



Profile of *Journal of Dentistry for Children and Pediatric Dentistry* Journal articles by evidence typology: thirty-year time trends (1969-1998) and implications

S.M. Hashim Nainar, BDS, MDSc

Dr. Nainar is a pediatric dentist, Hamilton, Ontario, Canada. Correspond with Dr. Nainar at smhnainar@dentallflavor.com

Abstract

Purpose: This study was performed to assess the profile of *Journal of Dentistry for Children and Pediatric Dentistry* journal articles by evidence typology and measure their changes over a thirty-year period (1969-1998).

Methods: All issues of both journals during the study period (1969-98) were manually reviewed. The publications were ranked by the quality of the evidence. Editorials, letters to the editor, abstracts, and organization-related communications were excluded from consideration. The publications were analyzed by journal and also by decade of publication, i.e., 1969-78, 1979-88 or 1989-98.

Results: There were 2848 publications included in the data set with descriptive studies, case reports, etc. comprising the majority (71%). No distinctive trends in the evidence typology were detected over the decades in either journal.

Conclusion: There is a need to improve the quality of the evidence in the two pediatric dental journals reviewed. (*Pediatr Dent* 22:475-478, 2000)

A shift in paradigm to evidence-based health care has been reported.¹ Sackett has defined evidence-based medicine as “the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.”² This involves “integrating individual clinical expertise with the best available external clinical evidence from systematic research.”² It has been noted that evidence-based medicine “integrates five elements: Francis Bacon’s precepts of the scientific method; Sir William Osler’s application of the scientific method to health care; Internet-facilitated methods of finding the current best evidence; clinical judgement; and the patient’s health belief model.”³

Evidence-based dentistry, however, has also been disparagingly termed a “deception” and no more than a “buzzword.”⁴ “It is hoopla, and as with so many other things in today’s society, it is all smoke and no substance.”⁴ The sentiments of some practitioners to retain the profession in a pristine state without change is an illusion that cannot be maintained. The halcyon days of “it works for me” and “it works in my hands” are over. The reality remains that the evidence-based paradigm is not a chimera but rather is the result of the evolution of the health sciences with decreasing dogma and increasing science. The importance of evidence-based dentistry is emphasized by the report that “beginning in late 1999, the National Institute

for Dental and Craniofacial Research will fund one of the twelve Agency for Health Care Policy and Research Evidence-based Practice Centers to conduct a series of systematic reviews of dental questions.”⁵

It was disconcerting to note a recent review of pediatric surgical literature concluding that “there is a paucity of scientifically rigorous data on which to base clinical practice in pediatric surgery.”⁶ This highlighted the importance of assessing the quality of the evidence in the pediatric dental literature since this analysis has not yet been fielded. The objectives of the present study were to assess the profile of *Journal of Dentistry for Children and Pediatric Dentistry* journal articles by evidence typology and to measure their changes over a thirty-year period (1969-1998) and to explore the implications.

Methods

ASDC *Journal of Dentistry for Children and Pediatric Dentistry* were selected for review as they are the two premier peer-reviewed pediatric dental journals. *ASDC Journal of Dentistry for Children* was reviewed over a thirty-year period (1969-1998; volumes 36-65). *Pediatric Dentistry* was reviewed over a twenty-year period (1979-1998; volumes 1-20). All issues of both the journals during the study period were manually reviewed. A single examiner ranked the publications as per the following hierarchical quality of evidence:

- I. Evidence obtained from randomized controlled trial;
 - II-a. Evidence obtained from controlled trial without randomization;
 - II-b. Evidence obtained from cohort or case-control analytic study;
 - II-c. Evidence obtained from comparisons between times or places with or without the intervention;
- III. Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.⁷

The following definitions were employed to assist in the ranking of the evidence described above:

Randomized controlled trial is an experimental study method where the investigator randomly assigns the subjects to the various study groups to evaluate the efficacy of a preventive or therapeutic agent or procedure.

Controlled trial without randomization is an experimental study method where the investigator without randomization

Table. Profile of publications in J Dent Child and Pediatr Dent by evidence typology (1969-1998)

Evidence typology	J Dent Child			Pediatr Dent		Total
	1969-78*	1979-88*	1989-98*	1979-88*	1989-98	
Randomized controlled trial (level I)	8%	4%	5%	7%	8%	6%
Controlled trial without randomization (level II-a)	4%	3%	2%	2%	2%	3%
Cohort study/ Case-control study (level II-b)	1%	2%	2%	1%	4%	2%
Comparisons between times or places (level II-c)	–	–	–	1%	1%	1%
Descriptive study, Case reports, etc. (level III)	75%	79%	78%	62%	60%	71%
Literature review	4%	4%	5%	8%	9%	6%
Animal study	3%	2%	–	4%	3%	2%
In vitro study	6%	7%	7%	13%	13%	9%
Total number	453	615	645	500	635	2848

*Percentages in some columns do not add up to 100 on account of rounding error.

assigns the subjects to the various study groups to evaluate the efficacy of a preventive or therapeutic agent or procedure.

Cohort study is an observational study method where the investigator does not control the assignment of the exposure and only observes the outcomes associated with the exposure experienced by the study participants.

Case-control study is an observational study method where the investigator does not control the assignment of the exposure and only makes comparisons between “cases” with exposure and “controls” without exposure.

Case reports and case series were assigned level III irrespective of the number of cases on account of being peer-reviewed literature. Literature reviews, animal studies and in vitro studies were ranked as such. The following publication types were excluded from consideration:

- Editorials
- Letters to the editor
- Abstracts
- Organization-related communications.

The publications were analyzed by journal and also by the decade of publication, i.e., 1969-78, 1979-88 or 1989-98. Frequency distribution analysis was performed. Intra-examiner reliability for the ranking of the publications by the evidence typology was measured on a subset consisting of ten percent (N=285) of the data set.

Results

There were 2848 publications included in the data set with the majority (60%) from the Journal of Dentistry for Children since this journal was reviewed over three decades. Level III evidence was predominant (71%). Journal of Dentistry for Children had a higher proportion of Level III evidence as compared to the Pediatric Dentistry journal over the decades. Pediatric Dentistry journal, however, had a greater proportion of literature reviews and in vitro studies over the decades (Table).

Intra-examiner reliability for the ranking of the publications by the evidence typology was 93 percent (kappa=0.88).

Discussion

The present study reviewed the quality of the evidence published in two clinical pediatric dental journals over a thirty-year period (1969-1998). Almost three-fourths of the evidence was level III, i.e., descriptive studies, case reports and case series, reports of expert committees, and opinions of respected authorities, based on clinical experience. This finding is similar to that of the pediatric surgical literature which was also reported to be “largely descriptive in content.”⁶ In light of these data it is pertinent to explore the implications of this state of the evidence upon the clinical practice of pediatric dentistry.

Need to improve the quality of the evidence: Adoption of clinical epidemiologic principles as part of pediatric dental science is essential as the lingua franca of the randomized controlled trial is being held as the gold standard in the health sciences. A recent paper formulating evidence-based guidelines for the use of space maintainers concluded that although the premature loss of primary teeth results in a loss of the space available for the succeeding teeth, there was poor evidence to recommend for or against the use of space maintainers.⁸ This equivocation likely resulted from the arbitrary methodologic criteria employed thereby eliminating most of the level III evidence.⁸ The present study has demonstrated that most of the evidence in the two premier clinical pediatric dental journals was level III. “The laudable goal of making clinical decisions based on evidence can be impaired by the restricted quality and scope of what is collected as best available evidence.”⁹

Pediatric dental journals are the resource for clinical practice to conform to the evidence-based paradigm. Recent perusal of the Journal of the American Medical Association (JAMA) instructions for authors indicates the emphasis being placed on having the authors report their study design.¹⁰ This helps the reader to rank the quality of the evidence published in a particular paper. Further, as electronic literature searches are the present norm, study design provides a key word to facilitate literature search. Pediatric dental journals should consider emulating the JAMA with regard to the emphasis on the study design. This should help promote the accumulation of better quality evidence. Further, there is a need to tighten the statis-

tical treatments employed by including the routine mention of confidence intervals for the statistical tests where applicable as this will facilitate meta-analytic studies.

Third-party payers: The clinical practice of pediatric dentistry remains subject to governance by third-party payers as the American Academy of Pediatric Dentistry's 1996 Survey of Practice Patterns/Career Trends of the New Pediatric Dentist reported that the majority of the patients were covered by third-party arrangements.¹¹ There has been increasing pressure to make third-party payers accountable for services covered as exemplified by the 1997 Texas Health Care Liability Act which was upheld by a U.S. District Court despite an appeal by the Aetna Liability Casualty Company.¹² It has been suggested that "evidence-based dentistry will introduce a new factor that should be used in deciding on the services to be included in a dental insurance plan: the evidence for effectiveness."⁵ Therefore, for third-party payers, evidence-based care might be the *deus ex machina*, providing an opportunity to limit coverage citing the lack of good evidence. Given the finding in the present study that most of the evidence in the two premier clinical pediatric dental journals was level III, the situation provides a mandate for clinical researchers to improve the quality of the evidence.

Clinical practice guidelines: It has been noted that in the absence of or inconclusiveness of the evidence, collective professional experiences should define the "standard of care."⁵ The state of the evidence in the two pediatric dental journals reviewed in the present study highlights the importance of clinical practice guidelines to set the standard of care.

"Evidence-based clinical practice guidelines are a welcome resource for busy clinicians."¹³ Pediatric dental journals should promote the publication of evidence-based clinical practice guidelines based upon systematic reviews of the literature. Systematic reviews are conducted with pre-planned methods that "include a comprehensive search of all potentially relevant articles and the use of explicit, reproducible criteria in the selection of articles for review."¹⁴ The selected articles are assessed with regard to their study design, the contained data are synthesized and the results interpreted.¹⁴ The systematic review is termed qualitative if the results of the primary studies are only summarized and quantitative (meta-analysis) if the results of the primary studies are statistically combined.¹⁴ Evidence-based clinical practice guidelines result from systematic reviews of the literature and are "systematically developed statements to assist practitioner and patient decisions about appropriate health care for specific clinical circumstances."^{14,15} The goal of the practice guidelines should be to meet the standard and be indexed in guideline registries such as the National Guideline Clearinghouse and the Cochrane Collaboration. The individual guidelines should be published as discrete scientific publications in the pediatric dental journals to ensure their inclusion in MEDLINE and identification during electronic literature searches.

Concern has been expressed at the "attempts to standardize health care because a good physician is an expert at individualizing care."¹⁶ However evidence-based clinical practice guidelines will promote the goal that "the practice of evidence-based dentistry assures that the best available evidence is used in patient care."⁵ Practitioners have been wary of clinical practice guidelines probably mistaking it for program guidelines. The latter have been "defined as statements on clinical

care which specific practitioners use to make decisions in order to achieve maximal health improvement for a defined population with identified needs."¹⁷ Program guidelines are developed by health care organizations for specific populations based on financial constraints and burden of illness.¹⁷

Need for equilibrium: A balanced and pragmatic outlook is necessary as the health sciences evolve with the evidence-based paradigm. "There has always been a balanced tension between the science and the art of medicine. We currently threaten that balance by failing to understand the limitations of the science and the power of the art."¹⁶ Adoption of the evidence-based approach should include due consideration of the fact that the randomized controlled trial may not always be the most appropriate study design in certain instances.¹⁸ For example, the study of pathologic conditions may be more amenable and appropriate with a cohort or case-control study design. Also randomized trials "provide a statistical prediction of the likely effect of an intervention, usually based on the "average" outcome aggregated across all patients in the trial."¹⁹ Further "participants in clinical trials are seldom representative of the general population."¹⁹ Thus the inferential leap necessary for treating an individual based on aggregate findings is assumed. It has been aptly remarked that "to devalue the intangible differences between individuals is to devalue individuals."²⁰

Case reports and case series have the lowest rating in evidence-based medicine, but nevertheless they are an important part of the literature spectrum and should not be decried.²¹ Case reports remain the "deep bench" of clinical practice. They have the best potential to stimulate new learning and even in this "age of evidence-based medicine, they remain as necessary as ever."²¹ It has been noted that systematic reviews must "address the danger of underestimating the evidence from relevant literature if it includes only that of a certain methodological quality."¹⁸ The clinical importance of publications (signal) must be balanced against any methodologic inadequacies (noise).¹⁸ Therefore, it is likely that the state of the evidence in the two pediatric dental journals reviewed reflects their audience of clinical practitioners. The encompassing nature of the specialty of pediatric dentistry allows evidence to be drawn from many other dental and medical journals. This provides the pediatric dental journals with the opportunity to encourage clinical-oriented research (e.g., case reports) albeit of a lower level of evidence.

Conclusions

- Almost three-fourths of the evidence in the two pediatric dental journals reviewed was level III, i.e., descriptive studies, case reports and case series, reports of expert committees, and opinions of respected authorities, based on clinical experience.
- There is a need to improve the quality of the evidence in the two pediatric dental journals reviewed.
- Pediatric dental journals should promote the publication of evidence-based clinical practice guidelines as discrete scientific publications.

References

1. Nainar SMH: Evidence-based dental care - a concept review. *Pediatr Dent* 20:418-21, 1998.
2. Black D: The limitations of evidence. *J R Coll Phys (Lond)* 32:23-26, 1998.

3. Niederman R, Badovinac R: Tradition-based dental care and evidence-based dental care. *J Dent Res* 78:1288-91, 1999.
4. Cook TR III: Evidence-based dentistry. *J Am Dent Assoc* 130:1159-60, 1999.
5. Ismail AI, Bader JD, Kamerow DB: Systematic reviews and the practice of evidence-based dentistry: professional and policy implications. *J Am Coll Dent* 66:5-12, 1999.
6. Hardin WD Jr, Stylianos S, Lally KP: Evidence-based practice in pediatric surgery. *J Pediatr Surg* 34:908-13, 1999.
7. Goldbloom R, Battista RN: The periodic health examination: 1. Introduction. *Can Med Assoc J* 134:721-23, 1986.
8. Brothwell DJ: Guidelines on the use of space maintainers following premature loss of primary teeth. *Can Dent Assoc J* 63:753-66, 1997.
9. Feinstein AR, Horwitz RI: Problems in the "evidence" of "evidence-based medicine." *Am J Med* 103:529-35, 1997.
10. American Medical Association: JAMA instructions for authors. *JAMA* 282:84-92, 1999.
11. American Academy of Pediatric Dentistry Subcommittee on Membership Diversification: Career trends and practice patterns of pediatric dentists. *Pediatr Dent* 20(6):110-14, 1998.
12. Sfikas PM: ERISA update. *J Am Dent Assoc* 129:1754-55, 1998.
13. Laupacis A: Preventive therapies: weighing the pros and cons. *Can Med Assoc J* 154:1510-12, 1996.
14. Cook DJ, Mulrow CD, Haynes RB: Systematic reviews: synthesis of best evidence for clinical decisions. *Ann Intern Med* 126:376-80, 1997.
15. Audet A-M, Greenfield S, Field M: Medical practice guidelines: current activities and future directions. *Ann Intern Med* 113:709-14, 1990.
16. Fischer PM: Evidentiary medicine lacks humility. *J Fam Pract* 48:345-46, 1999.
17. Leake JL, Main PA, Woodward GL: Developing evidence-based programme guidelines for children's dental care in a dental public health unit in Ontario, Canada. *Community Dent Health* 14:11-17, 1997.
18. Edwards AGK, Russell IT, Stott NCH: Signal versus noise in the evidence base for medicine: an alternative to hierarchies of evidence? *Fam Pract* 15:319-22, 1998.
19. Mant D: Can randomised trials inform clinical decisions about individual patients? *Lancet* 353:743-46, 1999.
20. Tonelli MR: The philosophical limits of evidence-based medicine. *Acad Med* 73:1234-40, 1998.
21. Vandembroucke JP: Case reports in an evidence-based world. *J R Soc Med* 92:159-63, 1999.

American Board



The American Board of Pediatric Dentistry: Executive Secretary-Treasurer Search

Paul O. Walker, DDS, MS

Dr. Paul Walker is the Vice President of the American Board of Pediatric Dentistry.

Dr. James R. Roche has informed the Directors of the American Board of Pediatric Dentistry (ABPD) that he will retire from the position of Executive Secretary-Treasurer on September 30, 2002. He has held this position since 1982. Since the formation of ABPD, there have been only three individuals to hold this position, Dr. Ralph L. Ireland (1940-1973), Dr. William S. Kramer (1973-1982) and Dr. James R. Roche (1982-present). During Dr. Roche's tenure, the number of Diplomates certified by the ABPD has increased from 340 in 1982 to 1167 in 2000...a 343% increase!

In May, 2000, during the ABPD Business Meeting at the Annual Session of the American Academy of Pediatric Dentistry (AAPD), President Stephen K. Brandt announced the formation of an ABPD Executive Secretary-Treasurer-Designate Search and Screen Committee. The committee consists of Dr. William C. Berlocher, representing the ABPD

College of Diplomates, Dr. Robert E. Primosch, representing the ABPD College of Diplomates Foundation, Dr. Brian D. Lee, a former ABPD Director and former At-large Trustee of the AAPD Board of Trustees, Dr. Keith R. Morley, a current member of the AAPD Board of Trustees and former Chief Examiner for the Royal College of Dentists of Canada. Dr. Paul O. Walker, ABPD Vice-President and former District IV Trustee of the AAPD Board of Trustees has been appointed chairperson of the committee.

In addition, Dr. Brandt gave the committee the following seven charges:

1. Advertise the position in appropriate journals
2. Solicit applicants through alternate sources
3. Review and screen applications
4. Interview prospective candidates as needed
5. Recommend to the Director of the American Board of Pediatric Den-

tistry three candidates in unranked order

6. Recommend to the Directors of the American Board of Pediatric Dentistry possible locations for the Central Office
7. Follow the timelines established by the Chairperson of the Executive Secretary-Treasurer Search and Screen Committee

The position description has been placed on the ABPD website, www.ABPD.org and advertisements have been placed in a variety of organizational publications and online opportunity descriptions.

The committee will review all applicant information and if needed, will interview applicants. Finally, the committee will present no more than three unranked names to the ABPD Directors early in 2001. The ABPD will conduct interviews and identify the successful candidate in 2001.