

## Professional responsibility and patient safety in Dentistry

Responsabilidade profissional e segurança do paciente em Odontologia

Responsabilidad profesional y seguridad del paciente en Odontología

Received: 07/01/2023 | Revised: 07/07/2023 | Accepted: 07/08/2023 | Published: 07/12/2023

**María Coralía Idrovo Campoverde**

ORCID: <https://orcid.org/0000-0002-2166-9577>

Universidad de Cuenca, Ecuador

E-mail: [coralia.idrovo15@ucuenca.edu.ec](mailto:coralia.idrovo15@ucuenca.edu.ec)

**Erika Susana Bacuilima Ñauta**

ORCID: <https://orcid.org/0000-0002-8877-032X>

Universidad de Cuenca, Ecuador

E-mail: [erika.bacuilima@ucuenca.edu.ec](mailto:erika.bacuilima@ucuenca.edu.ec)

**Micaela Salomé Cordero Morales**

ORCID: <https://orcid.org/0000-0003-3522-9676>

Universidad de Cuenca, Ecuador

E-mail: [micaela.cordero@ucuenca.edu.ec](mailto:micaela.cordero@ucuenca.edu.ec)

**Manuel Estuardo Bravo Calderón**

ORCID: <https://orcid.org/0000-0003-2968-1519>

Universidad de Cuenca, Ecuador

E-mail: [estuardo.bravo@ucuenca.edu.ec](mailto:estuardo.bravo@ucuenca.edu.ec)

### Abstract

**Objective:** To analyze the importance of professional responsibility and patient safety during dental procedures performed at the dental school of the University of Cuenca. **Methodology:** A cross-sectional descriptive observational study was carried out using a validated questionnaire based on the key dimensions of the SERVQUAL model to 50 patients between 18 and 65 years of age, who attend the undergraduate clinic of the Faculty of Dentistry of the University of Cuenca during the period March 2023-August 2023, where questions aimed at finding out the management of professional responsibility and patient safety during dental care were addressed. **Results:** Results were obtained from 50 surveys; in which it was determined that patients are satisfied with the biosafety management offered by students during dental procedures. On the other hand, the patients expressed dissatisfaction with the technological advances used by the students in the different areas during dental care. **Conclusion:** It is recommended to improve the technological advances during dental procedures, since the patients were able to indicate that there is a deficiency in this area.

**Keywords:** Professional responsibility; Patient safety; Dental procedures; Technology.

### Resumo

**Objetivo:** Analisar a importância da responsabilidade profissional e da segurança do paciente durante os procedimentos odontológicos realizados na faculdade de odontologia da Universidade de Cuenca. **Metodologia:** Foi realizado um estudo observacional descritivo transversal usando um questionário validado com base nas dimensões-chave do modelo SERVQUAL para 50 pacientes entre 18 e 65 anos de idade, que frequentam a clínica de graduação da Faculdade de Odontologia da Universidade de Cuenca durante o período de março de 2023 a agosto de 2023, onde foram abordadas questões destinadas a descobrir a gestão da responsabilidade profissional e a segurança do paciente durante o atendimento odontológico. **Resultados:** Foram obtidos resultados de 50 pesquisas, nas quais foi determinado que os pacientes estão satisfeitos com a gestão de biossegurança oferecida pelos alunos durante os procedimentos odontológicos. Por outro lado, os pacientes expressaram insatisfação com os avanços tecnológicos usados pelos alunos nas diferentes áreas durante o atendimento odontológico. **Conclusão:** Recomenda-se melhorar os avanços tecnológicos durante os procedimentos odontológicos, uma vez que os pacientes indicaram que há uma deficiência nessa área.

**Palavras-chave:** Responsabilidade profissional; Segurança do paciente; Procedimentos odontológicos; Tecnologia.

### Resumen

**Objetivo:** Analizar la importancia de la responsabilidad profesional y la seguridad del paciente durante los procedimientos odontológicos realizados en la Facultad de Odontología de la Universidad de Cuenca. **Metodología:** Se realizó un estudio observacional descriptivo transversal mediante un cuestionario validado basado en las dimensiones clave del modelo SERVQUAL a 50 pacientes de entre 18 y 65 años, que acuden a la clínica de pregrado de la Facultad de Odontología de la Universidad de Cuenca durante el periodo marzo 2023-agosto 2023, donde se abordaron cuestiones dirigidas a conocer la gestión de la responsabilidad profesional y la seguridad del paciente

durante la atención odontológica. Resultados Se obtuvieron resultados de 50 encuestas, en las cuales se determinó que los pacientes se encuentran satisfechos con el manejo de bioseguridad que les ofrecen los estudiantes durante los procedimientos odontológicos. Por otro lado, los pacientes manifestaron insatisfacción en cuanto al avance tecnológico utilizado por los estudiantes en las diferentes áreas durante la atención odontológica. Conclusiones: Se recomienda mejorar los avances tecnológicos durante los procedimientos odontológicos, ya que los pacientes supieron indicar que existe una deficiencia en ese ámbito.

**Palabras clave:** Responsabilidad profesional; Seguridad paciente; Procedimientos odontológicos; Tecnología.

## 1. Introduction

Dentistry is an essential profession dedicated to the oral health care of patients. Professionals in this branch have the responsibility to provide quality and safe treatment, ensuring the health and well-being of those who trust them to care for their oral health (Perea Pérez, 2013).

In this context, professional responsibility and patient safety become fundamental aspects that must be comprehensively addressed (Cerda, 2006).

Professional responsibility is a fundamental pillar that implies the ethical and legal commitment that dentists have to act for the benefit of their patients, providing quality care and complying with established standards. At the same time, it encompasses various aspects, from technical and scientific competence in diagnosis to the treatment of dental diseases (Cerda, 2006).

In the dental area, the legal claims of patients are very recent and have been increasing over time, this is due to the fact that patients are increasingly demanding in terms of the treatments they receive, so that oral health professionals are now afraid of legal pressure, therefore, measures and personal attitudes should be adopted to minimize this risk. Professional liability is defined as "The obligation of the dentist to repair, respond and compensate for damages caused to patients as a result of acts or omissions, voluntary or involuntary, committed during professional practice" ((Perea Pérez, 2013; Del Valle, 2002).

Similarly, patient safety is a paramount aspect in all areas of health care, and dentistry is no exception. When a patient seeks dental care, he or she trusts that he or she will receive safe and risk-free treatment. In recent years, there has been increased awareness of the risks associated with medical care and greater importance has been placed on patient safety as errors or adverse incidents can have serious consequences, both for the patient and the dental professional, and can affect confidence in the dental care system (Cuenca, 2019; Ecuatoriana, 2013).

Therefore, the objective of this descriptive observational research is to conduct a cross-sectional study in order to address the importance of professional responsibility and patient safety in dentistry, and how professionals can ensure safe and high-quality care for their patients.

## 2. Methodology

The present study was carried out as an observational, descriptive and cross-sectional study, with the objective of evaluating the quality of dental care services in the undergraduate clinic of the School of Dentistry of the University of Cuenca. For this purpose, the SERVQUAL model was used, which is widely recognized as a tool for evaluating the quality of medical services, including dentistry (Lara Alvarez, 2020).

The study population consisted of 50 patients between 18 and 65 years of age, who attended the undergraduate clinic during the period March 2023 - August 2023. These patients were randomly selected and administered a questionnaire specifically designed to assess professional responsibility and safety in dentistry, with a focus on patient satisfaction.

The questionnaire included a total of 11 questions that addressed key dimensions of the SERVQUAL model, such as reliability, responsiveness, safety, empathy, and tangibility (Lara Alvarez, 2020). These questions were related to the patient's

overall experience during dental care, quality of procedures and equipment used, clarity of information provided about procedures and associated risks, and the patient's perception of procedure safety.

Data collection was performed using three electronic devices that had a digital version of the questionnaire through the Google Forms platform. This allowed for an efficient and standardized collection of data from the participants.

To analyze the data obtained, a frequency analysis was used, which allowed determining the distribution to determine the distribution of responses in each category of the Likert scale used in the questionnaire (García Galicia, 2021). Participants had the option to select their response on a 5-point scale where '5' represented 'Very satisfied' and '1' represented 'Very dissatisfied'. A summary of the data comprising the questionnaire is presented in Table 1.

In this way, the overall level of satisfaction of the patients with regard to the dental care received in the clinic was evaluated.

**Table 1** - Summary of instrument data.

<i>Likert Scale Values</i>	1= <i>Very unsatisfied</i> 2= <i>Dissatisfied</i> 3= <i>Not very satisfied</i> 4= <i>Satisfied</i> 5= <i>Very satisfied</i>
----------------------------	---

Source: Authors.

The selection of the questionnaires to be included as part of the sample was carried out by simple randomization, and based on the inclusion and exclusion criteria (Table 2).

**Table 2** - Inclusion and exclusion criteria.

Inclusion criteria	Exclusion criteria
- Patients who attend the undergraduate clinic of the Faculty of Dentistry of the University of Cuenca during the period March 2023 - August 2023.	- Those questionnaires of participants who have not completed all the items.

Source: Authors.

### 3. Results

By relying on the SERVQUAL model and using the Likert scale, we were able to identify possible gaps between patients' expectations and their actual perceptions. These findings provide a solid basis for identifying specific areas for improvement in the quality of dental services.

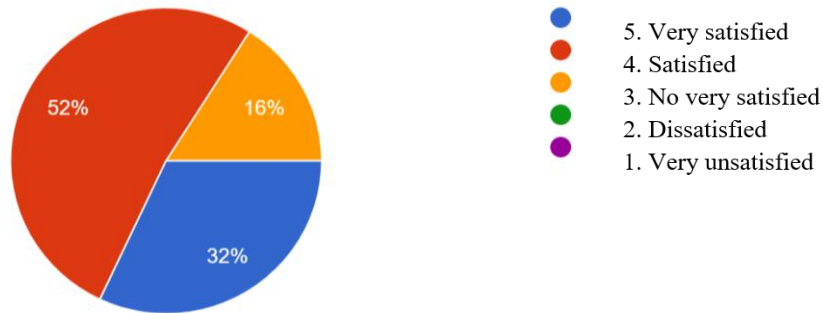
**Table 3** - Study population.

Age (18-65 years)	Nº
Total population	50
Pop. female	32 (64%)
Pop. male	18 (36%)

Source: Authors.

**Graphic 1 - Experience in dental care.**

**1. How would you rate overall experience in dental care?**

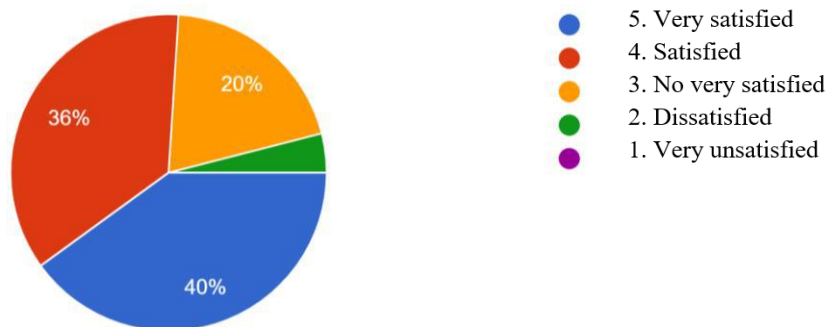


Source: Authors.

The vast majority of respondents were satisfied with the treatments, totaling 32% and 52% = 84%. These findings reinforce the idea that the majority of patients evaluated their dental experience favorably. The high proportion of patients who are satisfied or very satisfied suggests that the approach used in the undergraduate clinic at the School of Dentistry is meeting patient expectations and providing quality care.

**Graphic 2 - Information on procedures.**

**2. Do you think I provided you with clear and complete information about the procedures that were performed on you?**

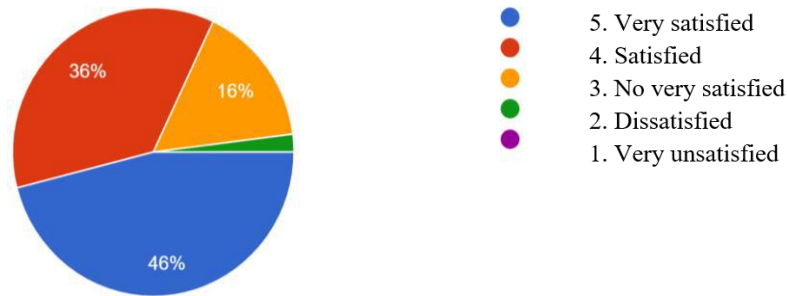


Source: Authors.

The results reveal a generally positive outlook from the patients. Forty percent of the patients were very satisfied and 36% were satisfied with the clarity and completeness of the information provided. That is to say, patients indicate that at the time of dental treatments the student in charge of performing the treatments provided them with the necessary information about the procedures, i.e. how they are going to be performed, in what time, with what material, etc.

**Graphic 3 - Risks associated with procedures.**

**3. Were you provided with sufficient information about the risks associated with the procedures?**

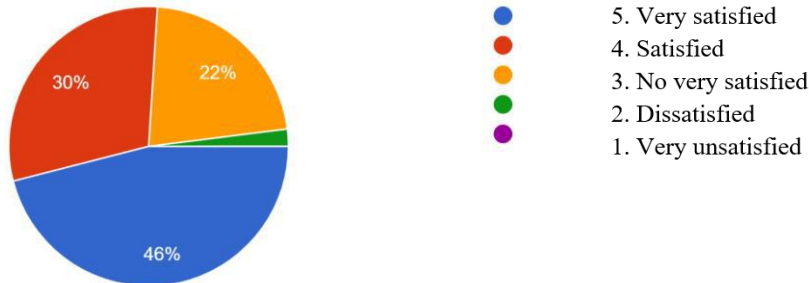


Source: Authors.

The vast majority of respondents were satisfied with the information provided about risks, totaling 46% and 36%=82%. This reveals the importance of effective communication about the risks associated with dental procedures since the ability of dental professionals to provide clear information about risks can influence patient satisfaction and confidence.

**Graphic 4 – Medical history.**

**4. Were you asked about your medical history before performing dental procedures?**

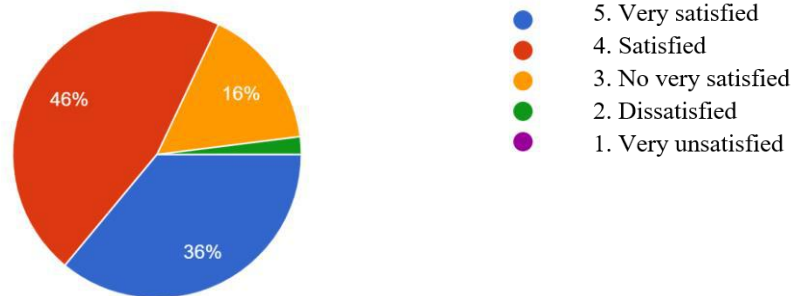


Source: Authors.

The medical history of a patient is very important before performing any procedure, this in order to identify if the patient presents any allergy, disease or any medical event that is of utmost importance, in this case patients indicated in 46% that they feel very satisfied with the fact that students take into account their medical history before starting any dental intervention as it is crucial to ensure their safety and well-being during dental treatments.

**Graphic 5 - Disinfection and sterilization protocols.**

**5. Do you believe that the dental practice staff follow adequate protocols for disinfection and sterilization of equipment?**

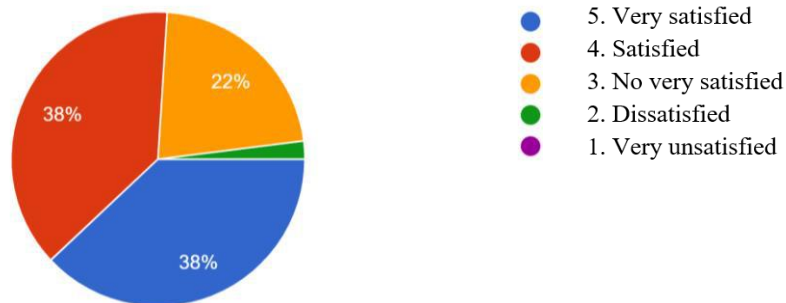


Source: Authors.

The results of the survey show that a high percentage of patients - 46%, feel satisfied despite the fact that the students do not comply 100% with the disinfection and sterilization protocols. It is therefore important to emphasize the importance of full compliance with disinfection and sterilization protocols in dental care as this can contribute to greater safety and confidence on the part of patients, as well as effective prevention of the spread of viruses and bacteria.

**Graphic 6 – Safety during care.**

**6. Did you feel safe during dental procedures?**

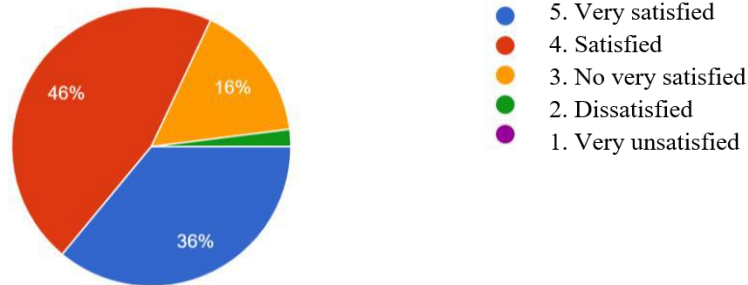


Source: Authors.

The results indicate that 38% of patients chose value 5 on the Likert scale, in terms of safety during dental care, while the other 38% feel only satisfied, this means that patients show high levels of satisfaction in terms of safety during dental care and that students are transmitting confidence in their procedures, since rigorous compliance with biosafety protocols can continue to improve the quality of dental care.

**Graphic 7 – Safety measures.**

**7. Were you provided with information about the security measures that were taken to guarantee your safety during the procedures?**

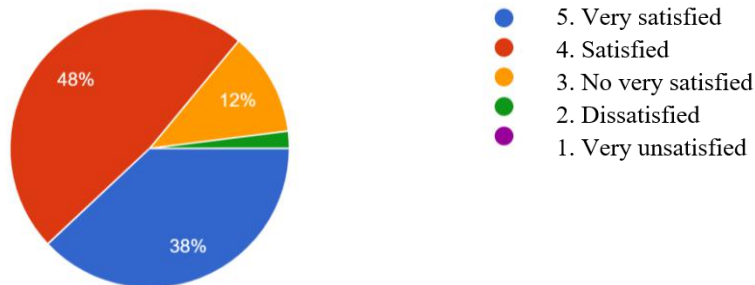


Source: Authors.

The result of the questionnaire reveals that 46% of the patients are satisfied with the information provided on the safety measures taken by the students during dental procedures. This indicates that students are aware of the importance of ensuring a safe and secure environment during dental procedures as safety measures are essential to prevent possible risks and ensure patient comfort or well-being.

**Graphic 8 - Quality of care.**

**8. How would you rate the quality of care you received at the dental practice?**

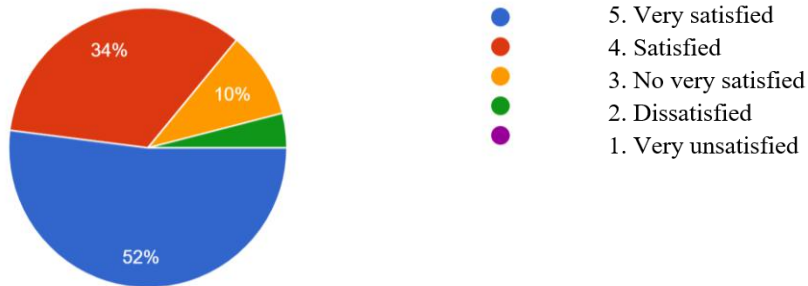


Source: Authors.

The results of the survey show that 48% of the population feels only satisfied with the quality of care provided at the dental school, which indicates that there is a significant percentage of patients who are not completely satisfied with the care received. This perception may lead some patients to prefer to seek care in private clinics instead of going to the faculty clinic. Therefore, it would be important to implement continuous training programs for students and to strengthen available resources or services.

**Graphic 9 - Informed consent.**

**9. Were you asked for informed consent prior to any dental procedure?**

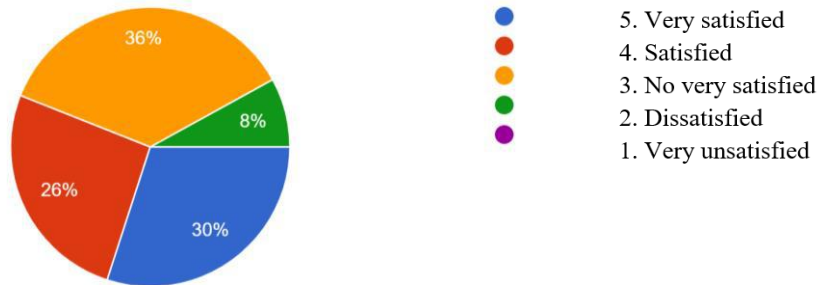


Source: Authors.

The result shows that 52% of patients indicate that they are very satisfied with the fact that they were asked for informed consent as it is an integral part of medical and dental care, as it ensures that the patient is fully informed about the procedures, risks and associated benefits before giving consent. This document is essential to ensure informed decision making and to respect the patient's right to actively participate in their own healthcare.

**Graphic 10 - Advances and new techniques in dentistry.**

**10. Do you consider that the dentist and his team keep up to date on the advances and new techniques of dentistry?**



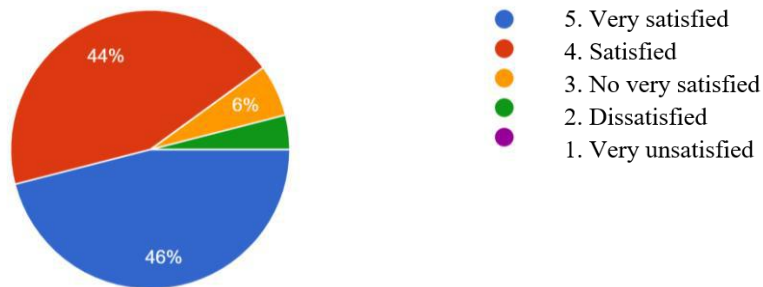
Source: Authors.

Thirty-six percent of the population indicates that they are somewhat satisfied with advances and new techniques in dental procedures. This response indicates that there is a significant proportion of patients who would like to see more updating and adoption of technological advances in dental practice, so professionals should keep up with training programs to meet patient expectations and provide quality, state-of-the-art care.



**Graphic 11** - Dental care recommendation.

**11. Would you recommend the attention of the School of Dentistry to others in search of dental attention?**



Source: Authors.

The vast majority of respondents were satisfied with the treatments, totaling 46% and 44% = 90%. This is a positive indicator that demonstrates that a significant proportion of patients have experienced high satisfaction with the treatments received at the facility and that they are also willing to recommend others to have procedures performed at the faculty's clinic so it is important to continue to maintain high quality standards and constantly seek to improve the patient experience.

#### 4. Discussion

Based on the results obtained in the patient survey, two main aspects stand out as requiring attention and improvement: technological advances during dental procedures and safety measures to ensure the integrity of patients.

Regarding technological advances, both this study and the existing literature support the importance of incorporating advanced technologies in dental care. In a study conducted by (Vaca, 2021), he states that patients expressed their desire for more advanced technologies, such as 3D printing, to improve the precision and efficiency of treatments. Similarly, (Oliveira, 2020) concludes that there is a need to invest in modern equipment and technologies, providing quality and satisfactory dental care.

In recent years, there have been important technological advances in the field of dentistry, which have significantly improved the way dental problems are diagnosed and treated. For example, digital documentation in clinical practice has replaced paper records, allowing for more efficient management of patients' medical history and greater security in case of legal eventualities (Jimbo-Mendoza, 2019).

Among other technological advances in dentistry are digital radiographs, which have largely replaced traditional film radiographs. These emit less radiation and allow clearer visualization of dental problems according to one study (Petrelli, 2006). In addition, intraoral scanners have replaced cumbersome molds used for taking dental impressions, providing accurate and detailed images for the design and fabrication of dental restorations (Gonzalez, 2020).

Likewise, CAD/CAM technology is used to create customized dental restorations in a shorter period of time, eliminating the need to send impressions to outside laboratories (Fierro, 2020). Laser dentistry has also shown benefits, such as greater precision and faster recovery in certain procedures (Maslucan, 2021).

These technological advances in the dental office have improved diagnostic accuracy, enabled more personalized treatments and reduced waiting times for patients. In addition, they have improved comfort and the overall experience in the dental office, resulting in better oral health outcomes.

However, it is important to note that patient satisfaction depends not only on technological advances, but also on other factors, such as the quality of communication and the empathy of the dental professional. These aspects may have a more significant impact on patient satisfaction than the technology used. These discrepancies highlight the need to consider multiple factors in the evaluation of dental care quality and patient satisfaction (Carrillo, 2017).

In addition, it is critical to address biosafety in dental care. Although patients reported overall satisfaction with the care provided, it is essential to further strengthen safety measures to ensure the integrity of patients according to (Wilches-Visbal, 2021). This involves improving sterilization protocols, proper waste management and the prevention of nosocomial infections or cross-infections. (Kuriakose, 2020).

Therefore, it is recommended that the dental office provide masks, disinfectant alcohol and remove objects that can spread the spread of any type of virus. Before any procedure, the clinician should wash hands and use biosecurity elements in the following order: disposable surgical cap, mask (KN95), disposable long-sleeved gown with elastic wristbands, face shield and disposable gloves. As for the patient, a hydrogen peroxide rinse with 1% distilled water is provided to reduce the viral load (Cabrera-Tasayco, 2020).

At the same time, dental units and work tables should be covered with plastic (film) for single use for each patient, handpieces, micromotors and ultrasound parts should be disinfected with 96% alcohol, sodium hypochlorite or autoclave sterilization is also recommended between each patient these rotary instruments. (Cabrera-Tasayco, 2020; Cabrera-Tasayco, 2020)

Existing literature highlights the importance of following strict safety protocols in dental care to prevent the spread of infectious diseases and protect both patients and clinical staff (Javier de la Fuente Hernández, 2011). It is essential to promote effective communication with patients about the procedures performed, the associated risks and the safety measures implemented.

## 5. Conclusion

This observational, descriptive, cross-sectional study based on the SERVQUAL model has revealed the importance of technological advances and biosafety in dental care. The incorporation of advanced technologies can improve the quality of treatment and patient experience. However, it is crucial to ensure proper implementation of safety measures to protect patient health and confidence. These findings support the need to further improve the quality of dental services, both in terms of technology and biosafety, to provide satisfactory and safe care.

However, there are aspects that could be addressed in future research or articles to deepen the topic and broaden our knowledge. One recommendation for future research would be to further examine the relationship between patient satisfaction and the implementation of specific technological advances in dentistry. It would be interesting to explore how the adoption of technologies such as 3D printing, digital radiography or intraoral scanners can influence patients' perception of the quality of care and their overall satisfaction and it would also be relevant to further investigate biosafety practices in dental care and their impact on patient satisfaction.

## References

- Cabrera-Tasayco, F. d. (2020). Biosafety Measures at the Dental Office After the Appearance of COVID-19: A Systematic Review. *Disaster Med Public Health Prep*, 1-5.
- Carrillo, A. T. (2017). Los seguros de responsabilidad civil en Odontología. *Revista Mexicana de Ortodoncia*, 6-10.
- Cerda, J. M. (2006). La responsabilidad profesional en odontología. *Revista ADM*, 111-118.
- Cuases, J. C. (Marzo de 2020). *Nivel de conocimiento en estudiantes de la unidad de atención odontológica uniandes sobre tecnología instrumental para odontología*. <https://dspace.uniandes.edu.ec/bitstream/123456789/11888/1/ACUAODONT029-2020.pdf>

- Cuenca, U. d. (13 de noviembre de 2019). *Manuel de Bioseguridad de Odontología Codificado*. <https://www.ucuenca.edu.ec/images/odontologia/Manual-Bioseguridad-Odontologia-codificado---aprobado-13112019.pdf>
- Del Valle, S. C. (2002). Normas de bioseguridad en el consultorio odontológico. *Acta Odontológica Venezolana*.
- Ecuatoriana, F. O. (2013). *Guía de bioseguridad para odontología*. <https://repositorio.uta.edu.ec/bitstream/123456789/26147/2/Guia%20Bioseguridad%20Odont%202%20Ed.pdf>
- Fierro, O. (2020). Técnica CAD/CAM comparado con técnica convencional en pacientes con indicación de restauración indirecta unitaria posterior. *Int. J. Inter. Dent*.
- García-Galicia, A. (2021). Validación de una escala rápida de satisfacción del paciente en urgencias. *Rev Med Inst Mex Seguro Soc*, 529-537.
- González, C. B. (enero de 2020). *Aplicaciones del escáner intraoral en las distintas ramas de la odontología contemporánea*. <http://ri.uaemex.mx/bitstream/handle/20.500.11799/109174/TEISIS+APLICACIONES+DEL+ESC%C1NER+INTRAORAL+EN+LAS+DISTINTAS+RAMAS+DE+LA+ODONTOLOG%CDA+CONTEMPORANEA.pdf;jsessionid=0179B1600DB1E8FA93009F7373356D89?sequence=1>
- Javier de la Fuente Hernández, M. A. (2011). Uso de nuevas tecnologías en odontología. *Revista Odontológica Mexicana*, 157-162.
- Jimbo-Mendoza, J. C. (2019). Innovación tecnológica en el consultorio odontológico. Uso de los registros digitales en el Centro Odontológico Biodental. *Revista Científica Dominio de las Ciencias*, 19-41.
- Kuriakose, R. (2020). Patient safety in primary and outpatient health care. *Journal of Family Medicine and Primary Care*, 7-11.
- Lara-Alvarez, J. J. (2020). Satisfacción de los pacientes ante la atención odontológica recibida en un hospital en Lima. *Rev Estomatol Herediana*, 145-152.
- Maslucan, R. J. (2021). Aplicaciones del Láser de baja potencia en Odontología Pediátrica: Artículo de revisión. *REVISTA ODONTOLOGÍA PEDIÁTRICA*.
- Oliveira, C. D. (2020). Segurança do paciente no cuidado odontológico: revisão integrativa. *CSP*, 36.
- Perea Pérez, B. L. (2013). Responsabilidad profesional en Odontología. *Revista Española de Medicina Legal*, 149-156.
- Petrelli, B. (2006). Actualización en radiología dental. Radiología convencional Vs digital. *Avances en Odontoestomatología*.
- Vaca, D. G. (2021). Precisión de las impresiones digitales intraorales: una revisión de literatura. *Revista Digital Odontologica*, 1-8.
- Visbal, J. H. (2021). El láser dental en tiempos de transición a la pospandemia. *Revista Cubana de Medicina Militar*.
- Wilches-Visbal, J. H. (2021). Protección Radiológica en Radiología Dental. *CES Odontologia*, 52-67.