

Pediatric Dentistry Workforce in Puerto Rico: Results of a 2011 Survey

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Objective: Determine the socio-demographic and educational characteristics of and develop a profile of practice for Pediatric Dentists (PDs) in Puerto Rico.

Methods: A 34-item questionnaire assessing 3 dimensions: socio-demographic and education, practice profile, and level of satisfaction/desire to relocate, was developed and pre-tested for comprehensiveness, validity, and reliability. Data were collected through telephone interviews by a calibrated interviewer, entered and tabulated using Excel® (Microsoft Office 2010) and exported to SPSS v. 17 (SPSS Inc., Chicago, IL). Descriptive statistical analyses were conducted.

Results: Eighty percent (80%) of all of the licensed PDs in PR participated in our study. The typical PD in PR has been in practice for 19 years, is 48 years old, and spends 31 hours/week providing clinical care. Female PDs, who comprise 70% of the PD workforce, devote more time to clinical and managerial activities than do their male counterparts. Seventy-three percent (73%) of the current PD workforce will be retiring within the next 20 years and 70% are solo-practitioners. Most PDs (65%) participate in the government-subsidized dental insurance program “Mi Salud,” which represents as much as 48% of their income. PDs beginning or ending their careers were more likely to be participating providers for “Mi Salud” than were those in mid-career.

Conclusion: In evaluating the adequacy of the pediatric dentistry workforce in Puerto Rico, the socio-demographic information of the PDs and the characteristics of their practices must be taken into account. These variables must be examined in relation to epidemiological indicators as well as environmental factors, including the comprehensiveness of dental benefits and the adequacy of reimbursement levels by third-party payers, which when inadequate may lead to decreased access to care. [P R Health Sci J 2013;1:18-24]

Key words: Pediatric dentistry, Manpower, Supply and distribution, Dental economics, Puerto Rico

“In loving memory of my father. OA”

Pediatric dentistry is an age-defined specialty concerned with the prevention, diagnosis, and treatment of oral diseases in infants, children, and adolescents, including those with special healthcare needs (1). An analysis of these healthcare workers is particularly important, as children and individuals with special needs in Puerto Rico (PR) represent a significant segment of the population. According to a recent report, children in PR constitute 24% of the population, and 56% of them—three times the level found in the United States (US)—live in poverty (2). Although limited, the existing information on the oral health status of PR’s children is not very encouraging: Studies have shown that this population has a high prevalence of caries, a low prevalence of sealants, and disparities related to socioeconomic status (3-5). Furthermore, it is estimated that the number of PR residents with disabilities is approximately 1 million (6). Numerous publications have reported that people with disabilities have more dental disease,

more missing teeth, and more difficulty obtaining dental care than do members of the general population (7, 8).

According to the databases of the Society of Puerto Rican Pediatric Dentists (SPRPD) and the College of Dental Surgeons of Puerto Rico (CDSPR), there are approximately 75 pediatric dentists (PDs) in PR. It is important to monitor trends in the supply of dental personnel and related factors that may lead to diminished access to care (9). Numerous states collect data about health care practitioners by using information from state

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The authors have no conflict of interest to disclose.

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licensing boards (10). This is particularly true for the pediatric dentistry workforce as multiple reports and publications are focusing on disparities in access to care among children and special needs populations. (7, 8, 11-18).

The pediatric dentistry workforce in the US has been analyzed from different perspectives, including geographic distribution, demographics, supply issues, training, etc. (19-25). While the publications that present these analyses offer a comprehensive view of the pediatric dentistry workforce in the US, the findings that they report do not illustrate the status of the PD in PR. The dental care delivery system in PR is unique because of the island's geographic location, the high penetration of third-party reimbursement, and the restrictive licensure requirements. It is evident that information about the dental workforce in PR is sparse, with what is available having to be aggregated from disparate sources. A PubMed search with no limits and using the terms "Puerto Rico," "dental," and "workforce" returned a single publication. This paper (written in Spanish) addressed projections of the dental workforce up to the year 1995, a time period of relative economic growth for Puerto Rico and its dental practitioners (26).

This study had three primary objectives: 1) to develop a demographic and practice profile of PDs in PR; 2) to assess the geographic distribution of PDs as it relates to demographic and socioeconomic variables; and 3) to determine PR PDs' levels of satisfaction and desire to relocate. The current manuscript focuses exclusively on the first objective. Subsequent publications, currently under development, will present our findings regarding the second and third objectives.

To our knowledge, this is the first study of this nature for any dental specialty in PR as well as the first study that assesses the pediatric dental workforce for a particular state or jurisdiction in the US. The findings of this study can be utilized by different stakeholders, including policy-makers, academicians, and public health practitioners, to exchange information and develop policies that will result in an adequate workforce and in improved access and oral health outcomes.

Materials and Methods

This study was approved by the University of Puerto Rico Institutional Review Board (IRB). The data for this manuscript are from a 2011 survey of licensed PDs whose names were found in the databases of the SPRPD and the CDSRP. The survey procedures included the development of a 34-item questionnaire assessing three dimensions: socio-demographics and educational, practice profile, and level of satisfaction/desire to relocate. (The instrument is available from the corresponding author on request.) The questionnaire was pre-tested for comprehensibility, reliability ($\alpha = 0.92$),

and content validity. A letter informing PDs about the study and inviting them to participate was prepared and mailed. The survey was conducted via telephone by a calibrated surveyor. An identification number was assigned to all questionnaires to facilitate the data entry process. In order to be eligible for participation, the PD had to be currently engaged in clinical practice. The collected data were entered into and tabulated in an Excel spreadsheet (Microsoft Office 2010) and then exported for descriptive data analysis using SPSS v. 17 (SPSS Inc., Chicago, IL).

Results

Sample

Letters and questionnaires were mailed out to 75 PDs; 63 were willing to participate, but only 60 (n) met our criteria for participation; i.e., being currently engaged in clinical practice.

Demographics

Female dentists comprised 70% of the state's PD population. One hundred percent (100%) of the PDs in PR considered themselves to be of Hispanic/Latino origin, and 72% considered themselves to be white. The average age of the practicing PD in PR was 48 years old (range: 29-74) with females being younger than males: 44 vs. 56. Forty-seven percent (47%) of PDs were in the age bracket of 40 to 54 years, 84% of male PDs are 50 years and older while 76% of female dentists were younger than 50 years old (Figure 1). The average age for faculty members was 47 years (range: 30-65).

Years in practice and Years to retirement

On average, a PD in PR has been in practice for 19 years (range: 1-41), and 60% have been in practice for 11 to 30 years. In terms of length of practice, PDs in the older age brackets plan

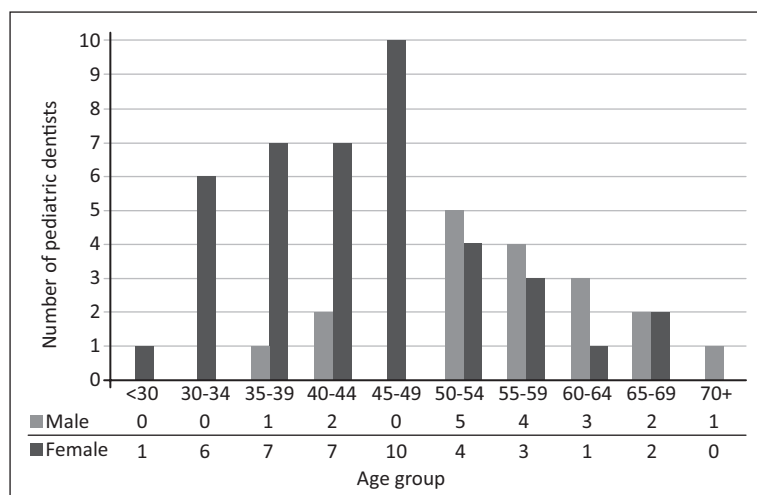


Figure 1. Distribution of pediatric dentists in Puerto Rico by age and by gender, 2011

to remain active in clinical practice longer than those in the younger age groups. PDs in the age bracket of 56 to 65 years will have remained in practice 38 years when they retire while those in the age-bracket of 29 to 35 will be in practice for only 27 years. Male PDs plan to remain in clinical practice longer: 40 years vs. 35 for female PD.

Seventy-three percent (73%) of the total number of PDs participating in our survey will be retiring within the next 20 years: 8 in the short term (0-5 years), 29 in the mid-term (6-15 years), and 17 in the long term (16-40 years) (Figure 2).

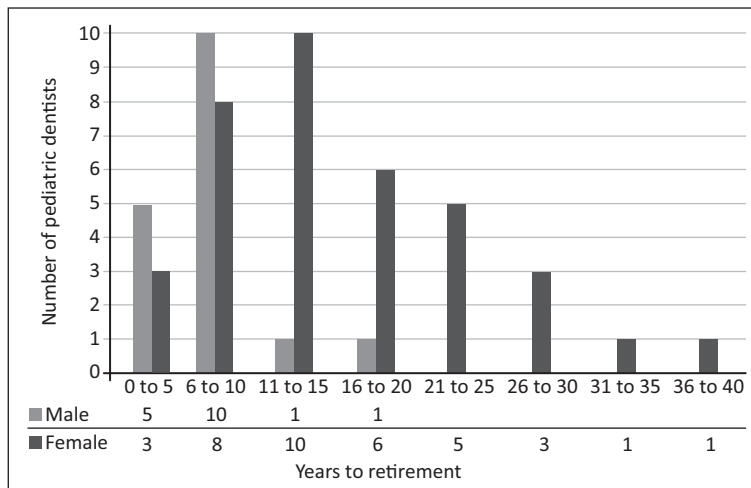


Figure 2. Distribution of pediatric dentists in Puerto Rico by gender and years to retirement, 2011

Table 1. Number of hours that pediatric dentists in Puerto Rico devoted to clinical care and managerial activities, 2011

Age bracket	29-35	36-45	46-55	56-65	66+
No. of pediatric dentists	10	17	19	10	4
Average number of weekly hours devoted to clinical care (range)	29.55 (20-40)	28.85 (8-40)	30.25 (8-40)	29.40 (14-40)	28.5 (6-40)
Average number of weekly hours devoted to managerial activities (range)	4.40 (0-10)	4.81 (0-20)	4.89 (0-12)	3.10 (0-8)	1.00 (0-2)

Training

Sixty-three percent (63%) of PDs who participated in our survey completed their residency program at the University of Puerto Rico. More female than male PDs trained in residency programs located on the mainland U.S. (13 vs. 9).

Type of practice/professional activity

Seventy percent (70%) of PDs in PR worked as solo-practitioners and 35% as associates. These categories were not mutually exclusive; therefore, PDs working as solo-practitioners may also practice as associates. Similarly, they may have been involved in teaching and/or public health. Of the 42 PDs practicing

as associates, 45% worked with PDs, 40% with general dentists, 7% with orthodontists, and 7% with another specialist. Less than 1% of PDs claimed to practice in public health/community settings and 20% reported to be involved in academia.

Time devoted to clinical and managerial activities

In 2010, PDs in PR worked an average of 48 weeks (range: 40-52). On a weekly basis, they spent an average of 31 hours (range: 6-40) rendering clinical care and 4.6 hours (range: 0-20) in managerial activities. Female PDs devoted more time to clinical and managerial activities than their male colleagues; 31 vs. 26 hours/week and 5 vs. 3 hours/week respectively.

PDs in the age group 46 to 55 years old spent more time in both clinical (30.25 hours) and managerial (4.89 hours) activities than the other age groups. PDs who were 66 years and older spent the least amount of time providing clinical care (28.5 hours) and involved in managerial activities (1 hour) (Table 1).

Clinical components of practice

As part of their clinical practices, 18% of PDs treated patients in an operating room (OR), and 32% incorporated oral sedation (OS) in their practices. While there were no age-group related differences in OR utilization, PDs in the age-bracket of 44 to 56 years were more likely to utilize oral sedation in the delivery of care. Regarding the delivery of orthodontic services, 82% rendered interceptive orthodontics and 50% corrective orthodontics.

Participation in third-party plans and sources of income

While 100% of PDs participated in private insurance plans, only 65% accepted “Mi Salud”, the island of Puerto Rico’s government-subsidized insurance program. Participation in “Mi Salud”, a program analogous to Medicaid in the United States, was similar for both genders, 67% for male vs. 64% for female PDs. However, there were variations in participation depending on the number of years in practice: PDs beginning and ending their careers were more likely to participate than those in mid-career. For instance, 85% of PDs who had been in practice less than 10 years and 100% of those in practice for more than 40 years participated in “Mi Salud”. Participation was the lowest (50%) for those PDs in practice for 21 to 30 years (Figure 3).

A given PD’s total income came from private insurance companies (53%), “Mi Salud” (48%) while self-payers (cash, check, and credit card) amounted to 17%. These figures varied

depending on the number of years a given PD had been in practice. For PDs in practice for fewer than 10 years, "Mi Salud" represented 50% of their incomes followed by private insurance at 43%. PDs in practice for 11 to 30 years drew 57% to 59% of their incomes from private insurance plans and 44% to 51% from "Mi Salud" (figures do not amount to 100% because not all PDs participated in "Mi Salud"). As a source of income, self-payers represented 15% to 19% of the total (Figure 4).

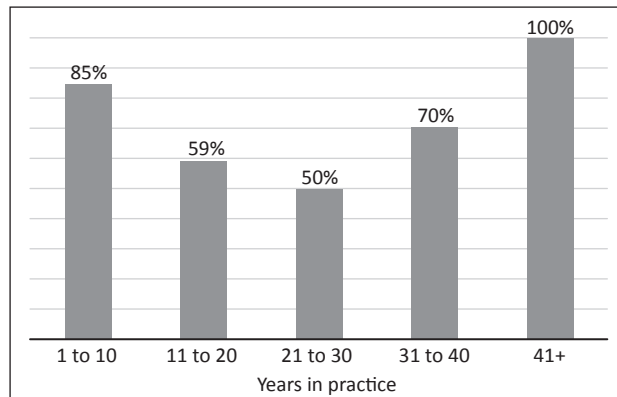


Figure 3. Participation of Puerto Rico's pediatric dentists in "Mi Salud" by years in practice, 2011

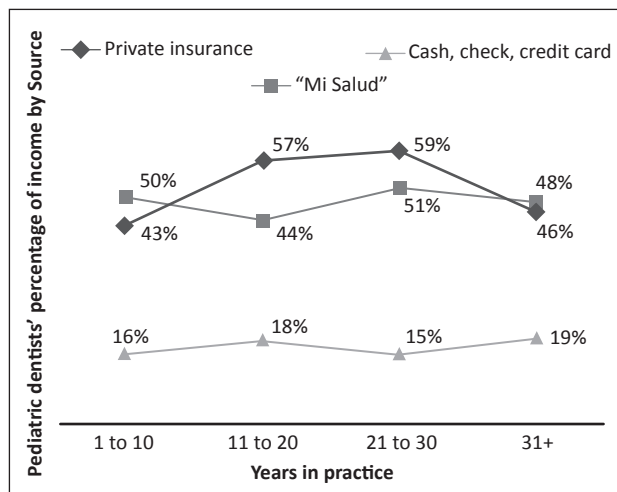


Figure 4. Puerto Rico's pediatric dentists' percentage of income by source of payment and years in practice, 2011. Figures do not amount to 100% because 35% of pediatric dentists claimed that they did not participate in "Mi Salud".

Auxiliary and support personnel

PDs in PR employed 2.93 dental assistants (range: 1-5), who worked an average of 33 hours/week (range: 4-49 hours). PDs in practice from 11 to 20 years employed the greatest number of dental assistants (3.23), followed by those in practice 21 to 30 years (2.93) and those in practice for 31 or more years (2.91). PDs who had been in practice for 10 years or fewer employed the least number of DAs (2.46). The number of administrative

support personnel averaged 1.9 (range: 1-5), which personnel worked an average of 31.44 hours/week/person (range: 2-49 hours). PDs in practice for 10 years or fewer were more likely to employ a higher number of support personnel (2.08), while those in practice from 11 to 20 years employed the lowest number (1.73) (Table 2).

Table 2. Number of dental assistants (DA) and administrative personnel (AP) employed by pediatric dentists by years in practice, 2011

Years in practice	1-10	11-20	21-30	31+
No. of pediatric dentists	13	22	14	11
Average # DA (range)	2.46 (1-5)	3.23 (1-5)	2.93 (1-5)	2.91 (2-4)
Average # AP (range)	2.08 (1-5)	1.73 (1-5)	2.00 (1-5)	1.91 (1-5)

Delegation of duties to auxiliary personnel

Most PDs (92%) delegated services to auxiliary personnel. From those who delegated services, 98% delegated preventive care, 92%, restorative treatment, 60%, orthodontic procedures, and 45% indicated that they delegated other services.

Discussion

The total number of PDs who participated in our telephone interview was 60, which represents 80% of the individuals whose names were included in the databases of the SPRPD and the CDSPR. Female PDs comprised 70% of all PDs. This figure is quite the opposite of what is seen in the US, as the most recent report from the American Dental Association (ADA) showed that females represented 29.8% of the PD workforce (25). The increase of women in dentistry is a national trend: According to the ADA report, in 1998 fewer than 15% of PDs in the US were women. Based on the distribution by age shown in Figure 1, it is evident that the rate of growth of female PDs in PR has been exponential, as women now represent 91% of all PDs who are 49 years of age or younger.

Based on our results, there seems to be a trend among younger PDs to remain in clinical practice a fewer number of years than do their older counterparts. Male PDs plan to remain in clinical practice longer compared to their female counterparts. However, men represent only 30% of the PD workforce and are, on average, 12 years older.

Gender composition, the years to retirement, and the number of PDs entering vs. departing the workforce have important ramifications, particularly from an access perspective. National studies have demonstrated that female dentists are more likely (than are male dentists) to work part-time and take time-off during their professional careers in order to accommodate their families and their personal needs (27, 28). However, in our study female PDs reported spending 19% more time providing clinical care and 38% more time doing managerial work than male PDs. This may be the result of the typical female PD's

being an average of 12 years younger than the typical male PD. Assuming that there are no gender-related differences in productivity per patient per day, as US surveys have shown (25, 26), the impact on access to the pediatric population should be negligible.

In order to maintain the current levels of the workforce (based on retirement projections for the next 20 years), it will be necessary for two to three PDs to remain in PR after having completed their residency programs. Two factors might lead to a decline in the number of PDs: 1) migration of PR-licensed PDs to the US because of financial incentives, and 2) an increase in the number of non-licensed dentists in PR accepted into the only residency program in the state, as restrictive licensing requirements do not allow them to practice in PR after the completion of their training.

Participation in "Mi Salud" was surprisingly high among PDs, especially given the high levels of dissatisfaction among practicing dentists with this public insurance program's reimbursement levels, which have not been adjusted since 1994 (29). A report released by the Government Accountability Office (GAO) showed that in 2010, 25 of 39 states reported that fewer than half of the dentists in their states treated any Medicaid patients during the previous year (30). The high level of participation among PDs in PR may be a reflection of either a high level of commitment to address the needs of children or the need to be a participating provider given the high level of penetration of third-party payers. PDs starting their careers drew a higher percent of their income from "Mi Salud" than they did from other sources. This finding may be a result of the need to quickly establish a positive cash flow, which, in this case, is accomplished by seeing a high volume of patients. Once settled in practice, after 11 to 30 years, they can afford to slow down the clinical pace and draw a higher percentage of their incomes from third-party payers, which reimburse at higher levels. This issue will be explored further in one of our forthcoming publications.

Regarding pharmacological management, only 18% and 32% reported incorporating operating rooms (OR) and oral sedation (OS), respectively. Both figures are much lower than what was reported by American and Canadian surveys (31-33). OR and OS are effective tools in the management of the medically or developmentally compromised patients as well as that of mildly anxious patients who are unable to cope with conventional dental care (34). Possibly one of the most important issues leading to the low utilization of pharmacological management is the reimbursement factor. Sedation of any type, oral, nitrous-oxide, or intravenous, is not covered by third-party payers in PR. For parents, high out-of-pocket expenditures limit early intervention and needed care, especially when dental expenditures compete with other basic living expenses. From the perspective of the PD, given the low reimbursement levels from third-party payers, providing care in the OR may not be cost-effective.

Half of the PDs participating in our survey reported providing interceptive orthodontic services. This figure was not surprising, given the high emphasis on orthodontic training during the residency program at the University of Puerto Rico and the fact that 63% of those surveyed completed their training at this institution. Similarly, this may be a mechanism for increasing revenues, given the low reimbursement levels of third-party payers.

Most PDs in our survey delegated services to auxiliary personnel. The utilization of expanded-function dental assistants can increase productivity significantly, as numerous studies have demonstrated (35-37). Based on the average number of clinical auxiliary personnel in a given office, it can be assumed that PDs work with an optimal number of dental assistants and as a result are highly productive. However, it was an interesting finding that those PDs who had been in practice for fewer years were more likely to employ a higher number of support rather than clinical personnel than did their peers. A possible explanation for this finding may be that younger PDs do not feel comfortable delegating services or want more control over the final output.

Less than 1% of the participating PDs claimed to be involved in public health. PDs provide critically important services in their offices, including early identification, anticipatory guidance, prevention, and treatment. However, a meaningful improvement in oral health status will not be attained unless PR implements cost-effective programs, such as community water fluoridation. PDs could play a meaningful role in the development of a strategic plan to address the dental needs of the pediatric population and the establishment of an effective dental public health infrastructure.

There are several limitations in this study inherent to the data gathering mechanism, i.e., a telephone survey. For instance, some of the responses may not reflect the reality, and the data produced lacked details and depth as we did not use open-ended questions. On the other hand, the telephone survey allowed us to collect a significant amount of information on a range of topics using a standardized instrument in a relatively short period of time. Survey participation was high, leading to an ample understanding of the pediatric dentistry workforce in PR. We encourage the CDSRP and the State Board of Dentistry to follow suit in order to develop a more global analysis.

Conclusion

This study characterized PDs in PR across multiple dimensions to develop a thorough demographic and practice profile. This paper is one of three to explore PDs in PR; the other two are forthcoming and will explore availability and geographic distribution and provider satisfaction. A comprehensive assessment of the pediatric dentistry workforce can be utilized by policy-makers, academicians, and public health practitioners

to enact legislation and modify practices, all of which should ultimately lead to improved access and oral health outcomes.

Finally, PDs play a crucial role in addressing the high accumulated oral needs of Puerto Rican children and special needs individuals resulting from high poverty levels and a deficient dental public health infrastructure. In evaluating the adequacy of the pediatric dentistry workforce in Puerto Rico, the socio-demographic information of the PDs and the characteristics of their practices must be taken into account. These variables should be examined in relation to epidemiological indicators, availability of community preventive programs, and adequacy of dental benefits and reimbursement levels provided by third-party payers.

Resumen

Objetivo: Determinar las características socio-demográficas y educativas y el perfil de práctica profesional de los Dentistas Pediátricos (DPs) en Puerto Rico. **Métodos:** Un cuestionario de 34 preguntas evaluando tres áreas: socio-demográficas y educativas, perfil de práctica y nivel de satisfacción/deseo de reubicación, fue diseñado. El cuestionario fue evaluado para asegurar claridad, validez y confiabilidad. La información fue recolectada a través de una entrevista telefónica llevada a cabo por un entrevistador calibrado. La información recopilada fue entrada y tabulada en Excel® (Microsoft Office 2010) y exportada a SPSS v. 17 (SPSS Inc., Chicago, IL). Análisis descriptivos estadísticos fueron conducidos. **Resultados:** Ochenta por ciento (80%) de los DPs licenciados en PR participaron en el estudio. El típico DP en PR ha practicado 19 años, tiene 48 años de edad y trabaja 31 horas por semana en actividades clínicas. Las mujeres, quienes representan el 70% del gremio, dedican más tiempo a actividades clínicas y administrativas que los hombres. Setenta y tres por ciento (73%) de los DPs actualmente en práctica planean retirarse dentro de los próximos 20 años y 70% practican individualmente. La mayoría de los DPs, 65%, participan en el programa de beneficios dentales de "Mi Salud", el cual representa el 48% de sus ingresos. DPs que están comenzando o terminando sus carreras tienden a participar más en "Mi Salud" que aquellos que están en la mitad de su carrera profesional. **Conclusión:** Para determinar que tan adecuado es el número de DPs se debe de evaluar las características socio-demográficas y de práctica clínica. Estas variables se deben examinar con relación a los indicadores epidemiológicos así como a factores ambientales. Estos últimos incluyen los tipos de beneficios dentales y las tarifas de pago de los planes de seguros, los cuales podrían disminuir los niveles de acceso a tratamiento.

Acknowledgments

The authors would like to express their gratitude to the following individuals for their support in the development

of this project: Drs. Noel Aymat and Rosana Hanke, both of whom are faculty members at the residency program in pediatric dentistry; Drs. Augusto Elias-Boneta and Jose Vivaldi at the Center for Clinical Research and Health Promotion; and Dr. Carla Rodriguez from the Society of Puerto Rican Pediatric Dentists. This project was funded by the Office of the Assistant Dean of Research, School of Dental Medicine, University of Puerto Rico.

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