

# Journal of Dental Research

<http://jdr.sagepub.com/>

---

## **General Dental Practice: The Missing Link in Dental Research**

Ivar A. Mjor and Nairn H.F. Wilson

*J DENT RES* 1997 76: 820

DOI: 10.1177/00220345970760040101

The online version of this article can be found at:

<http://jdr.sagepub.com/content/76/4/820>

---

Published by:



<http://www.sagepublications.com>

On behalf of:

[International and American Associations for Dental Research](#)

**Additional services and information for *Journal of Dental Research* can be found at:**

**Email Alerts:** <http://jdr.sagepub.com/cgi/alerts>

**Subscriptions:** <http://jdr.sagepub.com/subscriptions>

**Reprints:** <http://www.sagepub.com/journalsReprints.nav>

**Permissions:** <http://www.sagepub.com/journalsPermissions.nav>

**Citations:** <http://jdr.sagepub.com/content/76/4/820.refs.html>

>> [Version of Record](#) - Apr 1, 1997

[What is This?](#)

# General Dental Practice: The Missing Link in Dental Research

Ivar A. Mjör and Nairn H.F. Wilson

The primary aim of dental research is to provide the scientific basis for the best possible patient care. Research topics are defined by major funding organizations, including the National Institute of Dental Research, Medical Research Councils, a variety of international, national, and local foundations and organizations, by dental faculties, or by individual researchers. Representatives from many areas of basic and clinical sciences and dental academia outline the research hypotheses which span fields as diverse as basic biological and physical sciences, health services research, and controlled clinical studies. The methodology is becoming increasingly complex, and resolution at the molecular level is required to be at the cutting edge of science. Considerable research is also carried out by dental industry and is often categorized as applied research, but it is rarely practice-based.

All areas of dental research can point to major achievements during the last few decades. However, the impact of these achievements on oral health care has been slow, and in some cases extremely slow (Mjör, 1986), to take effect. Furthermore, several apparently simple but clinically important questions have remained unanswered, and some never seem to reach the priority lists of funding agencies and researchers, probably because the problems have not been presented to the research community by clinicians or by organized dentistry. This lack of communication should be remedied by systematic outlining of the problems encountered in everyday general dental practice. Some areas of clinical dentistry, notably the recognized specialties, have defined and addressed their problems better than others. International and, to a lesser extent, national variations in the emphasis of research topics must also be recognized.

The responsibility for defining the problems in general dental practice remains with the clinicians facing the problems. If these problems are not identified, it is unlikely that they will ever be solved. Obviously, basic studies and controlled clinical investigations are needed to address the problems, but it is important to keep in mind that there is a world of difference between controlled research and general dental practice. Traditional clinical research has a long history in dentistry and has been referred to as the silent partner in dental practice (Mandel, 1993). Originally, much of it was practice-based research. Today, this approach is virtually a missing link in dental research, especially in highly developed countries. Differences also exist between developed regions, *e.g.*, between Europe and North America. At least some of these differences may be due to variations in the clinician/basic scientist ratio in the research

community and within funding agencies.

Several examples from the largest field of general dental practice, operative/conservative dentistry, can be used to illustrate the discrepancies between research data and clinical practice. Clinical research on new dental materials may be used to exemplify the situation. In a controlled clinical study, the research design usually includes the participation of a specially trained and exceptionally well-qualified clinician working without time constraints on a selected group of patients (often dental students) as part of a team which has spent time studying the instructions for use and being pre-operatively drilled in the handling of the materials. This clinical setting is very different from that of a busy general dental practice, and it is not considered cost-effective and realistic for affordable dental care to change the average clinical setting to that of the controlled clinical trial. Data from laboratory studies are even further divorced from clinical practice. As a consequence, the results from controlled clinical and laboratory studies cannot be extrapolated to real-life dentistry. Thus, there is a need to complement all phases of new treatment modalities developed in highly controlled randomized clinical trials and *in vitro* investigations with studies based on real-world, practice-based scrutiny. In fact, some of the established principles for routine treatment need scientific verification. Results from highly controlled *in vivo* and *in vitro* investigations are academically rewarding, but they tend to end up in a general pool of knowledge which at best may provide an indirect evidence base which may assist in explanations of possible success or failure in restorative dentistry.

Marked variations between clinicians have been noted in clinical diagnoses in operative/conservative dentistry (Bader and Shugars, 1992). Thus, major improvements in oral health may be achieved by refocusing teaching programs on diagnostic skills and on the calibration of teaching faculty and dental students in diagnosis, disease perception, and treatment alternatives. However, such changes must also be based on research data obtained under realistic conditions. If such an approach is to prevail, dental students must be prepared to accept that their future responsibilities should extend to a life-long commitment to both learning and research. This charge, in turn, requires curriculum committees to critically review the aims and objectives of their programs of study.

Secondary (recurrent) caries is another topic that has been largely ignored by research. Its importance in operative/conservative dentistry is illustrated by its being the most common clinical diagnosis of failure of all types of restorations, and it invariably results in the replacement of

restorations. It may be estimated that up to half of all dental treatment provided to adults in general practice is justified under the clinical diagnosis "secondary caries". The cost implications are enormous and soaring.

The few attempts to correlate the clinical diagnosis of secondary caries with the histopathological entity have provided more questions than answers. How can a crevice be differentiated from a gap with associated secondary caries? If true secondary caries is present, can active and arrested lesions be differentiated? Is the bacteriology of secondary caries the same as, similar to, or different from that of primary caries? Is the bacteriology of secondary caries dependent on or affected by the restorative material? Do preventive measures have the same positive effect on secondary caries as on primary caries? The questions relating to the most common diagnosis in clinical practice are many. The answers are lacking.

Real-world, practice-based data from general dental practices are needed to qualify and supplement the findings of experimental investigations. These data *per se* will rarely lead to improvements in the oral health of patients, but they will identify the problems which may be solved through controlled basic and applied research. Definition of problems originating in general practice will not replace any existing priorities of dental research, but it will highlight research hypotheses that may lead to an early resolution of problems which may enhance oral health and the care of patients. Many problems are encountered in the practice-based collection of data (Hopkins and Eaton, 1996). Some may involve quantitative techniques, but qualitative research approaches play a significant role. Several techniques are available (Gift, 1996).

The clinical relevance of results from hypothesis-founded research originating in clinical dentistry will be more apparent

than if the research hypothesis is theoretically based. It is of prime importance that dental research address problems that are recognized and understood by clinicians; otherwise, technology transfer will be unduly difficult. Although dentistry, like other professions, has an obligation to contribute to the advancing knowledge base of basic and clinical sciences, this contribution should not overshadow the efforts to find solutions to everyday problems in general dental practice. A symbiotic relationship should exist between established research and practice-based data (Wilson and Mjör, 1996). The time has come to re-assess the relevance and value of general practice in dental research and set priorities accordingly.

## References

- Bader JD, Shugars DA (1992). Understanding dentists' restorative treatment decisions. *J Publ Health Dent* 52:102-110.
- Gift HC (1996). Values of selected qualitative methods for research, education and policy. *J Dent Educ* 60:703-708.
- Hopkins LMA, Eaton KA (1996). Research In general dental practice—what is involved? Part 1. General considerations. *Prim Dent Care* 3:71-74.
- Mandel ID (1993). Clinical research—the silent partner in dental practice. *Quintessence Int* 24:453-463.
- Mjör IA (1986). The impact of dental research on dental practice. *J Dent Res* 65:1194-1195.
- Wilson NHF, Mjör IA (1997). Practice-based research: Importance, challenges and prospects. A personal view. *Prim Dent Care* 3 (in press).

---

*Dr. Mjör is Professor and Academy 100 Eminent Scholar at the College of Dentistry, University of Florida, Gainesville, USA. Dr. Wilson is Professor of Restorative Dentistry and Head of Conservative Dentistry at the Turner Dental School, The University of Manchester, UK.*