategy, or, if they did not suspend consultations, the number of people attended daily decreased, due to the time it took to carry out biosecurity actions. One of the investments that hit their pockets the hardest was the purchase of personal protective equipment, on which they did not skimp, as its use gave them some certainty. «Everything that was added to it, the double mask, the glasses, the face shields, the lab coat, the surgical boots, the boots are good because sometimes we drop them in our tennis shoes». «Increase your personal barriers, have your gloves, N95 masks, goggles, face shield, reduce the use of the piece by the aerosol, use the scrub and a surgical coat, we had disposable coats made of thick waterproof cloth also long sleeved, barriers on all surfaces we touch, avoid touching surfaces that are not covered.»

«The use of physical barriers between the patient and the odontologist, my protective glasses and my surgical cap, I changed my triple-layer mask for a kn95, I said, well, if I am going to protect myself this way, I wouldn't have to get infected». They were also forced to speed up the attention, schedule less consultations and even refuse consultations. In addition, the number of consultations was more dependent than ever on having all the necessary conditions for disinfection. «If I don't have enough to sanitise the office, the patient is cancelled, I tell them that the work cannot be done for whatever reason, I prefer to have the necessary measures to be able to work in optimal conditions». «Knowing what you have and if you don't have what you need to clean and sanitise, let the patient rest, reschedule until you have everything you need and it is perfectly sanitised, very well controlled, for me that would be the most important thing». «We already had the disinfection protocols in place in the clinic, but without a doubt, we need to be more constant and specific, because normally they were done every day and now we have to do it before, after and during the treatment». «I try not to keep appointments too close together, I don't like to keep two or three people waiting for me, especially if I'm going to take a long time to do a job». Get disinfectant solutions was another significant source of investment, as disinfection featured prominently both in webinars and in information shared via social media, while sterilisation was rarely discussed, probably because it was assumed that the process was known and done correctly. None of the participants said they had made changes to these processes, nor had they included any strategy to verify the relevance of the cycles.

Disinfection focused on the contact surfaces of the patient, rather than the practitioner, always placing the user as the likely guest and not the dentist. New spaces began to be recognised as being at risk and in that sense to be considered relevant to disinfecting. «Before it was the spittoon, now it's all the areas where patients touch, the tray, the parts, the lamp, parts that before were not taken into account for disinfection, even though it should have always been right?» . «The LYSOLs are never lacking, either for floor, or spray, nor chlorine, with the chlorine I feel much safer if it goes in the spittoon and in the sink where you can wash the instruments, where you wash the instruments the chlorine goes there mainly by spraying or putting it on the instruments».

Increasing the frequency with which instruments are washed and potentially infectious biological material is disposed of, including not wearing the uniform in public and/or domestic spaces, was also featured in their narrative. In this regard, however, the issue of sterilisation or verification of such processes did not feature.

Discussion

This study confirmed, as other studies have done before, that the pandemic triggered a great concern and interest among dental personnel to learn about the risk of COVID 19 and how to deal with it, and as a consequence, most professionals incorporated the use of new equipment, clothing and supplies into their practice. [2-4,9], What this study was able to document, however, is that the adoption of these biosecurity practices, more than the protocols issued by formal institutions, was due to the emotion of fear and uncertainty that invaded the professionals, those who acted in recognition of and prioritised their own vulnerability to SARS-COV2, since the perception of risk was identified as being based, as has been documented in other studies, on the fear of becoming infected or bringing the disease to their relatives [16]. This is to be expected since, as Susan Cutter says, although «risks are always present, they become hazards only when humans or the environment come into contact with them», Under this premise, elaborating a perception of risk in general and in the first place demands that we assume ourselves to be vulnerable in relation to what is threatening, because it is in contact with it that we have the opportunity to subjectivise risk, to stop contemplating it as something abstract and to assume it as an experience that acquires a sense of ominousness, that occurs when experiences that have become commonplace suddenly involve conditions over which we perceive a sense of lack of control or affect our familiarity with those situations [17].

The implementation of biosecurity practices did not emerge from what they know about cross-infection, but from the emotions

that were generated by taking on the context and timing of the risk, because as Fischhoff, Watson and Hope note [18] the adaptations to the dangerous situations emerge not from real and measurable risks, but from the perception that each person elaborates from their own subjectivity, which becomes from their own life experience, worldview and the prioritisation that is made from social and professional values, both personal and collective. In the perception of risk that the professionals constructed, it can be observed that within the framework of the emotion of fear and uncertainty, they prioritised above all their personal safety, as Renn mentions [18] individuals in a state of risk become more individualistic and hierarchical, with a pessimistic outlook and increased vulnerability to risks. Professional risk should cease to be seen as a fatality and should be assumed as an act of responsibility, but for this to happen, more must be done than just including microbiology content in the subjects; reflective processes must be encouraged in real practice, situations that the informants say they have not experienced, and which explains why even though other authors have reported that the level of knowledge about cross-infection is acceptable, this does not translate into safe interventions in practice [5-9]. In the light of the above, we have identified that there is a tendency to normalise risk, and even to devalue the risk when it comes to cross-infection in the user population, a situation that is relevant because it shows how, while recognising and even overestimating one's own risk, The user's perception of risk is accepted on a daily basis, as Douglas' contributions show, because the perception of risk also emerges from the processes of interaction that prevail in relationships [19].

In this case, in the therapeutic relationship, the professional assumes that he/she is the guarantor of his/her own and others' safety, even when several studies have documented weaknesses associated with biosafety. Within the framework of the contributions of the anthropology of risk, professionals have developed a sense of subjective immunity not about their personal risk, but about their patients' risk to cross-infection in general, understanding this term of subjective immunity as defined by Douglas [13] as «the socially learned tendency to ignore dangers that are part of everyday life, or to downplay infrequently occurring threats», a device of the psyche to perceive the world as less threatening and stressful. This sense of immunity to a foreign risk explains the overconfidence that other studies have pointed to as a threat to cross-infection control [10], which we must problematise not as an individual stance, but as a consequence of the existence of work cultures that are socialised during professional training and legitimised within the trade itself, although content related to microbiology is reviewed, there is a need for spaces for reflection to raise awareness of the own vulnerability and that of others, and for actions in which the more experienced socialise their position on the risk of cross-infection with the less experienced. In the words of Martínez [20] «This creates a series of patterns of relationship with risks that tend to be perpetuated over time, generating not only a culture of work, but also a culture from work».

In addition to the vulnerability of not having developed the skills to position in an assertively way in the face of risks during university studies, there were other situations that added to this vulnerability, especially in the first and second waves of the epidemic, where dental proffesionals were not prioritised in the distribution of protective equipment or the delay in the construction of specific biosecurity protocols, situations that forced them, in the search to keep their practice active while reducing exposure to risk, to implement highly costly measures, many of which were ineffective and inefficient [21]. In addition, in the specific context of Mexico, there was a presidential stance that segmented resources, and therefore immunisation, between public and private health professionals; In the words of President López Obrador, «private doctors must wait for their vaccination until it is our turn», This is debatable, as it violates the right to health, which is established in the Political Constitution of the United Mexican States, and as a consequence, it directly harms the professionals, but also, indirectly, the user population that used to go to the private system to seek care [22]. Another vulnerability they faced as health professionals is related to the voracious marketing that was promoted in the midst of the chaos generated by a virus about which little was known, because fear as a mechanism that seeks to avoid the unpleasant, denies the real, and in that sense, also fails to see what is possible in the containment of the threatening. `

The incessant need not to feel vulnerable leads us to be tyrants, and at the same time, to be subjected to seductive marketing techniques that often misleadingly promise a false immunity from threats [23]. This contributed to the vulnerability of informants to predatory companies that promised them false certainty through equipment and materials that often lacked solid scientific underpinning, as demonstrated with the sanitising arcs, which to date have no scientific evidence to support their efficacy in inactivating SARS-CoV-2 or other viruses associated with acute respiratory infections, because as documented in this study, which coincided with another study by Turini and Cols [24], the sources accessed by professionals to construct their perception of risk were based more on information circulating on public websites or virtual communities than on scientific documents. As noted above, the vulnerability experienced by dental professionals in the first and second waves of the pandemic in turn translated into societal vulnerability. In an effort to minimise the risk to which they were exposed, the professionals invested significant amounts of money in equipment, materials and supplies for disinfection, which were highly expensive, given the increased demand and/or shortages, this resulted, as other studies have pointed out, in a significant increase in the costs of care, which in turn contributed to some patients seeing their right to health vulnerated for economic reasons [21,25], This, together with the conditioning of access to care, such as the use of highly efficient mask or simply going to the consultation, constituted a serious threat to access to the right to health for the poorest people [26]. Fear obscures and results in an exaggerated perception of what is considered threatening, paralysing the reasoning from which best practices can be analysed and chosen

to contain what is identified as dangerous, resulting in negative qualities being exposed and thus contributing to the construction of stigma [27].

Delumeau [28] states «when collective fears lead to social actions, such as identifying a perpetrator or a culprit, they become social fears», social fears justify, invisibilizes or normalise stigmatising and discriminatory practices, and this could be seen in this research, where in the search to reduce the probability of being affected, they suspended or conditioned the attention, violating the population's right to health. Finally, while in several studies, including the present one, it became evident that a greater concern about own's risk of infection developed, resulting in the incorporation of protective equipment such as goggles, face shields and frequent hand washing, as well as the proper and regulated use of surface disinfectants, it is striking that, as another study pointed out, during the contingency, no changes in sterilisation processes have been documented [29], although strengthening such procedures has been identified as necessary in a large number of protocols developed to ensure proper management of the epidemic. Readers are asked to take into consideration that this study was conducted with individuals in private practice, who in other studies have been reported to have less knowledge and agency in the face of risk, because unlike odontologist practicing within public health institutions, they are subject to less access to institutional information and training [30]. Similarly, we should consider that most of the informants have been women, which has been documented as a good prognostic factor for the incorporation of cross-infection prevention measures [31].

Conclusion

The purpose of the research was to understand the perception of risk and to visibilize how this affects biosecurity practices within private practices in times of pandemic. It was possible to document how the COVID-19 pandemic disrupted protocols in dental care primarily through the emotion of fear and uncertainty in the face of a particular disease. In this regard, it is worth reflecting on the adaptation of biosecurity protocols made in the context of the pandemic. Although adjustments were made, there is a risk that these will be temporary, since by focusing on fear, as it becomes normalised, practices will tend to be reduced, and the risk of cross-infection in general will tend to be maintained. The experience of the subjectivation of risk could have been constituted as a moment to rethink the practice of stomatology, particularly to assume the ethical and legal responsibility of managing personal risk but also that of others, developing awareness of how contextual conditions such as threat, can involve us, and also the user population. It was identified that the perception of risk regarding COVID 19 gets complex by a lack of awareness of cross-infection in general, the multiplicity of sources of information and the divergent interests that drive the flow of information on the subject, situations that result in the implementation of costly, unhelpful and occasionally unnecessary strategies, the practice of which also harms the user population. It is desirable to continue to carry out research that leaves a historical record of the vicissitudes and emerging responses that the pandemic brought with it, health records makes it possible to make better decisions and strategies in the future, it is desirable to explore how the same phenomenon was experienced in dental consultations within the public health services.

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