Women's Oral Health: The Evolving Science

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Abstract: The evidence base for women's oral health is emerging from legislative action, clinical research, and survey documentation. The Women's Health in the Dental School Curriculum study (1999) followed a similar study (1996) of medical school curricula. Both of these major efforts resulted from statutory mandates in the National Institutes of Health Revitalization Act of 1993 (updated October 2000). A major study of the Institute of Medicine (IOM) National Academy of Sciences in 2001 concluded that "the study of sex differences is evolving into a mature science." This IOM study documented the scientific basis for gender-related policy and research and challenged the dental research enterprise to conduct collaborative, cross-disciplinary research on gender-related issues in oral health, disease, and disparities. This report chronicles some of the factors that have and continue to influence concepts of women's oral health in dental education, research, and practice. Gender issues related to women's health are no longer restricted to reproductive issues but are being considered across the life span and include psychosocial factors that impact women's health and treatment outcomes.

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The 1990s ushered in an era in which major national efforts were initiated in response to awareness of inequities in women's health in the United States by scientists, clinicians, policymakers, legislators, and the public.[1-4] Included in these inequities were inadequate attention to gender differences in research, barriers to accessing health care services, lack of funding for women's health concerns, lack of focus on women's health issues in public health care and health care professions education, and the dearth of women in senior medical and scientific positions in federal and academic institutions. This report chronicles some of the factors that have and continue to influence concepts of women's oral health in dental education, research, and practice. It is important for physicians and dentists to be more aware of the relationship between oral and systemic health and the emerging data that are changing our understanding of this new science.

The Dental Curriculum Study on Women's Health

The first comprehensive study on how women's health and gender-related issues are taught in the basic and clinical sciences in U.S. dental schools was reported in 1999.[5] This study, *Women's Health in the Dental School Curriculum,* was jointly conducted by the Office on Women's Health at the U.S. Health Resources and Services Administration and the Office of Research on Women's Health at the National Institutes of Health (NIH). It responded to a Congressional mandate concerning the adequacy of academic and clinical training in women's health in the education of health professionals. The study continued an examination begun by the U.S. Department of Health and Human Services when it issued its 1996 report, *Women's Health in the Medical School Curriculum: Report of a Survey and Recommendations*.[6] This medical curriculum report recommended that "all health professionals, regardless of specialization, should have full understanding of women's health issues along with the knowledge, skills, and competence to provide optimum care to women of all ages."

The 1999 dental curriculum survey[5] included what were at the time all fifty-four U.S. and ten Canadian dental schools. It covered a broad range of women's health issues and examined models of education and the methods of teaching women's health in dental schools. Fifty-one of the U.S. schools and five of the Canadian schools responded, with a 94 percent response rate for U.S. schools and 50 percent response rate for Canadian schools.

The survey covered data across nine topic areas:

1. General Social Themes and Gender
2. Biological and Basic Science Considerations
3. Developmental and Psychological Themes
4. Health Behavior and Health Promotion
5. Sexual and Reproductive Function
6. Selected Conditions Prevalent in Women
7. Impact of Medications
8. History, Physical Examination, and Communication Skills
9. Selected Topics of Concern to Women

The survey found that only one of the U.S. schools and none of the Canadian schools had an office or program for coordinating and monitoring the integration of women's health and gender-related issues into the curriculum. It reported, also, that 25 percent of the schools did not offer information on women in their basic science courses and 50 percent did not consider the life span of the individual. In addition, developmental and psychological issues of women were not present in the curricula of 25 percent of dental schools. Sexual and reproductive function of women was not addressed in 25 percent. Less than 50 percent of the schools instructed students in obtaining a history of violence and abuse or considering gender in formulating treatment plans. (See Table 1.)

The study concluded that whereas a number of women's health and oral health issues were covered in dental curricula, there still was a lack of conscious or studied inclusion of gender in the curriculum of many dental schools.

Emerging Trends Related to Women's Oral Health

Three major factors have influenced trends that support promotion of the oral health of women: congressional legislation, research policy, and a major report of the Institute of Medicine National Academies of Science.

1. Legislative Support. In its report for the Fiscal Year 1993 budget of the Department of Health and Human Services (HHS), the Senate Committee on Appropriations stated: "To date, there is no medical specialty which provides comprehensive primary health care to women. The Committee requests that the NIH Office of Research on Women's Health (ORWH), in cooperation with the Health Resources and Services Administration (HRSA) and the PHS's [Public Health Service] Office on Women's Health, evaluate a random sample of medical school curricula to determine the extent to which women's health issues are addressed."[7] This Congressional directive provided the basis for efforts to address long-standing inequities that have existed in the education of health care providers. It also provided the resources and clout needed for both the medical and dental women's curriculum studies.

2. Research Policy. The NIH policy on the inclusion of women and minorities as subjects in clinical research became effective in March 1994. This policy, the outgrowth of the NIH Revitalization Act of 1993,[8] included the following: "the statutory establishment

Table 1. Topics that received least attention in the dental curricula of fifty-one responding U.S. dental schools

Ranking	# of Schools Not Offering	Topic
1	46	Lesbian health issues
2	42	Female sexuality
3	40	Sexual dysfunction
5.5	38	Gender identification and sexual orientation
5.5	38	Women's health issues within and across ethnic groups
5.5	38	Women's oral health issues within and across ethnic groups
5.5	38	Health consequences of disabilities in women
9	37	Oral health consequences of disabilities in women
9	37	Intentional and unintentional injuries
9	37	Adolescent pregnancy and parenting
12	36	Legal/ethical issues in women's health
12	36	Premenstrual syndrome
12	36	Effects of maternal health and health practices on the health of the fetus and newborn

Source: Women's health in the dental school curriculum: report of a survey and recommendations. Bethesda, MD: U.S. Department of Health and Human Services, Health Resources and Services Administration, and National Institutes of Health, 1999.

of the ORWH; an Advisory Committee on Research on Women's Health, which advises the ORWH on appropriate research activities to be undertaken by the NIH; and a statutory mandate for the inclusion of women and minorities as subjects in clinical research funded by the NIH." The NIH Revitalization Act[8] has contributed to the generation of new knowledge related to women's health and has expanded the inclusion of and opportunities for women in basic research, clinical trials, and research training endeavors. This policy was updated in October 2000 (see www.nih.gov/news/crp/97report/execsum.htm).

3. Major Study Report. A 288-page Institute of Medicine (IOM) report, *Exploring the Biological Contributions to Human Health: Does Sex Matter?* in 2001,[9] resulted from efforts of the Committee on Understanding the Biology of Sex and Gender Differences and the Board on Health Sciences Policy. The overarching conclusions contained in this IOM report from the scientific experts across diverse disciplines are the following:

- Sex matters: it is an important basic human variable that should be considered in health research.
- The study of sex differences is evolving into a mature science.
- Barriers to the advancement of knowledge about sex differences in health and illness exist that must be eliminated.

This IOM report not only documents the scientific basis for gender-related policy and research, but presents a challenge to the dental research enterprise for collaborative, cross-disciplinary research concerning gender-related issues in oral health, disease, and disparities. The full text of the IOM publication is available at www.nap.edu/catalog/10028.html.

These three major factors of influence have generated interest and action, resulting in the following initiatives:

1. Women's Oral Health: Dental Clinics of North America. This 196-page reference text by Studen-Pavlovich and Ranalli[10] covers a broad array of women's oral health topics including psychosocial issues, eating disorders, women's oral health across the life span, gender differences in special needs patients, and maternal oral health. The authors have made an effort to address issues cited as deficiencies in the dental curriculum survey.

2. Increased Research and Research Documentation. In addition to coronary artery disease, hypertension, and breast cancer, a host of diseases are emerging that affect the health of women in disproportionate degrees and across the life span. These diseases include but are not limited to stroke syndrome, cervical dysplasia/cancer, diabetes, obesity, lipoprotein disorders, lung cancer, oral cancer, sexually transmitted diseases, migraine headache, and immunological disorders such as Sjögren's syndrome, rheumatoid arthritis, scleroderma, and systemic lupus erythematosis.

Recent federal reports[3,11] document disparities in women's oral health and dental care. Documentation related to race/ethnicity and income now exists for minority and low-income women. Non-Hispanic black women are most likely to have caries (17.1 percent), followed by Hispanic women (12.0 percent); non-Hispanic white women are least likely to have caries (6.8 percent). Length of time since the last dental visit varies by income. Women with incomes over 300 percent of the poverty level are most likely to have regular dental visits.[11] These disparities affect women's health across the life span and serve as major challenges regarding access to care for minority and low-income women.

Major research attention and efforts are being directed toward the relationship of oral disease and systemic diseases, especially between periodontal disease and cardiovascular disease and diabetes. Recent reports[12,13] now provide data sources for published studies describing associations between oral condition and cardiovascular diseases and diabetes. At the present time, research studies related to periodontal disease and preterm birth are moving toward intervention studies to improve pregnancy outcomes.[14,15] Periodontal treatment has been shown to reduce preterm/low birth weight for newborns of women with pregnancy-associated gingivitis. Other therapeutic interventions are being considered.

3. Knowledge Transfer. The American Dental Education Association (ADEA) is considering the development of an online data resource for women's oral health: the Women's Health Information Network (WHIN). Such a resource would be useful for knowledge and technology transfer related to women's health/women's oral health and to establish a science database for curriculum reform with regard to the diagnosis, prevention, and treatment of oral and related conditions in women. In 2005, an online search of information pertaining to the topic "women's oral health" generated over 1.9 million results. The results, however, do not meet the unique needs of dental practitioners as expressed by a focus group and a survey conducted that same year to determine the need and scope for the WHIN. ADEA convened a WHIN focus group and conducted the survey in collabora-

tion with the National Women's Health Resource Center and the Procter & Gamble Company. Results of the WHIN focus group were consistent with the results of the dental curriculum survey published in 1999. These two surveys are forming the basis for an online system such as the WHIN to address both the needs expressed by women oral health practitioners and the impact those needs will have on curriculum development in this area. The ADEA Women's Affairs Advisory Committee is encouraging the continuation of this data collection to determine the most effective way of building a database that will support the evolving evidence related specifically to women's oral health. The results of the continuation effort will be shared with the dental education community through publication in the *Journal of Dental Education* and through an ADEA Community of Interest. There is a need to identify resources that will allow continued focus on this emerging data for its value to curriculum development. This new science is important to both male and female dental practitioners as we consider women's health across the life span.

4. Collaborative Opportunity. As recommended in the dental curriculum study, ADEA expects to encourage the inclusion of women's oral health within the HHS National Centers of Excellence in Women's Health. Eleven of these centers are located in academic institutions with accredited dental schools. In keeping with the comprehensive, collaborative intent of these centers, it was recommended "that a mechanism be established to include women's oral health in these centers and in future models that are established."[5] Such interaction will improve the understanding of oral/systemic relationships, promote collaborative research, and foster an integrated approach to women's health/women's oral health.

Summary

We will continue to build the evidence base for women's oral health. Efforts to include emerging data in dental curricula and ultimately in the scope of clinical practice will benefit the health of women of all ages and across races and ethnicities. ADEA's Women's Affairs Advisory Committee will continue to address the recommendations of the curriculum study. The broad context of those recommendations provides the basis for both policy and program changes needed to advance the science base of women's oral health. These advances will encompass a broad definition of women's health including behavioral and psychosocial factors over the life span of women. This new body of knowledge is important to both physicians and dentists in comprehensively addressing women's health over the life span and what is known about women and reproductive biology.

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