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Original Article

Self-assessed Confidence of A Group of Egyptian Visitor Residents Regarding Provision of Different Treatment Modalities in Pediatric Dentistry: A Before and After Study

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Abstract

Aim: This study aims to assess visitor residents' self-confidence regarding the provision of different pediatric dentistry services before and after the residency period.

Subjects and Methods: A quantitative close-ended survey was conducted on 120 visitor residents. It was sent as an online survey on Google Forms. Visitor residents were approached at the beginning of the residency program by e-mail and at the end of the residency period.

Results: The percentages of participants who were very confident/ confident in performing different treatments significantly increased after the completion of the residency program.

Conclusion: The study showed that knowledge and experience gained from the residency program increased the confidence levels of visiting residents in pediatric dentistry.

Keywords: knowledge, experience, dental services

Introduction

The provision of different treatment modalities in pediatric dentistry is crucial for ensuring the oral health of children (General Dental Council, 2008). However, the effectiveness of these modalities can be influenced by the confidence of dental professionals in implementing them.

Many pediatric dentistry practitioners in Egypt and worldwide feel chronic anxiety and stress

when dealing with children (Radwan and Morsy, 2002). This may be due to the common belief that children associate going to the dentist with pain, discomfort, and anxiety (Sedky et al., 2023). It also requires cooperation from the patient and sometimes it may be difficult with younger children or children with special needs (Faheem et al., 2023).

For pediatric dentistry residents, this may be more challenging than their more experienced counterparts. According to Panagiotidou et al. (2024), the acquiring of competence in the field is based on a gradual learning process, where the practitioner passes through stages from “novice”, shifting to “beginner” and finally to “competent”. At the start of residency program, most dentists would fall between novice and beginner.

Thus, residents are required to perform procedures with limited clinical experience. This requires them to have self-confidence, despite one’s own perception of his or her actual capability, to improve their competence and to perform treatment modalities effectively (Elmanaseer et al., 2023).

Several factors influence the self-confidence of visitor residents in pediatric dentistry. According to Puryer et al. (2018), knowledge plays a significant role in their confidence levels. Dental professionals who possess a deep understanding of the various modalities available are more likely to feel confident in their ability to implement them effectively. This knowledge can be acquired through continuous education and professional development programs (Elmanaseer et al. 2023).

Experience also plays a crucial role in building self-confidence in dental professionals (Packer et al., 1999). By gaining practical experience in treating pediatric patients using different modalities, visitor residents can develop the necessary skills and expertise to handle a wide range of cases. This experience allows them to feel more confident in their ability to provide effective treatment.

Additionally, cultural beliefs surrounding healthcare and treatment methods may affect the willingness of dental professionals to implement certain modalities (Mohamed, 2020). For example, if a particular treatment modality is not widely accepted or practiced in Egyptian culture, visitor residents may feel less confident in providing it, even if they possess the knowledge and experience.

This study aims to assess visitor residents' self-confidence regarding the provision of different pediatric dentistry services before and after the residency period.

Subjects and methods

a) Sampling method and sampling size

A non-probability purposive sample was taken, with a size of 120 visitor residents (VR), who applied for the residency program in a year. The residency program duration is three months. So, we had four groups of visiting residents throughout the year.

Inclusion criteria

1. Holders of bachelor’s degree in Dentistry, who finished their internship period (one year of clinical experience, or more)
2. Visitor residents who applied for the residency program in the Pediatric Dentistry Department, Faculty of Dentistry, Cairo University.

Exclusion criteria:

1. Visitor residents who didn’t complete the online survey at the start of the residency program.

2. Visitor residents who didn't fulfill at least 90% of the residency program clinical requirements.

b. Method:

A quantitative close-ended survey was conducted on the sample. The structured questionnaire consisted of 23 items, developed in accordance with best practice guidelines. It includes all questions proposed by (Babar & Haider, 2022) and (Simpson et al., 2022) in their questionnaires.

It was then conducted as an online survey on Google Forms. Section I of the survey collected data on respondent demographics including age, gender, year of graduation, university of graduation, and residency period. Section II explored self-rated confidence in 18 questions relating to different skills and competencies for the provision of pediatric dental care using a five-point Likert scale. It is shown in Appendix I.

c. Data collection and analysis:

Visitor residents were approached at the beginning of each residency program by e-mail with a standard e-invite that included a link to the online survey (Google Forms). A reminder e-mail was sent one week later. At the end of the residency program, a clinical requirements evaluation was done to exclude visitor residents who didn't fulfill 90% of the clinical requirements. Then the same questionnaire was re-sent only to the ones who filled out the questionnaire at the beginning of the residency program. To assess any differences that occurred during this period. Microsoft Excel was used for the collection of data.

Statistical data analysis: quantitative data were presented as frequencies and percentages. Self-confidence scores are non-parametric data that were presented as median, range, mean, and standard deviation values. Mann-Whitney U test was used to compare between two groups. Kruskal-Wallis test was used to compare more than two groups. Spearman's correlation coefficient was used to determine the correlation between self-confidence scores and age. The significance level was set at $P \leq 0.05$. Statistical analysis was performed with IBM SPSS Statistics for Windows, Version 23.0. Armonk, NY: IBM Corp.

Results

Response Rate:

The questionnaire was sent by e-mail to 120 visitor residents. Six were excluded as they didn't fulfill 90% of the clinical requirements. Fourteen were excluded as they didn't respond to the survey at the beginning of the residency program. So, the response rate was 83.3%.

Demographic data:

The data collected in the present study was about 100 visiting residents: five males (5%) and 95 females (95%). The mean and standard deviation (SD) values for age were 27.1 (2.5) years with a minimum of 24 and a maximum of 44 years old. Less than two-thirds of participants (61%) graduated between 2016 and 2020, approximately one-third (35%) graduated in 2020 and only (4%) graduated before 2015. Less than two-thirds of participants (64%) graduated from private universities, about one-third (32%) graduated from governmental universities and only (4%) graduated from foreign universities outside of Egypt and these were excluded from the sample. All demographic data of the study participants are shown in Table (1).

Table 1: Frequencies (n), percentages (%), mean and standard deviation (SD) values for demographic data of the study participants (N = 100)

Demographic data
Gender [n (%)]

Male	5 (5%)
Female	95 (95%)
Age in years [Mean (SD)]	27.1 (2.5)
Graduation year [n (%)]	
Before 2015	4 (4%)
2016 – 2020	61 (61%)
2021 and after	35 (35%)
University [n (%)]	
Governmental	32 (32%)
Private	64 (64%)
Foreign (Abroad)	4 (4%)

Results of the questionnaire:

Percentages of responses to questions regarding confidence levels before and after the residency program are presented in Table (2) and Figures (1) and (2).

There was a statistically significant change in all items (18 items) as well as the overall score of the questionnaire after the residency program.

The percentage of participants who were very confident/ confident in taking comprehensive history, physical examination, and proper diagnosis increased from 18% to 81% after the program. Also, the percentage of participants who were very confident/ confident in managing fear and anxiety with different behavior management techniques increased from 16% to 72% after the program.

The percentage of participants who were very confident/confident in performing extraction under local anesthesia for a preschool child increased from 30% to 81% after the program. The percentage of participants who were very confident/confident in performing extraction under local anesthesia for a mixed-dentition child increased from 44% to 84% after the program.

The percentage of participants who were very confident/ confident in making decision of a space maintainer increased from 17% to 66% after the program. The percentage of participants who were very confident/ confident in applying pit and fissure sealants increased from 31% to 62% after the program.

The percentage of participants who were very confident/ confident in making restoration for a preschool child increased from 28% to 80% after the program. The percentage of participants who were very confident/confident in making restoration for a mixed-dentition child increased from 39% to 81% after the program.

The percentage of participants who were very confident/ confident in making pulp therapy for a preschool child increased from 20% to 81% after the program. The percentage of participants who were very confident/ confident in making pulp therapy for a mixed-dentition child increased from 25% to 81% after the program.

The percentage of participants who were very confident/ confident in making preformed crowns for a preschool child increased from 22% to 78% after the program. The percentage of participants who were very confident/ confident in making preformed crowns for a mixed-dentition child increased from 26% to 79% after the program.

The percentage of participants who were very confident/ confident in providing trauma-related treatment for primary teeth increased from 5% to 26% after the program. The percentage of participants who were very confident/ confident in providing trauma-related treatment for permanent teeth increased from 6% to 29% after the program.

Table 2: Percentages (%) for responses to the questionnaire (N = 100) and results of Wilcoxon signed-rank test for comparison between scores before and after the program

Item		Very confident	Confident	Neutral	Unconfident	Very unconfident	*P*-value
Taking comprehensive history, physical examination, and proper diagnosis.	Before program	0	18	46	32	4	<0.001*
	After program	31	50	10	0	9	
Managing fear & anxiety with different behavior management techniques.	Before program	3	13	43	33	8	<0.001*
	After program	31	41	20	1	7	
Performing extraction under local anesthesia for a preschool child.	Before program	7	23	41	24	5	<0.001*
	After program	45	36	10	0	9	
Performing extraction under local anesthesia for a mixed-dentition child.	Before program	12	32	36	15	5	<0.001*
	After program	55	29	7	0	9	
Making decision for a space maintainer.	Before program	0	17	38	35	10	<0.001*
	After program	31	35	23	5	6	
Applying pit and fissure sealants.	Before program	19	12	40	20	9	<0.001*
	After program	39	23	22	6	10	
Making restoration for a preschool child.	Before program	5	23	49	21	2	<0.001*
	After program	45	35	10	0	10	
Making restoration for a mixed-dentition child.	Before program	9	30	41	15	5	<0.001*
	After program	49	32	11	0	8	
Making pulp therapy for a preschool child.	Before program	0	20	35	36	6	<0.001*
	After program	56	25	8	1	10	
Making pulp therapy for a mixed-dentition child.	Before program	2	23	45	25	5	<0.001*
	After program	56	25	9	0	10	
Making preformed crown for a preschool child.	Before program	2	20	30	44	4	<0.001*
	After program	41	37	13	1	8	
Making preformed crown for a mixed-dentition child.	Before program	4	22	40	29	5	<0.001*
	After program	40	39	13	1	7	
Providing trauma-related treatment for primary teeth.	Before program	1	4	23	49	23	<0.001*
	After program	10	16	31	29	14	
Providing trauma-related treatment for permanent teeth.	Before program	1	5	25	48	21	<0.001*
	After program	9	20	29	26	16	
Treating patients with complex medical conditions.	Before program	1	7	34	48	10	<0.001*
	After program	16	20	41	15	8	
Writing antibiotic prescription for a child in need.	Before program	3	10	46	35	6	<0.001*
	After program	11	34	34	12	9	
Treating patients with special needs.	Before program	0	4	32	46	18	<0.001*
	After program	5	26	38	21	10	
Doing full mouth rehabilitation under general anesthesia.	Before program	3	3	23	46	25	<0.001*
	After program	11	19	36	18	16	
		Median	Min.	Max.	Mean	SD	
Total score (Mean of 18 items)	Before program	2.69	1.61	4.06	2.72	0.55	<0.001*
	After program	3.83	1	5	3.68	0.88	

**: Significant at P ≤ 0.05*

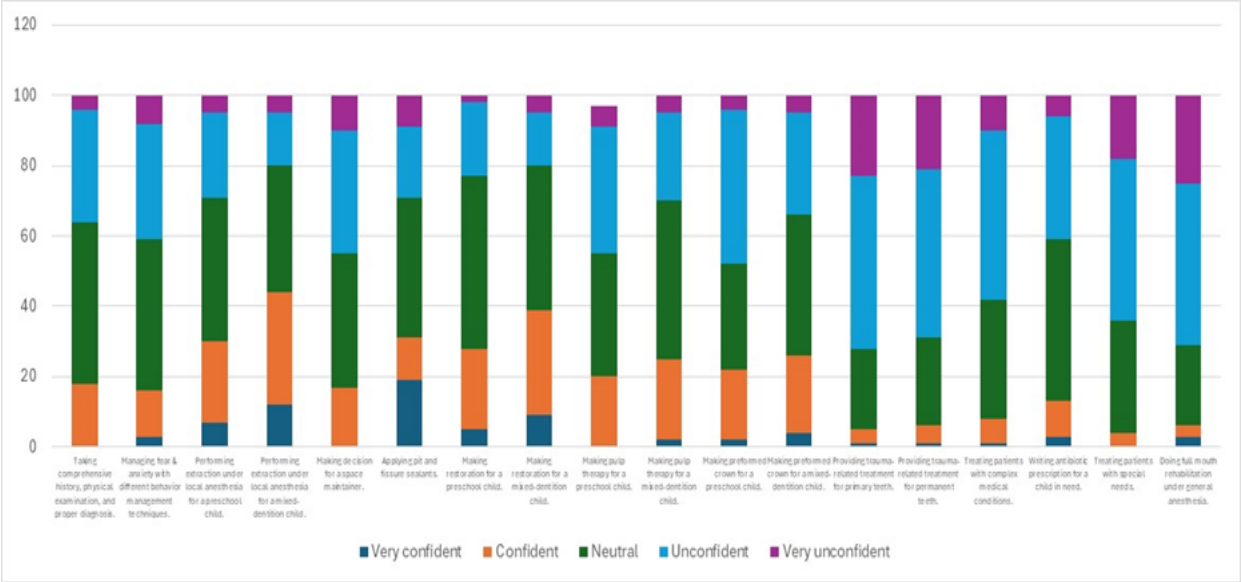

Figure (1) Stacked bar chart representing self-confidence scores of study participants before residency program

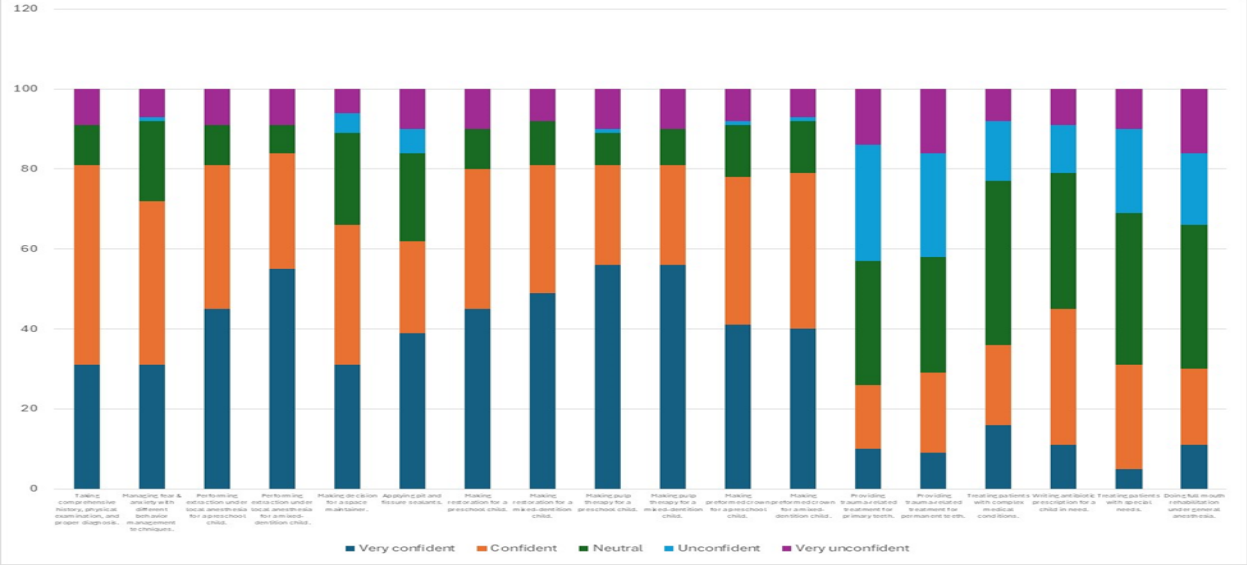

Figure (2) Stacked bar chart representing self-confidence scores of study participants after residency program

The percentage of participants who were very confident/ confident in treating patients with complex medical conditions increased from 8% to 36% after the program. The percentage of participants who were very confident/ confident in writing antibiotic prescriptions for a child in need increased from 13% to 45% after the program.

The percentage of participants who were very confident/ confident in treating patients with special needs increased from 4% to 31% after the program. The percentage of participants who were very confident/ confident in doing full mouth rehabilitation under general anesthesia increased from 6% to 30% after the program.

The total questionnaire score (mean of the 18 items scores) showed a statistically significant increase after the program.

The average percentage of self-confidence for the 18 items (mean % of very confident/confident respondents) increased from 19.9% to 62.4% after the program.

Association between self-confidence scores and different variables:

There was no statistically significant difference between self-confidence scores of males and females before program. After the program, males showed statistically significantly higher self-confidence scores than females (P-value = 0.023). There was no statistically significant difference between self-confidence scores of participants from different graduation years whether before or after the program. There was also no statistically significant difference between self-confidence scores of participants from different universities whether before or after the program. There was no statistically significant correlation between age and self-confidence scores.

Discussion

The study provides an insight into how confident visiting residents in pediatric dentistry are when it comes to applying different treatments before and after residency period. The results were a comparative analysis between the time the participants started their residency and the time they finished it.

The results of the study came in line with the literature on the subject. As Packer et al. (1999) and Elmanaseer et al. (2023) suggested, both knowledge and experience help in increasing the confidence levels of dentistry practitioners. Hence, getting adequate training during residency time, increases the confidence of pediatric visiting residents in their abilities of administering different treatments to different medical cases, ages (from 2 to 18) and backgrounds.

There was a statistically significant change in all items tested after the completion of the residency program. The findings proved a positive correlation between confidence levels of visiting residents and finishing the residency program.

Some items showed a more significant difference in confidence levels like confidence in the abilities of physical examination, diagnosis, managing fear and anxiety of children, extraction under local anesthesia, restoration and pulp therapy for preschoolers as well as making performed crown. On average, there was an increase in confidence around 60 percent.

Other aspects, however, showed a smaller variance in confidence levels, probably because they were perceived as harder or more challenging tasks. Examples of these aspects are providing trauma-related treatments for primary and permanent teeth, treating children with complex medical conditions, writing antibiotic prescriptions for a child in need, treating special needs patients, and full mouth rehabilitation under general anesthesia.

After the program, males showed statistically significantly higher confidence scores than females (P-value = 0.023).

Variables that showed no statistically significant differences were age, university

(whether public or private), and year of graduation.

Conclusion

There were high levels of confidence among visiting residents of the pediatric dentistry department, Faculty of Dentistry, Cairo University, after completing their residency program as compared to the start of their residency.

Although there was a significant improvement in the confidence levels in all aspects, we could spotlight on some aspects that didn't show enough improvement. Such as providing trauma-related treatments for primary and permanent teeth, treating children with complex medical conditions, writing antibiotic prescriptions for a child in need, treating special needs patients, and full mouth rehabilitation under general anesthesia.

This makes it important for professors to provide adequate learning tools, hands-on experience, and sources of knowledge for residents during their training period. Besides innovations in the field, including equipment, materials, and new techniques should be highlighted. This will teach residents more about the newest in the profession and will increase their confidence in their understanding and capabilities of the practice.

Conflict of interest: No conflict of interest.

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Ethics: This study protocol was approved by the ethical committee of the Faculty of Dentistry-Cairo University on 30 Jan 2024, approval number: 27-1-24.

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