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PEDIATRIC DENTISTRY TRAINING FOR DENTISTS IN PAKISTAN



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OBJECTIVE: In the last decade, a rapid growth has been observed in the number of dentists due to establishment of number of dental colleges in Karachi, Pakistan. There is an acute dearth of Pediatric Dentistry faculty in Pakistani dental institutions. Similarly, no post graduate Pediatric Dentistry fellowship program exists in the country. The objectives of this study are to map the pattern of pediatric dentistry services provided by the clinicians in teaching institutions and private practices of Karachi.

METHODOLOGY: A cross sectional study conducted at dental departments of academic institutions and selected dental practices in different parts of Karachi. The sample comprised of 71 subjects in the teaching while 97 subjects in the non-teaching group. Stratified random sampling was carried out. Data were obtained using a structured, self administered questionnaire. Chi square test was used to assess, if pattern of services are different between dentists in the two groups.

RESULTS: The response rate in teaching group was 94.67% (71 out of 75) while in the practitioners group it was 44.1% (97 out of 220). The groups were different regarding the use of topical fluoride, fissure sealants, and planning for primary teeth root canal treatment.

CONCLUSIONS: There is a statistically significant difference in preferences, selection of dental materials and pattern of pediatric dentistry services provided by the teaching dentists as compared to the private dental practitioners. Both the teaching and non-teaching dentists need to update themselves in provision of Pediatric Dentistry services such as fluoride application and fissure sealant placement.

KEYWORDS: Pediatric Dentistry, clinical training, dentist

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INTRODUCTION

Dentistry is no more a single specialty; it is a discipline of health science that has well established specialties and emerging subspecialties. In USA, there are nine dental specialty boards including Pediatric Dentistry. Similarly, the faculty of dentistry of the Royal Surgical Colleges in United Kingdom and Ireland recognize at least 8 specialties of dentistry, including Pediatric Dentistry. The system of dental education and training in Australia is governed by the Royal Australasian College of Dental Surgeons which

follows the UK model. However, the situation is significantly different in Pakistan; the College of Physicians & Surgeons of Pakistan (CPSP) recognizes only 6 disciplines of dentistry. Unfortunately, pediatric dentistry is not in the list. There is no formal training program, specialty board or assessment body for pediatric dentistry in the entire country. Therefore, it appears important to map the features of Pediatric Dentistry practice in Karachi so that the need of establishing a new training program in our country can be assessed.

There are two strata of dental care provision in Karachi, Pakistan: the private dental clinics and the dental colleges' hospital. We hypothesized that the provision of Pediatric Dentistry services varies with type of the clinical setup as the clinicians in private practice are subjected to pressure of time restraints and cost effectiveness. With the backdrop of changing trends in dental care provision it's imperative to explore the status of the least attractive area of dentistry

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i.e. "Pediatric Dentistry".

OBJECTIVE

To compare the pediatric dental care (preventive and restorative aspects) offered by the teaching and non teaching dentists in Karachi.

OPERATIONAL DEFINITIONS

1. Teaching dentist: Dentists employed in academic institutions as faculty members, fellows or post graduate students were labeled as teaching group.
2. Private Practitioners: Dentists who were not associated with any academic institution and are full time practitioners were considered in this group.

METHODOLOGY

It was a cross sectional study conducted at seven undergraduate and five post graduate dental institutions and their attached clinical settings in Karachi and selected private Dental Practices in different parts of Karachi.

Inclusion Criteria: Dentists who were registered with Pakistan Medical & Dental Council (PMDC) and have completed at least one year internship after graduation and are engaged in practice, teaching or both.

Exclusion Criteria: Dentists who are not active in practice or retired were excluded.

Sampling technique: The names and contact information of the practitioners were obtained from the Office of the Pakistan Dental Association Karachi division (last updated in 2007). There are about 250 dentists in the academic settings and 750 in private settings. Stratified random sampling was done to select the study subjects, considering the academic and private practice settings as two distinct strata.

Sample size: We calculated the sample size to test if there is a significant difference in the proportion of dentists using GIC (Glass ionomers cement based restorations) for primary teeth at 5% significance level and 80% power. We assumed (using our clinical judgment and experience) that in teaching group 70% and in the non-teaching group 50% dentists may use GIC. The sample size turned out to be 67 in teaching group, while in non-teaching group 201. To adjust for refusal, we inflated the sample size by 10% to get the sample of 75 in the teaching and 220 subjects in the non-teaching group.

Ethical Approval: The study protocol was approved by the Aga Khan University ethical Review committee (Ref

Table 1: Descriptive Statistics and Comparison of Age and Experience of Participants in the Two Groups (n=168)

Variable	Mean	Standard Deviation	p-value
Age in years (overall)	32.8	6.5	0.10
Teaching group	31.8	7.4	
Practice group	33.5	5.7	
Professional Experience (overall)	8.9	6.2	0.07
Teaching group	7.6	7.6	
Practice group	8.9	5.5	

573-Sur/ERC-06). The written informed consent of the participants was taken.

Table 2: Specialty of Interest according to Group Status (n=168)

Specialty of Interest	Group Status		Total	p-value
	Teaching	Practitioners		
Operative Dentistry & Endodontics	36	28	64	0.003
Orthodontics	10	14	24	
Prosthodontics	9	6	15	
Oral Surgery	6	9	15	
General Dentistry	8	35	43	
Periodontics	2	5	7	
Pediatric Dentistry	0	0	0	
Total	71 (42.3%)	97 (57.7%)	168	

Data Collection Tool: A structured, self-administered questionnaire comprised of 10 questions (written in English) regarding preferences, selection of materials and techniques used in providing pediatric dental care. The questionnaire had two parts:

- First part dealt with Demographics (independent variables)
- Second part had 10 questions on Pediatric Dentistry practice (response variables).

Data Collection Method: Questionnaires were given to the study population by hand. A reminder via telephone was made in case of no response after 2 weeks. A second

Table 3: Comparison of Teaching and Non-Teaching Dentists in Preventive Pediatric Dentistry

Clinical Situation	Group	Never	Rare	Frequent	Mean ranks	Mann - Whitney p-value	Chi Sq. p-value
Fissure sealants on primary teeth	Teaching	12.7%	50.7%	36.6%	106.08	< 0.001	< 0.001
	Practice	49.5%	38.1%	12.4%	68.70		
Clinical Situation	Group	Never	Rare	Frequent	Mean ranks	Mann - Whitney p-value	Chi Sq. p-value
Use of Fissure sealants on adult teeth	Teaching	28.2%	50.7%	21.1%	109.15	< 0.001	< 0.001
	Practice	75.3%	22.7%	2.1%	66.45		
Clinical Situation	Group	These are not effective	They dislodge easily	I don't have the kit	I don't like sealants	Patients don't want it	Chi Sq p-value
Reason of not using sealants	Teaching	19.3%	38.6%	12.3%	19.3%	10.5%	< 0.001
	Practice	41.1%	27.4%	4.2%	3.2%	24.2%	
Clinical Situation	Group	Never	Rare	Frequent	Mean ranks	Mann - Whitney p-value	Chi Sq. p-value
Use of Topical Fluoride in Practice	Teaching	33.8%	39.4%	26.8%	92.79	< 0.044	< 0.001
	Practice	45.4%	33.0%	21.7%	78.43		
Clinical Situation	Group	These are not effective	It's a temp measure	I don't have the kit	I don't like sealants	Patients don't want it	Chi Sq p-value
Reason of not using fluorides	Teaching	19.2%	28.8%	26.9%	11.5%	13.5%	< 0.001
	Practice	33.3%	46.0%	0%	3.4%	17.2%	

Chi Square test (Fisher's exact test or Mann-Whitney U test where needed was applied. Alpha set at 0.01.

reminder after four weeks of distribution was made to

Table 4: Restorative Pediatric Dentistry Services offered by Teaching and Non-Teaching Dentists

Clinical Situation	Group	Amalgam	Composite	Compo-mer	GIC / RMGIC	IRM / ZOE	Chi Sq. p-value
Restoration of deep cavity in a vital primary molar	Teaching	25.4%	4.2%	4.25%	50.75%	15.5%	< 0.001
	Practice	43.3%	22.7%	0%	21.7%	12.4%	
Clinical Situation	Group	Pulp cap	Tempo-rize only	Pulp-ectomy	Pulp-otomy	Extract	Chi Sq p-value
If pulp exposes in a primary molar	Teaching	52.1%	8.5%	2.8%	35.2%	1.4%	< 0.001
	Practice	24.0%	39.6%	14.6%	19.8%	2.1%	
Clinical Situation	Group	medicate d cotton	Ca (OH) ₂	ZOE paste	Others		Chi Sq p-value
Material for obturation in primary tooth	Teaching	8.6%	47.1%	44.3%	—		< 0.001
	Practice	42.3%	32.0%	25.8%	—		
Clinical Situation	Group	Never	Rare	Frequent	Mean ranks	Mann - Whitney p-value	Chi Sq p-value
Use of Stainless Steel crowns	Teaching	57.7%	39.4%	2.8%	88.76	0.259	0.20
	Practice	66.0%	33.0%	1.0%	81.38		
Clinical Situation	Group	Never	Rare	Frequent	Mean ranks	Mann - Whitney p-value	Chi Sq p-value
Use of Space maintainers	Teaching	35.2%	57.7%	7.0%	86.79	0.579	0.14
	Practice	36.1%	62.9%	1.0%	82.83		

Table 5: Determination of reliability of the obtained information

Questions	Kappa value	p-value
Fissure sealants in Permanent Teeth	0.779	< 0.001
If pulp exposure occurs during primary tooth preparation	0.891	< 0.001

collect the maximum number of questionnaires. To ascertain the information reliability, we repeated 2 (20%) questions at the end of the of the study questionnaire.

Data Analysis: SPSS 19.0 (SPSS Inc., USA) was used for data analysis. From the demographic section, means **Table 6: Dental Specialties Diplomas as approved by Dental Faculties at Training Institutions in United Kingdom, Ireland and Pakistan**

Royal Surgical Colleges, United Kingdom	Royal College of Surgeons, Ireland	College of Physicians & Surgeons, Pakistan
MJDF	MFD	FCPS part I
MFGDP	MGDS/ FGDS	MCPS (Family Dentistry)
M Orth RCS	FFD RCSI (Ortho)	FCPS (Orthodontics)
M Surg Dent RCS	FFD RCSI (Oral Surg)	FCPS (Oral Surgery)
M Endo RCS	FFD RCSI (Endo)	FCPS (Operative Dentistry)
M Prosth RCS	FFD RCSI (Prosth)	FCPS (Prosthodontics)
M Perio RCS	FFD RCSI (Perio)	No program in Periodontology
M Com Dent RCS	FFD RCSI (Com Dent)	No program in Community Dentistry
M Paed Dent RCS	FFD RCSI (Paed Dent)	No program in Pediatric Dentistry

and standard deviations of the quantitative variables and proportions for the categorical variables were determined. The response variables in the study are about the preferences in material and clinical technique selection. These responses are measured on nominal or ordinal scale.

Independent samples t test was applied to compare the two arithmetic means.

Chi Square (Fisher's Exact test) of proportions at 0.05 level of significance.

Independent samples t test was applied to compare continuous variables such as age and experience of the participants. Chi Square test (or Fisher's exact test) was applied to test if clinical preferences and pattern of services are different between dentists in academic settings than those in private practices. Mann-Whitney U test was applied

to compare the two groups for ordinal scale responses. P-value less than 0.01 were considered as statistically significant. Kappa statistic was applied to assess the agreement between the initial responses and the repeated questions.

Chi Square test (Fisher's exact test or Mann-Whitney U test where needed) were applied. Level of significance was set at 0.01.

Kappa statistics is computed to determine the percent agreement between the study questions.

RESULTS

The total number of participants were 168 out of which 71 (42.3%) of participants were teaching dentists while 97 (57.7%) were private practitioners. There were more males in both groups.

The response rate in the teaching group was 94.6% (71 out of 75) while in the practitioners group, it was 44.1% (97 out 220). Both groups were comparable with respect to the age of the subjects (p-value 0.1) and their professional experience (p-value 0.07).

Teaching and non teaching dentists have statistically significant differences regarding their interest in clinical specialties (p-value 0.003). Not even a single participant showed interest in pediatric dentistry.

In preventive pediatric dentistry, decisions such as use of sealants, use of topical fluoride and reasons of not employing sealants and use of topical fluorides were different for both the study groups (p-value < 0.001). Large proportions of practitioners believed that fluoride and sealants are not effective while a large proportion of academic dentists considered these as temporary measures.

The restorative pediatric dentistry practice was similar in the two groups for use of stainless steel crowns and use

of space maintainers while restorative material selection for deep cavities in primary teeth, obturation material for primary root canal obturation and technique of choice for mechanical exposure of a primary tooth were significantly different for both the study groups (p-value < 0.001).

The reliability of the information obtained in our study was excellent 78-89% (table 5).

DISCUSSION

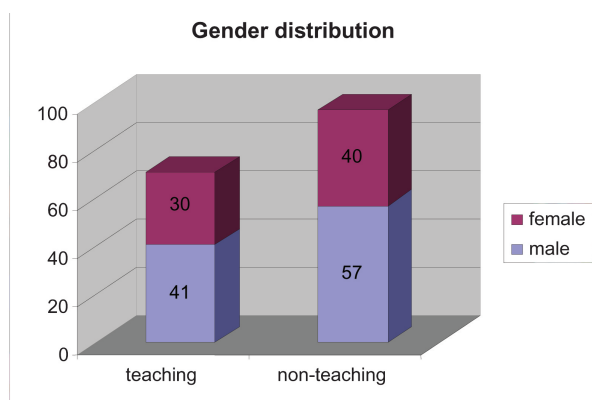
Although the participants in both the study groups were similar in age and professional experience (table 1), but their clinical interests were highly variable. No individual in the sample reported his/ her interest in the pediatric dentistry (table 2).

This indicates that this discipline does not attract the dentist. This can be attributed to the lack of training opportunity in this specialty and lack of teachers in this area who can be role models and source of inspiration for students. Alternatively, lack of interest may be attributed to the practitioners' perception that children dental care involves low monetary returns.

In UK, Milsom¹ reported on outcomes of restorative dental care of primary teeth. They did a retrospective investigation of case notes of 677 child patients of 50 general dental practitioners (GDPs). The glass ionomer restorations were used most commonly (over 61%) and are significantly more likely to require replacement than amalgam restorations. The type of restorative material used had no influence on clinical outcomes.

In USA, Guelmann² conducted a survey on materials and techniques used by pediatric dentistry clinicians for posterior restorations in primary molars and compared the results to what is being taught in dental schools. A questionnaire was mailed to all 180 members of the American Academy of Pediatric Dentistry. The information requested included material selection for restorations in primary molars and the type of cavity preparation for amalgam and resin-based materials, and the bonding system in use. Resin-based composite materials were the most commonly selected for Class I and II restorations, while stainless steel crowns were the predominant material when 3 or more surfaces are involved. Different opinions were found between clinicians and educators in respect to material selection and contraindication criteria for the use of tooth-colored restorations in primary molars.

A similar study³ in Australia and New Zealand focused on the clinician preferences regarding dental restorative choices in pediatric dentistry. For Class I and II restorations



Chi square p-value = 1.00

Figure 1: Distribution of Gender according to Group Status

in primary molars, composite was chosen by 92 and 84 per cent respondents respectively. The specialist pediatric dentistry respondents were significantly more likely to choose glass ionomer cement for Class I and II restorations and for restoring two proximal lesions ($p < 0.001$) than other respondents, who were more likely to choose composite resins/compomers or amalgam/stainless steel crowns for these restorations.

Our study findings are somewhat closer to the GDPs of UK and specialists of Australia & New Zealand where clinicians are preponderantly inclined towards Glass ionomers restorations but the difference between our two study groups is statistically significant. It means that our two sets of clinicians made entirely different choices.

At least 37% dentists in USA⁴ have been reported to place topical fluorides routinely on primary teeth and despite of having established and convincing evidence for the use of sealants,⁵ a large proportion i.e. 45-50% of respondents in our practitioners group never provided these services to their children patients. This is an alarming situation which needs to be addressed on a priority basis. A similar trend was observed among teaching group too, as 12% & 33% of them never used sealants and fluorides respectively.

Stainless steel crown and are considered as integral components of Pediatric Dentistry. A study⁶ showed that even in UK, only 18% general dentist had ever fitted a stainless steel crown in their practice but we observed that 99% practitioners and 93% teachers have hardly placed any restoration. The difference is evident.

Although space maintainers are an essential component of pediatric dental care but it's strange that there was no international data found on the use of on space maintainers by the dentists. However, we observed that around 35 % respondents in the both groups have never placed any space maintainers in their career. This again raises questions on the quality of pediatric dental care in Karachi, Pakistan.

There are a number of studies¹⁻⁷ to which our study results can be compared but it would not be prudent to compare a developing country's data to developed countries where the pattern of dental diseases (and hence the demand of care) may be somewhat different. Availability of resources, materials and first hand information can also be a factor for poor clinical decision making in some clinical scenarios in our study. However, our study has the advantage that it included the preventive & restorative aspects of Pediatric Dentistry.

With the gradual acceptance of evidence based dentistry, the dentists as well as consumers of dental health care are

driving the demand for access to reliable information so they can make more informed decisions. It's a high time for teaching and non-teaching dentist to engage themselves in a life long commitment of continuing education to predictably meet the point of care and to routinely carry out good-quality dentistry.

From the inception, the system of dental post graduate education and training in Pakistan is largely influenced by the system in UK. But this does not hold true for pediatric dentistry. Table 6 reveals that in Pakistan, we don't have any formal training programs and assessment body for Pediatric Dentistry, Dental Public Health and Periodontology. Lack of trained specialists in these areas would result in poor delivery of education at dental colleges. This finally translates into poor decision making and treatment provision by the clinicians. However, this vacuum does offer an opportunity for young dental graduates to acquire training in these subjects from abroad and get a good career in dental academia in Pakistan.

STRENGTHS & LIMITATIONS: This study involves both strata (academic institutions and as well as private practices) thus, it provides a view of what has been the current practice and what are the future directions of the Pediatric dentistry. The sample of 168 dentists belonging to a diverse background was valuable in achieving the objectives and addressing the research question of identifying differences between these two groups of dentists. The relatively poor response rate from the practitioner group (97 out of 201 or 48.25%) appears bad but upon exploring into the causes of this low response rate, it's obvious that busy practitioners are not interested in completing questionnaires during business hours.

Additionally, a sense of insecurity prevailed about revealing their practicing pattern; fearing criticism if they deviate from standards of care, may probably be a reason. On similar studies, Slaus⁸ had a response rate of 25.1% in Belgium. A response rate of 26.3% was recorded by Haj-Ali⁹ in USA. Jenkins¹⁰ in UK had response rate of 41.5%. Mjor¹¹ had response rate of 51% in Iceland while Forss¹² received a response rate of 53.6% from dentists in Finland. This suggests that it's not uncommon for practicing dentists to give low response rate. In this context, our response rate of 44.1% does not appear that bad. Since the information of non responding practitioners was not available, so we could not explore any further in this direction. However, this non-response bias has the potential to affect the study results.

In comparison to practitioners, the teaching dentists

showed an excellent compliance (94%) in responding to the questionnaires probably because they are familiar to research activities and therefore, more complacent and open in participation. This study included participants from all dental institutions of the city except one. Data was not obtained from that dental college because permission to distribute study questionnaire was refused by that institution authorities. As a result, 4 subjects were dropped out; reducing the original sample size from 75 to 71 in the teaching group.

CONCLUSIONS

There are significant differences between the teaching and practitioner groups regarding preventive and restorative pediatric dentistry care. One third of teaching dentists and practitioners never used topical fluoride. About one third dentists of teaching and practitioner group subjects never placed space maintainer in children. The overall quality of pediatric dental care was perceived as poor in both the study groups.

RECOMMENDATIONS

1. The Pediatric Dentistry should be established as a separate specialty and residency programs should be initiated by the potential trainers in this area.
2. Seminars and workshops on standards of Pediatric clinical dental care should be organized by institutions and manufacturers of pediatric dentistry products.
3. Emphasis should be given on Pediatric Dentistry at an undergraduate curriculum.
4. A system of re-validating the dental practice license after accumulating a number of CME credits should be made mandatory by PMDC.

REFERENCES

- 1 Milsom KM, Tickle M, Blinkhorn A. The prescription and relative outcomes of different materials used in general dental practice in the North West region of England to restore the primary dentition. *J Dent.* 2002; 30: 77-82.
- 2 Guelmann M, Mjor IA. Materials and techniques for restoration of primary molars by pediatric dentists in Florida. *Pediatr Dent.* 2002; 24: 326-331.
- 3 Tran LA, Messer LB. Clinicians' choices of restorative materials for children. *Aust Dent J.* 2003; 48: 221-232.
- 4 Swigonski NL, Yoder KM, Maupome G, Ofner S. Dental providers' attitudes regarding the application of fluoride varnish by pediatric health care providers. *J Public Health Dent* 2009; 69:242-247.
- 5 Folke BD, Walton JL, Feigal RJ. Occlusal sealant success over ten years in a private practice: comparing longevity of sealants placed by dentists, hygienists, and assistants. *Pediatr Dent.* 2004; 26:426-432.
- 6 Threlfall AG, Pilkington L, Milsom KM, Blinkhorn AS, Tickle M. General dental practitioners' views on the use of stainless steel crowns to restore primary molars *Br Dent J.* 2005; 199:453-455
- 7 Schorer-Jensma MA, Veerkamp JS. A comparison of paediatric dentists' and general dental practitioners' care patterns in paediatric dental care. *Eur Arch Paediatr Dent.* 2010;11:93-96.
- 8 Slaus G, Bottenberg P. A survey of endodontic practice amongst Flemish dentists. *Int Endod J.* 2002;35:759-767.
- 9 Haj-Ali R, Walker MP, Williams K. Survey of general dentists regarding posterior restorations, selection criteria, and associated clinical problems. *Gen Dent.* 2005;53:369-375.
- 10 Jenkins SM, Hayes SJ, Dummer PM. A study of endodontic treatment carried out in dental practice within the UK. *Int Endod J* 2001;34:16-22.
- 11 Mjor IA, Shen C, Eliasson ST, Richter S. Placement and replacement of restorations in general dental practice in Iceland. *Oper Dent.* 2002;27:117-123.
- 12 Forss H, Widström E. Factors influencing the selection of restorative materials in dental care in Finland. *J Dent* 1996; 24 257-262.