



CLINICAL RESEARCH:

Dentistry Postgraduates: User Satisfaction at the University of Costa Rica Posgrados en Odontología: satisfacción de los usuarios, Universidad de Costa Rica

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ABSTRACT: The objective of this research was to determine the level of satisfaction among patients attending the postgraduate clinics at the University of Costa Rica during 2022 using the Dental Satisfaction Questionnaire. The research included the entire population of patients and/or legal guardians who received dental care in the postgraduate clinics of pediatric dentistry and prosthodontics at the School of Dentistry between August and October 2022. A questionnaire consisting of Dental Satisfaction Questionnaire items and sociodemographic variables was applied. Descriptive statistics were performed to establish the absolute and relative frequencies, measures of central tendency, and variability, depending on the nature of the variables. The Kolmogorov-Smirnov test was used to assess the data's conformity to a normal distribution. Questionnaire and sociodemographic variables were analyzed using the Mann-Whitney U Test and the Kruskal-Wallis Test. The response rate was 54.1%, with 95% of the participants expressing satisfaction or high satisfaction with the dental services received. Statistically significant differences were observed in some of the domains concerning sociodemographic variables: between the educational level and pain management ($p=0.022$) and between the frequency of dental visits and availability ($p=0.008$). Additionally, a statistically significant difference was observed among postgraduate categories in the domain of quality ($p=0.038$). This study concludes that patients attending the postgraduate clinics of prosthodontic and pediatric dentistry at the School of Dentistry, University of Costa Rica, are generally satisfied with the care they receive.

KEYWORDS: Patient satisfaction; Questionnaire; Access and evaluation; Prosthodontics; Pediatric dentistry.



RESUMEN: El objetivo de esta investigación fue determinar el nivel de satisfacción de los pacientes que asisten a las clínicas de posgrado en la Universidad de Costa Rica utilizando el cuestionario Dental Satisfaction Questionnaire durante 2022. La investigación se realizó con toda la población de pacientes y/o tutores legales que recibieron atención dental en las clínicas de postgrado de odontopediatría y prostodoncia de la Facultad de Odontología entre agosto y octubre de 2022. Se aplicó un cuestionario con preguntas del Dental Satisfaction Questionnaire y variables sociodemográficas. Se realizó estadística descriptiva para establecer la frecuencia absoluta y relativa, así como medidas de tendencia central y variabilidad, según la naturaleza de las variables. La prueba de Kolmogorov-Smirnov se utilizó en la evaluación de la conformidad de los datos para la distribución normal. Las relaciones entre las puntuaciones obtenidas del Dental Satisfaction Questionnaire y las variables sociodemográficas fueron analizadas mediante el Test U de Mann-Whitney y el Test de Kruskal-Wallis. La tasa de respuesta fue de 54,1%; el 95% de los participantes estuvieron satisfechos o muy satisfechos con el servicio odontológico recibido. Hubo una diferencia estadísticamente significativa en algunos de los dominios y las variables sociodemográficas: entre el nivel educativo y el manejo del dolor ($p=0.022$) y entre la frecuencia de visitas al dentista y la disponibilidad ($p=0.008$). Adicionalmente, se observó una diferencia estadística entre los posgrados en el dominio de calidad ($p=0.038$). Los pacientes que son atendidos en el servicio odontológico de las clínicas posgrados de prostodoncia y odontopediatría de la Facultad de Odontología Universidad de Costa Rica están satisfechos con la atención recibida.

PALABRAS CLAVE: Satisfacción del paciente; Cuestionario; Acceso y evaluación; Prostodoncia; Odontología pediátrica.

INTRODUCTION

The Graduate Studies System (SEP) at the University of Costa Rica is dedicated to the mission of contributing to the training of researchers, educators, and professionals with a commitment to academic excellence, a humanistic perspective, and social responsibility, not only in disciplinary fields but also across inter, multi, and transdisciplinary domains (1). With more than 19,000 graduates and a portfolio of more than 300 curricula, the SEP not only represents the largest and most robust system in the country but also stands as a distinguished institution in the Central American region. It effectively coordinates and manages graduate programs in practically all academic disciplines with the university (2). Currently, in

the field of dentistry, specifically within the pediatric dentistry and prosthodontic programs, active academic pursuits persist.

The Postgraduate Program in Pediatric Dentistry, established in 1990, holds the distinction of being the first postgraduate initiative affiliated with the Faculty of Dentistry and the SEP. This program offers a comprehensive humanistic approach, emphasizing academic excellence while considering the university's three substantial axes of teaching, social action, and research. Clinical activities, including oral health promotion, disease prevention, and minor and restorative surgeries, are performed within the Faculty of Dentistry, catering to infants, children, and adolescents, both with and without disabilities. To date, this postgra-

duate program has conferred degrees on approximately seventy professionals hailing from various countries (3).

The Postgraduate Program in Prosthodontics has a distinguished history of sixteen years of active engagement, during which it has continually adapted to changes and new global trends in the areas of dental materials and treatments. In early 2019, the program underwent an important transformation towards the use of digital technology in the creation of oral restorations. Today, digital treatments are widely accepted and poised to shape the future of dental care. It is the students of this Master's Degree program who are well-prepared to harness the potential of these technologies, equipped with extensive experience in their application. To date, the postgraduate program has graduated more than forty prosthodontists. Much like the postgraduate course in pediatric dentistry, this program benefits from the expertise of both national and international dentists who lead the courses at their respective universities (4).

Even though these postgraduate courses have been in existence for more than two decades, no data has been published regarding patient satisfaction with dental treatments, which are consistently administered year after year. In the context of health services, user satisfaction is defined as the result of the difference between the patient's perception of the service provided and the expectations he had before receiving it (5). These expectations are obtained from previous experiences of the same patient when accessing the health service, from experiences reported by other people and from the commitments that the same system acquires towards the patient (6). Satisfaction is considered successful when the perception of the service received is greater than expectations and is considered a failure when expectations are greater than perception (5). Patient satisfaction serves as one of the most

reliable indicators of healthcare service quality (7). Furthermore, it should constitute an inherent and essential objective for any establishment providing healthcare services (8).

There are different questionnaires to measure satisfaction in dental services, some of them are: the Dental Visit Satisfaction Scale, the Satisfaction Scale and the Dental Satisfaction questionnaire (DSQ) (9). The DSQ includes five dimensions: quality, accessibility, availability/convenience, pain management, and costs (10) and has been used in several dental schools (11-14).

The objective of this research was to assess the level of patient satisfaction among those who sought treatment at the postgraduate clinics of the University of Costa Rica during the year 2022, employing the DSQ questionnaire.

METHODOLOGY

PARTICIPANTS

This research encompassed the entire population of patients who received dental care at the Postgraduate Clinics of the School of Dentistry, University of Costa Rica, between August and October 2022. Due to a restructuring of the Postgraduate Program in Pediatric Dentistry and to the Covid 19 pandemic, the number of patients was reduced, so the survey was applied until 2022 where there were more patients. The sample size calculations were predicted on the following parameters: a hypothesis of 50% prevalence of satisfaction with the protocols, an accuracy of 5%, a confidence interval of 95%, a test power of 80%, and an anticipated response rate of 30%. The inclusion criteria comprised adult patients and/or legal guardians of children who received dental services in the pediatric and prosthodontic clinics at the School of Dentistry, University of Costa Rica, and had agreed to participate in the research. The

exclusion criterion was applied to patients and/or legal guardians with limited cognitive abilities who could not complete the survey.

ETHICAL CONSIDERATIONS

The research was approved by the Scientific Ethics Committee of the University of Costa Rica (CEC-UCR-658-2019). In the survey header, participants were provided with comprehensive information about the project, including assurances of confidentiality, anonymization of data, estimated completion time, and the necessity of their informed consent to participate.

DATA COLLECTION

The questionnaire employed in this study had undergone prior validation and was applied physically (15). Rigorous measures were implemented to safeguard the confidentiality and anonymization of all collected data.

The survey utilized a Spanish-translated version of the DSQ, as translated by López-Garví (2014) (16). Modifications were made to adapt it to the specific context of the School of Dentistry at the University of Costa Rica (15). Comprising 19 items, the questionnaire addressed a range of satisfaction aspects, encompassing overall satisfaction, service quality, cost considerations, pain management, accessibility, and availability. Respondents were asked to express their opinions using the Likert scale, which offers five response categories. To analyze the satisfaction levels of the sample, the Dental Satisfaction Index was used. This index was obtained by summing the scores of each of

the items of the DSQ questionnaire. The methodology used in this research aligns with prior investigations into user satisfaction within the undergraduate clinics of the School of Dentistry (17).

The sociodemographic variables evaluated were as follows: sex (male or female), age range (18-29 years, 30-39 years, 40-49 years, 50-59 years, 60-69 years, and 70 years or older), approved educational level (none, primary school, high school, university), province of origin (San José, Alajuela, Cartago, Heredia, Guanacaste, Puntarenas, and Limón), frequency of the visits to the dentist (none, once a year, or more than once a year), and the clinic at which they receive dental services, including pediatric dentistry and prosthodontic.

STATISTICAL ANALYSIS

Data was recorded in an Excel spreadsheet (Microsoft, Inc., Redmond, WA, USA), and inconsistencies were meticulously corrected. The information was analyzed using the SPSS version 25.0 program (IBM, New York, USA). Descriptive statistics were performed to establish absolute and relative frequencies, as well as measures of central tendency and variability, based on the nature of the variables. The Kolmogorov-Smirnov test was used in the assessment of data conformity for the normal distribution.

The relationships between the scores obtained from the Dental Satisfaction Index and socio-demographic variables were analyzed using the Mann-Whitney U-Test and the Kruskal-Wallis Test. Statistical significance was defined as a p value <0.05 , and the confidence level of 95% (RI) was

considered. If a positive result emerged, the post-hoc Bonferroni test was subsequently applied. For the bivariate analysis, the variable “province of origin” was categorized into two groups: GMA (comprising people coming from the Greater Metropolitan Area, including San José, Cartago, Heredia, and Alajuela) and outside the GMA (encompassing people coming from Limón, Puntarenas, and Guanacaste). Age was stratified into three ranges: 18-39 years; 40-59 years; and 60 years or older.

To facilitate result interpretation and conduct bivariate analysis between the DSQ, its domains, and each of the sociodemographic variables, both the DSQ questionnaire and its domains were converted into a weighting scale ranging from 1 to 100%.

RESULTS

46 patients or legal guardians of children answered the survey, yielding a response rate of 54.1%. Within the participation group, 23.9% fell within the age range of 30-39 years, with a majority of 65.2% being female. A significant proportion, also at 65.2%, hailed from the province of San José. Approximately 50.0% reported having completed high school, while 63.0% indicated attending the dentist more than once a year. Moreover, 52.2% received dental care at the pediatric clinic (Table 1).

Notably, a substantial 95% of the participants expressed satisfaction or high satisfaction levels with the dental services received at the postgraduate clinic at the Faculty of Dentistry at the University of Costa Rica. The average score on the Dental Satisfaction Index was 81.4. Additionally, when the DSQ domains were converted into a weighting scale, the average scores were 86.6% for quality, 76.2% for pain management, 79.3% for access, 76.3% for availability, and 82.6% for cost.

The questions with the highest ratings were as follows: Question 6 (mean 4.9; standard deviation 0.4), Question 2 (mean 4.7; standard deviation 0.8), and Question 16 (mean 4.7; standard deviation 0.8), all referring to quality aspects. In contrast, the questions with the lowest scores were Question 1 (mean 3.3; standard deviation 0.5), associated with overall satisfaction, and Question 17 (mean 2.7; standard deviation 1.2), relating to quality (Table 2).

The bivariate analysis revealed statistically significant differences between the educational level and pain management ($p=0.022$) and between the frequency of dental visits and availability ($p=0.008$). Additionally, a statistically significant difference was observed among postgraduate categories in the domain of quality ($p=0.038$) (Table 3).

Table 1. Distribution of sociodemographic variables (N=46).

Variable	N	%
Age ranger		
Between 18 – 29 years	8	17.4
Between 30 – 39 years	11	23.9
Between 40 – 49 years	6	13.0
Between 50 – 59 years	9	19.6
Between 60 – 69 years	6	13.0
Between 70 – 79 years	6	13.0
Sex		
Male	16	34.8
Female	30	65.2
Province of origen		
San José	30	65.2
Cartago	7	15.2
Heredia	7	15.2
Alajuela	0.0	0.0
Guanacaste	2	4.3
Limón	0.0	0.0
Puntarenas	0.0	0.0
Approved educational level		
None	0	0.0
Primary	7	15.2
High school	23	50.0
University	16	34.8
Frecuency of visit to the dentist		
None	1	2.2
Once a year	16	34.8
More an once a year	29	63.0
Clinic		
Pediatric Dentistry	24	52.2
Prostodontic	22	47.8

Table 2. Mean and standard deviation of the DSQ, aspects and questions of the questionnaire (N=46).

Questions, total DSQ and aspects	Mean	DS
1. Are there aspects of dental treatment that I receive that could be improved? <i>¿Hay algunos aspectos que podrían mejorarse?</i>	3.3	1.5
2. Dental students show special care when examining their patients? <i>¿Los estudiantes de odontología muestran un cuidado especial cuando examinan a sus pacientes?</i>	4.7	0.8
3. Are prices charged by the School of Dentistry UCR too high? <i>¿La Facultad de Odontología UCR cobran precios demasiado elevados?</i>	4.0	1.1
4. Sometimes I avoid going to the dentist because it is very painful? <i>¿Algunas veces evito ir al dentista porque es muy doloroso?</i>	3.8	1.2
5. Patients must wait a long time in the waiting room? <i>¿Normalmente los pacientes tienen que esperar mucho tiempo en la sala de espera?</i>	4.2	1.1
6. Dental students always treat their patients with respect? <i>¿Los estudiantes de odontología siempre tratan a sus pacientes con respeto?</i>	4.9	0.6
7. There are enough dentists in my area? <i>¿Hay suficientes dentistas en mi zona?</i>	3.6	1.1
8. Dental Students need to do more to reduce pain? <i>¿Los estudiantes de odontología deben hacer más para reducir el dolor?</i>	3.8	1.2
9. The School of Dentistry UCR is an easy access place? <i>¿La Facultad de Odontología está en un lugar fácil para llegar?</i>	4.0	1.1
10. Dental students always avoid unnecessary expenses for their patients? <i>¿Los estudiantes de odontología siempre evitan a sus pacientes gastos innecesarios?</i>	4.3	0.9
11. Dental students are not as thorough in examining their patients as they should? <i>¿Los estudiantes de odontología no son tan exhaustivos a la hora de examinar a sus pacientes como deberían?</i>	4.2	1.1
12. I was treated by the same dental student almost every time I need dental treatment? <i>¿Me atiende el mismo estudiante de odontología casi siempre que necesito tratamiento dental?</i>	4.5	0.8
13. It is difficult to get a consultation with the dental student immediately? <i>¿Es difícil conseguir una consulta con el estudiante de odontología de forma inmediata?</i>	3.6	1.2
14. Dental students are able to alleviate or cure most dental problems that patients may have? <i>¿Los estudiantes de odontología son capaces de aliviar o curar la mayoría de los problemas dentales que los pacientes puedan presentar?</i>	4.5	1.0
15. The hours of operation of dental students are convenient for most people? <i>¿El horario de atención de los estudiantes de odontología es conveniente para la mayoría de las personas?</i>	4.2	1.1
16. Dental students usually explain what the treatment will consist of and its cost before starting it? <i>¿Los estudiantes de odontología suelen explicar en qué consistirá el tratamiento y su costo antes de iniciarlo?</i>	4.7	0.8
17. Dental students should do more to prevent people from having dental problems? <i>¿Los estudiantes de odontología deberían hacer más para evitar que las personas tengan problemas dentales?</i>	3.5	1.2
18. The offices of the School of Dentistry UCR are modern and have the latest technologies? <i>¿Los consultorios de la Facultad de la UCR son modernos y disponen de las últimas tecnologías?</i>	4.0	1.1
19. I'm not afraid to feel pain when I go to the dentist. <i>¿No tengo miedo a sentir dolor cuando voy al dentista?</i>	3.9	1.2

Table 3. Mean values on a scale from 1 to 100% and standard deviation for DSQ and domains, based on the sociodemographic conditions (N=46).

Variables	Overall Satisfaction			Cost			Access			Pain Management			Quality			Availability			
	Average	SD	p	Average	SD	p	Average	SD	p	Average	SD	p	Average	SD	p	Average	SD	p	
Age																			
18 – 39	84.4	7.1	0.146	84.7	16.8	0.604	82.8	14.1	0.130	77.9	13.9	0.578	89.8	9.3	0.224	77.4	18.5	0.378	
40 – 59	77.8	11.3		81.3	13.6		72.9	17.7		72.4	18.0		84.4	13.1		70.7	20.5		
60 or more	81.4	10.0		80.8	15.0		82.2	13.1		78.3	18.1		85.0	9.3		81.7	12.7		
Posgrade			0.064			0.427			0.122			0.665			0.038			0.964	
Pediatric dentistry	84.2	7.9		84.6	16.7		82.2	15.3		77.5	15.2		89.6	9.7		76.7	18.6		
Prostodontic	78.5	10.6		80.5	13.3		76.4	15.5		74.8	17.6		83.6	11.2		75.9	17.9		
Origen			0.773			0.698			0.812			0.812			0.661			0.526	
GMA	81.6	9.8		82.7	15.5		79.5	15.8		76.1	16.6		86.6	11.0		76.6	18.4		
Outside GMA	79.5	2.2		80.0	0.0		76.7	4.7		80.0	0.0		91.4	0.0		70.0	0.0		
Sex																			
Male	80.9	11.8		84.4	14.1		79.2	17.4		72.1	16.9		86.3	14.0		78.6	20.6		
Female	81.8	8.5		81.7	15.8		79.6	14.8		78.4	15.7		87.1	8.8		75.0	16.8		
Educational level			0.343			0.428			0.743			0.022			0.346			0.295	
School	84.1	8.5		81.4	16.8		74.3	20.5		74.3	16.1		91.8	8.6		85.7	19.9		
Highschool	79.8	9.5		80.0	16.2		81.2	15.1		71.0	14.3		86.6	10.3		74.8	15.0		
University	82.7	10.5		86.9	15.2		79.2	14.2		84.6	16.5		84.8	12.0		74.4	21.0		
Frequency of visits to the dentist			0.388			0.792			0.306			0.926			0.453			0.008	
Once a year	83.9	9.1		80.6	16.5		82.9	17.5		75.4	14.5		88.4	10.7		86.9	14.9		
More than once a year	80.0	10.0		83.5	14.7		77.2	14.4		76.6	17.6		85.6	11.0		71.4	17.1		

Test U de Mann-Whitney y Test Kruskal-Wallis, significativos al nivel $p < 0.05$. P values represents univariate analysis comparing means of satisfaction with each sociodemographic variables.

DISCUSSION

The results of this research indicate a high level of patient satisfaction among those receiving treatment in the postgraduate program. The results align with previous studies that have shown consistently high levels of patient satisfaction in all clinics of the School of Dentistry at the University of Costa Rica (17, 18).

Assessments of user satisfaction have yielded diverse outcomes in various universities. For instance, in the postgraduate clinics specializing in pediatric dentistry, operative dentistry, advanced dentistry, endodontics and periodontics at the Faculty of Dentistry of the University of UANL, a noteworthy 83.5% of patients expressed satisfaction with the service they received (19). Similarly, at the San Martín de Porres University in Peru, 92% of patients who received dental treatment were satisfied (20). However, in the postgraduate Orthodontic program at Babol Dental Faculty, the level of total satisfaction reached 72% (21).

This discussion highlights the consistent trend of favorable patient satisfaction across different dental specialties between undergraduate and postgraduate students while also acknowledging some variability in satisfaction levels reported at the same university. In a tertiary health care center, patient satisfaction was notably higher when attended to by postgraduate students compared to undergraduate students (22). Interestingly, at the University of Costa Rica, previous research indicates that patient satisfaction with undergraduate student care was slightly higher at 98.5% (17) than what was found in this study.

Upon a closer analysis of the survey questions, one of the most positively rated aspects, achieving a 98% satisfaction rate, was related to whether dental students consistently treated their patients with respect. This high assessment regard-

ing the respect shown by students also occurred in the research carried out in the Specialty of Orthodontics and Orthopedics of the Faculty of Dentistry, Santa María University, where 98.7% of patients reported similar satisfaction (23). The significance of this aspect lies in the importance of treating their patients with respect, which consists of recognizing the unique qualities, situations, and individual values of each patient, even in situations where there may be differences in thought or perspective (24).

Patient satisfaction with waiting times to be seen was consistently high, with a satisfaction rate of 84%. This figure is notably higher compared to findings from the postgraduate course in orthodontics at San Martín de Porres University, where only 69% of patients were satisfied in this aspect (20). In contrast, satisfaction levels were considerably lower in the Postgraduate Stomatological Clinic of the San Juan Bautista Private University, where only 48.5% of the respondents indicated short waiting times (25).

Some questions achieving intermediate satisfaction levels of 80% included: Are the prices charged by the School of Dentistry at the University of Costa Rica too high? And do the offices of the School of Dentistry at the University of Costa Rica have modern technology? Regarding cost perceptions, the results vary across universities. In one study, in an orthodontic specialty, 92% of patients considered the prices charged to be adequate (23), while in the postgraduate Stomatological Clinic of the San Juan Bautista Private University, a lower percentage of patients (88.2%) found the treatment costs accessible (25). Surprisingly, satisfaction with the infrastructure was not higher, despite recent renovations in both postgraduate clinics. Other studies carried out in two universities show higher percentages of satisfaction with infrastructure, such as 92.9% in the postgraduate Stomatological Clinic of the San Juan Bautista

Private University and 94% in the postgraduate orthodontics of the San Martín de Porres University (20, 25).

There were statistically significant differences between postgraduate courses and with some sociodemographic variables. The users of the postgraduate degree in prosthodontics were those who reported the lowest satisfaction in the quality domain, this can be related to the fact that in this area, patients often require complex restorative treatments such as prostheses or dental implants which may present complications that make patient satisfaction not very high (26, 27). About to educational level, users with more schooling report better pain management, which can be associated with the fact that pain has been related to quality of life and socioeconomic aspects; subjects of low socioeconomic status with restricted access to health services may have greater dental pain (28, 29). Finally, regarding the frequency of visits to the dentist, patients who attended more times were less satisfied with availability, which is understandable since if a patient requires extensive treatments must attend multiple appointments which leads to constantly traveling to the facilities of the UCR.

One of the limitations of the study is that the survey was conducted at a single point in time. Ideally, multiple assessments should be performed to determine changes in satisfaction levels over time. Nevertheless, it is worth noting that this survey represents the first of its kind to evaluate patient satisfaction in the context of postgraduate clinics within the Faculty of Dentistry. By analyzing each of the domains of the survey, it will help to identify areas for improvement to ensure the ongoing quality of the service provided.

CONCLUSION

The patients who receive care at the postgraduate clinics specializing in prosthodontic and pediatric dentistry at the School of Dentistry at the University of Costa Rica express satisfaction with the care received. While there were no significant differences in overall satisfaction among the participants, there were differences between some domains and sociodemographic variables.

AUTHOR CONTRIBUTION STATEMENT

Conceptualization and design: N.G.M.

Literature review: N.G.M. and A.L.S.

Methodology and validation: N.G.M.

Formal analysis: N.G.M.

Research and data collection: N.G.M.

Resources: N.G.M.

Data analysis and interpretation: A.L.S.

Writing and preparation of the original draft: N.G.M. and A.L.S.

Writing: review and editing: N.G.M. and A.L.S.

Supervision: N.G.M.

Project administration: N.G.M.

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