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ABSTRACT

This report presents the analytical results of a survey of U.S. and Canadian dental schools conducted during 1997 by the American Association of Dental Schools. It documents how women's health and oral health issues are addressed in the curriculum. It also presents an annotated bibliography of research involving oral and craniofacial health and disease in women, as well as articles and other documents related to dental education and women's health. Finally, several recommendations on incorporating women's health issues in dental school curricula are offered. The report is the most comprehensive study of its type to look at how women's health and gender-related issues are taught in the basic and clinical sciences in dental schools and serves as a follow-up to the Department of Health and Human Services' earlier study of women's health in medical education. The report documents that overall, dental schools do not address a broad range of women's health issues in their curricula, although they indicate a positive attitude toward such issues. (EV)

Women's Health in the Dental School Curriculum

Report of a Survey & Recommendations

h Resources and Services Administration • National Institutes of Health

DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service

Health Resources and
Services Administration
Rockville MD 20857

Dear Colleague:

The National Institutes of Health's Office of Research on Women's Health and the Health Resources and Services Administration are pleased to provide you with a copy of Women's Health in the Dental School Curriculum: Report of a Survey and Recommendations. This is the most comprehensive study of its type to look at how women's health and gender-related issues are taught in the basic and clinical sciences in dental schools. The report is also very important to the Department of Health and Human Services' efforts to follow up on its earlier study of women's health in medical education and broaden the examination of women's health in health professions education.

This report includes the analytical results of a survey of U.S. and Canadian dental schools conducted during 1997 by the American Association of Dental Schools (AADS). It documents how women's health and oral health issues are addressed in the curriculum. It also presents an annotated bibliography of research involving oral and craniofacial health and disease in women, as well as articles and other documents related to dental education and women's health.

We wish to acknowledge the vital effort of the AADS, its staff and faculty fellows, in the preparation of this resource document and especially the leadership of Dr. Jeanne Sinkford who brought this effort to fruition. The report significantly contributes to the understanding of the educational and clinical aspects of women's oral health, expanding the concept of women's health in dental education.

We hope that this report will be of value to you in efforts to incorporate women's health issues into professional education.

Sincerely yours,

Vivian W. Pinn, M.D.
Director, Office of Research on Women's Health
National Institutes of Health

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Women's Health in the Dental School Curriculum

Women's Health

Report of a Survey & Recommendations

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American Association of Dental Schools

The responding dental schools of the United States and Canada

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The Procter & Gamble Company and the Partnership for Women's Health at Columbia University

AADS/Warner-Lambert Enid A. Neidle Scholar-in-Residence Program for Women

Women's Affairs Advisory Committee of the American Association of Dental Schools – Dr. Marcia A. Boyd, Chair

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We are especially appreciative of the expertise, enthusiastic support and genuine interest received from all who contributed to this pivotal study with regards to women's oral health.

INTRODUCTION

The 1990's marked the beginning of a decade in which major national efforts began in response to awareness of major inequities in women's health in the U.S. by scientists, clinicians, policy makers, legislators, and the public. Included in these inequities were: inadequate attention to gender differences in research, barriers to accessing healthcare services, lack of funding for women's health concerns, lack of focus on women's health issues in public health care and health care professional education, and the dearth of women in senior medical and scientific positions in federal and academic institutions.

In its report on the Fiscal Year 1993 budget for 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 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....." (Senate Report No. 102-397, Page 143)

This Congressional directive provided the basis for efforts to address the long-standing inequities that have existed in the education of health care providers of women (Appendix A). The leadership for action in response to the congressional mandate exists in the Health Resources and Services Administration and the National Institutes of Health Office of Research on Women's Health (NIH/ORWH) in collaboration with the Public Health Service's Office on Women's Health (PHS/OWH). Through this collaboration and in partnership with the Association of American Medical Colleges (AAMC), and many advocacy and professional women's health organizations, significant steps have been taken towards determining the degree to which women's health, and sex/gender issues, are incorporated into an innovative, multidisciplinary, life-span approach to women's health in the training of future physicians.

This major collaborative effort resulted in the 1996 report: Women's Health in the Medical School Curriculum. Report of a Survey and Recommendations.[1] A need to determine the content of women's health in other health professions was the logical next step.

It is within the context of this need to learn more about models of education and teaching of a multidisciplinary, life span approach to women's health that the need to address women's health issues in U.S. dental schools curricula was conceived. The American Association of Dental Schools undertook the lead on this concept by conducting a survey of all U.S. and Canadian dental schools. The NIH/ORWH, HRSA, and NIDCR provided support for the analysis of the resulting data and this report. The AAMC contributed guidance for this process based upon its experience from conducting the similar survey of U.S. and Canadian medical schools.

PART I. BACKGROUND

Among academic medical centers there is an increasing awareness of the importance of women's health issues. A 1995 report of the Council on Graduate Medical Education (COGME) entitled: Women & Medicine[2] addresses the "difficulty women have in receiving comprehensive and coordinated care as a result of deficiencies in physician training and fragmented care." COGME recognized that multiple populations, including women, have unique health care needs. COGME, serving in an advisory capacity, provides an ongoing assessment of physician workforce trends and recommends appropriate Federal and private sector efforts to address identified needs. COGME is currently authorized in Section 762 (Part E Title VII of the Public Health Service Act), as amended by Public Law 105-392, the Health Professions Education Partnerships Act of 1998, Section 104(b). According to COGME findings, the area of women's health traditionally has focused on reproductive issues in adolescent girls and adult women. As such, the reference for women's health care has been primarily confined to disciplines pertaining to reproductive health and child bearing. This limited perspective does not take into account the broad spectrum of women's health concerns or relative differences between men and women in terms of health behaviors, morbidity, disability and mortality. This more limited perspective, also, may not recognize the demographic, social, cultural or political influences on women's health or their approach to health care.[2] COGME developed a rationale for the development of a core women's health curriculum that incorporates the 1985 U.S. Public Health Service task force definition. The task force has defined women's health issues broadly as "diseases or conditions that are unique to or more prevalent or serious in women, have distinct causes or manifest themselves differently in women, or have different outcomes or interventions.[3]

Inherent in the current expanded conception of women's health is the imperative that all health professionals—regardless of specialization—have full understanding of women's health issues, along with the knowledge, skills and competence to provide optimum care to women of all ages. In order to realize this imperative, the study of women's health across the life-span must be fully integrated into the curricula of medical schools.[1] COGME has established Basic Principles Underlying the Concept of Women's Health (Appendix B). These principles are intended to form the basis for curricular change and the development of academic and clinical programs in women's health. Basic competencies to support the principles have been developed, also.

American Association of Dental Schools and Women's Health Issues

The Division of Women and Minorities, established in 1993, evolved from the Office of Women and Minority Affairs within the American Association of Sental Schools (AADS). In 1998, it became the Division of Equity and Diversity. The Division, through its six-member Advisory Committee (Women's Affairs Advisory Committee – WAAC), implements programs and activities as approved and sanctioned by the Executive Committee of the Association. The members of WAAC (Appendix C) endorsed AADS' cooperation with HRSA and NIH in efforts to address women's health issues in research, education, and health clinical services. The Study of Women's Health in the Dental Curriculum was approved for implementation in 1997.

Individuals representing AADS have served in the following collaborative capacities:

- Dr. Jeanne Sinkford:
  Member, Task Force for Women in Biomedical Careers Conference sponsored by the NIH/Office of Research on Women's Health, 1992
  Member, Task Force – A Women's Health Curriculum: Academic and Clinical Training in Schools of Medicine, NIH/ORWH, 1992

- The AADS/Warner-Lambert Enid A. Neidle Program for Women in academic dentistry has afforded female faculty fellows the opportunity to participate in the ongoing efforts of the ORWH related to a broad range of interests and activities affecting education, women's health, access to care, training, research and advancement in health careers.

  Dr. Kerry Maguire University of Colorado; (1994 Fellow) – Researched a broad range of oral health/general health issues for the medical school curriculum study report and prepared dental-related questions for inclusion in the medical survey. (Appendix D)

  Dr. Linda Wells Baylor College of Dentistry-A Member of The Texas A&M University System; (1995 Fellow) – Researched implementation procedures used in the medical school curriculum study and participated in planning of the dental school curriculum survey.

  Dr. Susan Silverton University of Pennsylvania; (1996 Fellow) – Presented AADS Testimony related to oral health issues in the *Beyond Hunt Valley: Research on Women's Health for the 21st Century Conference* in Santa Fe, New Mexico, July, 1997. She also served as a member of the Oral Health Working Group for the ORWH Conference – "Putting it All Together: Research on Women's Health for the 21st Century," 1997 (Appendix E).

  Dr. Deborah Studen-Pavlovich University of Pittsburgh; (1997 Fellow) – Presented AADS Testimony at the Office of Research on Women's Health hearing, November 17, 1997, Bethesda, Maryland. (Appendix F)

- "Women's Oral Health Issues" were featured in an AADS/IADR Joint Symposium sponsored by Colgate-Palmolive at the Annual Session of the AADS in Chicago, March 14, 1993. Drs. Lois Cohen (NIDR) and Jeanne Sinkford (AADS) co-chaired the planning group for this Symposium. Proceedings have been published in a special section on Women's Health in the October 1993 issue of the Journal of Dental Education, pp. 736-759.

- The AADS International Women's Leadership Conference held in Cannes/Mandelieu, France, June 20-22, 1998 included: a focus on women's health/women's oral health, education, and research. Members of the Conference Planning Committee and supporters are listed in Appendix G. Procter & Gamble, and the Partnership for Women's Health at Columbia University provided major corporate support for this Conference. Funding for

the planning of this conference was received from the National Institute of Dental Research.

- The AADS has included the advancement of women and minorities in dental education among its priorities since 1986. During this time, increasing female enrollments have altered the picture for undergraduate student enrollment and dental faculty composition. Females now constitute 36.3% of undergraduates and 22% percent of the full-time faculty in U.S. dental schools (Appendix H and Appendix I).

- The report of the medical school curriculum survey was completed in 1996. A comparable examination of women's health issues had not been conducted in dental education. Therefore, in 1997 AADS assumed the responsibility for design, conduct and analysis of a dental school curriculum survey to document current curricula content relative to women's health.

Dental School Curricula

Annual surveys of dental educational institutions are conducted by the American Dental Association.[4] The major purpose of this survey is to gather information from dental schools regarding enrollment, administrative organization and responsibility, admissions policy and procedures, financial statistics, curriculum and faculty positions. The information is gathered in four sections: Section I contains general information (facilities, admissions, faculty, patient care), Section II deals with the number and characteristics of students, Section III details financial expenses and Section IV presents detailed questions about the curriculum offered. Section IV of the Survey closely follows the methodology used in the Dental Education in the United States, 1976 study, which relied on clock hours as the best indicator of the scope of the curriculum and found the data on instructional hours made possible general comparisons of overall program length, the breadth of curriculum content and the degree of emphasis. According to the 1995/96 Survey of Predoctoral Dental Educational Institutions, (Appendix M) an average of 4892.6 clock hours of instruction exists with a range of 3997 to 8285 hours. The average clock hours per week averaged at 30. The average dental school spends about 3920.9 hours in clinical science topics, 829.2 on basic science and 142.6 on behavioral subjects. Gender-related issues are not identified in the survey.

The William Gies report in 1926 helped to establish dental education as a university discipline and accomplished for dental education what the Flexner report had accomplished for medical education in 1910. Both reports continue to influence the educational environment. Major curriculum reviews for dentistry have occurred in 1961 (Hollinshead) and in 1976 (ADA, CDE) with the assistance of AADS. The Institute of Medicine Report, Dental Education at the Crossroads (1995) includes a well-documented report by Dr. Lisa Tedesco related to evolution, trends and educational standard setting for dentistry.[5] Curriculum content is influenced today by the standards of the Commission on Dental Accreditation and Licensure (Appendix N). The Standards were revised in January, 1998. Standard 2, which deals with Educational Program does not include gender specific language. The Curriculum Guidelines previously developed independently by the AADS

provide useful models that are not intended to constitute curricular regulatory requirements. Curriculum guidelines related to women's oral health do not exist.

Competencies for the New Dentist were developed and approved by the House of Delegates of the American Association of Dental Schools in March, 1997 (Appendix O). Competencies as described in this document are abilities essential to beginning the practice of dentistry. They describe the performance of graduates in dental settings and therefore reflect an interdisciplinary process in their development. The 63 competencies relate to "the child, adolescent, adult, geriatric and medically compromised patient." There is no specific reference to gender. The competencies document has replaced curriculum guidelines per se and is useful in both dental education and oral health care management.

PART II. THE DENTAL SCHOOL CURRICULUM SURVEY

A. Purpose

The American Association of Dental School conducted a survey on Women's Oral Health Issues in the Dental School Curriculum in the academic year 1997 / 98. Its main purpose was to determine what is currently taught about women's health and oral health issues in the 55 US and 10 Canadian dental schools. Additionally it was also determined (a) whether this content is covered as part of the required or elective curriculum, (b) in which academic period of the predoctoral dental program these issues are covered, (c) how this material is presented (as a lecture, in a small group or laboratory, case based or as a tutorial), (d) by which disciplines the material is covered, and (e) which methods of assessing the outcomes (such as by multiple choice questions, oral examination, observation, or objective structured clinical exam) are used.

B. Objectives

The objectives of this survey are

1. To determine what is currently taught about women's health and oral health issues in US and Canadian predoctoral dental programs, and

2. To determine the degree to which these issues are included as well as the way this inclusion is structured.

C. Design of the Questionnaire

In February 1995, the American Association of Medical Colleges (AAMC) mailed a survey to all 142 medical schools in the United States and Canada to determine what was taught about women's health issues in medical school curricula. This survey provided a framework for the American Association of Dental Schools to determine the inclusiveness of women's health and related oral health issues in dental school curricula in the United States and Canada. Questions were modified to focus more closely on issues related to women's oral health. The instrument designed for AADS dental schools survey is included in the Appendix.

After a short introduction to explore whether the schools have a separate office / program coordinating and monitoring the integration of women's health and oral health issues into the curriculum and whether there is a mechanism to assist faculty in increasing their competence concerning these matters and their incorporation into their teaching, the questionnaire started with a first section exploring the inclusion of general themes such as: the impact of gender, ethnicity/race, and poverty/socioeconomic status on women's health / oral health status/access across life stages. Seven specific areas of interest are then covered.

These areas are:

(a) biological considerations

(b) developmental and social issues
(c) approaches to health behavior/health promotion in women
(d) sexual and reproductive function
(e) etiology, prevalence, course, treatment and prevention of particular conditions / disorders in women
(f) impact of the use of medications
(g) history, physical examination and patient communication skills

A section with selected topics concerning health and oral health issues within and across ethnic groups, of elderly women, of women with a disability, of lesbian health issues, as well as legal and ethical matters, followed these specific sections. Several questions were included in this section to assess attitudes and beliefs about dental education.

While these attitudes and beliefs about dental education were measured by assessing the degree of agreement with statements about dental education on five point rating scales, all other topics were covered in a five-step process. For each issue of interest, it was first assessed whether this material was covered as part of a required course, as a separate required course or as an elective. A second question determined in which of the four years of the dental curriculum the material is presented. Questions concerned with the format in which the material was presented (as a lecture, in a small group/conference or in a laboratory, case based or as a tutorial), the disciplines involved in the teaching of these subject matters as well as the method of assessment used for the topic (such as multiple choice questions, oral examination, observation or objective structured clinical exam) followed. This approach allowed us to determine not only which topics were covered but also provided extensive data about the degree these matters were included in the curricula as well as how this curriculum inclusion was achieved.

D. Conduct of the Survey

The surveys were mailed by the AADS to the 54 United States* and 10 Canadian dental schools in May 1997. Fifty-six surveys were completed and returned which is an overall response rate of 87.5 %. 51 of the 54 U. S. schools and five of the ten Canadian schools responded which is a 94% response rate for the U. S. schools and a 50% response rate for the Canadian schools. However, one of the US schools only responded summarily in a letter indicating that no particular efforts were made to cover women and women's oral health issues in their curriculum. The results reported for the US schools are therefore based on the responses of 50 schools. The presentation of the results includes the results for the responding U. S. schools and the Canadian schools separately.

* The questionnaire was not mailed to the newly founded School of Dentistry in Florida (Nova Southeastern University College of Dental Medicine).

PART III-A. RESULTS AND DISCUSSION

1. General Questions

Only one of the US schools and none of the Canadian schools had an office or program responsible for coordinating and monitoring the integration of women's health and gender related issues into the curriculum.

Table 1: Number (%) of the responding U.S. and Canadian schools with a women's health education office or program

Response	Number (%) U.S.	Number (%) Canada
Yes	1 (2%)	0 (0%)
No	48 (96%)	4 (80%)
Unknown	1 (2%)	1 (20%)

Three of the US schools and none of the Canadian schools reported a mechanism to assist faculty in increasing their competence in women's health or in incorporating women's health and gender-related issues into their teaching.

Table 2: Number (%) of the responding US and Canadian schools with a mechanism to assist faculty in increasing their competence in women's health and in incorporating women's health and gender-related issues into their teaching

Response	Number (%) US	Number (%) Canada
Yes	3	0
No	46	5
Unknown	1	0

2. Overall survey results in the nine major areas of concern

Major results are presented in the following section. However, this survey has generated such a rich dataset that it is impossible to discuss all findings in this first report. Future publications will focus on more specific issues that go beyond the scope of this first report.

In form of a general introduction to the results, it should be acknowledged that the collaborators at the dental schools were most helpful and willing to provide their time and effort in order to complete the information requests they received. However, many of them found the survey onerous because the materials asked for were not accessible to them within the context of the organization of their curricula. "Gender" was not part of the objectives, goals, keywords, clock hours, syllabi, examination information, etc. It became obvious from a follow-up with the academic deans and other academic leaders in the schools that often students or former students were the best sources of information on course inclusion of sex/gender-related topics. Thus, oral histories of courses received from telephone interviews

were used to help complete the survey. This reality reflects the lack of planned or studied inclusion of sex or gender issues in many dental school curricula. Coupled with a similar lack of assessment and evaluation tied to gender-related issues at the school, regional or national level makes gender a shadow topic in the curriculum.

As a guide to the following overview of results, it is useful to note that the survey was divided into the following nine categories:

1. General Social Themes & Gender (6 items)
2. Biological & Basic Science Considerations (10 items)
3. Developmental & Psychosocial Themes (25 items)
4. Health Behavior & Health Promotion (13 items)
5. Sexual & Reproductive Function (9 items)
6. Selected Conditions Prevalent in Women (30 items)
7. Impact of Medications (7 items)
8. History, Physical Examination & Communication Skills (12 items)
9. Selected Topics of Concern to Women (12 items)

The survey consisted of 124 women's health and gender-related topics which were organized into nine topic areas. Some of these areas are traditional to dental curricula and our intent was to evaluate the presence of gender considerations in these common topics. Some of the areas have been targeted as possible interfaces between the area of medicine and the specialty concerns of oral health providers. In these areas, the findings of this survey can be compared with the results of the recent survey of the medical curriculum to outline the interfaces and point out the gaps (see Part III-B). Overall, one of the most significant findings was the substantial inclusion of general medical topics within the dental curriculum. Although this survey provides little information about the depth of inclusion of these medical topics, it is revealing that in many dental schools, the curricula follow the recommendations of the 1995 Institute of Medicine Report highlighting the importance of general medical competence for the dental practitioner.

2.1. General Social Themes & Gender

The concerns addressed in the section on "General Social Themes and Gender" were: (a) health issues across the life span; (b) the impact of race, ethnicity and culture on health beliefs, health behaviors and health care utilization; and (c) the effect of poverty and socioeconomic status on health and access to health care. For the oral health setting, these topics were rephrased to focus on oral health as a specific segment of general health.

Table 2.1. presents the frequencies with which each topic was covered by the 50 responding US and five responding Canadian schools according to the type of course in which it was presented. These results show that the topic of gender is relatively underrepresented when compared with race/ethnicity/culture issues. The impact of poverty/socioeconomic status is the most frequently discussed of these three topic areas in dental school curricula.

Table 2.1.: Number of responding US/Canadian schools that taught each topic in the "general themes" category according to type of course*

General themes:	Part of required course	Separate required course	Elective	not offered
The impact of gender on health issues across the life stages	25 / 3	8 / 0	0 / 0	9 / 1
The impact of gender on oral health issues across the life	26 / 3	6 / 0	1 / 0	9 / 1
The impact of race/ ethnicity/ culture on health status, health beliefs and behaviors & health care utilization	31 / 3	11 / 0	4 / 0	2 / 0
The impact of race/ ethnicity/ culture on oral health status, oral health beliefs and behaviors & oral health care utilization	31 / 3	11 / 0	3 / 0	2 / 0
The impact of poverty/socioeconomic status on health status and access to health care	35 / 1	7 / 1	3 / 1	1 / 0
The impact of poverty/socioeconomic status on oral health status and access to oral health care	35 / 3	7 / 0	3 / 0	1 / 0

*US/Canadian – The first number represents US, the second Canadian

2.2. Biological & Basic Science Considerations

This topic area corresponds generally with the basic science requirements which form the core information for preclinical training in US and Canadian dental schools and comprises the material on which the National Board Dental Examination Part I assesses

students. As can be seen in Table 2.2., the ten specific topic areas are anatomy, reproductive biology, physiology, pharmacokinetics of drugs, pathology, epidemiology, pharmacology, and aging. It is obvious from the results presented in Table 2.2. that most dental school curricula include these issues as a part of required course (62%) Very few schools include these issues in separate required courses and only one school indicated the inclusion in electives.

Table 2.2.: Number of responding US/Canadian schools that taught each topic in the category "Biological Considerations" according to type of course*

Biological considerations:	Part of required course	Separate required course	Elective	not offered
Normal & abnormal female anatomy	34 / 3	10 / 1	0 / 0	2 / 1
Female reproductive biology	29 / 2	7 / 1	0 / 0	7 / 1
Normal and abnormal female physiology	35 / 3	7 / 0	0 / 0	4 / 1
Pharmacokinetics of drugs in women	28 / 3	7 / 0	0 / 0	7 / 1
Gender differences in the pathogenesis of disease and disease mechanisms	34 / 2	7 / 0	0 / 0	5 / 1
Gender differences in the pathogenesis of oral disease and oral disease mechanisms	32 / 2	7 / 0	0 / 0	4 / 2
Gender differences in the epidemiology of disease and disease rates	29 / 3	8 / 0	1 / 0	5 / 1
Gender differences in the epidemiology of oral disease and oral disease rates	33 / 3	8 / 0	1 / 0	2 / 1
Gender differences in the aging process	34 / 2	7 / 1	1 / 0	2 / 2
Oral health concerns in women across life stages	21 / 2	5 / 0	0 / 0	10 / 2

*US schools/Canadian schools

2.3. Developmental and Psychosocial Issues

As can be seen in Table 2.3., of the 25 topics only oral health issues and aging as well as oral health issues during pregnancy and perimenopausal issues and the role of eating

disorders for oral health are included in dental curricula by 50% or more of the schools. Gender identification and sexual orientation, peri/post menopause, impact of societal role expectations, and rape/other criminal victimization are issues that are least covered in the area of developmental and psychosocial issues. These issues are covered in less than 30% of the dental curriculums.

Table 2.3: Number of responding US/Canadian schools that taught each topic in the category "Developmental and psychosocial issues" according to type of course

Developmental and psychosocial issues:	Part of required course	Separate required course	Elective	not offered
Pubertal development & health issues in young women	16 / 2	5 / 0	1 / 0	11 / 1
Oral health issues in puberty & in young women	22 / 2	6 / 0	1 / 0	8 / 1
Gender identification and sexual orientation	9 / 1	3 / 0	0 / 0	15 / 2
Psychological effects of maj changes in reproductive horr Puberty	16 / 3	4 / 0	1 / 0	13 / 0
Pregnancy	17 / 3	4 / 0	0 / 0	11 / 0
Peri/post menopause	15 / 3	3 / 0	1 / 0	11 / 1
Pubertal oral health issues	20 / 3	6 / 0	1 / 0	6 / 0
Oral health issues during pregnancy	30 / 4	7 / 0	0 / 1	3 / 0
Perimenopausal oral health issues	26 / 02	10 / 01	0 / 0	3 / 3
Menopausal oral health issues	20 / 3	6 / 0	0 / 0	8 / 1
Postmenopausal oral health issues	24 / 3	5 / 0	0 / 0	8 / 1
Impact of societal role expectations on women's health	13 / 1	4 / 0	0 / 0	16 / 2
Effect of the aging population on oral health care needs & services	36 / 3	9 / 0	1 / 0	1 / 1
Health & oral health consequences of trauma experienced by women: Childhood sexual/ physical abuse	23 / 1	5 / 0	1 / 0	9 / 2
Domestic violence	20 / 2	3 / 0	1 / 0	10 / 1

Table 2.3 continued

Rape/other criminal victimization	13 / 0	3 / 0	1 / 0	14 / 2
Elder abuse	21 / 2	7 / 0	0 / 0	8 / 1
Influence of gender on the following conditions: Anxiety disorders(panic/phobia)	21 / 1	5 / 0	1 / 0	8 / 2
Depressive syndrome	22 / 1	4 / 0	1 / 0	8 / 1
Eating behaviors / disorders	26 / 4	4 / 0	3 / 0	6 / 0
Addictive behaviors / disorders	18 / 0	6 / 0	3 / 0	8 / 3
Impact of anxiety disorders on oral health & oral health care utilization	23 / 1	7 / 0	2 / 0	6 / 2
Impact of depressive syndrome on oral health and oral health care utilization	20 / 1	6 / 0	2 / 2	9 / 2
Impact of eating behaviors /disorders on oral health and oral health care utilization	22 / 1	8 / 0	3 / 0	7 / 1
Impact of addictive behaviors/disorders on oral health and oral health care utilization	21 / 2	7 / 0	3 / 0	9 / 2

2.4. Approaches to health behavior/health promotion in women

Health behavior and health promotion are important components of oral health care. Dental schools have always emphasized prevention of oral disease. Table 2.4. shows that this topic area is supported by most dental schools. However, the different aspects of oral health promotion receive strikingly different amounts of attention. Figure 1 shows that oral cancer prevention and screening is included in the curriculum of more than 75% of the dental schools surveyed. More than 50% of the schools include seven more topics in the health behavior and health promotion area, namely (a) nutrition, (b) smoking cessation, (c) alcohol & substance abuse, (d) cancer prevention, (e) cardiovascular risk, (f) caries risk & oral self-care, and (g) periodontal risk and prevention. In contrast, less than 50% of dental schools include: adaptation to stress, physical fitness and weight, and occupational/environmental hazards in their required instruction. Less than 25% of dental schools include intentional and non-intentional injuries in required instruction.

Table 2.4.: Number of responding US/Canadian schools that taught each topic in the category "Health behavior/health promotion" according to type of course

Approaches to health behavior/health promotion in women:	Part of required course	Separate required course	Elective	not offered
Adaptation to stress	12 / 0	4 / 0	1 / 0	13 / 2
Physical fitness & weight	14 / 0	5 / 5	1 / 0	13 / 0
Nutrition	25 / 2	7 / 0	0 / 0	6 / 0
Intentional and unintentional injuries	10 / 1	3 / 0	0 / 0	13 / 1
Smoking initiation and cessation	26 / 1	9 / 0	1 / 0	5 / 1
Alcohol/other substances use/abuse	29 / 1	9 / 0	0 / 0	3 / 1
Cancer prevention & screening	27 / 1	7 / 1	0 / 0	4 / 1
Oral cancer prevention & screening	33 / 3	9 / 0	0 / 0	2 / 0
Cardiovascular risk prevention & screening	29 / 1	8 / 0	0 / 0	6 / 1
Caries risk & prevention	28 / 3	9 / 0	0 / 0	4 / 0
Periodontal disease risk & prevention	26 / 3	10 / 0	3 / 0	3 / 0
Oral self-care assessment & behavior modification	26 / 3	7 / 0	0 / 0	5 / 0
Occupational/environmental	17 / 1	10 / 0	0 / 0	6 / 1

See Figure 1, Page 14a

2.5. Sexual and Reproductive Function

The area of sexual and reproductive function has typically been considered a women's health issue. However, in the US and Canadian dental school curricula, sexual and reproductive function is not comprehensively addressed. Less than 50% of dental schools include 8 out of 9 of these topics in their required courses. Of all of these issues, only normal menstruation is included in more than 50% of dental school curricula. Adolescent pregnancy, female sexuality and sexual dysfunction are the least covered sexual and reproductive function issues. It appears that dental schools have not included these issues that seriously affect the health of women especially as both adolescent pregnancy and HIV are on the rise in women.

Health Behavior/Health Promotion

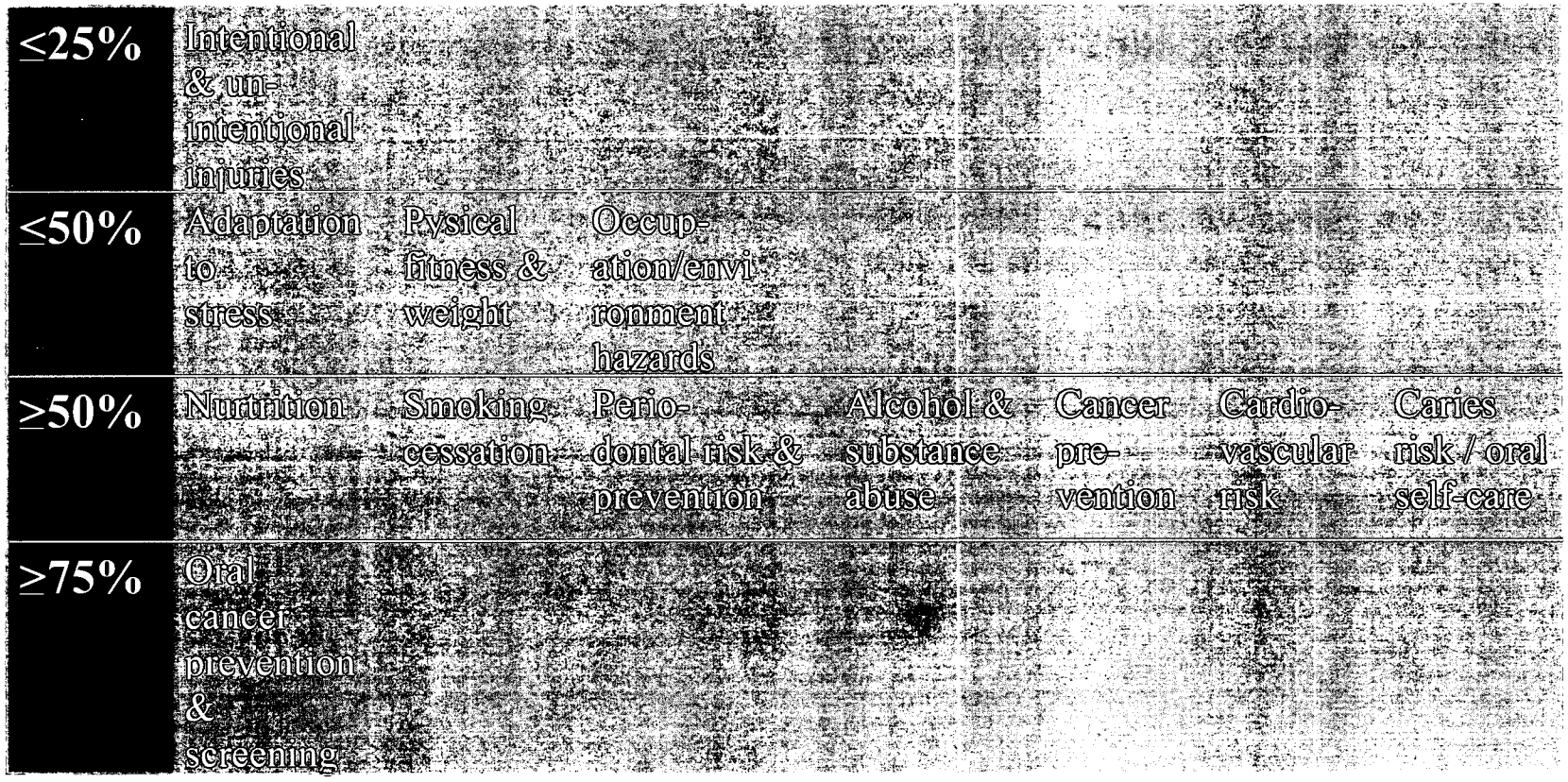


Figure 1

14a

Table 2.5.: Number of responding US/Canadian schools that taught each topic in the category "Sexual and reproductive function" according to type of course

Sexual and Reproductive Function:	Part of required course	Separate required course	Elective	not offered
Normal menstruation	24 / 2	5 / 0	0 / 0	11 / 0
Pre-menstrual syndrome	12 / 1	2 / 0	0 / 0	15 / 1
Dysmenorrhea	12 / 1	2 / 0	0 / 0	15 / 2
Adolescent pregnancy	9 / 1	3 / 0	1 / 0	16 / 1
Effects of maternal health & health practices on the health of the fetus and newborn	20 / 2	4 / 0	0 / 0	18 / 1
Consequences of surgical/ natural menopause	16 / 1	4 / 0	0 / 0	13 / 1
Risks/benefits of hormone-replacement therapy	20 / 1	3 / 0	1 / 0	12 / 1
Female sexuality	6 / 0	2 / 1	0 / 0	18 / 2
Sexual dysfunction	9 / 0	2 / 0	0 / 0	18 / 2

2.6. Etiology, Prevalence, Course, Treatment and Prevention of Selected Conditions Prevalent in Women

Table 2.6 represents the dental school responses to questions in the category of Selected Conditions Prevalent in Women.

More than 50% of the dental schools include the following conditions prevalent in women in their instruction, namely cervical dysplasia/cancer, coronary artery disease, stroke syndrome, hypertension, diabetes, obesity, lipoprotein disorders, lung cancer, oral cancer, sexually transmitted diseases, migraine & headache, osteoporosis, dental implants, dentures, periodontal disease/tooth loss, postmenopausal alveolar bone loss, Alzheimer's, immunologic disorders, scleroderma, Sjorgen's, rheumatoid arthritis, thyroid disorders, pemphigoid/phemphigus.

Two diseases which affect women disproportionately are also disproportionately excluded from the dental curricula: fibromyalgia and chronic fatigue syndrome. It is possible that the oral implications of these diseases have not been documented sufficiently to merit their inclusion at this time.

Table 2.6.: Number of responding US/Canadian schools that taught each topic in the category "etiology, prevalence, course, treatment & prevention" according to type of course

Etiology, prevalence,course,treatment & prevention of the followingconditions/disorders in women:	Part of required course	Separate required course	Elective	not offered
Breast cancer	29 / 1	6 / 0	0 / 0	7 / 1
Pelvic inflammatory disease	21 / 0	6 / 0	0 / 0	10 / 2
Cervical dysplasia/cancer	27 / 1	6 / 0	0 / 0	8 / 1
Coronary artery disease	31 / 1	8 / 0	0 / 0	5 / 1
Stroke syndrome	29 / 1	7 / 0	0 / 0	4 / 3
Hypertension	31 / 1	8 / 0	0 / 0	5 / 1
Diabetes	29 / 1	8 / 0	0 / 0	5 / 1
Obesity	25 / 0	8 / 0	0 / 0	7 / 2
Lipoprotein disorders	24 / 1	6 / 0	0 / 0	9 / 1
Lung cancer	27 / 1	7 / 0	0 / 0	6 / 1
Oral cancer	33 / 2	8 / 0	0 / 0	3 / 0
HIV and related disorders	35 / 2	9 / 0	1 / 0	4 / 0
Sexually transmitted diseases	33 / 2	8 / 0	0 / 0	5 / 0
Immunologic diseases: Systemic Lupus Erythematosis	32 / 2	8 / 0	0 / 0	4 / 0
Scleroderma	31 / 1	7 / 0	0 / 0	4 / 1
Sjorgren's syndrome	34 / 2	7 / 0	0 / 0	3 / 0
Rheumatoid arthritis	31 / 2	8 / 0	0 / 0	4 / 0
Thyroid disorders	32 / 2	8 / 0	0 / 0	4 / 0
Pemphigoid, pemphigus	33 / 2	7 / 0	0 / 0	4 / 0
Osteoporosis	33 / 2	8 / 0	2 / 0	3 / 0
Migraine/other headache disorders	28 / 1	7 / 0	0 / 0	3 / 1
Temporomandibular joint disease	33 / 2	10 / 0	0 / 0	2 / 0
Dental implants	28 / 1	13 / 0	1 / 1	3 / 0
Dentures	23 / 2	12 / 0	0 / 0	3 / 0
Periodontal disease & tooth loss	24 / 2	14 / 0	2 / 0	2 / 0
Alveolar bone loss in postmenopausal women	26 / 2	8 / 0	0 / 0	4 / 0

Table 2.6 continued

Fibromyalgia	16 / 1	4 / 0	0 / 0	10 / 1
Chronic fatigue syndrome	16 / 0	5 / 0	0 / 0	12 / 2
Alzheimer's disease	29 / 0	9 / 0	0 / 0	6 / 2
Anemia	26 / 1	9 / 0	0 / 0	6 / 1

2.7. Impact of Medications

Dental schools have a good record of including information on pharmaceuticals in the curriculum. As can be seen in Table 2.7, the drug classes which are covered best (over 75% of schools) include contraceptives, tranquilizers and antibiotics. Two of these, tranquilizers and antibiotics may be prescribed by dental practitioners on a regular basis. This table also shows that more than 50% of the schools instruct their students in the pharmacology of antihypertensives, antianxiety medications and dietary supplements. However, approximately 50% of dental schools cover the medications used for weight control.

Table 2.7.: Number of responding US/Canadian schools that taught each topic in the category "Medication use" according to type of course

Impact of the use of the following medications (Rx & OTC):	Part of required course	Separate required course	Elective	not offered
Contraceptives	30 / 4	10 / 1	0 / 0	1 / 0
Antihypertensives	31 / 1	9 / 0	0 / 0	1 / 0
Antianxiety	30 / 0	9 / 2	0 / 0	0 / 1
Tranquilizers	30 / 3	10 / 1	0 / 0	1 / 0
Antibiotics	32 / 3	9 / 1	0 / 0	1 / 0
Dietary supplements	26 / 1	8 / 0	0 / 0	5 / 1
Weight control	19 / 1	7 / 0	0 / 0	9 / 1

2.8. History, Physical Examination & Communication Skills

Table 2.8. shows that more than 75% of the dental schools include a complete medical history, a medication history and a complete dental history in the curricula. More than 50% include a history of trauma, information on gender and patient-doctor roles, esthetic concerns, HIV testing and counseling, counseling for dentures and implants and oral health promotion. Only half of schools instruct students in obtaining a history of violence and abuse or consider gender in formulating treatment plans. Appropriate patient information is a prerequisite of appropriate care. Failure to consider the special concerns of women with respect to esthetics, violence and abuse leads to less acceptable care. Furthermore, there are also reporting responsibilities associated with these conditions. All health care providers assume legal liabilities as well as the moral responsibilities related to these problems while performing as practitioners and patient advocates. It is important that cultural sensitivity be a part of the training of dentists especially related to its influence on patient/doctor relations, patient motivation and follow-up related to chronic diseases.

Table 2.8.: Number of responding US/Canadian schools that taught each topic in the category "History, physical examination & Patient communication skills" according to type of course

History, physical examination & patient communication skills:	Part of required course	Separate required course	Elective	not offered
Taking a complete medical and medication history including sexual and reproductive history	32 / 2	11 / 0	0 / 0	0 / 1
Taking an appropriate medical and medication history	35 / 3	12 / 0	0 / 0	0 / 0
Taking a complete dental history	30 / 4	11 / 1	0 / 0	0 / 1
Obtaining a history of traumatic events (i.e., domestic violence, rape, incest)	20 / 2	8 / 0	1 / 0	9 / 1
Understanding how gender/ cultural background influence the patient/doctor relationship	24 / 2	9 / 1	2 / 0	6 / 1
Understanding how gender role expectations influence treatment planning & oral health behavior	18 / 1	7 / 1	1 / 1	10 / 2
Understanding the influence of violence and abuse on medical and dental history	19 / 1	7 / 1	2 / 2	10 / 2
Understanding the influence of violence and abuse on dental fear/ phobia	17 / 0	7 / 1	1 / 0	12 / 2
Understanding the impact of esthetic concerns on treatment planning	27 / 2	10 / 0	0 / 0	3 / 0
HIV testing and counseling	35 / 1	9 / 0	1 / 0	4 / 2
Counseling concerned with dentures versus dental implants	23 / 0	11 / 0	1 / 1	5 / 1
Oral health promotion	33 / 2	8 / 0	0 / 0	3 / 0

2.9. Selected Topics

The least recognized issues in dental curriculum related to women's health were found under the following areas. As can be seen in Table 2.9., less than 25% of our dental schools consider health or oral health within and across ethnic groups. Legal and ethical issues and the issues of lesbians are part of the curriculum in less than 25% of schools. Oral health consequences in women with disabilities, women's oral health issues, gender in medical / dental decision making, gender specific communication styles and the effects of gender discrimination and harassment are discussed in less than 50% of schools.

Table 2.9.: Number of responding US/Canadian schools that taught each of the selected topics according to type of course

Selected topics:	Part of required course	Separate required course	Elective	not offered
Women's health issues within & across ethnic groups	9 / 0	3 / 0	0 / 0	16 / 3
Women's oral health issues within & across ethnic groups	9 / 0	3 / 0	0 / 0	14 / 3
Health issues of elderly women	21 / 2	7 / 0	0 / 2	8 / 0
Oral health issues of elderly women	26 / 2	7 / 0	2 / 0	3 / 2
Lesbian health issues	2 / 0	2 / 0	0 / 0	18 / 3
Health consequences of disabilities in women	8 / 2	3 / 0	0 / 0	14 / 2
Oral health consequences of disabilities in women	10 / 2	3 / 0	0 / 0	17 / 0
Women's oral health issues	14 / 2	3 / 3	0 / 0	11 / 2
Gender differences in medical/ dental decision making	14 / 0	6 / 0	0 / 0	11 / 3
Gender-specific communication styles	16 / 1	4 / 0	1 / 0	12 / 2
Effects of gender discrimination and sexual harassment	10 / 0	6 / 0	0 / 0	10 / 2
Legal/ethical issues in women's health	9 / 0	5 / 0	0 / 0	12 / 2

3. Summary of Findings

Table 3 summarizes the average frequency for each of the nine areas of interest by type of instruction offered. Considering the overall index - which is the weighted mean number of schools (by type of instruction) that include the topics in a certain area - it becomes obvious that biological considerations, medication use, and etiology, prevalence, course and treatment of conditions are the most frequently taught topic areas, while general themes, selected topics, and sexual and reproductive functions are the least likely areas to be taught in dental schools in the US.

Table 3: Average responses in the nine areas of concern by type of classes offered (for the 50 responding US schools)

Topics:	Part of required course	Required course	Elective	not offered *	Overall index **
General themes	28.8	7.2	2.3	7 to 18 / 10.8	5.7
Biological considerations	32.0	7.3	0.3	6 to 24 / 11.7	18.5
Developmental and psychosocial issues	20.6	5.4	1.1	6 to 38 / 23.3	12.3
Health behavior / health promotion	23.2	7.2	0.2	9 to 37 / 19.7	14.0
Sexual and reproductive function	14.2	3.0	0.2	21 to 42 / 34	8.1
Etiology, prevalence, course, treatment of conditions	6.6	8.0	0.2	8 to 33 / 14.9	16.7
Medication use	28.1	8.9	0	8 to 24 / 13	17.0
History, physical exam, patient communication skills	26.1	9.2	.08	5 to 27 / 15.5	16.2
Selected topics	12.3	4.3	.03	17 to 38 / 29.8	7.7

Legend: * = the range of the responses of schools that do not offer any of the single topics in this category/mean. For example under the category "general themes" between 7 and 18 of the 50 U.S schools did not offer a certain topic listed in this category and an average of 10.8 schools did not have course offerings under this category.

** = the overall index is determined by weighing the frequency of responses by the type of course offered: weight (required course) = 3; weight (part of required

course) = 2; weight (elective) = 1. The frequencies were averaged to produce an overall index. The higher the index, the more intensive the coverage.

These findings are further elaborated in Tables 4 and 4a. Table 4 illustrates that very few schools omit taking an appropriate medical and medication history, and normal and abnormal female biology in their curricula. Table 4a provides a ranking of the most often missed / not covered topics in dental schools. It shows that issues around female sexuality (lesbian health issues, female sexuality, sexual dysfunction, gender orientation and sexual orientation) are the most frequently omitted issues in US dental schools.

Tables 4 and 4a: List of topics that receive most and least attention in the dental school curricula of the 50 responding US schools

Table 4. Most frequently included topics in US dental school curricula

Ranking	Out of 50 Schools Missed by	Topic
1	5	Taking an appropriate medical and medication history
2.5	6	Normal and abnormal female biology
2.5	6	Effects of aging population on oral health care needs and services
4.5	7	The impact of poverty/socioeconomic status on health status and access to health care
4.5	7	The impact of poverty/socioeconomic status on oral health status and access to health care
10	8	The impact of race/ethnicity/culture on health status, health beliefs, and behaviors & health care utilization
10	8	The impact of race/ethnicity/culture on oral health status, oral health beliefs, and behaviors & oral health care utilization
10	8	Temporomandibular disorder
10	8	Antibiotics
10	8	HIV testing and counseling
10	8	Normal and abnormal female physiology
10	8	Gender differences in the epidemiology of oral diseases and disease rates
10	8	HIV and related disorders
10	8	Sjogren's syndrome

Table 4a. Most often missed / not offered topics in US dental school curricula

Ranking	Out of 50 Schools Missed by	Topic
1	46	Lesbian health issues
2	42	Female sexuality
3	40	Sexual dysfunction

Table 4a continued

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 and ethical issues in women's health
12	36	Pre-menstrual syndrome
12	36	Effects of maternal health & health practices on the health of the fetus and newborn

4. Results concerning significance and future of women's health issues in dental school curricula

The majority of schools respond favorably with regards to educating future dental health care providers about women's health issues. They are positive about the effect that more women will have but uncertain with regards to the efforts that will be made to increase the coverage of women's health issues in their school's curricula.

Table 5 provides the results concerning the questions about the significance and future of covering women's issues in dental school curricula. On the whole responding schools indicate awareness of the significance of these issues and are positive about the inclusion of women and oral health issues in their schools' curricula in the future.

Table 5: Frequencies of answers and mean answers to the questions concerning the significance and future of women and oral health issues for the responding US/Canadian schools*

Question: How much do you agree/disagree with the following statements on a scale from "1" = disagree strongly to "5" = agree strongly?

Statement:	Strongly Disagree				Strongly Agree	Mean
Educating future dental health care providers about women's health issues is important.	0/0	3/0	8/2	22/2	15/1	4.02
Education future dental health care providers about women's health issues is a neglected topic in our school's curriculum.	2/0	14/0	18/2	9/1	5/1	3.02
Overall, dental schools do not address women's health issues in their curricula.	2/0	7/1	16/0	15/3	6/0	3.36

*US schools/Canadian schools

Table 5 continued

Education future dental health care providers about women's health issues would contribute to their future professional effectiveness.	0/0	3/0	7/2	24/1	14/1	4.02
Future curriculum changes will aim at increasing the coverage of women's health issues in our school's curriculum.	1/0	10/2	26/2	7/0	3/0	3.02
As more women enter the dental profession, women's health issues will receive more attention.	0/0	5/1	15/1	23/1	5/1	3.57
Major efforts will be made to increase the coverage of women's health issues in our school's curriculum.	1/0	14/2	23/2	6/0	1/0	2.82

PART III-B. DISCUSSION of Selected Areas of Comparison With the Medical School Curriculum Survey.

The results in this area were compared with the medical school curriculum findings. The rationale for comparison with the medical curriculum survey was the overarching impact of these issues on the delivery of and access to comprehensive and integrated health care for women across their life spans.

1. General Social Themes & Gender

For each topic, the percentage of schools covering the topic from the recent medical survey results, the percentage of dental schools covering the topic as it relates to general health in the dental school curriculum, and the percentage of dental schools covering the topic as it relates to oral health are reported. Table 6 shows these results. Thus, for health issues across life stages, 74% of medical schools included this topic as part of their required course, 8% considered it as a separate course, 19% included it as an elective, and 9% did not offer it in their curriculum. For the dental schools, 47% of schools required this topic as part of a course, 14% as part of a separate course, none as an elective. Thirty-nine percent of dental schools did not offer information on this topic as part of their curriculum. As far as oral health issues across life stages, 49% of the dental schools offered this issue as part of a required course, 10% as a separate required course, 2% as an elective and 41% did not offer the topic.

Table 6: Percentages of coverage of general social themes in the medical and dental curricula

Topic:	Part of required course	Separate required course	Elective	Not offered
Health issues across life stages: Medical survey	74%	8%	19%	9%
dental (general health)	47%	14%	0%	39%
dental (oral health)	49%	10%	2%	41%
Race, ethnicity, culture & health beliefs, behaviors and utilization: medical survey	81%	13%	14%	4%
dental (general health)	57%	19%	7%	24%
dental (oral health)	57%	19%	5%	24%
Poverty, socio-economic status & health, health access: medical survey	79%	9%	13%	4%
dental (general health)	61%	14%	7%	24%
dental (oral health)	64%	12%	5%	22%

The comparison of the inclusion of general social themes between the medical and dental curricula shows that:

a. medical school curricula address these issues in required courses in approximately 91% of the schools surveyed whereas dental schools include these concerns in 75% of schools, with the life span issues only included in 60% of schools;

b. dental school curricula address these issues rather equally, whether the issue is of general health or an oral health origin; suggesting that dental schools recognize the responsibility of including significant general health issues as well as oral health in their curricula.

2. Developmental & Psychosocial Issues

Developmental and psychosocial issues form an important part of the background for the practicing clinician. Given the diversity of our patient and practitioner pools, and the poor track record of communication across gender, medical and dental practitioners require instruction and exposure to the theoretical frameworks which will inform their clinical practice. These issues must be addressed as we evaluate gender and culturally appropriate care in the context of culturally competent practitioners.

Figure 2 (pp. 25a and 25b) compares the inclusion of these topics between the medical and dental curricula. (N.B. The topic areas which are starred are oral health issues and were included only in the survey of the dental curriculum.) Three topics have a relatively similar representation between the medical and dental curriculum, namely (L) impact of societal role on health, (Q) health consequences of elder abuse, and (T) eating behaviors and disorders. Each of these issues are required in more than 50% of both medical and dental curricula, but none is present in more than 75% of the curricula of either medical or dental schools.

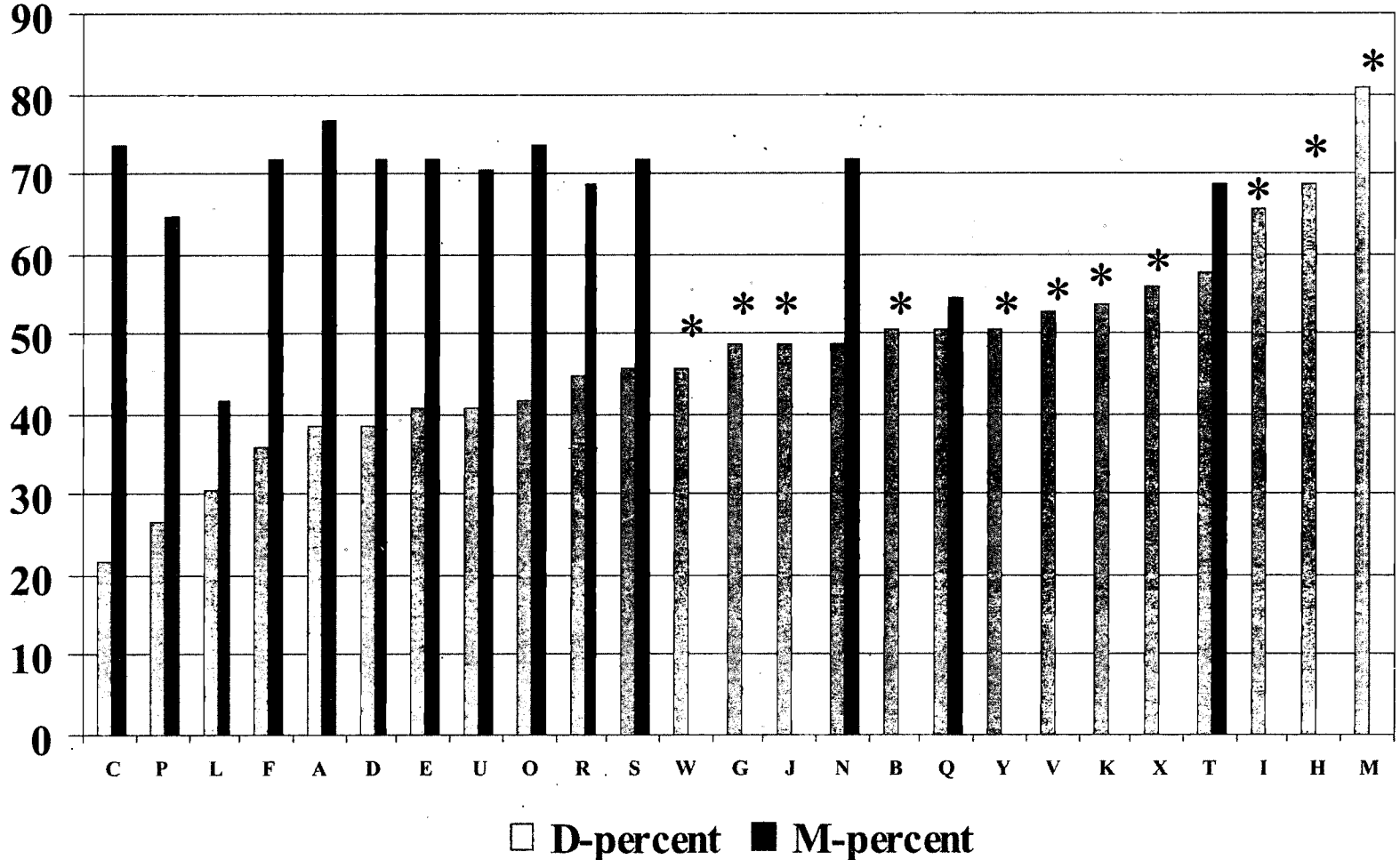
3. Health Behavior & Health Promotion

Health behavior and health promotion are important components of oral health care. Dental schools have always emphasized prevention of oral disease. Figure 1, page 14a shows that oral cancer prevention and screening is included in the curriculum of more than 75% of the dental schools surveyed. More than 50% of the schools include seven more topics in the health behavior and health promotion area:

a. nutrition
b. smoking cessation
c. alcohol & substance abuse
d. cancer prevention
e. cardiovascular risk
f. caries risk & oral self-care
g. periodontal risk and prevention

In contrast, less than 25% of dental schools include intentional & non-intentional injuries in their required instruction.

Developmental & Psychosocial Issues



* included only in dental survey

Figure 2

Data for Figure 2 – Developmental & Psychosocial Issues

The name of the topic and the reference letter in the graph can be found below. The first numeric column is dental information, second is medical information. Starred items were included only in the dental survey.

Topic	Letter	% dental	% medical
Gender & sexual identification	C	22	74
Rape or victimization	P	27	65
Impact of societal role on health	L	31	42
Hormones & peri/post menopause	F	36	72
Pubertal development	A	39	77
Hormones in puberty	D	39	72
Hormones in pregnancy	E	41	72
Addictive disorders	U	41	71
Domestic violence	O	42	74
Anxiety disorders	R	45	69
Depressive syndrome	S	46	72
Depression & oral healthcare utilization	*W	46	
Oral health & puberty	*G	49	
Menopausal/oral health	*J	49	
Childhood physical/sexual abuse	N	49	72
Puberty & Oral Health	*B	51	
Elder abuse	Q	51	55
Addictive behaviors & oral healthcare utilization	*Y	51	
Anxiety & oral healthcare utilization	*V	53	
Postmenopausal/oral health	*K	54	
Eating disorders & oral healthcare utilization	*X	56	
Eating disorders	T	58	69
Perimenopausal/oral health	*I	66	
Pregnancy & oral health	*H	69	
Aging population & oral health	*M	81	

PART IV. SUMMARY

One of the most significant positive findings of this survey was the tremendous inclusion of general medical topics within the dental curriculum. Dental schools recognize the responsibility of including significant general health issues as well as oral health in their curricula. This is important to the understanding of the relationship of oral health to systemic health in both men and women. It is also important to the comprehensive care concept that is taught in dental schools and in the assessment of quality of oral healthcare of individuals. Dental schools have been exemplary in the inclusion of the impact of HIV & related disorders. The opposite was observed in the medical school study. Likewise, temporomandibular joint disease is included in all but 7% of dental schools. These are significant, positive efforts of dental schools to provide appropriate training for future dental practitioners.

However, there is a lack of conscious or studied inclusion of gender in many dental school curricula. In fact, dental school curricula do not include general concerns about gender as consistently as do the medical schools. Twenty-five percent of the dental schools do not consider the life span of the individual. In addition, developmental and psychological issues of women are not present in curricula of 25% of dental schools. Less than 50% of schools instruct students in obtaining a history of violence and abuse or consider gender in formulating treatment plans. These gaps in the curricula impact upon the ability of our future providers to appropriately treat their patients, and result in a barrier to health and oral health care for women. Future curricula for practitioner training should include the differences as well as the similarities between men and women.

The content with regards to women's health/women's oral health in general is not labeled or identified as such in dental school curricula or course syllabi. In addition, the absence of computerized curriculum databases, in most dental schools, contributes to the difficulty in responses to data-specific curriculum surveys regarding women's health. In the absence of a gender-based approach in the content, this becomes an important issue.

The general responses received from U.S. dental schools reveal the following:

- Women's health/oral health in dental school curricula concentrate in the following areas: taking an appropriate medical and medication history, normal and abnormal female biology and effects of the aging population on oral health care needs and services. According to the survey, the topics addressed the least are: lesbian health issues, female sexuality and sexual dysfunction.

- Overall, dental schools do not address a broad range of women's health issues in their curricula.

- Most schools believe that educating future dentists about women's health would contribute to professional effectiveness.

- The schools are uncertain with regard to future curriculum changes needed to adequately address women's health concerns.

- Schools believe that as more women enter the profession, women's health issues will receive more attention.

- Schools are uncertain as to the most effective efforts that are needed to increase women's health in their curriculums.

As an outlook to the future, it might be worthwhile to consider the fact that the answers to the attitudinal items concerned with the significance of women and oral health issues were largely positive. This is a positive indicator of potential future change in this significant area of concern. Most schools recognize the importance of women's issues and expect the increase in female students and female faculty to influence the rate with which these issues will be addressed in dental school curricula.

PART V. RECOMMENDATIONS

Based on the information provided by this survey and in anticipation that it will generate interest and action with regards to gender issues in dental school curricula, the authors put forth the following recommendations that have been endorsed by the Women's Affairs Advisory Committee of the American Association of Dental Schools:

1. There is a need to improve access to dental school curricula by using database methodology and technology to facilitate content review, reporting and revisions.

2. Individuals who have institutional responsibility for curriculum development in US dental schools should consider an expanded definition of women's health (e.g. U.S.P.H.S. 1985) in determining dental practice competencies in this area.

3. Individuals responsible for dental curriculum development should review the Council on Graduate Medical Education (COGME) Basic Principles Underlying the Concept of Women's Health, 1995 and assess their appropriate applicability in developing competencies for future oral health providers.

4. Dental curricula should reflect a "life span" approach to women's health. This approach includes girls and women from birth through menopause and past menopause, and a redefinition of terms and treatments for women of "child bearing" age.

5. Dental curricula should redefine the scope of women's health beyond "diseases and disorders occurring only in women or disproportionately in women" to include those that adversely impact the health and well being of women across the life span.

6. Efforts should be made to enhance medical consultation training with regard to women's health and the relationship of oral health to general health. Emerging data related to: oral cancer, periodontal disease, and low birth weight infants, obesity and taste, mental health and other factors that contribute to the health outcomes of women should be included.

7. Less than 50% of dental schools instruct students in obtaining a history of violence and abuse. Efforts should be made to correct this gap for its value to appropriate care for women and to establish the role of oral health care providers as patient advocates in the prevention of violence against women.

8. Areas of the curricula needing specific review/revision are:
   - integrating women's health into the basic science portion of the curriculum;
   - improving the instruction of psychosocial and socioeconomic issues, where women are disproportionately influenced;
   - considering gender issues in access to care and in planning therapeutics and treatments;
   - increasing the knowledge of future oral health care providers in the social and legal responsibilities of their profession especially as their responsibilities relate to women and the promotion of health and well-being.

9. The content of the National Board Dental Examinations should be reviewed and revised to reflect the growing body of knowledge affecting diagnosis, treatment and health outcomes of women.

10. The AADS and NIDCR should take the lead in use of computing technology for information transfer related to women's health, research and treatment outcomes.

11. An interdisciplinary Women's Health Task Force should be established within AADS to continue the assessment of women's health in the dental curriculum. This group is necessary to facilitate knowledge and technology transfer; to identify emerging research and research training needs of women; to assess health outcomes related to newer treatment philosophy and modalities; and to assure the clinical competency, advocacy and legal responsibilities of future dental providers with regards to women's oral health.

12. The DHHS has established 18 model centers to provide integrated and comprehensive women's health services to women across the country. Eleven of these **National Centers of Excellence in Women's Health** are located in academic institutions having accredited dental schools. In keeping with the comprehensive, collaborative intent of these centers, it is recommended that a mechanism be established to include women's oral health in these centers and in future models that are established.

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APPENDIX A

Calendar No. 662

102D CONGRESS
2d Session

SENATE

REPORT
102–397

DEPARTMENTS OF LABOR, HEALTH AND HUMAN SERVICES, AND EDUCATION AND RELATED AGENCIES APPROPRIATION BILL, 1993

SEPTEMBER 10 (legislative day, SEPTEMBER 8), 1992.—Ordered to be printed

Mr. HARKIN, from the Committee on Appropriations, submitted the following

REPORT

[To accompany H.R. 5677]

The Committee on Appropriations, to which was referred the bill (H.R. 5677) making appropriations for the Departments of Labor, Health and Human Services, and Education and related agencies for the fiscal year ending September 30, 1993, and for other purposes, reports the same to the Senate with various amendments and presents herewith information relative to the changes recommended.

Amount of budget authority

Amount of House bill	$240,360,387,000
Amount of Senate bill over House bill	+512,787,000
Total bill as reported to Senate	240,873,174,000
Amount of adjusted appropriations, 1992	219,036,041,000
Budget estimates, 1993	240,406,973,000
The bill as reported to the Senate:	
Over the adjusted appropriations for 1992	+21,837,133,000
Over the budget estimates for 1993	+466,201,000

58–801 cc

Academic and clinical training in women's health

To date, there is no medical specialty which provides comprehensive primary health care to women. The Committee requests that the Office of Research on Women's Health [ORWH] in cooperation with the Health Resources and Services Administration [HRSA] evaluate a random sample of medical school curriculums to determine the extent that women's health issues are addressed. The project must examine at least five medical school curriculums, at both public and private universities. The assessment must include information on the amount and content of academic and clinical training covering women's health care topics. The Committee requests that ORWH and HRSA publish a report presenting their recommendations for a model women's health core curriculum for medical schools.

In addition, the Committee requests that the ORWH establish an advisory board for this project comprised of but not limited to the American Association of Medical Colleges, the American Medical's Women's Association, the National Black Women's Health Project, the American Psychiatric Association, the American Psychological Association, the Consortium of Social Science Associations, the Congressional Caucus for Women's Issues, and the Society for the Advancement of Women's Health Research.

Minority health initiative

The Committee has included $43,000,000 for the minority health initiative. The minority health initiative [MHI] is a major trans-NIH project that supports research and research training activities aimed at improving the health of minority Americans. The MHI will focus on the following goals: closing the health gap that currently exists between minority Americans and the majority populations; and increasing the opportunities for minorities to pursue careers in the biomedical sciences. The NIH will address the minority health life-span issues, including infant mortality, health behaviors of adolescent and young adult minorities, and the health status of older minority Americans. The initiative will also focus on recruitment and retention of minorities in a wide array of research and health care professions.

Office of Minority Programs

The Committee has included $9,500,000 for the Office of Minority Programs. The Office of Minority Programs [OMP] serves as the focal point for coordinating overall NIH policies and programs for improving minority health status, increasing the level and scope of research on health problems that disproportionately affect minorities, and expanding the participation of minorities in biomedical or health service delivery careers. Currently, the OMP's efforts include: supplementary support for ICD's projects that provide research on risk factors prevalent in minority populations; establishment of programs to increase minority participation in clinical research, including clinical trials; and development, recruitment, and retention of minorities in the broad range of careers in biomedical research and health services delivery.

Calendar No. 201

103D CONGRESS
1st Session

SENATE

REPORT
103–143

DEPARTMENTS OF LABOR, HEALTH AND HUMAN SERVICES, AND EDUCATION AND RELATED AGENCIES APPROPRIATION BILL, 1994

SEPTEMBER 15 (legislative day, SEPTEMBER 7), 1993.—Ordered to be printed

Mr. HARKIN, from the Committee on Appropriations, submitted the following

REPORT

[To accompany H.R. 2518]

The Committee on Appropriations, to which was referred the bill (H.R. 2518) making appropriations for the Departments of Labor, Health and Human Services, and Education and related agencies for the fiscal year ending September 30, 1994, and for other purposes, reports the same to the Senate with various amendments and presents herewith information relative to the changes recommended.

Amount of budget authority

Amount of House bill	$259,768,129,000
Amount of Senate bill over House bill	+1,213,014,000
Total bill as reported to Senate	260,981,143,000
Amount of adjusted appropriations, 1993	247,094,751,000
Budget estimates, 1994	265,398,931,000
The bill as reported to the Senate:	
Over the adjusted appropriations for 1993	+13,886,392,000
Under the budget estimates for 1994	−4,417,788,000

72–245 cc

the Office of Rural Health Policy. Therefore, the Committee encourages the Office, consistent with the general criteria it has developed for the evaluation of health services outreach grant applications, to extend delivery of health services to migrant farmworkers through mobile clinic programs.

Building and facilities

The Committee recommends $942,000 for buildings and facilities, the same as the administration request and House allowance and $40,000 below the fiscal year 1993 amount. These funds provide for routine repairs and improvements at the Gillis W. Long Hansen's Disease Center located at Carville, LA.

National practitioner data bank

The Committee recommends $7,500,000 for the national practitioner data bank, which is the same as both the House allowance and the administration request and $1,500,000 over the fiscal year 1993 amount. The $7,500,000 will be provided entirely through the collection of user fees and will cover the full cost of operating the data bank. The data bank was created by Public Law 99–660 to serve as a national source of information on malpractice judgments and settlements and various other disciplinary actions taken against physicians, dentists, and other categories of licensed health professionals.

The Committee is disturbed by the failure of the Department to provide a final report on whether small malpractice payments should be excluded from the reporting requirements of the data bank. A study of this issue was mandated by Public Law 99–660 to be issued by November 14, 1988, and was again requested by the Committee 2 years ago; however, it has still not been received by the Congress. It is the Committee's understanding that this study was completed during the previous administration. Therefore, the Committee directs the Department to release the study within 6 months of the date of enactment of this act.

Program management

The Committee recommends $121,976,000 for program management activities for fiscal year 1994. This is the same as both the administration request and the House allowance and $489,000 above the fiscal year 1993 amount. The Committee concurs with the House regarding program management funds, and expects that HRSA will not tap into funds provided for programs in order to increase administrative accounts.

The Committee recommends that $1,000,000 be used to establish an Office of Women's Health in the Office of the Director of HRSA. The Office of Women's Health will ensure that women's health is given the highest priority through HRSA programs in training, research, treatment, and service.

The Committee continues to be concerned that most health professions schools throughout the country lack a comprehensive women's health training curriculum. The Committee is also concerned that HRSA and the Office of Research on Women's Health [ORWH] at the National Institutes of Health [NIH] have not made adequate progress to address the inadequacy of women's health training in

medical schools. Therefore, the Committee requests that HRSA, in cooperation with ORWH and the PHS Office on Women's Health, conduct a broad-based, national study of the adequacy of academic and clinical training in women's health in the education of health professionals, to be completed by October 1, 1994. The study shall examine the context of disease prevention, health promotion, epidemiology and pathology of disease, and the identification, treatment, and control of disease across a woman's lifespan. The Committee requests that, in conducting the study, HRSA consult with specialty boards, health professions schools, deans, women's health professionals, Members of Congress, consumer groups, and nongovernmental agencies. The Committee requests that HRSA prepare a report, based on the results of this study, which shall address the implications for accreditation and licensure of professions. The report shall also outline the effects of gaps in the knowledge of health professionals on the care that women receive.

MEDICAL FACILITIES GUARANTEE AND LOAN FUND

Appropriations, 1993	$10,900,000
Budget estimate, 1994	9,000,000
House allowance	9,000,000
Committee recommendation	9,000,000

The Committee recommends $9,000,000 for the medical facilities guarantee and loan fund. This is the same as both the administration request and the House amount and $1,900,000 less than the fiscal year 1993 appropriation. These funds are used to comply with the obligation of the Federal Government to pay interest subsidies on federally guaranteed loans throughout the life of the loans. These loans were used for hospital modernization, construction, and conversion.

HEALTH EDUCATION ASSISTANCE LOANS [HEAL]

Appropriations, 1993	$25,148,000
Budget estimate, 1994	26,458,000
House allowance	26,458,000
Committee recommendation	26,458,000

The HEAL Program insures loans to students in the health professions. The Budget Enforcement Act of 1990 changed the accounting of the HEAL Program; one account is now used to pay obligations arising from loans guaranteed prior to 1992, while a second account pays obligations and collects premiums on loans guaranteed in 1992 and later. Administration of the HEAL Program is separate from administration of other HRSA programs.

The Committee recommends guarantee authority of $375,000,000 for new HEAL loans in fiscal year 1994.

The Committee was particularly pleased that, in the fiscal year 1993 allocation of HEAL loans, a bidding process was utilized that employs multiple bids to identify the lender offering the best HEAL loan terms for students. The Committee directs that this again be the process utilized for the fiscal year 1994 allocation of HEAL lending authority.

The Committee provides $64,878,000 to liquidate 1994 obligations from loans guaranteed before 1992, which is the same as both the House allowance and the administration request. In addition,

103D CONGRESS
1st Session
HOUSE OF REPRESENTATIVES
REPORT
103–156

DEPARTMENTS OF LABOR, HEALTH AND HUMAN SERVICES, AND EDUCATION, AND RELATED AGENCIES APPROPRIATION BILL, 1994

JUNE 24, 1993.—Committed to the Committee of the Whole House on the State of the Union and ordered to be printed

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Mr. NATCHER, from the Committee on Appropriations, submitted the following

REPORT

[To accompany H.R. 2518]

The Committee on Appropriations submits the following report in explanation of the accompanying bill making appropriations for the Departments of Labor, Health and Human Services (except the Food and Drug Administration, Indian Health Service, and the Office of Consumer Affairs), and Education (except Indian Education), Action, the Corporation for Public Broadcasting, the Federal Mediation and Conciliation Service, the Federal Mine Safety and Health Review Commission, the National Commission on Libraries and Information Science, the National Council on Disability, the National Labor Relations Board, the National Mediation Board, the Occupational Safety and Health Review Commission, the Prospective Payment Assessment Commission, the Physician Payment Review Commission, the Railroad Retirement Board, the United States Soldiers' and Airmen's Home, the United States Institute of Peace and the United States Naval Home for the fiscal year ending September 30, 1994 and for other purposes.

★ 69–704

prehensive federal response to ensure that children are immunized on time, these funds also would provide seed money for emerging vaccine initiatives that have not developed within the normal Federal budget cycle, to increase efforts to ensure vaccine safety, to speed up the development and testing of new vaccines, and to evaluate the success of various State and local vaccine distribution systems.

Office of Research Integrity

The Committee recommends $4,000,000 for the Office of Research Integrity, a reduction of $2,000,000 from the budget request. This Office has been funded in the past by "tapping" the other Public Health Service agencies for the necessary funds. The Committee believes that the Department should be able to fund this activity at a somewhat lower level of scarce Federal resources.

The Office of Research Integrity carries out PHS responsibilities to investigate and resolve allegations of scientific misconduct. ORI will continue to develop scientific research policies, integrity procedures, and regulations and to provide an accused scientist an opportunity for an independent adjudicatory hearing or review when an investigation concludes that research misconduct may have occurred. ORI is designed to assure that misconduct allegations are addressed in a manner that assures fairness to all parties.

Office on Women's Health

The bill includes $1,000,000 for the Office on Women's Health, the same as the budget request. This Office has been funded in the past by "tapping" the other Public Health Service agencies for the necessary funds.

The Office on Women's Health advises the Assistant Secretary for Health on scientific, legal, ethical, and policy issues relating to women's health. The Office also provides leadership, sets priorities, develops policy and guidance, and reviews and monitors PHS activities in regard to issues of women's health.

The Committee is concerned about the current inadequacy of women's health training in medical school education. Because of a lag in research on women's health, and because almost all medical schools use the 70 kilogram male as their model, medical practitioners have gaps in their knowledge about the special health needs of women. Physicians, therefore, are not adequately trained to address the needs of half of our population, which results in poorer quality care for women and increased costs as some of women's health care needs are misdiagnosed or mistreated.

The Committee intends part of the increase for the Office to be used to examine issues surrounding the appropriate integration of women's health issues into medical school curricula. The Committee directs that the Office work with the various agencies of the Public Health Service, in particular the Health Resources and Services Administration, to study the improvement of competencies in training in the care of women with the goal of educating all physicians in the full range of women's health issues and ending the fragmentation of women's health care. This will ensure the provision of optimal health care to women.

The study should be broad-based, including specialty boards, women's health professionals, specialists in women's health, Members of Congress, medical school representatives, and consumer groups. The Committee would like to receive this study by February 1, 1994.

Office of Emergency Preparedness

The bill includes $1,500,000 for the Office of Emergency Preparedness, a reduction of $1,500,000 from the budget request. This Office has been funded in the past by "tapping" the other Public Health Service agencies for the necessary funds. Because of budgetary constraints on discretionary spending, the Committee was unable to provide the full amount requested.

The Office of Emergency Preparedness (OEP) is responsible for planning, implementing, and coordinating the Departmental response to a disaster. HHS is the primary agency for health and medical services under the Federal Response Plan, and responsibility for the entire Departmental response was delegated to OEP in 1990. Medical, mental health, and human services are provided to victims of catastrophic disasters under the Federal Response Plan.

Health Care Reform Data Analysis

The Committee recommends $3,000,000 to initiate a data improvement and analytical effort in support of health care reform. This is $2,000,000 less than the amount requested because of overall budgetary constraints.

This initiative would fund several interagency efforts aimed at the improvement, expansion and analysis of data in support of health care reform in the areas of employer-provided health insurance, population estimates of health insurance coverage, the efficacy of various cost containment approaches, and related areas. Health care reform efforts will require timely and systematic national information on employer-provided health insurance as well as employer/employee sharing of premium costs.

Public Health Service Management

For Public Health Service Management, the bill includes $19,379,000, a reduction of $2,000,000 from the request and from the 1993 appropriation. This activity provides support for the Assistant Secretary for Health to assure effective guidance, leadership, and direction of the Public Health Service programs. In an effort to reduce administrative and overhead costs, the Committee recommends this reduction. This reduction should be able to be absorbed without seriously affecting any critical activity of the Federal Government.

Within the total, the Committee has provided $200,000 for the Office of Public Health History to conduct an inventory and evaluation of public health materials and programs in use in informal education settings.

The Committee has made several reductions in this account for the staffing of offices, i.e. Emergency Preparedness, Research Integrity. The Committee directs the Department to refrain from "tapping" funds from other PHS agencies to restore these reduc-

APPENDIX B

Basic Principles Underlying the Concept of Women's Health

The biopsychosocial approach is fundamental to an integrated understanding of women's health issues.

A scientific knowledge base is essential in advancing research, education and clinical care in women's health.

Gender issues must be considered in every aspect of health.

The uniqueness of individuals and their personal experience informs and guides the appropriate provision of health care.

The relationship between women and their providers is an interactive process defined by mutual respect and collaboration.

Women's health requires a multidisciplinary approach that integrates content from various disciplines such as nursing, nutrition, dentistry, women's studies, psychiatry and the behavioral sciences.

Innovative clinical models are needed to provide comprehensive care to women and training for physicians, including prevention, community involvement and education.

Fundamental in the development of a women's health curriculum is the ability to respond to the needs of the traditionally economically, socially, and culturally excluded populations. The evolution of a curriculum must reflect the diversity of the population.

Medical education is as much a socialization process as it is an acquisition of skills and knowledge. Women's health cannot be taught only didactically.

Women's health would benefit from women in leadership and policy making positions in all aspects of health care. Efforts must be made to recruit and promote women into these positions.

These principles are not unique to women's health but, applied broadly, would benefit the entire population. The rationale for focusing on women's health is that women have been the ones least well served by the current system.

Source: Council on Graduate Medical Education. Fifth Report: women and medicine. Bethesda, Md: Department of Health and Human Services, Spring 1995.

APPENDIX C

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APPENDIX D

ORAL and DENTAL Health

Section on Women's Oral Health

Submitted by:
Dr. Kerry Maguire, Assistant Professor
University of Colorado and the 1994 Enid A. Neidle Scholar

To:
Dr. Janet B. Henrich, Associate Professor of Medicine
Yale University School of Medicine

For inclusion in Women's Health in the Medical School Curriculum

June 2, 1995

Oral health refers to the status and function of the oral cavity and associated structures. Because of the importance of the oral cavity to the processes of mastication, taste, digestion, respiration and communication, oral health is fundamental to systemic well-being. Tissues of the oral cavity are subject to many diseases with significant morbidity and mortality. These include cancer, salivary gland dysfunction and connective tissue diseases. Eating disorders, infectious diseases, hormonal influences and inadequate health behaviors also negatively affect oral health status. In discussing women's oral health issues, the integral relationship of oral health to systemic health must be acknowledged.

Oral health encompasses dental health and focuses on the structures in and around the mouth. Bony anatomy includes the facial skeleton, mandible and maxilla, alveolar bone and temporomandibular joint area. The oral cavity is bounded by the lips and cheeks and includes the teeth, periodontium, hard and soft palates and tongue. The muscles of mastication, salivary glands, lymphoid tissues and deep spaces of the head and neck are also components of the oral system.

Two major oral diseases are dental caries and periodontal disease. The etiology of both is essentially bacterial in origin. Dental caries remains one of the most prevalent human diseases. Carious lesions damage the hard tissue of the tooth and are typically classified by their location on coronal or root surfaces. The use of flouride has proven to be effective in the prevention of tooth decay. As with dental caries, diseases of the periodontium may only be prevented or controlled – not cured. Periodontal diseases affect the supporting structures of the dentition including the gingiva, cementum, alveolar bone and periodontal membrane. Disorders of the periodontium occur on a continuum that includes gingivitis, periodontitis, and edentulism in terminal stages.

Gender differences in the areas of oral health and disease have been addressed only minimally. Until the NHANES III survey of oral health is released, results from the 1985-1986 National Survey of U.S. Employed Adults and Seniors provide the most current analysis of gender differences related to basic oral health indicators. To summarize, differences in tooth loss patterns (edentulism) were minimal, with older women demonstrating a higher prevalence of intact dentition. Males exhibited more periodontal disorders such as gingivitis, recession, and loss of attachment than did females. Women and men differed on the types of carious lesions present, with a greater prevalence of coronal caries among women and root caries among men. According to the Surveillance, Epidemiology and End Results (SEER) summary information, women are one-third as likely as men to develop orofacial neoplasms. Conversely, analysis of the 1989 National Health Interview Survey supplement indicated consistently higher prevalence rates in females for all types of orofacial pain. Clinical reports are consistent with this evidence in that women report a much higher frequency of temporomandibular joint dysfunction and myofascial pain.

Sjogren's syndrome is an autoimmune disease causing dry mouth (xerostomia) and eyes (keratoconjuctivitis sicca). Ninety percent of all cases occur in women, with 50 years of age being the average time of onset. Patients with xerostomia associated with Sjogren's or other causes are at increased risk of caries, periodontal disease and oral candidiasis. Approximately half of those affected exhibit enlargement of the parotid gland. Arthralgia, myalgia and fatigue are common symptoms.

Although erosion of the dental enamel may have many causes, eating disorders, particularly bulimia nervosa, are notable. Bulimia nervosa is estimated to affect one to three percent of adolescent and young adult women, placing them at risk for related oral problems. The pattern of erosion associated with chronic vomiting is usually most common on the lingual surfaces of the teeth, although all surfaces may be affected. Severe erosion of the enamel weakens the tooth structure and damages soft tissues; exposure of softer dentin and cementum surfaces increases the risk of caries. Soft tissue manifestations such as

ulceration, glossitis, mucositis and periodontal abnormalities may result from nutritional deficiencies related to eating or metabolic disorders.

An increasing proportion of those infected with human immunodeficiency virus (HIV) are women. The most common mode of transmission in women is through injection drug use, followed by sexual contact with an infected partner. Seropositive mothers are the primary source of HIV infection in infants. In North America, acquired immune deficiency syndrome (AIDS) is among the ten leading causes of death in women of childbearing age. Because of early manifestations of the disease often occur in the mouth, health care professionals should be familiar with the presentation of common oral lesions associated with HIV, especially oral candidiasis and hairy leukoplakia.

Hormonal influences on the oral cavity during pregnancy have been well-documented. Generalized gingival hyperplasia may result from alteration of the hormonal environment (specifically an increase in progesterone) coupled with local irritants. This condition, sometimes incorrectly termed a "pregnancy tumor," is also associated with puberty. It appears to be transient with no significant loss of periodontal attachment. The effects of menopause or postmenopausal conditions such as osteoporosis on oral conditions have not been comprehensively addressed. The belief that reduced salivary flow accompanies the normal aging process in healthy individuals has not been proven. Instead, xerostomia secondary to other systemic conditions or drug therapy, concurrent with aging, appears more common. With the impending demographic shift, the increased percentage of older women in the general population should focus attention on prevalent conditions and related oral manifestations.

Nearly half of American homes will be directly affected by domestic violence at some time. Women suffer more severe physical injuries associated with non-accidental trauma and are more likely to require subsequent hospitalization. Because the majority of injuries involve the head and neck region, oral and maxillofacial trauma is often the reason that domestic violence victims initially seek care. Health professionals should be alert to the relationship of non-accidental trauma to patterns of delayed care, injuries at various stages of healing, conditions inconsistent with history, or long-term interpersonal difficulties.

The influences of economic, social, psychological and behavioral factors on women's oral health have not been fully explored. Nearly 75 percent of individuals living in poverty in the United States are women and children. Low socioeconomic status is typically associated with poorer health status, need for oral health services and barriers to access. Nonetheless, women are known to be higher utilizers of dental and medical care, to practice more frequent preventive health behaviors and to place greater value on dental esthetics than men. Where clinical indicators of women's oral health status appear positive, the factors influencing these outcomes are not fully understood. Also, the increased proportion of women among the growing older adult population may influence trends in oral epidemiology. Only a comprehensive approach to the study of women's oral health and disease will permit a complete picture to emerge.

EDUCATIONAL/TRAINING OBJECTIVES

All students should demonstrate appropriate knowledge, skills, attitudes and behavior in the following areas:

- The relationship of oral health to systemic well-being.
- An understanding of the structures and functions of the oral system.
- Performance of an oral examination.
- Knowledge of common oral diseases and conditions, with emphasis on how they are manifested in women.
- The epidemiology of oral diseases in women, especially as they are influenced by the impending demographic shift.
- Acknowledgement that economic, social, psychological and behavioral factors may affect women's oral health.
- Appropriate referral mechanisms for oral health care.

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APPENDIX E

American Association
of Dental Schools

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TESTIMONY

Submitted to the
National Institute of Health Conference:
Beyond Hunt Valley: Research on Women's Health for the 21st Century

July 21, 1997
Hilton Hotel, Santa Fe, New Mexico

presented by
Dr. Susan Silverton, Assistant Professor
Department of Oral Medicine, School of Dental Medicine
Department of Medicine, School of Medicine
University of Pennsylvania

on behalf of the
American Association of Dental Schools

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Santa Fe 1997

I am Dr. Susan Silverton, a member of the faculty of the School of Medicine and School of Dental Medicine at the University of Pennsylvania. I am an endocrinologist, caring for patients with metabolic bone diseases, including osteoporosis. I also have a PhD and my research concerns osteoclast-related bone destruction. At the School of Dental Medicine, I instruct predoctoral dental students in required medicine and medical practice topic areas. It is my pleasure to present testimony on behalf of the American Association of Dental Schools. The AADS represents the 55 U.S. and 10 Canadian dental schools, the postgraduate programs in dentistry and the allied oral health professional schools. The AADS works closely with the research community on matters related to education and training. The AADS is the one national organization that speaks on behalf of dental education.

As a physician teaching in an oral health care setting, I have been exposed to a unique set of circumstances which I would like to share with you. I would like to start by asking you to recognize that everything I wish to convey in this testimony can be condensed into two messages. First, oral health is an integral part of general health and should be considered whenever health needs are discussed. Second, postmenopausal women, elderly women and frail elderly women need oral health care. In addition, they need a proper integration of oral health and health care to decrease morbidity and mortality and to secure a better quality of life for themselves.

My goal is to place you comfortably into the perspective contained in these two messages. To do so, I will discuss several issues which have led me to these conclusions, illustrate the issues with a case presentation, comment on initiatives in progress to implement change and conclude with short list of recommendations for improving the oral health and general health landscape.

Oral Health Care Economics and Impact

First, I would like to acquaint you with data showing that dental and oral diseases affect most older Americans. 99.5% of Americans 65 years and older have had cavities and 40% of these elderly Americans have lost all of their teeth (1.). Of those who are poor, a disproportionate number (50%), are also edentulous (2). In general, in the edentulous elderly population, only 10% had a yearly dental visit (3) . In addition, those in poorer health or limited by disability show a 28% decrease in regular oral health followup visits. (4) By the year 2000, it is estimated that 62.3 billion dollars will be spent yearly on dental services. Yet, only 15% of those 65 and older have dental insurance. The Public Health Report concludes that "oral diseases remain an unnecessary obstacle to better health".

Gender specific data on women shows that increasing age is accompanied by an increase in the edentulous population. While women aged 45 -54 have only a 12% prevalence of complete loss of teeth, 46% of women over 75 years of age have lost all their teeth (4). The loss of teeth does not signal an end to the need for oral health care. In fact, the health problems of edentulous patients demand continued care. The vast majority of nursing home residents are women. New nursing home regulations on oral health care have been in place for two years, but oral health screening is not standardized and no

provision is made for coverage of oral health care costs unless the service required is an emergency or is covered by Medicare.

Oral Health Diseases of Postmenopausal and Elderly Women

In addition , a litany of conditions present orally, undermining an elderly person's quality of life. Several of the most common oral health diseases occur more frequently in elderly women.

Temporomandibular Disease - Headache is a very common presenting complaint. The symptoms of headache range from stress and hypoglycemia to brain tumor and meningitis. Oral health practitioners are often consulted for chronic headaches. One of the causes of chronic headache is temporomandibular joint syndrome. Women have a higher rate of headache from temporomandibular joint syndrome than men. It has been reported that women present for treatment for temporomandibular symptoms 5 times as frequently as men. (5). Since chronic headache is a debilitating condition, solving and treating headache symptoms appropriately may require input from an oral health practitioner (6).

Trigeminal Neuralgia - An excruciating burst of pain across the face, triggered by gentle touch or by a change in the position of the neck, may be a sign of this painful chronic condition. The pain may be caused by a variety of conditions, some benign and others which are life-threatening. Trigeminal neuralgia is more common in women, and its onset is highest in the fifth decade. Oral health practitioners diagnose the origin of these symptoms and treat this chronic condition.

Atypical Facial Pain,- Atypical facial pain is a chronic pain disorder which occurs most frequently in women (female:male ratio is 19:1). Often these patients have been treated by multiple health care providers and have had extensive workups for tumor and multiple root canals for possible tooth involvement. More effective integration of care between oral health practitioners and physicians would be helpful in decreasing the number of interventions these patients suffer before the syndrome is recognized.

Pemphigus - Women are more likely to be affected by autoimmune disease than men. Pemphigus is a blistering deforming disease which may present with mainly oral lesions or may involve a large enough area of the skin to be life-threatening. Treatment of the oral and skin lesions should be coordinated by the integration of oral health services with the dermatology treatments. Many of the medications used to treat pemphigus have serious side effects: aplastic anemia can be caused by methotrexate, osteoporosis and fractures result from corticosteroid treatment. Since the total accumulated dose of these agents determines the severity of some of these complications, both the oral health practitioner and the physician need to coordinate care to effectively treat the disease and minimize the complications. (7).

Burning Mouth is an oral and taste disorder of postmenopausal women. This condition presents after menopause and is presumed to be another of the postmenopausal effects of estrogen withdrawal. Estrogen replacement therapy is a possible treatment of this

disorder, but studies need to be coordinated between oral health care practitioners and gynecologists to explore this health problem.

Discoid Lupus Erythematosus, and Systemic Lupus Erythematosus have oral presentations and occur more frequently in women. Connective tissue disease can be limited and benign, or severe and systemic. Oral lesions can be the presenting feature of these disease. The oral lesions can by painful and may cause malnutrition in the seriously ill patient.

Although the loss of teeth in women has been attributed to alveolar osteoporosis, another cause of tooth loss in women is *periodontal disease*. Periodontal disease occurs frequently in elderly women. Severe periodontal inflammation is a precursor of tooth loss. Non-institutionalized women visit dentists more frequently, suggesting that this periodontal disease is not a product of neglect, but is another disease which affects elderly women.

Fibrous Dysplasia, a disease of bone, occurs more frequently in women and may be exacerbated by pregnancy or estrogen therapy. Fibrous dysplasia of the jaw is seen and diagnosed by oral health care practitioners.

Dental implants are more common in women, and more women are denied dental implants than men. In a study by Andersson et al, more women than men received single tooth implants. In addition, a larger proportion of women were rejected for dental implant placement in this study than men. The reasons for rejection in this study were not defined, however, most dental implant devices have been tested in jaw locations which are defined by bone geometry. Women have smaller, thinner alveolar ridges which may not be suitable for the devices being tested. (8).

Oral cancer is more common than cancer of the cervix or ovary. Oral cancer is associated with smoking or tobacco use. New patterns of smoking suggest that younger cohorts of women will be at increased risk of contracting oral cancer as they become elderly women. Oral cancers have a poor prognosis, with a survival rate at five years of less than 50%. Oral cancers are disfiguring and can result in severe disabilities and malnutrition in survivors.

Oral Manifestations of Systemic Disease

Sometimes, oral symptoms are the prodrome of systemic disease. Below are some examples of systemic diseases which oral health care practitioners recognize and treat or refer.

Anemias can be caused by vitamin B deficiency and by iron deficiency. These vitamin deficiencies are associated with painful oral symptoms.

Multiple myeloma is a devastating plasma cell malignancy which may present as facial pain.

Paget's disease of bone predominately affects the elderly. This progressive disease is characterized by bony deformities which may induce neuropathies by compressing nerves. Paget's disease may present with jaw pain or numbness.

Diabetes mellitus may present with oral mucosal infections, altered taste sensation or complaints of dry or burning mouth. In a study of patients with these symptoms, the frequency of non-insulin dependent diabetes was twice that expected in the general population. (9).

Connective tissue diseases which affect women in greater proportion include *Sjogren's syndrome, systemic lupus erythematosus* and *temporal arteritis* . These disease have oral and orofacial symptoms and may present to either an oral health care practitioner or to a general health care practitioner.

The Traditions of the Oral Health Practitioner Include Prevention and Screening

Oral health practitioners and their Allied Health Professionals have a tradition of providing effective Preventive Health Care. A visit to the dentist usually encompasses a mixture of education, prevention and treatment. Eighty percent of general practitioners are trained to take a comprehensive medical and oral history, blood pressure and any other diagnostic tests which are required for risk assessment prior to the surgical treatments of health care. Preventive counseling highlights caries and periodontal care. However, dental care practitioners also include information on smoking and tobacco cessation (oral cancer risk), and nutrition counseling (caries, alveolar bone loss, anorexia-bulemia-related tooth erosion). In older or more medically compromised populations, dentists are competent to take blood pressures and recommend a physician followup for hypertension control. With the AIDS epidemic, oral manifestations of AIDS in severely immunocompromised medically complex patients are being treated by oral health care practitioners. In hospitals, dentists are an integral part of the transplant team for heart, lung, liver and kidney transplant patients. The oral health care practitioner sees patients when they are well; before the subclinical illness becomes clinically evident and forces the patient to present to a physician. Thus, oral health care practitioners recognize systemic disease manifestations and encourage the patient to consult a physician, realizing an important benefit for the patient.

Oral Health in the Medical Curriculum

While there is considerable overlap in the knowledge base of physicians and oral health practitioners, there are also barriers in the education and training of health care practitioners and oral health care practitioners which limit the integration of oral health care and general health care. A recent survey and report of the medical school curriculum (10) sponsored by PHS, HRSA and ORWH, documented a requirement for instruction in oral health and in women's oral health concerns in only 35% of medical schools surveyed. A complimentary study of the dental school curriculum is in progress, and results will be forthcoming this fall, 1997. The gap in knowledge in oral health means that physicians without special training are not informed about oral disease and are not knowledgeable about the role of oral health practitioners in caring for their shared patients. As a physician

working at this interface of general health and oral health, I am often a practical link between these two worlds. As an example, I would like to share a case with you which illustrates the advantage of integrating oral health care and general health care.

A Case Illustrating Integration of Health Care and Oral Health Care

The patient, Mrs. G. presented to a third year dental student in the Clinic of the School of Dental Medicine. The patient was a 60 year old female with extensive periodontal disease which had led to loss of several teeth. The patient had also been diagnosed with Paget's disease of bone, a localized, benign bone condition which causes bone deformity in the affected bones. Mrs. G. told the dental student that she had been to several dental practitioners asking if she could have dental implants placed. Once her diagnosis of Paget's disease was known, each dental practitioner had told her that dental implants were not possible and that dentures would also be a problem because she had a bone disease. Finally, Mrs. G. ended up at the University Dental Clinic hoping that someone could provide some solution for her tooth loss. The third year student had just finished a research rotation in my laboratory and he knew that my area of clinical expertise was in metabolic bone disease. He refereed the patient to me, asking if there were any contraindications to dental implants or to dentures. The patient had a previous bone scan which did not show any Paget's disease in her maxilla, which was the area where her teeth had been lost. X-rays of the same area did not show any Paget's lesions in her maxilla. I was able to recommend that either dentures or dental implants could be provided for this patient. A week later, the Oral Surgeon who was inserting the implants called and asked if a bone graft from the pelvis could be used to build up the maxilla to house the dental implants. To this, I definitely replied "no", because the pelvic bones from which the graft would be harvested showed evidence of Paget's disease. In theory, use of the pelvic graft material might result in seeding of Paget's disease into the previously unaffected maxillary bone. A heterologous bone graft was used to build up the maxilla for Mrs. G. While this case did not involve a life and death decision for Mrs. G., her quality of life was seriously impaired before there was an effective integration of her oral health care and general health care. The integration in this case was only possible because I was in the oral health care setting, interacting with oral health practitioners. Often, the patient is not able to benefit from this kind of integration. For example, in the university-based clinical setting, where I see patients with osteoporosis and metabolic bone disease, I have seen postmenopausal women with oral symptoms of estrogen deficiency, dry mouth and burning mouth, who have not thought of consulting an oral health care practitioner about their problem, and have been told repeatedly by physicians that they have never heard of such symptoms associated with menopause. I cannot fault the physicians, because I was in the same position as they before I started teaching in the oral health environment.

Implementing Change

The barriers which divide oral health care and general health care for women are being challenged by two approaches. The survey and report of the medical curriculum and the ongoing survey of the dental curriculum should lead to reevaluation of the gaps between the training of health care and oral health care practitioners. One goal should include structuring the respective curricula to provide linkages between the disciplines of medicine and dentistry. Curricula can be designed to decrease the knowledge gaps and to lower

barriers to the practice of integrated care. As far as practice integration is concerned, integrated medical and dental services are now beginning to be offered in some managed care settings. Working together on the same patients should help oral health and health care practitioners achieve better integration of oral health and health care for women.

Recommendations for Oral Health and General Health Care for Postmenopausal and Elderly Women

I will close by recommending specific changes aimed at improving oral health care and the integration of oral health care with general health care. First, I am currently involved as an investigator in an AADS nation-wide survey of the dental curriculum. The object of the survey is to document the inclusion of women's health and oral health issues in dental school curricula. This survey should provide findings complimentary to the Women's Health in the Medical Curriculum: Report of a Survey and Recommendations (4) which was recently completed by the ORWH, PHS and HRSA. With the completion of our survey, the gaps in women's health and oral health care education can be systematically addressed. As a general frame for closing these gaps and implementing specific changes, I suggest the following three recommendations:

- **Improve science transfer/education of the public**

The research community is continually improving the depth and applicability of scientific and medical knowledge, but only a very little of this substance is effectively transmitted to the patient and the public. It is imperative that we impact on the education of practitioners. We should also transmit and translate our findings into the area of continuing medical and dental education, and to the public.

- **Strengthen the linkages between oral health and general health**

My second recommendation would be a plea for research into the feasibility of integrating oral health clinical problem solving into general medical care and involving oral health care practitioners in the general health care setting. This recommendation is similar to the Recommendation 5 from the recent Institute of Medicine Report on Dental Education at the Crossroads (11). Outcome analysis of the impact on clinical care should be followed for both kinds of practitioners to further the effectiveness of this initiative. This translates into more clinical research to support these studies of integrated care. I would recommend the series of short topics on Oral and Dental Problems in the Elderly edited by Bruce Baum in Clinics in Geriatric Medicine as a prototype of this approach. Crosstalk between oral health care practitioners and general health care practitioners should also be fostered in a continuing education environment, or in symposia.

- **Enhance research training opportunities for women as future educators/researchers**

The NIDR Strategic Initiative II includes a specific goal to enhance training and career development programs to attract and retain exceptional individuals in craniofacial, oral and dental research. A subgoal is to facilitate the participation of women, ethic and racial minorities and individuals with disabilities in research. The National Science Foundation

POWRE program is another program aimed at involving women as future educators and researchers. These goals of inclusion of women as leaders in research and education are key to the future of women's health.

Thank you for this opportunity to give testimony. I will close by quoting Dr. C. Everett Coop, "You're not healthy without oral health".

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APPENDIX F

Testimony

Submitted to the

Office of Research on Women's Health

Hearing of November 17, 1997
Bethesda, Maryland

presented by

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My name is Deborah Studen-Pavlovich. I am a pediatric dentist and an associate professor at the University of Pittsburgh, School of Dental Medicine and the Enid Neidle Scholar-in-Residence at the Division of Women and Minority Affairs at the American Association of Dental Schools (AADS). I am pleased to present this testimony to the Office of Research on Women's Health (ORWH) and commend your efforts to expand opportunities for women in biomedical careers through the recruitment, reentry, retention, support, and advancement of women scientists.

The AADS represents all of the nation's 55 dental schools as well as advanced education programs in dental schools and hospitals, and allied dental education programs. It is in these institutions where future dental practitioners, educators, and researchers are trained; significant dental care provided; and the majority of dental research conducted. The AADS is the one national organization that speaks exclusively on behalf of dental education. Identifying and representing women's issues is a priority for the association.

My remarks will focus on the needs of female dental researchers. I will first :

- discuss the difference between dental and medical education followed by
- women's presence in dental school programs, in postgraduate clinical training and research training programs, and in faculty positions.

- Finally, I will provide recommendations by the AADS to support female dental scientists.

Differences Between Dental and Medical Education

Distinct differences exist between dental and medical education, and these differences have significant implications for the training of dentists.

- Unlike medicine, no requirement exists for a dental school graduate to pursue postdoctoral or advanced education. Considering the rigorous dental school curriculum and accumulated debt of dental graduates (Average graduating debt was $75,748 in 1996.[1])*, it is surprising that despite such debt nearly 60 percent of recent graduates enroll in some form of advanced dental education. Annually, approximately 1,500 dentists begin a general dentist residency program and nearly an equal number begin clinical specialty programs.[2]
- If dentists elect to enroll in a research training program, they pursue the program in a period equivalent to a medical residency. This is in contrast to physicians whose research training is a post-residency endeavor. Before the National Research Service Award (NRSA) program, postgraduate training centered around clinical specialty training. Legislation that limits NRSA training to three years of postdoctoral research experience is a significant problem for oral

*Updated figure for 1997 -- $81,688
Survey of Dental School Seniors 1997 Graduating Class. 1998 American Association of Dental Schools.

health research (OHR) scientists. A dentist awarded a training grant seeking a Ph.D. requires more than three years, especially when concomitant clinical training is involved. Recruitment could be increased if the legislated limit were removed.

- Additionally, dentists have a disincentive to pursue training as clinical investigators. Whereas, the physician receives a salary and benefits as a hospital resident and subspecialty fellow, the dentist's similar payment is limited largely to hospital-based training programs in oral surgery or oral pathology. Training in other specialty areas rarely offers compensation and may even require tuition payment.
- Finally, even though the National Institutes of Health (NIH) comprises the largest single source of support for postdoctoral research training of physicians, a variety of private foundations, agencies, and corporate-related organizations fund the training of physician-scientists. **However, the National Institute of Dental Research (NIDR) is the only funding source through its NRSA programs and Dentist-Scientist Awards that support oral health research or training specifically for oral health research.** Continued support of training through NIDR is essential to continued improvement of oral health research scientists.

Women's Presence in Dentistry

Historically, women have been substantially under-represented in the field of dentistry. In 1982, of all of the professionally active dentists, only three percent were women.[3] By 1995, the percentage rose to 12 percent.[3] A critical need for aggressive efforts to increase the number of women in dentistry exists. United States dental schools are working to increase the number of women entering the dental profession. Female enrollment at dental schools continues to grow with the total number of women exceeding 36 percent in 1996.[4] However, women are still a minority on almost every dental campus.

An increase in female enrollment in advanced dental programs is also occurring. Women accounted for 30 percent (1,433 women) of all the dentists in postgraduate training programs.[2] This increasing proportion of female dental postdoctoral students may make it possible for women to acquire a larger share of the faculty positions at US dental schools.

The dilemma of underrepresentation is particularly severe among dental school faculty and administrators. Presently, no woman is the dean of a dental school in any of our 55 institutions. And historically, only one woman has ever held such a position. Only six percent of the department chairs are women.[5] From personal experience, this figure is often inflated.

Exact comparisons of data with other professions are not always consistent because data-reporting methods vary. Nevertheless, overall trends can be seen by the following statistics:

- Of the 178 law schools, 28 percent of the faculty are women, as are 40 percent of the associate professors and 17 percent of the full professors.[6]
- In medicine, 20 percent of the associate professors and 10 percent of the full professors are women.[6]
- At the 55 US dental schools, 15 percent of the associate professors and five percent of the full professors are women.[6] With regard to female faculty, dental schools are clearly lagging behind other professional institutions.

A database on dental educators compiled by the AADS provides the best available information on the oral health research labor force. This database includes all faculty appointments to US dental educational institutions and is updated annually. It includes information on age, gender, race, academic rank, appointment status (full or part-time), academic degrees held, and area of primary appointment. Analysis of this database showed that the average age of oral health research scientists increased from 47.3 to 49.1 years of age from 1986 to 1992.[7] During this same time, the percentage of these scientists who identified their primary appointments as clinical sciences decreased from 44 percent to 36

percent (comparative figure for all full-time faculty is 58 percent).[7] Finally, the portion of these scientists who entered and left was more than one-third of the total. These analyses indicate that oral health research scientists are a somewhat aging group who leave dental education and contribute to an acute shortage of dental educators and oral health researchers.

The most recent data for fiscal year 1993 (1992 for trainees) indicate that, overall, the success rate for competing research project grants (RO1 and FIRST awards) has been declining. The success rate for both women and men was 18 percent, although for renewal applications it was 40.2 percent for men and 38.4 percent for women.[8] In fiscal year 1993, 16.4 percent of research grant dollars went to women, compared with 10.2 percent in 1984.[8] However, total dollar amounts of competing and non-competing grant awards to women are significantly less than those for men. **Of particular concern to the AADS is the fact that the success rate for competing research projects is lowest for women at the NIDR as compared with all other institutes at the NIH.**

Success rates for funded grants are higher among scientists with a dental degree and a Ph.D. Therefore, special initiatives are needed to allow women to enter these research training opportunities so they can approach the level of their male counterparts. **An alarming shortage of research-trained, full-time female dental faculty exists at our dental schools.** To alleviate these shortages, enhanced resources and cooperation and collaboration between institutions and

need to occur if we are to improve the oral health of the American people as mandated by Congress for the twenty first century.

Recommendations

To meet current and anticipated needs form qualified female dental researchers in academic dentistry, our organization recommends the following:

- Stimulate interest in dental careers among young women through specific outreach programs, starting in the elementary school years with increasing emphasis through high school and college.
- Establish research mentoring programs in magnet high schools for female students to be linked with university researchers.
- Expand the clinical research fellowship program to train women dentists to research expertise level to investigate clinical areas such as epidemiology, behavioral medicine, and health services research. The NIH study sections are so focused on basic sciences that a new section needs to be formed that would focus on clinical areas of oral health research.
- Increase the number of positions in the five year Dentist-Scientist Award program and the NRSA training and fellowship programs to accommodate the increasing pool of women dental school graduates interested in research careers.
- Expand mentoring program along with short-term experiences to assure to develop long-term interest and contact with potential oral health researchers.

- Increase the number of positions in the five year Dentist-Scientist Award program and the NRSA training and fellowship programs to accommodate the increasing pool of women dental school graduates interested in research careers.
- Expand short-term research experiences (T-35 mechanism) to attract female dental students into research careers. Explore whether this mechanism can be extended to retraining and/or re-entry. Currently, this mechanism is limited to four percent of NRSA funds.
- Develop research grants for other advanced dental education programs such as pediatric dentistry, periodontology, orthodontics, or any of the other specialties (Most grants cover oral and maxillofacial surgery and oral pathology positions.). This should establish and strengthen research training capabilities in all of the specialty areas.
- Provide supplemental research opportunities at a critical career stage (for example, a career interruption to accommodate family responsibilities or relocation requirements). These supplements would be designed to support women dental scientists who had demonstrated excellent research potential, but interrupted their careers for family care responsibilities. Such grants would allow re-entry candidates to update their skills and advance toward becoming independent investigators.

The American Association of Dental Schools thanks you for this opportunity to provide testimony to the Office of Research on Women's Health. We encourage you to support programs for women to achieve career goals in dentistry and oral health research.

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APPENDIX G

PLANNING COMMITTEE: International Women's Leadership Conference Cannes/Mandelieu, France June 20-22, 1998

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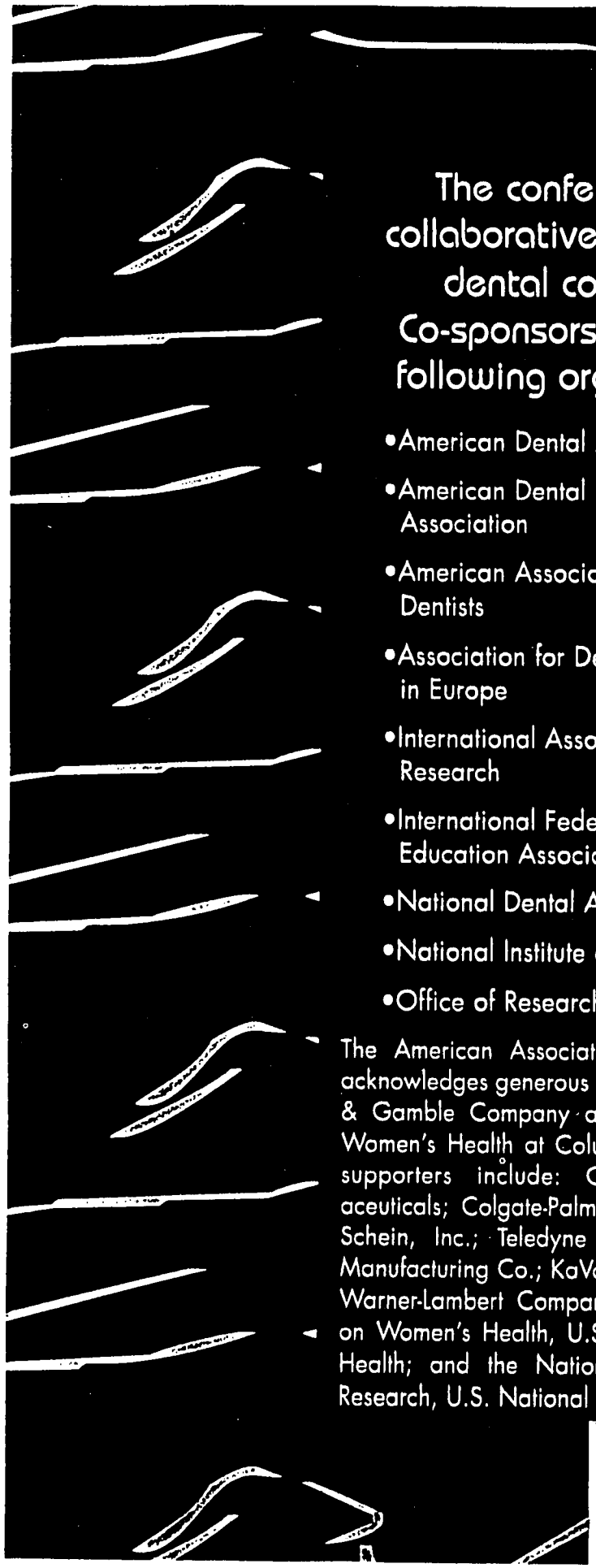

The conference is a collaborative effort in the dental community. Co-sponsors include the following organizations:

- American Dental Association
- American Dental Hygienists' Association
- American Association of Women Dentists
- Association for Dental Education in Europe
- International Association of Dental Research
- International Federation of Dental Education Associations
- National Dental Association
- National Institute of Dental Research
- Office of Research on Women's Health

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APPENDIX H

	WHITE		BLACK		HISPANIC		NATIVE AMERICAN		ASIAN		NOT SPECIFIED		COMBINED		
DENTAL SCHOOL	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE	TOTAL
ALABAMA	143	56	2	5	1	2	1	1	9	7	0	0	156	71	227
PACIFIC	173	81	1	1	2	3	0	0	83	68	8	11	267	164	431
CALIF. S.F.	63	39	6	4	20	17	1	1	90	85	0	0	180	146	326
CALIF. L.A.	64	55	1	2	12	9	1	0	136	85	4	1	218	152	370
S. CALIF.	170	87	6	4	11	4	0	1	213	118	0	0	400	214	614
LOMA LINDA	109	30	4	5	7	5	2	0	112	56	0	0	234	96	330
COLORADO	85	25	0	1	10	2	1	0	10	8	0	0	106	36	142
CONNECTICUT	82	55	3	3	6	1	0	0	11	8	0	0	102	67	169
HOWARD	37	16	78	114	7	9	2	0	19	21	0	0	143	160	303
FLORIDA	169	57	5	7	17	23	1	0	20	17	0	1	212	105	317
NOVA SE	51	17	0	1	7	9	1	0	13	13	0	0	72	40	112
GEORGIA	134	48	6	10	0	0	1	0	6	12	2	0	149	70	219
NORTHWESTERN	105	41	0	1	3	3	0	0	63	44	21	23	192	112	304
SO. ILLINOIS	131	39	5	4	2	1	3	0	5	8	10	3	156	55	211
ILLINOIS	101	63	0	6	6	4	0	1	39	32	0	0	146	106	252
INDIANA	231	86	4	4	2	3	1	0	22	33	0	0	260	126	386
IOWA	157	80	4	7	11	4	5	0	10	7	0	0	187	98	285
KENTUCKY	104	63	3	6	1	1	1	1	5	9	0	0	114	80	194
LOUISVILLE	172	80	4	7	3	0	0	1	5	7	0	0	184	95	279
LOUISIANA	137	59	3	1	2	2	0	0	9	5	0	0	151	67	218
MARYLAND	149	87	16	30	8	5	0	0	54	42	0	0	227	164	391
HARVARD	40	29	2	1	4	2	0	0	23	42	0	2	69	76	145
BOSTON	105	64	6	5	12	10	0	0	98	69	33	34	254	182	436
TUFTS	205	154	4	3	8	9	0	0	143	86	0	0	360	252	612
DETROIT-MERCY	141	83	5	16	0	4	1	0	17	18	0	0	164	121	285
MICHIGAN	140	111	15	18	9	9	2	1	39	52	2	0	207	191	398
MINNESOTA	188	99	1	0	1	1	0	1	13	11	5	2	208	114	322
MISSISSIPPI	73	35	6	5	0	0	0	0	1	0	0	0	80	40	120
MISSOURI K.C.	163	70	8	14	7	4	4	2	19	21	0	0	201	111	312
CREIGHTON	204	74	3	4	3	3	3	0	16	18	2	1	231	100	331
NEBRASKA	120	46	0	0	1	2	1	0	1	0	0	0	123	48	171
NEW JERSEY	129	77	9	22	8	17	2	0	18	15	0	0	166	131	297
COLUMBIA	67	30	1	4	3	1	0	0	103	71	0	3	174	109	283
NEW YORK	437	305	10	11	20	23	0	1	195	161	0	2	662	503	1165
STONY BROOK	67	57	1	0	0	4	0	0	6	10	0	0	74	71	145
BUFFALO	199	65	1	2	1	4	0	0	32	21	13	3	246	95	341
N. CAROLINA	146	101	10	14	3	5	1	2	11	11	0	0	171	133	304
OHIO	225	90	4	2	3	1	0	0	38	18	0	0	270	111	381
CASE WESTERN	135	37	0	2	1	2	0	0	40	33	3	8	179	82	261
OKLAHOMA	114	48	2	1	2	2	21	6	10	9	1	0	150	66	216
OREGON	178	60	1	1	2	1	1	0	19	18	0	0	201	80	281
TEMPLE	194	82	10	13	16	8	2	0	80	47	0	0	302	150	452
PENNSYLVANIA	173	120	3	7	9	7	0	0	63	46	0	0	248	180	428
PITTSBURGH	177	94	6	8	2	3	0	0	24	12	4	5	213	122	335
S. CAROLINA	143	38	4	3	0	1	2	1	4	7	0	0	153	50	203
MEHARRY	10	6	76	90	2	2	2	0	17	5	0	0	107	103	210
TENNESSEE	217	50	8	8	3	2	1	0	6	8	0	0	235	68	303
BAYLOR	147	77	6	10	18	12	0	3	42	41	0	0	213	143	356
TEXAS, HOUSTON	80	59	0	6	8	7	0	0	51	35	0	0	139	107	246
TEXAS S.A.	151	79	4	3	25	23	3	0	30	33	0	0	213	138	351
VIRGINIA	184	63	5	6	1	2	0	1	20	31	0	0	210	103	313
WASH. SEATTLE	89	34	2	3	6	1	2	1	34	37	1	0	134	76	210
W. VIRGINIA	102	31	2	0	2	0	0	0	10	6	0	0	116	37	153
MARQUETTE	139	57	8	4	19	13	1	1	27	15	0	0	194	90	284
PUERTO RICO	0	0	0	0	85	111	0	0	0	0	0	0	85	111	196
TOTAL	7449	3589	374	509	422	403	70	26	2184	1692	109	99	10608	6318	16926
US TOTAL BY ETHNIC/RACE		11038		883		825		96		3876		208			
% OF TOTAL ENROLLMENT		65.21328		5.2168262		4.874158		0.567175		22.89968		1.228879			

Source: ADA, Division of Education

APPENDIX I

AADS Survey of Dental Educators 1997-98

Number of U.S. Dental School Faculty by Employment Status, Gender, Ethnic Identity, and Academic Rank

Status	Gender	Ethnic ID	Academic Rank									Total
			Prof.	Assoc. Prof.	Asst. Prof.	Instr.	Lect.	TRA	Other	N/R	Prof. Emris.	
Full-time			1624	1656	1383	231	33	77	106	3	11	5124
	Male		1476	1311	922	128	17	42	63	3	10	3972
		Native	9	9	11	1		1	1			32
		Asian	67	86	78	12	3	10	7		1	264
		Black	35	51	54	10	1		3			154
		Hisp	34	35	34	5		1	1			110
		White	1306	1106	724	99	13	28	50	3	9	3338
		Other	25	24	21	1		2	1			74
	Female		148	345	461	103	16	35	43		1	1152
		Native	1	2	4	2		1	1			11
		Asian	4	20	48	9	3	11	10			105
		Black	4	27	32	13						76
		Hisp	7	17	22	5		1				52
		White	130	274	348	72	12	21	32		1	890
		Other	2	5	7	2	1	1				18
Part-time			551	1076	2508	1342	250	348	346	1	68	6490
	Male		531	964	1964	859	192	252	279		65	5106
		Native	1	3	8	7						19
		Asian	18	47	115	76	25	22	11		2	316
		Black	11	24	54	32	1	2	6			130
		Hisp	9	27	71	21	6	4	4		1	143
		White	486	853	1699	718	155	222	258		62	4453
		Other	6	10	17	5	5	2				45
	Female		20	112	543	479	58	96	67	1	3	1379
		Native			1				1			2
		Asian		3	74	42	5	14	10			148
		Black	2	8	27	23	1	1	2			64
		Hisp		9	41	20	4	8	2			84
		White	18	90	393	387	44	73	51	1	3	1060
		Other		2	7	7	4		1			21
	Unknown				1	4						5
		Asian				2						2
		White			1	2						3
Unknown			2	3	2	3	1					11
	Male		2	3	1	3	1					10
		Asian					1					1
		White	2	3	1	3						9
	Female				1							1
		Asian			1							1
		White										

APPENDIX J

DENTAL CURRICULUM QUESTIONNAIRE

*Name of institution*_____

*Information provided by*_____

General questions:

Does your school have an office / program responsible for coordinating and monitoring the integration of women's health and gender-related issues into the curriculum? If yes, please, describe on a separate page.

_____Yes _____No _____Unknown

Does your school have a mechanism to assist faculty in increasing their competence in women's health and in incorporating women's health and gender-related issues into their teaching? If yes, please describe on a separate page.

_____Yes _____No _____Unknown

Please use the following descriptive categories to indicate how each of the following topics is included in your curriculum.

Descriptive categories:

- as part of an existing required course (=PR) or as a separate required course (=R) or elective (=E); (No = not offered).
- where in the dental curriculum is the topic taught; (1=first year; 2=second year; 3=third year; 4=fourth year).
- the format in which the information is presented; (L=lecture; SG=small group/conference; LB=laboratory; CB=case based; T=tutorial; Other/please list).
- the disciplines involved (please list).
- the method of assessment used for the topic; (MCQ= multiple choice questions; Oral=oral examination; OB=observation; OSCE=objective structured clinical exam; Other / please list).

1. General themes:	*Required/ Elective PR/R/E*	*Academic Period 1/2/3/4*	*Format L/SG/LB/ CB/T/O*	*Disciplines involved (list)*	*Assessment MCQ/O/OB/ OSCE*
The impact of gender on health issues across the life stages	_____	_____	_____	_____	_____
The impact of gender on oral health issues across the life stages	_____	_____	_____	_____	_____
The impact of race/ethnicity/ culture on health status, health beliefs and behaviors & health care utilization	_____	_____	_____	_____	_____
The impact of race/ethnicity/ culture on oral health status, oral health beliefs and behaviors & oral health care utilization	_____	_____	_____	_____	_____
The impact of poverty/socio-economic status on health status and access to health care	_____	_____	_____	_____	_____
The impact of poverty/socio-economic status on oral health status and access to oral health care	_____	_____	_____	_____	_____

2. Biological considerations:	*Required/ Elective PR/R/E*	*Academic Period 1/2/3/4*	*Format L/SG/LB/ CB/T/O*	*Disciplines involved (list)*	*Assessment MCQ/O/OB/ OSCE*
Normal & abnormal female anatomy	_____	_____	_____	_____	_____
Female reproductive biology	_____	_____	_____	_____	_____
Normal and abnormal female physiology	_____	_____	_____	_____	_____
Pharmacokinetics of drugs in women	_____	_____	_____	_____	_____
Gender differences in the pathogenesis of disease and disease mechanisms	_____	_____	_____	_____	_____
Gender differences in the pathogenesis of oral disease and oral disease mechanisms	_____	_____	_____	_____	_____

	Required/ Elective PR/R/E	*Academic Period 1/2/3/4*	*Format L/SG/LB/ CB/T/O*	*Disciplines involved (list)*	*Assessment MCQ/O/OB/ OSCE*
Gender differences in the epidemiology of disease and disease rates	_____	_____	_____	_____	_____
Gender differences in the epidemiology of oral disease and oral disease rates	_____	_____	_____	_____	_____
Gender differences in the aging process	_____	_____	_____	_____	_____
Oral health concerns in women across life stages	_____	_____	_____	_____	_____
3. Developmental and psychosocial issues:	***Required/ Elective PR/R/E***	***Academic Period 1/2/3/4***	***Format L/SG/LB/ CB/T/O***	***Disciplines involved (list)***	***Assessment MCQ/O/OB/ OSCE***
Pubertal development & changing health issues in young women	_____	_____	_____	_____	_____
Oral health issues in puberty & in young women	_____	_____	_____	_____	_____
Gender identification and sexual orientation	_____	_____	_____	_____	_____
Psychological effects of major changes in reproductive hormones:					
Puberty	_____	_____	_____	_____	_____
Pregnancy	_____	_____	_____	_____	_____
Peri/post menopause	_____	_____	_____	_____	_____
Pubertal oral health issues	_____	_____	_____	_____	_____
Oral health issues during pregnancy	_____	_____	_____	_____	_____
Perimenopausal oral health issues	_____	_____	_____	_____	_____
Menopausal oral health issues	_____	_____	_____	_____	_____
Postmenopausal oral health issues	_____	_____	_____	_____	_____

	Required/ Elective PR/R/E	*Academic Period 1/2/3/4*	*Format L/SG/LB/ CB/T/O*	*Disciplines involved (list)*	*Assessment MCQ/O/OB/ OSCE*
Impact of societal role expectations on women's health	_____	_____	_____	_____	_____
Effect of the aging population on oral health care needs & services	_____	_____	_____	_____	_____
Health and oral health consequences of trauma experienced by women:					
Childhood sexual/ physical abuse	_____	_____	_____	_____	_____
Domestic violence	_____	_____	_____	_____	_____
Rape/other criminal victimization	_____	_____	_____	_____	_____
Elder abuse	_____	_____	_____	_____	_____
Influence of gender on the following conditions:					
Anxiety disorders (panic/phobia)	_____	_____	_____	_____	_____
Depressive syndrome	_____	_____	_____	_____	_____
Eating behaviors/ disorders	_____	_____	_____	_____	_____
Addictive behaviors/ disorders	_____	_____	_____	_____	_____
Impact of anxiety disorders on oral health and oral health care utilization	_____	_____	_____	_____	_____
Impact of depressive syndrome on oral health and oral health care utilization	_____	_____	_____	_____	_____
Impact of eating behaviors/ disorders on oral health and oral health care utilization	_____	_____	_____	_____	_____
Impact of addictive behaviors/ disorders on oral health and oral health care utilization	_____	_____	_____	_____	_____

4. Approaches to health behavior/health promotion in women:	***Required/ Elective PR/R/E***	***Academic Period 1/2/3/4***	***Format L/SG/LB/ CB/T/O***	***Disciplines involved (list)***	***Assessment MCQ/O/OB/ OSCE***
Adaptation to stress	_____	_____	_____	_____	_____
Physical fitness & weight management	_____	_____	_____	_____	_____
Nutrition	_____	_____	_____	_____	_____
Intentional and unintentional injuries	_____	_____	_____	_____	_____
Smoking initiation and cessation	_____	_____	_____	_____	_____
Alcohol/other substances use/abuse	_____	_____	_____	_____	_____
Cancer prevention & screening	_____	_____	_____	_____	_____
Oral cancer prevention & screening	_____	_____	_____	_____	_____
Cardiovascular risk prevention & screening	_____	_____	_____	_____	_____
Caries risk & prevention	_____	_____	_____	_____	_____
Periodontal disease risk & prevention	_____	_____	_____	_____	_____
Oral self-care assessment & behavior modification	_____	_____	_____	_____	_____
Occupational/environmental health hazards	_____	_____	_____	_____	_____

5. Sexual and Reproductive Function:	***Required/ Elective PR/R/E***	***Academic Period 1/2/3/4***	***Format L/SG/LB/ CB/T/O***	***Disciplines involved (list)***	***Assessment MCQ/O/OB/ OSCE***
Normal menstruation	_____	_____	_____	_____	_____
Pre-menstrual syndrome	_____	_____	_____	_____	_____
Dysmenorrhea	_____	_____	_____	_____	_____
Adolescent pregnancy and parenting	_____	_____	_____	_____	_____

	Required/ Elective PR/R/E	*Academic Period 1/2/3/4*	*Format L/SG/LB/ CB/T/O*	*Disciplines involved (list)*	*Assessment MCQ/O/OB/ OSCE*
Effects of maternal health & health practices on the health of the fetus and newborn	_____	_____	_____	_____	_____
Consequences of surgical/ natural menopause	_____	_____	_____	_____	_____
Risks/benefits of hormone-replacement therapy	_____	_____	_____	_____	_____
Female sexuality	_____	_____	_____	_____	_____
Sexual dysfunction	_____	_____	_____	_____	_____
6. Etiology, prevalence, course,treatment & prevention of the following conditions/disorders in women:	***Required/ Elective PR/R/E***	***Academic Period 1/2/3/4***	***Format L/SG/LB/ CB/T/O***	***Disciplines involved (list)***	***Assessment MCQ/O/OB/ OSCE***
Breast cancer	_____	_____	_____	_____	_____
Pelvic inflammatory disease	_____	_____	_____	_____	_____
Cervical dysplasia/cancer	_____	_____	_____	_____	_____
Coronary artery disease	_____	_____	_____	_____	_____
Stroke syndrome	_____	_____	_____	_____	_____
Hypertension	_____	_____	_____	_____	_____
Diabetes	_____	_____	_____	_____	_____
Obesity	_____	_____	_____	_____	_____
Lipoprotein disorders	_____	_____	_____	_____	_____
Lung cancer	_____	_____	_____	_____	_____
Oral cancer	_____	_____	_____	_____	_____
HIV and related disorders	_____	_____	_____	_____	_____
Sexually transmitted diseases	_____	_____	_____	_____	_____

	Required/ Elective PR/R/E	*Academic Period 1/2/3/4*	*Format L/SG/LB/ CB/T/O*	*Disciplines involved (list)*	*Assessment MCQ/O/OB/ OSCE*
Immunologic diseases:					
Systemic Lupus Erythematosis					
Scleroderma					
Sjorgren's syndrome					
Rheumatoid arthritis					
Thyroid disorders					
Pemphigoid, pemphigus					
Osteoporosis					
Migraine/other headache disorders					
Temporomandibular joint disease					
Dental implants					
Dentures					
Periodontal disease & tooth loss					
Alveolar bone loss in postmenopausal women					
Fibromyalgia					
Chronic fatigue syndrome					
Alzheimer's disease					
Anemia					

7. Impact of the use of the following medications (Rx & OTC):	*Required/ Elective PR/R/E*	*Academic Period 1/2/3/4*	*Format L/SG/LB/ CB/T/O*	*Disciplines involved (list)*	*Assessment MCQ/O/OB/ OSCE*
Contraceptives	_____	_____	_____	_____	_____
Antihypertensives	_____	_____	_____	_____	_____
Antianxiety	_____	_____	_____	_____	_____
Tranquilizers	_____	_____	_____	_____	_____
Antibiotics	_____	_____	_____	_____	_____
Dietary supplements	_____	_____	_____	_____	_____
Weight control	_____	_____	_____	_____	_____
8. History, physical examination & patient communication skills:	*Required/ Elective PR/R/E*	*Academic Period 1/2/3/4*	*Format L/SG/LB/ CB/T/O*	*Disciplines involved (list)*	*Assessment MCQ/O/OB/ OSCE*
Taking a complete medical and medication history including sexual and reproductive history	_____	_____	_____	_____	_____
Taking an appropriate medical and medication history	_____	_____	_____	_____	_____
Taking a complete dental history	_____	_____	_____	_____	_____
Obtaining a history of traumatic events (i.e., domestic violence, rape, incest)	_____	_____	_____	_____	_____
Understanding how gender/ cultural background influence the patient/doctor relationship	_____	_____	_____	_____	_____
Understanding how gender role expectations influence treatment planning & oral health behaviors	_____	_____	_____	_____	_____
Understanding the influence of violence and abuse on medical and dental history	_____	_____	_____	_____	_____
Understanding the influence of violence and abuse on dental fear / phobia	_____	_____	_____	_____	_____

	Required/ Elective PR/R/E	*Academic Period 1/2/3/4*	*Format L/SG/LB/ CB/T/O*	*Disciplines involved (list)*	*Assessment MCQ/O/OB/ OSCE*
Understanding the impact of esthetic concerns on treatment planning	_____	_____	_____	_____	_____
HIV testing and counseling	_____	_____	_____	_____	_____
Counseling concerned with dentures versus dental implants	_____	_____	_____	_____	_____
Oral health promotion	_____	_____	_____	_____	_____

9. Selected topics:	*Required/ Elective PR/R/E*	*Academic Period 1/2/3/4*	*Format L/SG/LB/ CB/T/O*	*Disciplines involved (list)*	*Assessment MCQ/O/OB/ OSCE*
Women's health issues within & across ethnic groups	_____	_____	_____	_____	_____
Women's oral health issues within & across ethnic groups	_____	_____	_____	_____	_____
Health issues of elderly women	_____	_____	_____	_____	_____
Oral health issues of elderly women	_____	_____	_____	_____	_____
Lesbian health issues	_____	_____	_____	_____	_____
Health consequences of disabilities in women	_____	_____	_____	_____	_____
Oral health consequences of disabilities in women	_____	_____	_____	_____	_____
Women's oral health issues	_____	_____	_____	_____	_____
Gender differences in medical/ dental decision making	_____	_____	_____	_____	_____
Gender-specific communication styles	_____	_____	_____	_____	_____
Effects of gender discrimination and sexual harassment	_____	_____	_____	_____	_____
Legal/ethical issues in women's health	_____	_____	_____	_____	_____

General questions:

How much do you agree / disagree with the following statements on a scale from 1=disagree strongly to 5= agree strongly?

	strongly disagree				strongly agree
Educating future dental health care providers about women's health issues is important.	1	2	3	4	5
Educating future dental health care providers about women's health issues is a neglected topic in **our school's** curriculum.	1	2	3	4	5
Overall, dental schools do not address women's health issues in their curricula.	1	2	3	4	5
Educating future dental health care providers about women's health issues would contribute to their future professional effectiveness.	1	2	3	4	5
Future curriculum changes will aim at increasing the coverage of women's health issues in **our school**'s curriculum.	1	2	3	4	5
As more women enter the dental profession, women's health issues will receive more attention.	1	2	3	4	5
Major efforts will be made to increase the coverage of women's health issues in **our school's** curriculum.	1	2	3	4	5

Any additional comments?

April 28, 1997

Dean Name and Address

Dear Dean:

During the past few years, there has been an increasing concern on the part of U.S. Congress regarding the adequacy of academic and clinical training in women's health in the education of health professionals. This concern resulted in a mandate to federal agencies to collaborate with the Association of American Medical Colleges (AAMC) and others on a study to determine the extent to which women's health is addressed in the medical school curriculum.

The results of the medical school curriculum survey were included in a 1996 report: *Women's Health in the Medical School Curriculum: Report of a Survey and Recommendations*. The survey findings showed that women's oral health is taught as a required course in only 9% of medical schools and not offered in 69%. The AADS contributed to this project by writing a short section on women's oral health and drafting several questions for the medical curriculum survey.

A comparable survey of women's health issues has not been conducted in dental education. The AADS acknowledges the importance of educating dentists about the health and healthcare of both men and women. In view of the high level of interest related to women's health, the AADS is undertaking the responsibility for conducting the required survey to collect dental school data. There is very little information on how women's oral health is addressed in dental school curricula. We view this as an opportunity to document the state of dental school curricula relative to women's health.

The enclosed questionnaire is patterned after the Association of American Medical College's medical curriculum survey to allow comparison between medical and dental curricula. Collected information will be aggregated to maintain individual confidentiality. The aggregated data will be unrestricted.

Drs. Lisa Tedesco and Marita Inglehart (University of Michigan) and Dr. Susan Silverton (University of Pennsylvania) will work with AADS Staff in the data analysis and reporting.

Your participation is critical to the success of this information-gathering effort and to assure that the report reflects correct information. We expect to have this survey completed in time to be reported in June, 1998 and for use in ensuring that women's health is appropriately addressed in dental education.

Please have the individual who is responsible for this aspect of your curriculum complete this survey. In addition to the survey, we are requesting course and reference materials that could be incorporated in an appendix to the report.

If you have any questions concerning this questionnaire, they may be directed to: Dr. Susan Silverton at 215/898-6577 or Dr. Jeanne C. Sinkford at 202/667-9433 ext. 156.

We thank you in advance for your cooperation. **Please Return (by mail or fax) the Completed Questionnaire by June 20, 1997 to:**

Jeanne C. Sinkford
Assistant Executive Director, Women and Minority Affairs
AADS
1625 Massachusetts Avenue, NW
Washington, DC 20036-2212
FAX: 202/667-0642

Sincerely,

Jeanne C. Sinkford, D.D.S., Ph.D.
Assistant Executive Director
Division of Women and Minority Affairs

APPENDIX K

List of Dental Schools in the order as the questionnaire was received

Univ. of California	1
Univ. of Illinois	2
Medical University of South Carolina	3
UMDNJ- N.J. Dental School	4
U of Florida College	5
Univ. of Nebraska Medical Center	6
Univ. of Maryland	7
Univ. of Minnesota	8
Univ. of the Pacific	9
Medical College of Georgia	10
Lousiana State Univ.	11
Univ. of Saskatchewan	12
UT Houston Dental Branch	13
Harvard School of Dentistry	14
Univ. of Pennsylvania	15
Boston University	16
University of Tennessee	17
UBC	18
University of Missouri	19
VCU-MCV School of Dentistry	20
Alabama	21
University of MS School	22
Marquette University	23
Louisville	24
Univ. of Kentucky College of Dentistry	25
Ohio State University	26
U of Washington	27
U of Colorado	28
U of Southern California	29
UCLA	30
U of Oklahoma	31
West Virginia University	32
Creighton University	33
Howard University	34
Meharry Medical College	35
University of Iowa	36
Baylor College of Dentistry	37
University of Michigan	38
Univérsite Laval	39
Oregon Health Science	40
University of Manitoba	41
Columbia University	42
Case Western Reserve	43
Northwestern University	44
University of North Carolina	45
University of Pittsburgh	46
Univ. of Texas Health Science Center	47
Temple University	48
Tufts University	49
Indiana University	50
Loma Linda	missing
University of Connecticut	missing
University of Detroit Mercy	53
New York University	54
SUNY Buffalo	missing
SUNY Stony Brook	56
University of Puerto Rico	57
Southern Illinois	58
Dalhousie University	59

APPENDIX L

WOMEN'S HEALTH RESEARCH
FY 1995-1996
NATIONAL INSTITUTE OF DENTAL RESEARCH

EXECUTIVE SUMMARY

The mission of the National Institute of Dental Research (NIDR) is to improve and promote craniofacial, oral and dental health. Research areas that highlight issues of special interest to women include the study of periodontal disease and its role in the birth of premature, low birth weight infants; gender differences in response to certain pain medications; methods for regenerating bone weakened by osteoporosis; and an anti-HIV protein in human saliva.

Researchers, who are part of a recently established consortia to promote the study of minority oral health problems and offer research training to minority researchers, have demonstrated a preliminary link between periodontal disease and the delivery of preterm, low birth weight (PLBW) infants. The research team worked with pregnant women attending a high-risk obstetrical clinic where the incidence of periodontal disease was quite high. Periodontal disease is an inflammatory condition caused by bacteria that affects the gums. Eventually, tooth-supporting bone is damaged and teeth are lost. Recent epidemiological studies have shown that fifty-five percent of females between the ages of 20-24 years of age have periodontal disease. Within the small research population of pregnant women, the investigators found that women who had evidence of periodontal disease were 7.5 times more likely to deliver PLBW babies. Thirty-three percent of the study population were black and 67 percent were white; however, of the PLBW mothers, 45 percent were black and 55 percent were white. In an attempt to establish a definitive link between periodontal disease and PLBW, the NIDR is planning a follow-up study of 2500 patients where other obstetric risk factors, such as tobacco exposure, substance abuse and presence of vaginal pathogens are measured.

NIDR investigators have been active contributors to pain research. This year, interest in the diverse nature of pain research lead the Director, NIH, to establish the NIH Pain Research Consortium co-directed by the NIDR Director, Dr. Harold Slavkin and Dr. Zach Hall, Director of the National Institute of Neurological Disorders and Stroke. The Consortium will promote information exchange and collaboration among the NIH institutes, beginning with a major conference planned for the Fall of 1997. Recent discoveries in the field of pain research are beginning to highlight the differences between men and women. For example, NIDR-supported research has shown that hormone replacement therapy in women may be associated with referral for treatment of temporomandibular disorders. In addition, investigators have recently discovered evidence that women may experience pain relief differently than men. A class of drugs, kappa-opioids, that until now have been considered less effective than mu-opioids, such as morphine, codeine and methadone, have been shown by these investigators to be highly effective in women. This was not discovered earlier because kappa-opioids were studied primarily in

men and male rats where the analgesic effect is weak. This discovery provides impetus for pain researchers to study the putative differences between men's and women's pain mechanisms and search for safe and effective medication with an eye to gender.

NIDR intramural scientists, who are responsible for the design of procedures that allow for the isolation and study of bone-forming osteoblasts, are now using these techniques to harvest osteoblast precursors called marrow stromal fibroblasts (MSFs) from normal human volunteers and growing them in vitro. When the MSFs are implanted in immunosuppressed mice, they grow new bone. In the latest development, these researchers have succeeded in devising a methodology that allows for the consistent, in vivo generation of extensive bone from human MSFs in a mouse model. Under special conditions, bone and blood-forming marrow were generated throughout an implant within 48 hours. This line of research, when refined, could lead directly to methods to regenerate bone weakened by osteoporosis throughout the skeleton.

Immunodeficiency virus (HIV) and the resulting Acquired Immunodeficiency Syndrome (AIDS) has spread to all segments of the population. Over twenty-one million people are living with HIV/AIDS worldwide; forty-two percent of them are women, and this population is growing. In 1995, NIDR intramural scientists identified a protein in human saliva--secretory leukocyte protease inhibitor (SLPI)--that blocks HIV infection of human salivary gland cells in vitro. While there was no evidence of viral reproduction in the saliva-producing acinar cells where SLPI is secreted, there was viral activity in the lymphocytes found in the connective tissues surrounding the gland where there is no SLPI. This finding helps explain why HIV does not appear to be spread by saliva even though the virus was identified in thirty percent of the salivary glands examined. NIDR researchers now are investigating the role and presence of SLPI in other excretions, such as breast milk.

WOMEN'S HEALTH RESEARCH
FY 1995-1996
NATIONAL INSTITUTE OF DENTAL RESEARCH

The mission of the National Institute of Dental Research (NIDR) is to improve and promote craniofacial, oral and dental health. To further our mission we support research and training in normal development as well as in diseases and disorders that affect the tissues in and around the craniofacial-oral-dental complex. The scope of NIDR research thus includes development and molecular biology and inherited disease; oral cancers; infectious diseases (including AIDS); and chronic and disabling disorders, such as bone and joint diseases and neurological and neurosensory disorders, with particular emphasis on chronic pain. Our commitment to the fundamental study of the body's hard tissues--teeth, cartilage and bone--has led to advances in biomaterials research and to the emerging fields of tissue engineering and "biomimetics"--which exploit the body's own cellular and molecular processes to repair and regenerate tissues and organs. Recognizing that disease occurs in the context of personal behaviors and environmental factors, the Institute has long emphasized the importance of behavioral, social science and epidemiological research. Accomplishments that affect women in particular are to be found within many of these broad research categories.

Accomplishments

Oral Health Research

Periodontal Disease and Premature, Low Birth Weight Infants. NIDR supports four research consortia--Regional Research Centers in Minority Oral Health (RRCMOH)--designed to link research-intensive institutions with institutions that serve large minority populations and/or that train students who are predominantly drawn from racial or ethnic minority populations. These consortia provide opportunities for research on minority oral health problems and research training for minority students. In addition, funding from the National Center for Research Resources is providing support for research faculty development. One such consortia--Meharry Medical College/University of Alabama at Birmingham School of Dentistry--is collaborating with the University of North Carolina at Chapel Hill. This team of researchers, working with women attending a high-risk obstetrical clinic, demonstrated a preliminary link between the many cases of periodontal disease in the clinic and premature, low birth weight (PLBW) infants. Periodontal disease is a bacterial infection of the gums that causes painful inflammation and eventual loss of tooth-supporting bone. Recent epidemiological studies indicate that fifty-five percent of females between the ages of 20-24 years of age have periodontal disease. The RRCMOH study included 124 women (33 percent black, 67 percent white) who were pregnant or had recently delivered. The investigators found that women who had periodontal disease were 7.5 times more likely to have PLBW babies than women without the disease (within the PLBW mothers, 45 percent were black and 55 percent were white). While the study found a statistically significant association between periodontal disease and

PLBW in this small population, it does not necessarily mean that gum infections cause premature births. NIDR is planning a follow-up study on more than 2500 patients to determine whether the association with periodontitis persists when more extensive measures of periodontal disease and oral pathogens are analyzed in the context of other obstetric risk factors, e.g., smoke exposure, substance abuse, vaginal pathogens, sociobehavioral and demographic data.

Pain Research

NIDR has had a long-standing interest in pain research dating back to 1977 when the first training grant for clinical research on chronic pain was awarded. In 1983, the Institute established a multi-disciplinary Pain Research Clinic in the NIH Clinical Center where today a variety of pain conditions (acute and chronic) are studied. The Institute's interest in pain continues to grow and broaden as is exemplified in the list of initiatives and conferences/workshops listed below and in its growing portfolio. Pain issues of special interest to women are currently commanding more attention. Temporomandibular disorders (TMDs) and how women experience pain differently than men are two areas of study supported by the NIDR.

Tran-NIH Pain Research Consortium. Given the NIDR's growing pain portfolio and that of other NIH institutes, the NIH Director, Dr. Harold Varmus, established a trans-NIH Pain Research Consortium. The Consortium will encourage information sharing and collaborative research efforts, provide coordination of pain research across all NIH components and ensure that the results of NIH-supported pain research are widely communicated. It also will seek opinions and advice both from other Federal agencies involved in studies of pain and from non-Government organizations interested in pain research. The NIDR Director, Dr. Harold Slavkin, will co-chair the initiative along with Dr. Zach Hall, Director, NINDS. The Consortium will sponsor a conference in the Fall of 1997 at which time the TMDs will be addressed along with issues of gender and pain.

Gender and Pain. Researchers studying response to analgesics following wisdom tooth extractions recently reported that kappa-opioids produced potent post-surgical pain relief in female patients, but were of negligible benefit for male patients. Kappa-opioids, as a class of drugs, had been considered much less effective than mu-opioids, such as morphine, codeine and methadone, based on earlier studies. In recent studies, however, that ineffectiveness can be attributed to the fact that the kappa-opioids were studied primarily in men and male rats where the analgesic effect is weak. This phenomenon provides impetus for pain researchers to identify differences in male/female pain mechanisms and to address their search for safe effective analgesic drugs with an eye to gender.

Temporomandibular Disorders (TMDs). Temporomandibular disorders are chronic conditions of the jaw joint and surrounding musculature that lead to dysfunction and chronic pain. Chronic facial pain affects over 10 million adults; of these, nearly 7 million have pain mainly centered on the masticatory muscles and/or TM joint. Women report these symptoms

2.6 times more frequently than do men. While pain and dysfunction are overwhelmingly the presenting symptoms, the Institute is addressing all aspects of these disorders, including investigations of the etiology and pathogenesis. Since basic knowledge about the etiology and pathogenesis of these conditions is meager, research projects are being focused on all possible avenues of discovery: musculoskeletal, biomechanical, endocrine, immune, neurological and behavioral. Such studies can lead to a clearer understanding of underlying mechanisms that promote and sustain these chronic conditions and make it possible in the future for researchers to intervene early to prevent or ameliorate these maladies. Until then, the Institute recommends reversible, non-invasive treatments whenever possible. Accomplishments resulting from NIDR-funded TMD research in FY 1995-1996 reflect the various approaches being undertaken to studying these disorders.

Estrogen and the TMDs. Two NIDR-supported epidemiological studies were conducted to determine whether use of exogenous hormones (oral contraceptives and hormone replacement therapy) are associated with an increased probability of referral for treatment of TMDs. The investigators analyzed ten years of automated pharmacy and health care records available through a large HMO. Referral for TMD treatment was found to be 77 percent more likely among patients who had received estrogen replacement as compared with those who had not. Moreover, a clear dose-response relationship emerged, with the probability of referral for TMD treatment increasing consistently across subgroups exposed to higher dose levels of estrogen. Patients with cumulative yearly estrogen doses in excess of 220 mg were referred for TMD treatment at a rate almost double that of controls. While these findings suggest a positive statistical association between exposure to exogenous female hormones and the occurrence of symptoms of TMDs that prompt referral for diagnosis/treatment, this correlation cannot and should not be interpreted to suggest cause-effect relationships until further, more extensive research is conducted.

Markers of TMD Pathogenesis. In one study comparing women who have anatomical signs of TM joint disc displacement, investigators found that those who were currently experiencing pain had significantly higher levels of a marker substance called bradykinin in their joint fluid, in contrast to women who were asymptomatic. Other studies have found evidence of joint cartilage breakdown in the fluid that is reliably associated with arthritic changes. Arthritis is just one of the possible causes of pain and malfunction of the TM joint. These and other studies focused on the musculature of the jaw will help establish the exact pathology giving rise to these conditions.

Bone Research

The study of bone and other mineralized tissues are among the oldest basic research fields of interest at the NIDR, dating back to 1945 with the Institute's inception. Bone is a dynamic tissue that changes continually throughout life. In healthy bone, a delicate balance between bone formation (promoted by osteoblasts) and resorption (promoted by osteoclasts) is maintained. In aging bone, that balance often shifts, leaving the bone brittle and subject to fracture. Oral bone can be

affected as well, leaving the mandible and maxilla less able to support teeth, especially during periodontal infection.

In the early 1980s, NIDR intramural scientists designed procedures to isolate and study the bone-forming osteoblasts, making it easier for scientists around the world to conduct basic studies on bone formation. For example, using these techniques, investigators at the Mayo Clinic were able to show that human bone cells have estrogen receptors. These findings have led to further studies that refine our knowledge about the development of osteoporosis.

Osteoporosis is a skeletal disease characterized by loss of bone mass, architectural deterioration and an increased risk of fracture. As a major public health problem, osteoporosis affects an estimated 20 million older Americans in a female to male ratio of 4:1. Approximately 1.5 million cases of osteoporosis-related fractures are reported annually. In 1995, health care expenditures attributable to osteoporotic fractures were estimated at $13.8 billion, of which $10.3 billion (75.1%) was for the treatment of white women, $2.5 billion (18%) for white men, $0.7 billion (5.3%) for nonwhite women and $0.2 billion (1.3%) for nonwhite men.

Generation of New Bone for Osteoporotic Fracture. The same NIDR intramural scientists who designed the unique procedure to study osteoblasts are engineering the growth of new bone in damaged tissues, such as that experienced with degenerative diseases like osteoporosis. In 1995, these investigators initiated their first protocol in the newly established NIDR Bone Clinic in the NIH Clinical Center. There they have designed a method for harvesting bone marrow cells called marrow stromal fibroblasts (MSFs) from normal human volunteers and growing them in vitro. These studies are based on earlier findings that MSFs have the potential to develop into bone-forming osteoblasts. In fact, when the MSFs were implanted in immunosuppressed mice, they grew new bone. In the latest development, these researchers have succeeded in devising a methodology that allows for the consistent, in vivo generation of extensive bone from human MSFs in a mouse model. Under special conditions, bone and blood-forming marrow were generated throughout an implant within 48 days. This line of research, when refined, could lead directly to methods to regenerate bone throughout the skeleton.

Estrogen's Influence on Jaw Bone. NIDR-supported investigators have demonstrated that ovariectomized sheep (sheep whose ovaries have been removed) show significantly greater evidence of jaw bone degeneration, as measured by the depth of space between the gums and the teeth, than do sheep with their ovaries intact. Sheep with decreased estrogen levels due to ovariectomy also showed increased serum biomarkers for osteoporosis. Sheep provide a particularly appropriate animal model for studies of hormonal influences on bone because their metabolic rate and bone size are comparable to that of humans. In addition, normal adult female sheep have numerous estrous cycles throughout the year, and they experience skeletal and oral bone problems associated with aging.

Hormone Replacement Therapy and Jaw Bone. In another related study, investigators demonstrated the relationship between estrogen status in postmenopausal women and jaw bone density changes over a one-year period. Women, postmenopausal by no more than seven years, were divided into two groups: those taking hormone replacement therapy (HRT) and those who were not. Computer-assisted image analyses performed on their dental x-rays found that over the one year interval studied, women on HRT displayed a mean net gain in alveolar (jaw) bone density, while estrogen deficient women experienced a significant loss.

Tooth loss, Osteoporosis and Smoking. NIDR extramural scientists have found a significant relationship between the loss of periodontal bone and years since menopause, especially in women who smoke. Thus, it is likely that systemic bone loss may negatively effect tooth retention through an estrogen-mediated mechanism.

Oral Bone Loss and the Women's Health Initiative (WHI). In 1996, NIDR initiated a study to evaluate oral bone loss compared to systemic bone loss and hormonal status in the 1,300 postmenopausal women expected to enroll in the observational arm of the Buffalo area's NIH-initiated Women's Health Initiative (WHI) study. Preliminary studies by these investigators had showed gender differences in the incidence and prevalence of oral tissue changes associated with smoking, which is known to be a risk factor for periodontal disease. The hypothesis being tested is whether estrogen levels contribute to these differences. These studies may help generate information directly applicable to improving prevention and early detection of periodontal disease and osteoporosis in middle aged and older women.

Breast Cancer Cell Metastasis To Bone. In collaboration with colleagues in Belgium, intramural scientists have determined that bone sialoprotein (BSP), a bone matrix protein generally limited to normal mineralized tissues, such as bones and teeth, also is found in the radio-opaque mineralized nodules commonly detected in the mammograms of breast cancer patients. These findings led to a series of experiments that show that breast cancer cells with a propensity to metastasize to bone express significant levels of BSP. The hypothesis that BSP may be an osteotrophic agent is currently being tested. Based on these studies, the investigators also report that certain peptides (molecules that link together to form proteins), derived from the region of BSP that contains a cell attachment sequence, were effective in blocking breast cancer cell attachment to bone. Using this finding, researchers may be able to modulate breast cancer cell attachment to bone in the future.

Estrogen Research

Endothelial Cells in Blood Vessels Have Estrogen Receptors Estrogen's influence is felt throughout the body. As discussed above, estrogen may play a role in the pathophysiology of the TMDs and in bone formation. NIDR intramural scientists have shown that estrogen promotes the attachment, migration, proliferation, differentiation and deposition of new blood vessels (angeogenesis). These same scientists have now demonstrated that the endothelial cells lining the blood vessels have

functional estrogen receptors. These finding demonstrate the important role of estrogen in tumor growth, which depends on new blood vessel growth. In addition, estrogen increases the reactivity of endothelial cells to immune cells, which could explain why premenopausal women suffer more inflammatory diseases, such as rheumatoid arthritis, Takayasu's arthritis, lupus erythematosus and Sjögren's syndrome then do men.

Salivary Research

NIDR conducts and supports both basic and clinical research on salivary function and dysfunction. Xerostomia (dry mouth), a condition resulting from the destruction of salivary glands is studied in the NIDR-operated Dry Mouth Clinic as well as in several extramural academic health centers. Salivary gland malfunction may be caused by radiation therapy and chemotherapy for head and neck cancers and by diseases, such as Sjögren's syndrome.

Sjögren's syndrome and Salivary Function. Sjögren's syndrome is an inflammatory, autoimmune disease that causes salivary and tear duct gland destruction. Ninety percent of cases are found in women. Lack of saliva can lead to rampant tooth decay, tooth loss, and oral sores. In addition, when the mouth is dry, it is difficult to speak and swallow. The drugs being tested for conditions such as Sjögren's syndrome include those that stimulate salivary gland secretion and drugs that treat the underlying chronic inflammation. Working with a pharmaceutical company, NIDR intramural scientists were involved with the conduct of a clinical trial that provided the data necessary to apply for FDA approval of the saliva-promoting drug pilocarpine in 1995. It is the first and only drug approved by the FDA for xerostomia and salivary hypofunction in the US.

AIDS Research

NIH began studying Acquired Immunodeficiency Syndrome (AIDS)when it was first recognized in 1981 as a disease that weakened the immune systems of its victims and left them open to a myriad of opportunistic diseases. The NIDR focus began in 1983 when intramural scientists identified an unhealthy immune cell they were able to associate with the new and frightening syndrome. A retrovirus, immunodeficiency virus (HIV), was officially declared the causative agent in 1984. By 1985, NIDR was supporting a growing portfolio of intramural and extramural AIDS/HIV-related projects. Over the years since then, HIV has spread to all segments of the population, with an estimated 21.8 million people worldwide currently living with HIV/AIDS, 42 percent of whom are women, and this population is growing. Through 1996, approximately 5 million adults and 1.4 million children have died of AIDS-associated illnesses worldwide. In addition, an estimated 5 to 10 million children will be orphaned worldwide by the year 2,000 because of the premature deaths of their HIV-infected parents. In 1995, among women diagnosed with AIDS in the US, (76 percent) acquired HIV infection through injection drug use or through sexual contact with an infected man. Minorities are disproportionately affected by AIDS in the US. In 1995, blacks and Hispanics represented the majority of cases among men (54 percent) and

among women (76 percent). Women, especially minority women, and their children are clearly in growing jeopardy from this disease.

Anti-HIV Factor in Saliva and Breast Milk. In 1995 NIDR intramural investigators identified a protein in human saliva--secretory leukocyte protease inhibitor (SLPI)--that blocks HIV infection of human salivary gland cells in vitro. While there was no evidence of viral reproduction in the saliva-producing acinar cells where SLPI is secreted, there was viral activity in the lymphocytes found in the connective tissues surrounding the gland where there is no SLPI. This finding may help explain why HIV does not appear to be spread by saliva even though the virus was identified in 30 percent of the salivary glands examined. These same investigators have discovered that, while breast milk does not provide adequate levels of SLPI to confer antiviral protection, colostrum does. However, this maternal source of protection is transient and of insufficient duration to maintain protection against mucosal transmissions of the virus over time.

Natural History of HIV in Women and Minorities. Comparative studies of HIV infections in different groups have been a focus of NIDR HIV/AIDS studies since the beginning of the epidemic. As the profile of new patients shifted from a predominantly male homosexual population to increasing numbers of women and minorities, it becomes even more important to ensure that our epidemiological and clinical research studies include them. An NIDR-supported project in San Francisco, now in its tenth year, continues to track the oral manifestations of HIV infection, and, due to the increasing numbers of women and minorities living with HIV/AIDS, has increased their focus on both of these populations. Their clinical studies will gather data on the relationship between oral lesions and the changing profile of HIV-infection; the association between oral lesions and CD4 count (crucial immune cells that are disabled and killed during the typical course of infection); the prognostic significance of oral lesions for the development of AIDS; and whether behaviors, such as sexual practices and drug use, or specific HIV treatments, increase or decrease the development of oral lesions.

Women's Interagency HIV Study. The Women's Interagency HIV Study (WIHS) is a collaborative, multi-site, longitudinal study of HIV disease progression in women. NIDR supports oral health components at five WIHS sites across the country that will comprehensively study the oral manifestations of HIV infection among women. Additionally, this is the first study to compare oral lesions with viral load in peripheral blood and the only cohort to look at the effect of new anti-retroviral therapies on the oral manifestations of HIV infection. WIHS sites with oral components include Georgetown University; Bronx Lebanon Hospital; University of Southern California; University of California, San Francisco and Cook County Hospital, Chicago.

HIV in the Oral Cavity, Peripheral Blood and Vaginocervical Secretions. "DATRI 009" is an NIAID-funded cross-sectional study that uses the WIHS population to compare the amount of HIV ("viral load") found in the peripheral blood of HIV-infected women with the amount obtained from vaginocervical secretions. DATRI 009b is an NIDR-funded

substudy to extend the comparative evaluations to the oral cavity. The study's specific objectives are to (1) correlate the women's clinical status with the amount of virus in the oral cavity/saliva, peripheral blood and vaginocervical secretions; (2) determine whether systemic and local immunoglobulins influence the quantity and type of virus isolated from the oral cavity/saliva; and (3) assess whether specific infectious agents, such as Candida albicans (a common mucosal fungus that becomes an infection during periods of immunosupression), herpes virus, chlamydia, and Epstein-Barr virus, influence the amount and type of virus isolated from the oral cavity/saliva. The investigators will also be determining whether anti-viral factors, such as SLPI, influence the amount and type of virus isolated from the oral cavity/saliva and what the effect of anti-viral therapies may have on the ability to detect HIV in the oral cavity.

Initiatives

- NIDR intramural scientists proposed an Inter-Institute NIH Bone Clinic in 1995.

- The National Oral Health Information Clearinghouse (NOHIC) continues to inform the public and professionals about the TMDs. NOHIC had distributed 12,500 TMD information packets and 81,600 copies of the patient education brochures as of January 1997.

- A 1995 RFA on the Etiology and Pathogenesis of Temporomandibular Disorders resulted in thirty-six applications, ten of which were funded (nine by NIDR, six with ORWH co-funding and one by ORWH alone).

- On April 28, 1995, the NIDR joined nine institutes of the NIH and the Office of Alternative Medicine in a program announcement (PA) in Biobehavioral Pain Research to stimulate and foster a wide range of basic and clinical studies on pain as they relate to the missions of the various institutes.

- The NIH Director established the NIH Pain Research Consortium and named Drs. Harold Slavkin (NIDR) and Zach Hall (NINDS) as Co-chairs in 1996.

- NIDR intramural scientists initiated the trans-NIH Pain Interest Group and establish an appropriate LISTSERV in 1996.

- Following up on reports identifying hormonal influences on pain and profound gender-associated differences in response to kappa opioids, NIDR and NINR staff spearheaded an effort to expand extramural research on gender-related differences in pain modulatory systems and analgesic response. A preliminary draft for an RFA on these topics was prepared in 1996. It generated commitments of support from NCI, NINR, NIDA AND NIDR. Issuance of this RFA is anticipated in 1997.

Conferences and Workshops

- On December 4-5, 1995, the Interagency Chronic Pain Task Force, with NIDR as lead institute, sponsored a **Workshop on Selected Chronic Pain Conditions: Clinical Spectrum, Frequency & Costs.** The Interagency Task Force was comprised of nine NIH institutes--NIDR, NIDA, NICHD, NINDS, NIAMS, NINR, NCI, NIMH and NIDDK--and the Agency for Health Care Policy and Research (AHCPR)and the ORWH.

- On April 29-May 1, 1996 the NIDR and the NIH Office of Medical Applications of Research sponsored a **Technology Assessment Conference on Management of Temporomandibular Disorders.** Co-sponsors included the NIAMS, NINDS, NINR and the ORWH.

- On September 24-26, 1996, the NIDR sponsored a **Workshop on Biomimetics, Tissue Engineering and Biomaterials,** bringing together cross-disciplinary researcher to help shape a research program for NIDR in these areas. Biomimetics refers to molecular approach to repair and regeneration of biological tissues, such as that needed for TM joints that have experienced failed implants.

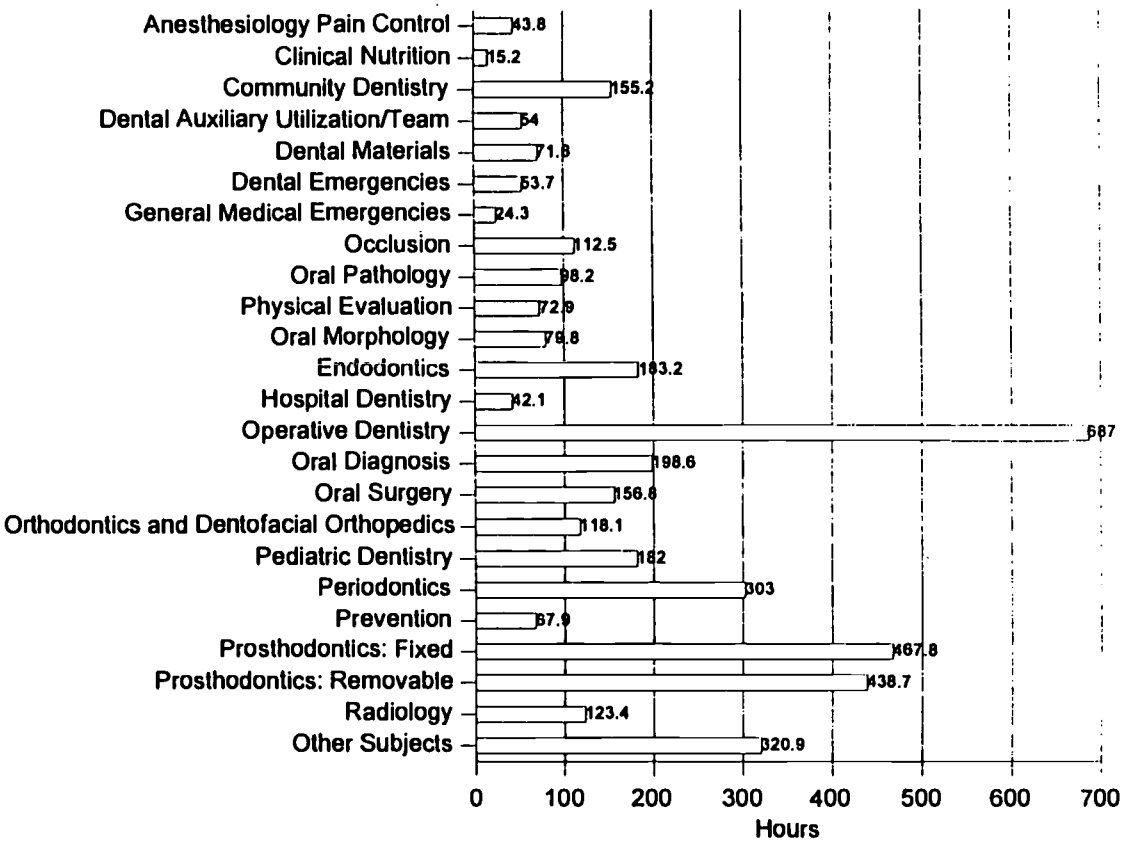
- On November 7-10, 1996, the NIDR sponsored a conference on Salivary Gland Biogenesis & Function along with the Sjögren's Syndrome Foundation and industry. The mission of the conference was to identify diverse biological systems that influence salivary function and explore opportunities for cross-disciplinary research.

APPENDIX M

On average, most of the clock hours for clinical science are spent on operative dentistry, commanding 687.0 hours across all years of dental school education (Figure 4). Other involved subjects include fixed prosthodontics (467.8 hours), removable prosthodontics (438.7 hours), and "Other" subjects (320.9 hours). The least number of clock hours is spent on clinical nutrition, for 15.2 hours across four years.

Figure 4

Average Number of Clock Hours in Clinical Science by Subject, 1995-96



Source: American Dental Association, Survey Center, 1995-96 Survey of Predoctoral Dental Educational Institutions.

Table 8 lists by school the number of clock hours by subject within clinical science. There is variation between the schools in the number of clock hours offered. Operative Dentistry, for example, averaged at 687.0 hours, but individual schools ranged from 325 hours to 1294 hours. The number of hours spent on clinical nutrition varied from one hour to 65 hours.

APPENDIX N

ACCREDITATION STANDARDS FOR

DENTAL EDUCATION PROGRAMS

JANUARY 1998

COMMISSION ON DENTAL ACCREDITATION
211 East Chicago Avenue
Chicago, Illinois 60611

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Introduction

Mission Statement of the Commission on Dental Accreditation

The Commission on Dental Accreditation's mission is to ensure the quality of dental and dental-related education by conducting accreditation reviews to determine the degree to which individual programs meet the Commission's published accreditation standards and their own stated goals and objectives. The Commission recognizes only those programs meeting the accreditation standards that are developed and agreed upon by the various communities of interest, including the public. The Commission's second purpose is to enhance and encourage improvement in the quality of its accredited educational programs.

The Commission's accreditation program ensures that quality education is available for dentists, dental specialists and allied dental personnel. Quality education ultimately leads to quality dental care for the public.

Thus, the Commission's voluntary accreditation program serves to ensure educational quality and to improve the quality of the educational programs in 14 dental and dental-related disciplines. These disciplines include: dentistry, dental assisting, dental hygiene, dental laboratory technology, dental public health, endodontics, oral pathology, oral and maxillofacial surgery, orthodontics, pediatric dentistry, periodontics, prosthodontics, general practice residency and advanced general dentistry.

12/89

In addition to the emphasis on quality education, the *Accreditation Standards for Dental Education Programs* have been developed for four reasons:

1. to protect the public welfare;
2. to guide institutions in developing their academic programs;
3. to provide a vehicle for site visit teams to make judgements as to the quality of the program; and
4. to provide students with reasonable assurance that the program is meeting its stated objectives.

The *Standards* were designed to meet the following additional goals:

1. improve assessment of quality in dental education programs;
2. streamline the accreditation process by including only standards critical to the evaluation of the quality of the educational program;
3. increase the focus on competency statements in curriculum-related standards; and
4. emphasize educational goals to ensure that graduates are life-long learners.

The assessment of quality in educational programs is the foundation for the *Standards*. In order to sharpen this focus on the quality of dental education, the Commission on Dental Accreditation has included standards related to institutional effectiveness. Standard 1, "Institutional Effectiveness" guides the self-study and preparation for the site visit away from a periodic approach, by encouraging establishment of internal planning and assessment that is ongoing and continuous.

[1] Comments in this introduction were taken, in part, from Commission on Colleges of the Southern Association of Colleges and Schools, *Resource Manual on Institutional Effectiveness*, 1992

Dental education programs are expected to demonstrate that planning and assessment are implemented at all levels of the academic and administrative enterprise. The *Standards* focus, where necessary, on institutional resources and processes, but also on the results of those processes and the use of those results for institutional improvement.

The following steps outline a recommended approach to an assessment process designed to measure the effectiveness of programs and units with educational, patient care, research and service missions. The assessment process should include:

1. establishing a clearly defined purpose/mission appropriate to dental education, patient care, research and service;
2. formulating goals consistent with the purpose/mission;
3. designing and implementing outcomes measures to determine the degree of achievement or progress toward stated goals;
4. acquiring feedback from internal and external groups to interpret the results and develop recommendations for improvement (*viz.*, using a broad-based effort for program/unit assessment);
5. using the recommendations to improve the programs and units; and
6. re-evaluating the program or unit purpose and goals in light of the results.

Thus, statement of purpose through planning, formulation of goals and expected outcomes, assessment and use of results for improvement form the foundation for establishing and maintaining institutional effectiveness. Taken together, these activities will enhance credibility and accountability of educational programs.

The *Standards* reconfirm and emphasize the importance of educational processes and goals for comprehensive patient care and encourage patient-centered approaches in teaching and oral health care delivery. Administration, faculty, staff and students are expected to develop and implement definitions, practices, operations and evaluation methods so that patient-centered comprehensive care is the norm.

Institutional definitions and operations that support patient-centered care[2] can have the following characteristics or practices:

- patients' preferences and their social, economic and emotional circumstances are sensitively considered;
- teamwork and cost-effective use of well-trained allied dental personnel are emphasized;
- evaluations of practice patterns and the outcomes of care guide actions to improve both the quality and efficiency of care delivery; and
- general dentists serve as role models in the appropriate treatment and referral of patients needing advanced therapies.

Finally, the Commission encourages the development of a formal liaison mechanism between the dental school and the practicing dental community. Such a mechanism could involve the practicing community in such activities as curriculum development and the clinical program.

It is anticipated that the *Standards* will strengthen the teaching, patient care, research and service missions of schools. These *Standards* are national in scope and represent the minimum requirements expected for a dental education program. However, the Commission encourages institutions to extend the scope of the curriculum to include content and instruction beyond the scope of the minimum requirements, consistent with the institution's own goals and objectives.

[2] This definition is taken from, M.J. Field, ed., Dental Education at the Crossroads, Challenges and Change, Institute of Medicine, National Academy Press, Washington, DC, 1995.

In these *Standards* the competencies for general dentistry are described broadly. The Commission expects each school to develop specific competency definitions and assessment methods in the context of the broad scope of general dental practice. These competencies must be reflective of an evidence-based definition of general dentistry[3]. These competencies are statements that define complex actions that represent the knowledge, skills and values required to provide the care necessary to achieve oral health goals.

The Commission recognizes that schools organize their faculties in a variety of ways. The instruction necessary to achieve the prescribed levels of knowledge and skill may be provided by the educational unit(s) deemed most appropriate by each institution.

The importance of academic freedom is recognized by the Commission, and an institution is allowed considerable flexibility in structuring its educational program so that it can meet the *Standards*. The Commission encourages curricular experimentation, development of institutional individuality and achievement of excellence without the establishment of uniformity. No curriculum has enduring value, and a program will not be judged by conformity to a given type.

The objectives of the Commission are based on the premise that an institution providing a dental educational program will strive continually to enhance the standards and quality of both scholarship and teaching. The Commission expects an educational institution offering such a program to conduct that program at a level consistent with the purposes and methods of higher education and to have academic excellence as its primary goal.

DEFINITION OF TERMS

Must: Indicates an imperative need or a duty; an essential or indispensable item; mandatory.

Predoctoral: Denotes training leading to the DDS or DMD degree.

Instruction: Describes any teaching, lesson, rule or precept; details of procedure; directives.

Standard: Offers a rule or basis of comparison established in measuring or judging capacity, quantity, quality, content and value; criterion used as a model or pattern.

Competencies: Written statements describing the levels of knowledge, skills and values expected of graduates.

In-depth: A thorough knowledge of concepts and theories for the purpose of critical analysis and the synthesis of more complete understanding (highest level of knowledge).

Competent: The levels of knowledge, skills and values required by the new graduates to begin independent, unsupervised dental practice.

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[3] The practice of evidence-based general dentistry means that the dentist integrates individual clinical expertise with the best available external clinical evidence from systematic clinical research. Individual clinical expertise includes effective and efficient diagnosis and thoughtful identification and compassionate use of individual patients' predicaments, rights and preferences in making clinical decisions about care. External clinical evidence includes clinically relevant research, often from the basic sciences of medicine and dentistry, but especially from patient-centered clinical research on accuracy and precision of diagnostic tests and clinical examination, power of prognostic markers, and efficacy and safety of therapeutic, rehabilitative and preventive regimens. This definition is taken from, D.L.Sackett, et al, "Evidence-Based Medicine, What it is and What it isn't"; *British Medical Journal*; 312:71-2; January 13, 1996.

Accreditation Standards for Dental Education Programs

STANDARD 1 -INSTITUTIONAL EFFECTIVENESS

1-1 The dental school must develop a clearly stated purpose/mission statement appropriate to dental education, addressing teaching, patient care, research and service.

1-2 Planning for, evaluation of and improvement of educational quality at the dental school must be broad-based, systematic, continuous and designed to promote achievement of institutional goals related to education, patient care, research and service.

1-3 The dental school must demonstrate the effectiveness of its programs and units using a formal and ongoing outcomes assessment process to include measures of student achievement.

1-4 The financial resources must be sufficient to support the dental school's stated purpose/mission, goals and objectives.

1-5 The dental school must be a component of a higher education institution that is accredited by a recognized accrediting agency.

1-6 The dental school must show evidence of interaction with other components of the higher education, health care education and/or health care delivery systems.

STANDARD 2- EDUCATIONAL PROGRAM

Admissions

2-1 Specific written criteria, policies and procedures must be followed when admitting predoctoral students.

2-2 Admissions policies and procedures must be designed to include recruitment and admission of a diverse student population.

Instruction

2-3 In advance of each course or other unit of instruction and at the time of initial clinic entry, students must be provided written information about the goals and requirements of each course, the nature of the course content and the method(s) of evaluation to be used.

2-4 If students do not meet the didactic, behavioral and/or clinical criteria as published and distributed, individual evaluations must be performed that lead to an appropriate decision in accordance with institutional due process policies.

Curriculum Management

2-5 The curriculum must include at least four academic years of instruction or its equivalent.

2-6 The stated goals of the dental education program must include the preparation of graduates who possess the knowledge, skills and values to begin the practice of general dentistry.

2-7 The dental school must define the competencies needed for graduation, which must be focused on educational outcomes.

2-8 The dental school must employ student evaluation methods that measure the defined competencies.

2-9 Biomedical, behavioral and clinical science instruction must be integrated and of sufficient depth, scope, timeliness, quality and emphasis to ensure achievement of the curriculum's defined competencies.

2-10 The dental school must have a curriculum management plan that ensures:
a. an ongoing curriculum review and evaluation process which includes input from faculty, students, administration and other appropriate sources;
b. evaluation of all courses with respect to the defined competencies of the school to include student evaluation of instruction; and
c. elimination of unwarranted repetition and outdated and unnecessary material, incorporation of emerging information and achievement of appropriate sequencing.

2-11 The dental school must ensure the availability of adequate patient experiences that afford all students the opportunity to achieve its stated competencies within a reasonable time.

Biomedical Sciences

2-12 Biomedical science instruction in dental education must ensure an in-depth understanding of basic biological principles, consisting of a core of information on the fundamental structures, functions and interrelationships of the body systems.

2-13 The biomedical knowledge base must emphasize the oro-facial complex as an important anatomical area existing in a complex biological interrelationship with the entire body.

2-14 In-depth information on abnormal biological conditions must be provided to support a high level of understanding of the etiology, epidemiology, differential diagnosis, pathogenesis, prevention, treatment and prognosis of oral and oral-related disorders.

2-15 Biomedical science knowledge must be of sufficient depth and scope for graduates to apply advances in modern biology to clinical practice and to integrate new medical knowledge and therapies relevant to oral health care.

Behavioral Sciences

2-16 Graduates must be competent in the application of the fundamental principles of behavioral sciences as they pertain to patient-centered approaches for promoting, improving and maintaining oral health.

2-17 Graduates must be competent in managing a diverse patient population and have the interpersonal and communications skills to function successfully in a multi-cultural work environment.

Practice Management

2-18 Graduates must be competent in evaluating different models of oral health care management and delivery.

2-19 Graduates must understand the basic principles and philosophies of practice management and have the skills to function successfully as the leader of the oral health care team.

Ethics and Professionalism

2-20 Graduates must be competent in applying ethical, legal and regulatory concepts to the provision and/or support of oral health care services.

2-21 Graduates must be competent in the application of the principles of ethical reasoning and professional responsibility as they pertain to patient care and practice management.

2-22 Graduates must recognize the role of lifelong learning and self-assessment in maintaining competency.

Information Management and Critical Thinking

2-23 Graduates must be competent in the use of critical thinking and problem solving related to the comprehensive care of patients.

2-24 Graduates must be competent in the use of information technology resources in contemporary dental practice.

Clinical Sciences

2-25 At a minimum, graduates must be competent in providing oral health care within the scope of general dentistry, as defined by the school, for the child, adolescent, adult, geriatric and medically compromised patient, including:

a. patient assessment and diagnosis;
b. comprehensive treatment planning;
c. health promotion and disease prevention;
d. informed consent;
e. anesthesia, sedation and pain and anxiety control;
f. restoration of teeth;
g. replacement of teeth;
h. periodontal therapy;
i. pulpal therapy;
j. oral mucosal disorders;
k. hard and soft tissue surgery;
l. dental emergencies;
m. malocclusion and space management; and
n. evaluation of the outcomes of treatment.

2-26 Graduates must be competent in providing appropriate life support measures for medical emergencies that may be encountered in dental practice.

STANDARD 3- FACULTY AND STAFF

3-1 The number and distribution of faculty and staff must be sufficient to meet the dental school's stated purpose/mission, goals and objectives.

3-2 The dental school must show evidence of an ongoing faculty development process.

3-3 Faculty must be ensured a form of governance that allows participation in the school's decision-making processes.

3-4 A defined evaluation process must exist that ensures objective measurement of the performance of each faculty member in teaching, patient care, scholarship and service.

3-5 The dental school must have a stated process for promotion and tenure (where tenure exists) that is clearly communicated to the faculty.

STANDARD 4- EDUCATIONAL SUPPORT SERVICES

Facilities and Resources

4-1 The dental school must provide adequate and appropriately maintained facilities and learning resources to support the purpose/mission of the dental school and which are in conformance with applicable regulations.

Student Services

4-2 Student services must include the following:

a. personal, academic and career counseling of students;
b. assuring student participation on appropriate committees;
c. providing appropriate information about the availability of financial aid and health services;
d. developing and reviewing specific written procedures to ensure due process and the protection of the rights of students; and
e. student advocacy.

Student Financial Aid

4-3 Prior to admission, students must receive a statement of the total expected cost of dental education, including estimates of living expenses and educational fees, an analysis of financial need, and the availability of financial aid based on a need analysis.

4-4 During each year of enrollment, each student must receive a statement of accumulated debt, expected costs of remaining dental education, including living expenses and educational fees, an updated analysis of financial need and current information on the availability of financial aid based on the need analysis.

4-5 Immediately prior to graduation, each student must receive a written statement identifying all sources of financial assistance received through the school for which repayment is required, as well as a review of promissory notes for each outstanding loan and the terms and conditions contained in each note, including, but not limited to, the following:

a. repayment schedules and specific billing procedures;
b. grace periods and their impact on repayment schedules;
c. deferments and their implications;
d. cancellation provisions; and
e. a description of available consolidation options and the time frame in which students would be eligible for them.

Health Services

4-6 The dental school must have pre-matriculation health standards that will ensure that prospective students are qualified to undertake dental studies.

4-7 There must be a mechanism for ready access to health care for students while they are enrolled in dental school.

4-8 Students must be encouraged to be immunized against infectious diseases, such as mumps, measles, rubella and hepatitis B, prior to contact with patients and/or infectious objects or materials, in an effort to minimize the risk of infection to patients and dental personnel.

STANDARD 5- PATIENT CARE SERVICES

5-1 The dental school must conduct a formal system of quality assurance for the patient care program that demonstrates evidence of:

a. standards of care that are patient-centered, focused on comprehensive care and written in a format that facilitates assessment with measurable criteria;
b. an ongoing review of a representative sample of patients and patient records to assess the appropriateness, necessity and quality of the care provided;
c. mechanisms to determine the cause(s) of treatment deficiencies; and
d. patient review policies, procedures, outcomes and corrective measures.

5-2 The use of quantitative criteria for student advancement and graduation must not compromise the delivery of comprehensive patient care.

5-3 The dental school must have developed and distributed to all appropriate students, faculty, staff and to each patient a written statement of patients' rights.

5-4 The dental school must ensure that active patients have access to professional services at all times for the management of dental emergencies.

5-5 All students, faculty and support staff involved in the direct provision of patient care must be continuously recognized in basic life support (B.L.S.), including cardiopulmonary resuscitation, and must be able to manage common medical emergencies.

5-6 Written policies and procedures must be in place to ensure the safe use of ionizing radiation.

5-7 The dental school must establish and enforce a mechanism to ensure adequate preclinical/clinical/laboratory asepsis, infection and biohazard control and disposal of hazardous waste.

5-8 The school's policies must ensure that the confidentiality of information pertaining to the health status of each individual patient is strictly maintained.

STANDARD 6- RESEARCH PROGRAM

6-1 Research, the process of scientific inquiry involved in the development and dissemination of new knowledge, must be an integral component of the purpose/mission, goals and objectives of the dental school.

6-2 The dental school faculty, as appropriate to meet the school's purpose/mission, goals and objectives, must engage in research or other forms of scholarly activity and provide opportunities for students to participate.

APPENDIX O

Appendix 2
Resolution 6

Competencies for the New Dentist

(Approved by the 1997 House of Delegates.)

Preamble

Dentists are expected to enhance and promote the total health of patients through oral health management. Managing oral health care applies to patients with oral pathoses, patients with special needs, and patients with oral manifestations of systemic disease and involves providing ongoing oral health care management. In the course of managing patient care, competent practitioners should recognize the limitations of their expertise and refer patients appropriately for treatment and coordinate the patient care plan. While dentists may delegate, they have the ultimate responsibility for comprehensive patient care.

Ideally, professional development begins the first day the student enters dental school and does not end until the day the dentist completely retires from the profession. While this should be a continuous process of improvement, the process can be divided conveniently into five stages: novice, beginner, competent, proficient, and expert.

Other than the decision to begin this professional journey, the most significant milepost is the attainment of the first professional degree, which corresponds to the attainment of professional *competency*—the ability to begin independent, unsupervised dental practice. Competencies are abilities essential to beginning the practice of dentistry. The competencies set forth in this document must be supported by working *knowledge* of basic biomedical, behavioral, and clinical sciences and biomaterials; by cognitive and psychomotor *skills;* and by professional and ethical *values*. The integration and application of the basic biomedical sciences are considered a critical element in the development of competencies for the future.

These abilities incorporate understanding, skill, and values in an integrated response to the normal range of problems and challenges in the practice of dentistry that will allow a graduate to practice safely and independently. The level of performance requires some degree of speed and accuracy consistent with patient well-being. It also requires an awareness of what constitutes acceptable performance under normal circumstances. For the purposes of this document, competent practitioners must use these abilities as the basis for clinical decisions and in professional, patient, and public education. They must have a desire for self-improvement.

Because competencies are written to describe the performance of graduates in dental settings, as opposed to the performance of students in courses, the development of competencies is an interdisciplinary process. It would be unusual to develop competency statements for single disciplines.

The AADS intends, over time, to pursue the original plan of the Council of Sections, which is to use the national, core competencies as a foundation for identifying (1) foundation knowledge and skills, (2) evaluation methods, (3) summaries of the research foundation upon which competencies are included in the curriculum, (4) a glossary of commonly defined terms, and (5) educational resources.

The value and usefulness of these competencies will depend on their application and the changes they effect. By defining the competencies of the new graduate, schools will have a benchmark with which to (1) review, redefine, and restructure the predoctoral curriculum; (2) review and improve student evaluation processes and promotion criteria; and (3) establish and apply outcome measures to assess the effectiveness of the predoctoral program.

These competencies relate to the child, adolescent, adult, geriatric, and medically compromised patient and are sequenced as they would be in rendering care.

Professional/Practice Competencies

To help dental educators understand these statements, certain terms have been defined. In general, the definitions proposed by Chambers and Gerrow (see following article) have been used; new definitions have been added, and some have been modified. When it is expected that the new dentist will be able to, and likely to, actually perform the necessary procedures, the terms "perform," "provide," "restore," or "treat" appear. When the new dentist may perform some treatment but is more likely to oversee treatment or to refer, the term "manage" is used. The term "appropriate" is not used in these statements to eliminate repetition. Rather, it is assumed that all knowledge, skills, and values described will be used to perform procedures for appropriate reasons, in appropriate circumstances, and in an appropriate manner.

The new dentist must:

General Skills

1. Apply ethical principles to professional practice.
2. Provide empathic care for all patients, including members of diverse and vulnerable populations.
3. Apply the principles of jurisprudence to the practice of dentistry.
4. Continuously analyze the outcomes of patient treatment to improve that treatment.
5. Evaluate scientific literature and other sources of information to make decisions about dental treatment.
6. Manage oral health based on an application of scientific principles.
7. Participate in professional organizations.

Information Management—Currency of Skills

8. Assess his or her level of skills and knowledge and take steps to improve areas of deficiency.
9. Evaluate social and economic trends and their impact on oral health care.

Practice Management

10. Evaluate career options, practice location, and reimbursement mechanisms.
11. Educate staff in professional, governmental, legal, and office policies, and professional responsibilities.
12. Coordinate and supervise the activity of allied dental health personnel.
13. Maintain patient records.
14. Use business systems in dental practice settings for scheduling, record-keeping, reimbursement, and financial arrangements.
15. Implement and monitor infection control and environmental safety programs according to current standards.
16. Practice within the scope of one's competence and make referrals to professional colleagues.
17. Use information technology and information management systems for patient care, practice management, and professional development.

Communication

18. Assess patient goals, values, and concerns to establish rapport and guide patient care.
19. Communicate orally, and in writing, with peers, other professionals, staff, patients or guardians, and the public at large.

Community Resources

20. Participate in improving the oral health of individuals, families, and groups in the community through diagnosis, treatment, and education.

Debt Management

21. Use professional debt management and financial planning skills.

Patient Care Competencies

Diagnosis

22. Establish rapport and identify patients' general needs and expectations.
23. Identify patients' chief complaints.
24. Obtain medical, dental, psychosocial, and behavioral histories.
25. Perform head and neck and intraoral examinations.
26. Select, obtain, and interpret clinical, radiographic, and other diagnostic information and procedures.
27. Obtain medical and dental consultations when appropriate.
28. Recognize signs of abuse or neglect and report and refer as necessary.
29. Recognize predisposing and etiologic factors that require intervention to prevent disease.
30. Use clinical and epidemiological data to diagnose and establish a prognosis for dental abnormalities and pathology.
31. Recognize the normal range of clinical findings and significant deviations that require monitoring, treatment, or management.
32. Monitor therapeutic outcomes and re-evaluate and modify initial diagnoses or therapy.
33. Develop treatment alternatives based on clinical and supporting data.

Treatment Planning

34. Integrate multiple disciplines into an individual, comprehensive, sequenced treatment plan using diagnostic and prognostic information.
35. Discuss etiologies, treatment alternatives, and prognoses with patients and educate them so they can participate in the management of their own care.
36. Develop and implement a sequenced treatment plan that incorporates patients' goals, values, and concerns.
37. Obtain informed consent from patient, parent, or guardian.

Treatment

38. Anticipate, diagnose, and provide initial treat ment and follow-up management for medical emergencies that may occur during dental treatment.
39. Perform basic cardiac life support.
40. Recognize and manage acute pain, hemorrhage, trauma, and infection of the orofacial complex.
41. Manage patients with pain and anxiety by the use of nonpharmacological methods.
42. Select and administer or prescribe pharmacological agents in the treatment of dental patients.
43. Anticipate, prevent, and manage complications arising from the use of therapeutic and pharmacological agents employed in patient care.
44. Provide patient education to maximize oral health.
45. Manage preventive oral health procedures.
46. Perform therapies to eliminate local etiologic factors to control caries, periodontal disease, and other oral diseases.
47. Manage patients with advanced periodontal diseases and conditions.
48. Manage patients with pulpal and periradicular diseases.
49. Perform uncomplicated endodontic procedures.
50. Perform uncomplicated oral surgical procedures.
51. Manage patients who have complicated oral surgical problems.
52. Manage patients requiring modification of oral tissues to optimize restoration of form, function, and esthetics.
53. Manage patients with occlusal and temporomandibular disorders.
54. Manage dental care for disabled and special care patients.
55. Manage patients in the hospital setting.
56. Manage a comprehensive maintenance plan following the active phase of periodontal treatment.
57. Manage patients requiring minor tooth movement or space maintenance.
58. Manage patients who have complex orthodontic problems.
59. Restore single defective teeth.
60. Restore partial or complete edentulism with uncomplicated fixed or removable prosthetic restorations.
61. Manage the restoration of partial or complete edentulism using implant procedures.
62. Manage patients with oral esthetic needs.
63. Communicate case design with laboratory technicians and evaluate the resultant prosthesis.

Appendix 3

Manual for Developing and Formatting Competency Statements

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There has been a great deal of activity recently directed to using competencies as part of the approach to dental education. The involvement of so many educators from so many schools has created an awareness and discussion that no single concept has engendered in several years. There is also some confusion as educators use the same words for different purposes or emphasize one aspect or another of this emerging idea.

This manual is offered as a working document to aid faculty and administrators exploring and initiating competency-based dental education. A common language is offered that has worked well in several diverse settings. A (a) definition of the term competency is proposed (with variations) and suggestions are made for (b) how to organize a group of experts to develop competency statements and (c) how to format them.

It is recognized that competency statements will only be effective if they are tailored to individual circumstances and if there is a sense of ownership that results from struggling with and ultimately personalizing a set that meets the needs of various user groups. On the other hand, there is value in using proven techniques and at least beginning with a standardized format.

Defining Competency

Competency in its broadest sense means being able to function in context. From that protean definition, it is possible to identify several common uses of the term in education. Five variants that are heard frequently will be mentioned, along with a discussion of the circumstances where each variation is customarily encountered. Where uses are likely to create confusion, this is noted.

1. Competency is most often used to describe the skills, understanding, and professional values of an individual ready for beginning independent dental or allied oral health care practice. "Graduates are competent because they are capable of functioning in realistic practice settings."

2. Competency is sometimes used in reference to the entire progression of professional learning that extends over ten to 15 years and takes students through the stages from beginner to novice to competent, to proficient, and finally to expert. "The competency continuum requires increasingly complex interpretation of material as one becomes competent in wider contexts."

3. Competency is broadly used to refer to a general educational approach focusing on measured outcomes in judging the quality of an educational program. Student outcomes are given high priority along with the traditional criteria of program process and efficiency, and alternative strategies are identified to handle students who are not competent. "We have a competency-based curriculum because we will not graduate anyone who cannot function as a complete general practitioner."

4. Competent is used loosely to signify the satisfactory completion of an educational experi-

ence. "I certify the students who received a D or higher grade on the practical examination to be competent to perform restorative dentistry in the clinic." Sometimes the term competency is used where "course requirement" is intended. "Required competency is redundant because all competencies are required." Because this use is so general it leads to confusion, it is suggested that the term "qualified" be used when referring to specific certifying situations.

5. Competent is also used in the very broad sense of "good enough." Performing satisfactorily when compared to standards (objectively defined or vague) is too imprecise a concept to share the word competency with the first four definitions. "adequate" or "satisfactory" performance would be a better choice.

ORGANIZING THE EXPERTS

In order to produce a competency statement document for a discipline as large and diverse as dentistry, the content expertise of many individuals will be needed. Because competencies are by definition interdisciplinary, breadth and openness are desirable characteristics of the expert panel.

A workshop format involving both plenary sessions and small working group sessions will allow sufficient representation to provide both content expertise and constituent representation. The workshop will also facilitate participation and hence develop ownership in the final product while ensuring that the task gets completed in a realistic time frame.

The number of participants will be determined partially by the sponsors and by available funds, but the size should be kept as small as possible while still providing content expertise and constituent representation. Constituent representation will be determined by identifying all potential users of the final competency statement document. These users may be schools, departments, course and clinic directors, dental associations, licensing authorities, accrediting organizations, specialty groups and parent disciplines, and examining boards. Each of the users must feel that at least one workshop participant speaks for their concerns, and there should be a perception of balance and evenhandedness. The content expertise should be provided by a mix of generalists, specialists, private practitioners, and educators, some of whom may represent user constituencies as well. In general, a workshop with 20 to 30 participants seems to function well.

A workshop organizing committee made up of three to five people including a workshop facilitator should be appointed by the sponsoring organization. The workshop organizing committee should identify and appoint all workshop participants taking into account both content expertise and constituent representation. Participants who will be representing a constituency can be identified by the working committee and approved by the organization or constituency they represent. Following the identification of the content areas for each of the working groups, participants should be assigned to groups and working group chairs and recorders appointed.

The organizing committee should make a preliminary determination of the level and format for the competency statements. A guide to this step is suggested below. The level will depend almost entirely on who the users of the document are. For example, a licensing authority may by interested only in the identification of fairly general competency areas in order to assist in the development of a licensing examination blueprint. Schools of dentistry, on the other hand, may be interested in identifying competencies at a very specific level in order to be able to perform outcome measures.

The organizing committee will need to decide whether to use a global competency statement and, if so, must draft that global competency statement. It has been found that providing participants with examples and competency lists prepared by other groups is valuable. When possible these should be circulated in advance for study.

The organizing committee and any resource personnel must meet with the chairs of the working groups to finalize the process to be used during the workshop and to calibrate the chairs on the format of the competency statements.

The first workshop plenary session should begin with a very brief introduction and could use an outside resource person to provide an overview of the purpose and process of writing competency statements. The working groups should then be charged with writing competencies for their identified areas and proceed to their assigned rooms to begin the process of writing competency statements. Chairs should meet throughout the workshop to review the progress of the groups and to recalibrate themselves in order to ensure that the groups are working at the same level of detail. At least one intermediate plenary session should be held so that working groups can present examples of their work and discuss common problems. This intermediate plenary session will serve to calibrate the participants, to identify areas of overlap, to identify areas missed, and to reassure participants that the task can be accomplished.

A final plenary session should be held at the end of the workshop to review all competency statements written by all the working groups. Comments and revisions should be made on the statements so that the workshop as a whole agrees in principle with all the competencies. It will likely be possible to identify areas of overlap, but the identification of missing competencies and consensus approval is more important.

The workshop participants must be asked to

agree to a process that will be used to finalize the competency document. It will be remembered that the participants have been selected to represent various constituencies of users of the document. It can be suggested that a small committee revise the draft competencies so that there is consistent style and wording. Areas of overlap and missing content areas would also be dealt with by this committee, at least on a preliminary basis.

A draft of the final document should be distributed to all participants as quickly as feasible for comment and approval in principle. Following a final revision, the document should be distributed to the participants for final approval prior to distribution to identified organizations and individuals.

There are two parts to this manual having to do with style for writing competency statements: (a) format and (b) glossary. The format suggestions are meant to standardize the structure of competency statements so they can be more easily written and understood across groups. The glossary terms define commonly used words. Interpretations of these common terms are suggested that permit economical expression in the competency statements.

FORMAT

Competency statements are written for specific contexts. Because the general context is always the same for a set of competencies, it can be stated once at the beginning of the set. This makes it possible to express each competency economically. For example, "A graduate of the School of Dentistry at the University of the Pacific will be competent to..."

A common three-part structure appears to express the content of individual competency statements. The use of a standardized structure will make competency statements easier to comprehend, less ambiguous, and more complete.

1. Verb. Third person singular statement of the most significant performance in the competency. "Restore," "assess," and "refer" are examples. Experience working with groups writing competency statements reveals that much disagreement and many superfluous qualifying phrases stem from efforts to ensure that the action of the competency is performed in a specific manner. This difficulty can be partially mitigated by use of the attached glossary which spells out assumptions about commonly used verbs. More verbs will be required as each organization defines its own competency statements, and locally expanded and modified glossaries are appropriate.

2. Direct object. "(Obtain) *diagnostic radiographs,*" "(diagnose or manage) *malocclusions,*" and "(restore) *intra-caronal defects*" are examples. There are generally two approaches available at this point: either a specific procedure can be named ("provide nutritional counseling") or a patient condition to be corrected can be named ("single tooth defects"). Where possible, addressing the patient condition is preferable to using specific procedures – even though they are equivalent in some cases. "Restore extra-caronal defects of a single tooth" is clear and less likely to generate hopeless debate over preferred and allowed techniques than the alternative, "using precious, semiprecious, or esthetic materials (except on posterior teeth), fabricate by commonly accepted procedures, three-quarter, reverse three-quarter, full crowns appropriate to the presenting anatomy and functional requirements..."

3. Qualifying conditions, special circumstances, limitations, and explicit outcomes. Many competency statements can be effectively expressed with only a verb and object. There are situations, however, where greater specificity is required. Several examples include: "Manage patient behavior by means of *both pharmacological and nonpharmacological techniques"* (identification of required types of intervention). "Recognize the required level of competency, proficiency, or expertise and *ensure no treatment will be performed that compromises the medical or dental well-being of the patient"* (specific outcome standard). *"Locate, read, and critically evaluate the published dental and related literature and incorporate such information into one's practice on a regular basis"* (unusual competency using nonglossary terms).

Where a performance is optional, it should *not* be specified. Treating pulpal infections in multirooted teeth is desirable and would satisfy a competency for teeth with one or more roots. But if treatment of the single rooted tooth is the level of competency expected of all graduates, no mention should be made of the more complex procedure.

Competencies should be numbered and sequenced in a logical order. The practice of grouping competency statements under topic headings, such as "diagnosis" or "practice management," or enumerating "sub-competencies" should be resisted because it promotes curricular segmentation and because it appears to open discussion on the oxymoron "partial competency."

GLOSSARY

Acquire (see **obtain**).

Appropriate. This modifying term is often used to signal that special vigilance or professional judgment is required. Because adaptation to a normal range of variation is part of all competencies, this term will usually be redundant and should not

be used. When writers of competency statements feel pressure to insert the term, they should scan other competencies to make certain that diagnosis has been covered. An alternative is to incorporate special circumstances – the third part of format – into the competency statement.

Assess. Evaluation of physical, written, and psychological data in a systematic and comprehensive fashion to detect entities or patterns that would initiate or modify **treatment, referral,** or additional assessment. Assessment entails **understanding** of relevant theory, and may also entail **skill** in using specialized equipment or techniques. But assessment is always controlled by an **understanding** of the purpose for which it is made and its appropriateness under the present circumstances. **Recognition** is a more limited term that does not subsume the notion of evaluating findings. **Diagnosis** is a more inclusive term which relates evaluated findings to treatment alternatives.

Collect (see **obtain**).

Communicate (see **discuss**).

Competency. Behavior expected of the beginning practitioner. This behavior incorporates **understanding, skill,** and **values** in an integrated response to the full range of requirements presenting in practice. The level of performance requires some degree of speed and accuracy consistent with patient well-being but not performance at the highest level possible. It also requires an awareness of what constitutes acceptable performance under the circumstances and desire for self-improvement.

Conduct (see **perform**).

Consult (see **discuss**).

Develop [a plan] (see **perform**).

Diagnose. Diagnosing means systematically comparing a comprehensive database on the patient with an **understanding** of dental and related medical theory to identify recognized disease entities or treatable conditions. The concept of diagnosis subsumes an **understanding** of disease etiology and natural history and a matching of disease entities to available therapies, their advantages and risks, and prognosis and side effects associated with these treatments and with lack of treatment. **Assessment** is a more limited term that does not subsume relating findings to alternative treatments.

Differentiate (see **recognize**).

Discuss (communicate, consult, explain, present). A two-way exchange that serves both the practitioner's needs and those of patients, staff, colleagues, and others with whom the practitioner communicates. The conversation, writing, or other means of exchange must be free of emotional or other distorting factors and the practitioner must be capable of expressing and listening in terms the other party understands. [Caution should be exercised with using these verbs to ensure that the communication is between the practitioner and the patient. Communication between the student and faculty is language reminiscent of the old instructional objectives and is not evidence of competency.]

Demonstrate. [This term is often used in the old instructional objectives literature to refer to behavior students perform for instructors. It can only be used for competencies where practitioners demonstrate for patients or staff.]

Describe. [This term is often used in the old instructional objectives literature to refer to behavior students perform for instructors. It can only be used for competencies where practitioners describe to patients or staff.]

Design. (see **perform**).

Document. Making, organizing, and preserving information in standardized, usable, and legally required format.

Educate. The use of **discussion** and other interpersonal skills to make relatively permanent changes in the behavior and attitudes of patients and employees.

Expertise (mastery). A level of practice that significantly exceeds **competency.** Expertise requires many years of practice and education and is seldom achieved across the full range of **competencies.** Expertise entails slightly greater speed and accuracy, much greater ability to recognize and manage advanced problems under very compromised conditions, and a strong sense of curiosity and commitment to continuous self-improvement.

Explain (see **discuss**).

Fabricate (see **perform**).

Foundation knowledge. Cognitive performance in clinical, biomedical, and behavioral sciences that supports **competency.** This cognitive knowledge must be learned at a suitable level to permit subsequent competence, although it may be imperfectly retained. **Understanding** foundation knowledge is especially important when **competencies** involve adaptation to varying conditions or when **communication** is part of the competency.

Foundation skill. Sets of performance in clinical, biomedical, and behavioral sciences that support **competencies.** These behavior patterns must be learned at a suitable level to permit transfer to subsequent competence. Foundation skills are usually simulations of **competencies** under controlled conditions such as preclinical laboratory exercises or role-playing.

Identify (see **recognize**).

Manage. Using dental and related biological information and knowledge of the patient's psychological, social, economic, and personal condition in correlation with theory, practitioners manage the patient's oral health condition. Management refers to the selection of **treatment** — including no intervention, choice of specific care providers–including hygienists and specialist, timing **evaluation** of **treatment** success, proper handling of sequela, and insurance of patient comprehension of and appropriate participation in the process. **Treatment** (by the practitioner or by others) is normally a part of the management sequence.

Mastery. A term normally used as synonymous with **expertise** — the highest level of **competency.** Using the term in its colloquial sense ("he mastered the basic concepts") should be avoided because it confuses two levels of competency.

Monitor. Systematic vigilance to potentially important conditions with an intention to intervene should critical changes occur. Normally monitoring is part of the process of **management.**

Obtain (collect, acquire). Making data available through inspection, questioning (patients, physicians, relatives), review of records etc., or capturing data by using diagnostic procedures. Health histories, radiographs, casts, and consults are **obtained.** It is always assumed that the procedures for obtaining data are performed accurately so that no bias is introduced, are appropriate to the circumstances, are no more invasive than necessary, and are legal.

Practice. Used to describe a general habit of practice, such as "practice consistent with applicable laws and regulations."

Perform (conduct, restore, treat). When a procedure is performed, it is assumed that it will be done with reasonable speed and without negative unforeseen consequences. Quality will be such that the function for which the procedure was undertaken is satisfied consistent with the prevailing standard of care and that the practitioner accurately **evaluates** the results and takes needed corrective action. All preparatory and collateral procedures are assumed to be a part of the performance.

Prepare (see **perform**).

Present (see **discuss**).

Prevent [the effects of]. The negative effects of known or anticipated risks can be prevented through reasonable precautions. This includes **understanding** and being able to **discuss** the risk and necessary precautions and **skill** in carrying out the precaution. Because preventing future damage is of necessity a response to an internalized stimulus rather than a present one, additional emphasis is placed on supportive **values.**

Proficiency. A level of practice that exceeds **competency.** Proficiency would be expected of practitioners with advanced education or several years of practice. Proficiency entails slightly greater speed and accuracy of performance, ability to handle more complicated problems and problems presenting under less than ideal circumstances, and greater internalization of professional standards.

Provide care (see **perform**).

Recognize (differentiate, identify). Identify the presence of an entity or pattern that appears to have significance for patient **management.** Recognition is not as broad as **assessment** — assessment requires systematic collection and evaluation of data. Recognition does not involve the degree of judgment entailed by **diagnosis.** [Caution is necessary with these terms. They are often used in the old instructional objectives literature to refer to behavior students perform for instructors. They can only be used for competencies when practitioners recognize, differentiate, or identify for patients or staff.]

Refer. A referral includes determination that **assessment, diagnosis,** or **treatment** is required which is beyond the practitioner's **competency.** It also includes **discussion** of the necessity for the referral and of alternatives with the patient, **discussion** and cooperation with the professionals to whom the patient is referred, and follow-up **evaluation.**

Restore (see **perform**).

Skill. The residual performance patterns of **foundation skills** that is incorporated into **competency.** The importance of the skill is more than speed and accuracy: it is the coordination of performance patterns into an organized **competency** whole.

Treat (see perform).

Use. This term refers to a collateral **performance.** In the course of **providing care,** precautions and specialized routines may be required. For example, infection control and rapport building communication are used. **Understanding** the collateral procedure and its relation to overall care is assumed. It is often the case that supporting **values** are especially important for procedures that are needed – they are usually mentioned specifically because their value requires reinforcement. ["Utilize" is a stylistic affectation that should be avoided.]

Understanding. The residual cognitive **foundation knowledge** that is incorporated into **competency.** Understanding is more than broad knowledge of details: it is organized knowledge that is useful in performing the **competency.** [Caution should be used with this term. Understanding alone is not a competency; it must be blended with skill and values.]

Values. Preferences for professional appropriate behavior in the absence of compelling or constraining forces. Values can only be inferred from practitioner's behavior when alternatives are available. "Talking about" values reflects a **foundation knowledge**; valuing can be inferred by observing the practitioner's attempts to persuade others. [Caution should be used with this term. Valuing alone is not a competency; it must be blended with skill and understanding.]

APPENDIX P

ORAL HEALTH

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*"Most of us enter the world head first and throughout our lives our faces are a window to self-image and how the world sees us. Yet there is more to the craniofacial complex than is in the eye of the beholder. Although history has resulted in differences in training for dentists, physicians and researchers, the body's nerves, blood vessels, inflammatory mediators and the like don't recognize artificial demarcations."**

Background

Analyses of recent oral epidemiologic data from the third National Health and Nutrition Examination Survey (NHANES III) indicate that women have shared in the positive oral health trends for the U.S. population. In fact, at face value most available oral health statistics are more favorable for women.[1] Thus, why highlight the need for additional research? Two reasons might be that the conditions under study are highly prevalent among both men *and* women and that a clustering of oral disease risk factor variables places significant numbers of women at high risk for development of oral diseases.

Most oral problems are "complex" diseases in that the manifestation of the condition is the result of multiple genes and gene susceptibility factors interacting with behavioral and environmental variables. A variety of demographic, general health, economic, social, and behavioral factors may be operative in placing subgroups of women at high risk for development of oral diseases. These factors include extended longevity, experience with multiple chronic conditions, medications, cognitive impairments, compromised functional status, and physical confinement. Each of these can induce biological or behavioral changes that adversely affect oral health.[2]

The life situations of significant numbers of women, including their poverty, underinsurance, and status as single head of household or family caregiver, may make attending to oral health and dental treatment needs problematic. Social influences such as traditional gender-role expectations or low income may influence women to defer consideration of their own oral health status while ensuring the well-being of others. Gender-role expectations may also bear on women's interactions with dental care providers, possibly affecting treatment recommendations. Similarly, behavioral patterns on the rise among women, including increases in smoking, unprotected sexual activity, and binging and purging, will likely lead to parallel increases in oral and pharyngeal cancers, AIDS-related oral pathologies, and tooth erosion and cavities.[2]

Another reason to consider oral health an important issue for women is its association with overall health and quality of life. The literature indicates that the progressive consequences of oral diseases are not only physical but economic, social, and psychological.[3-13] This point is underscored by the frequency with which fiction and drama exemplify general pain, suffering, or demise with depictions of oral problems.[14]

**Excerpt from the Oral Health Working Group Presentation. Putting It All Together: Research on Women's Health for the 21st Century*

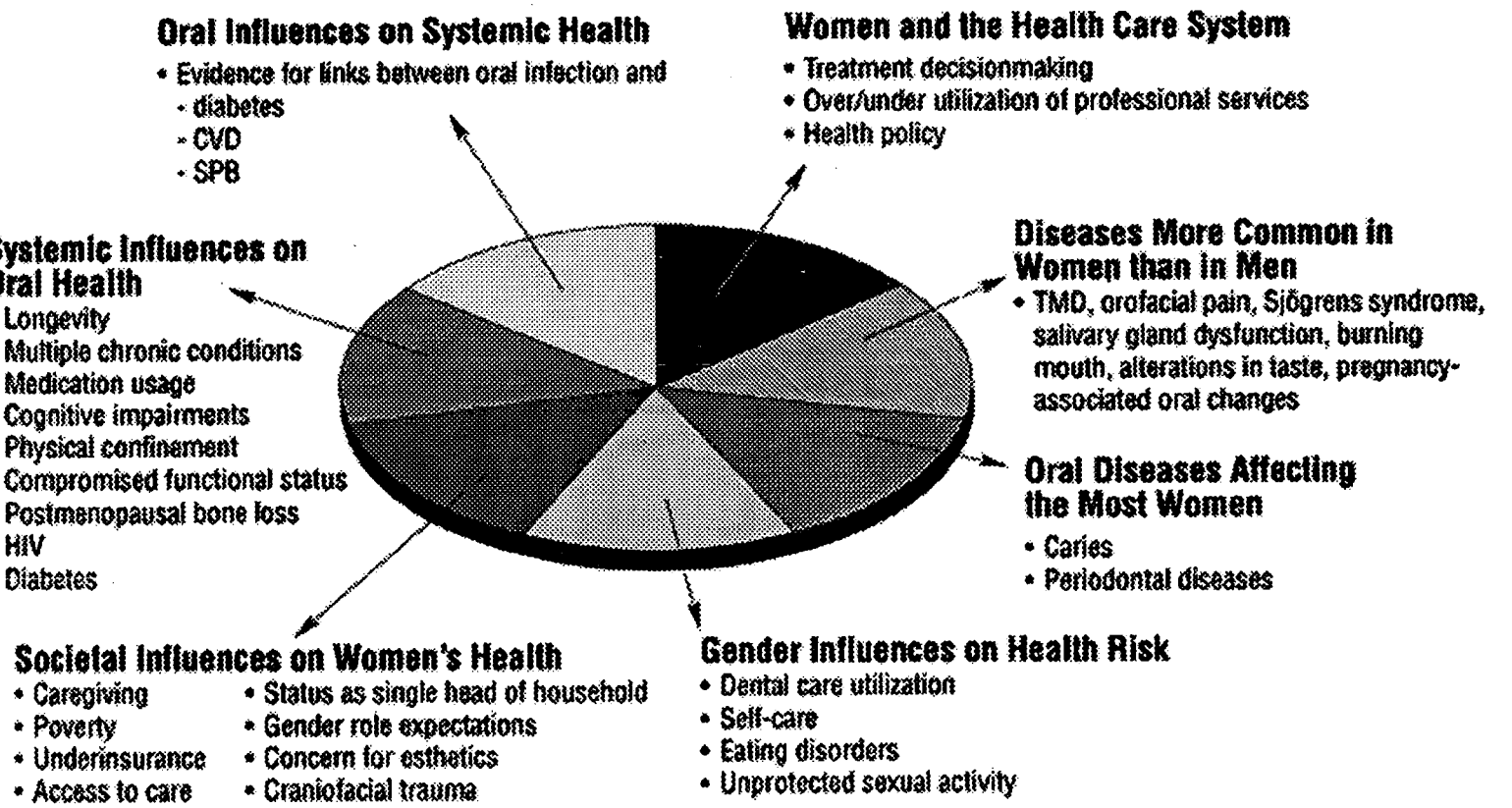
Because oral problems are typically repetitive and cumulative across the life span, disabling and handicapping outcomes are maximized among people in the later stages of life. Yet there are many opportunities throughout the life course to prevent oral problems and/or mitigate their sequelae.

In incorporating orofacial issues into the study of women's health, the research community can gain a fuller understanding of women's health needs and help ensure that oral problems do not unnecessarily add to women's health and life burdens in the 21st century. (See Figures 1 and 2 for background information.)

Recent Progress Achieved

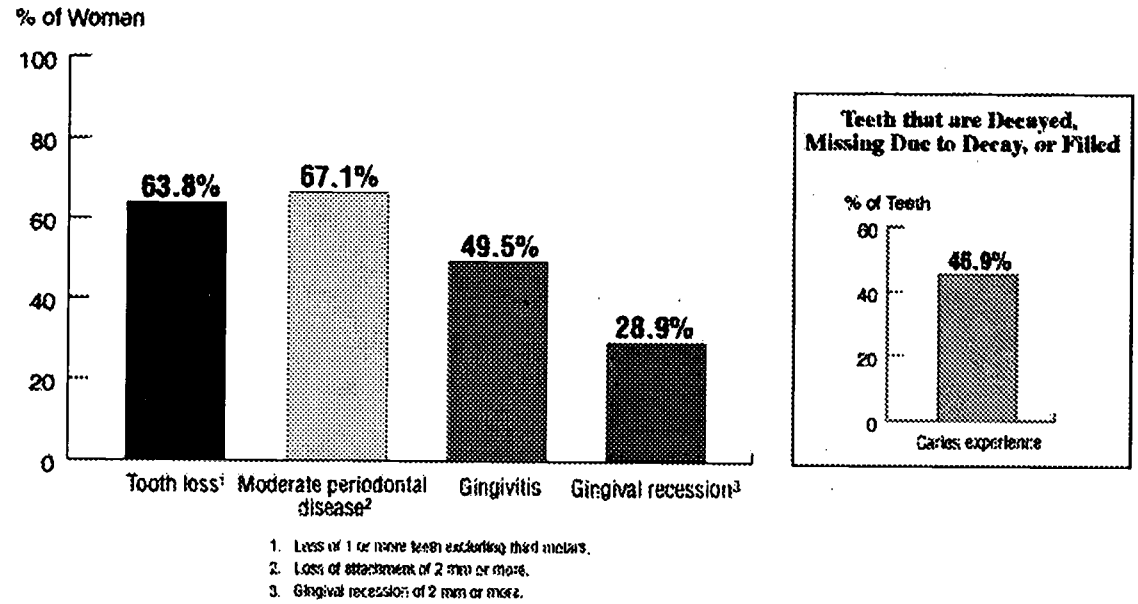
Since its inception in 1990, the Office of Research on Women's Health (ORWH) has worked with the National Institute of Dental Research (NIDR) to strengthen and enhance research related to oral diseases, disorders, and conditions that affect women. Collaboration has included the support of several major conferences, including the 1992 Osteoporosis and Oral Bone Loss Workshop, the 1995 Workshop on Selected Chronic Pain Conditions, and the 1997 Technology Assessment Conference on Management of Temporomandibular Disorders.

Figure 1. Content Areas in the Study of Women's Oral Health



Adapted from Chesney MA, Ozer EM. Women and Health: In Search of a Paradigm. Women's Health Research on Gender, Behavior, and Policy 1(1):3-26.

Figure 2. Prevalence of Select Oral Conditions Among Women 18 Years of Age and Older: United States 1988-94



National Health and Nutrition Examination Survey III

Similarly, the NIDR and the ORWH have joined forces to support extramural grants and intramural research projects investigating a wide array of issues of special relevance to women. Areas of focus include oral conditions that are unique to, more prevalent among, manifest differently in, have different risk factors for, or contribute significantly to morbidity among women.

By including an oral health working group in the "Beyond Hunt Valley" workshop, the ORWH has afforded women's health researchers, practitioners, and advocates an opportunity to integrate oral issues into the broader women's health agenda. Such an integrated, multidisciplinary perspective is needed to fully capitalize on the scientific opportunities of the new millennium.

The timing of this opportunity to re-examine oral health issues within the context of gender could not be better. Fifty years of progress spurred on by Federal investments in craniofacial research have paved the way for major advances in the 21st century. Recent advances in the fields of biomaterials, biomimetics, and tissue engineering are being applied to the development of new dental and facial implants, temporomandibular joint (TMJ) prostheses, bone matrix substitutes, and artificial replicas of calcified tissues, skin, and mucosa.[15] Clearly, the predictability of clinical success with these procedures may be influenced by gender.

Technological improvements have also sparked a renewed interest in using oral biochemical and structural markers to describe the risk for, presence, and outcome of oral and general health conditions. Taking advantage of the easy access to oral tissues, researchers are already using saliva as an

investigational diagnostic aid and potential monitor of disease progression. Systemic disorders that affect salivary gland composition and gland function include Alzheimer's disease, Sjögren's syndrome, cystic fibrosis, diabetes, and diseases of the adrenal cortex.[16] Saliva is also proving to be an effective tool to monitor levels of hormones and therapeutic medications, as well as the presence of illicit drugs.[17] Despite these positive advances, the extent to which the oral cavity can be exploited in the study of women's health has yet to be fully realized.

Oral researchers have begun applying gene transfer technologies to the repair of diseased or damaged salivary glands and to exploring uses of the salivary gland to produce therapeutic drugs for delivery into the mouth or into the systemic circulation.[18-20] Research opportunities abound to apply these advances to a myriad of conditions affecting women.

A new series of experiments recently published indicate that female dental patients respond more favorably than their male counterparts to kappa opioid analgesics for control of postoperative pain.[21,22] Because most clinically prescribed analgesics are of the mu opioid type, including morphine, codeine, and percodan, these findings could be used to benefit the large numbers of women undergoing operative procedures. More research is needed to generalize these findings to other clinical situations and to translate them as appropriate to clinical practice.

This observed gender difference in postoperative analgesia has added fuel to long-standing conjectures about male/female nervous system differences in response to pain. Indeed, studies in mice have shown that some quantitative trait loci for genes associated with responses to pain and analgesia are gender-specific.[23-25] These findings may help explain why certain painful conditions, including temporomandibular joint disorders, trigeminal neuralgia, fibromyalgia, reflex sympathetic dystrophy, migraine headaches, and burning mouth, are more commonly reported in women.

Similarly, new research on gender differences in taste perception may shed light on women's greater propensity for some painful conditions.[26,27] Oral health scientists have demonstrated that women are more likely than men to be supertasters to a bitter compound known as 6-n-propylthiouracil (PROP).[28] Supertasters to PROP have more fungiform papillae than non or medium PROP tasters, and experience more intense tastes (especially for bitter and sweet), more intense oral burn (e.g., alcohol, capsaicin), and more intense touch sensations from fats in food (e.g., "creaminess," "oiliness").[29-31] These findings, coupled with the fact that fungiform papillae receive innervation from the trigeminal nerve, have led to speculation that taste perception and experiences with trigeminal neuralgia and burning mouth may be linked.

There is new appreciation for the ways in which host factors modulate the susceptibility to and pathogenesis of caries and periodontal diseases, long considered localized infections. For instance, preliminary data from an oral ancillary study of the Women's Health Initiative indicate significant positive correlations between oral and hip bone mineral densities.[32] These findings indicate that oral bone loss caused by periodontal pathogens may be exacerbated by postmenopausal estrogen deficiency. Recent evidence also indicates that persons with noninsulin-dependent diabetes mellitus are three times more likely to develop periodontal disease than nondiabetic individuals. As diabetes increases in severity, the rate at which vital tooth-anchoring bone is lost accelerates.[33,34] Both of these systemic health conditions account for significant morbidity among women; these recent oral findings suggest that there is more to this morbidity than previously considered.

Oral effects of systemic disease are by no means limited to the periodontium. From birth to death, the mouth's continued exposure to opportunistic infectious pathogens is in balance with host immunity. When the host's immune system is compromised, as with HIV infection, certain microbes' virulence and ability to adhere to and colonize oral tissues is enhanced. Such is the case with C. albicans, whose overgrowth in the oral cavity highly suggests immune suppression. In fact, oral candidiasis is the most common opportunistic

infection seen in HIV and is often used to herald the presence of infection and/or to indicate disease progression.[35,36] NIDR-supported research to characterize the entire genome of C. albicans will accelerate progress in other areas of candida research including virulence factors, drug resistance, genomic evolution, and treatment. The information provided by this line of research will have considerable bearing on HIV-infected and -uninfected women's experiences with oral and genital tract fungal infections. Similarly, saliva's known anti-HIV activity and the intense search to identify protective salivary constituents may ultimately be applied to the formulation of new topical microbicides. In fact, all of oral HIV research, particularly in the areas of opportunistic infections, mucosal immunity, synthetic drugs and vaccines, and innovative drug delivery systems have tremendous potential to benefit women in that they are the fastest growing population with AIDS.

In this new scientific era, there are many reasons to consider oral and general health interactions as bi-directional. In the case of diabetes, new evidence points to chronic periodontal disease as a disrupter of glucose control, possibly due to induction of insulin resistance.[37] Perhaps even more surprising is preliminary evidence implicating periodontal disease as an independent risk factor for myocardial infarction and stroke. Epidemiologic findings indicate a nearly twofold risk for fatal myocardial infarction and stroke for persons with established periodontal disease.[38] More research is needed, including of a mechanistic nature, to further substantiate these findings. Future research in both the diabetes and heart disease/stroke arena should include greater numbers of women and examine potential gender differences in systemic responses to treating oral infections.

Furthermore, the impact of oral infections on the lives of women may relate not only to their own health but also to that of their offspring. Recent studies of microbial colonization between spouses and between parents and children have demonstrated that oral pathogens are transmitted among members of extended families.[39,40] Perhaps even more surprising is emerging evidence that poor maternal periodontal health increases an infant's potential for low birthweight and for preterm or premature birth. Recent findings indicate that severe periodontal disease in pregnant women is linked to a sevenfold increase in the risk of delivering preterm low-birthweight babies. It is estimated that as many as 18 percent of the 250,000 premature low-birthweight deliveries in the United States each year may be attributed to infectious oral disease.[41,42] Scientists working in this area theorize that oral pathogens release toxins that reach the human placenta via the mother's blood circulation, as shown by results from animal studies. Additional research is needed to substantiate this hypothesis and to confirm this intriguing link.

With remarkable advances in science, and technology have come increased responsibilities to ensure an adequate supply of competent investigators in the years to come. Education of dental care providers is an increasingly expensive endeavor for the school and for the individual. In 1996, the average accumulated debt of a graduating dental student was over $81,000. This debt is a significant deterrent to continuing studies by the dental school graduate, including research training. Furthermore, research training is not part of the undergraduate dental school curriculum nor is it included in dental residency programs. As a consequence, dental graduates are not generally exposed to research and are not oriented to pursuing advanced research training. In the case of female dental students, the situation is further compounded by a lack of role models. Women are underrepresented at all levels of academic dentistry; only 15 percent of associate professors and 5 percent of full professors are women. These figures are significantly lower than those in the academic medical environment, where twice as many women are at the full professor level. The result of these circumstances is a dearth of women in academics and research. Continued support and enhancement of oral research training and career development programs are needed to help ensure that women can assume leadership roles in academic and health professional institutions, government agencies, and the private sector.

Gaps in Knowledge

Large gaps in knowledge limit the ability to interpret oral health within the context of gender. For instance, there are areas in which oral health information for either gender, even at the descriptive level, is partial or nonexistent. Data gaps in the areas of craniofacial trauma, soft tissue pathologies, and salivary gland dysfunctions are notable illustrations.

Even in the presence of descriptive data, the lack of knowledge about etiologic factors, mechanisms, and clinical course of oral diseases limits the utility of available oral health statistics. For example, women are reported to be more inclined to self-care, more likely to visit a dentist, and more likely to report symptoms such as pain. The degree to which these behaviors influence oral disease patterns is unknown. Similarly, there is a dearth of information on the influence of gender on dental treatment decision-making and care delivery. Is women's oral health status a reflection of primary disease experience or gender-specific treatment patterns?[2]

In addition, large gaps in knowledge limit the ability to translate scientific advances to improvements in health. As previously mentioned, breakthrough discoveries in the areas of biomimetics, biomarkers, gene transfer technologies, and pain research have paved the way for a myriad of clinical applications. More research is needed to clarify the influence of gender on the predictability of clinical success for new procedures and pharmacologic regimens.

Although progress has been made in recognizing some oral and general health interactions, considerable research is needed to confirm putative associations for both genders and uncover biologic bases for these links. Additional research is also needed to determine whether there are gender differences in responses to therapies for the oral and general health conditions involved in these links.

Research Recommendations

Although the oral health research community can exult in its many recent successes, new-found knowledge challenges all of us to do more. It is within this context that oral health working group members encourage additional research in all the areas of oral health study discussed in this report.

The bulleted list below highlights research areas that are particularly ripe for study and that have the greatest capacity to control oral diseases and improve the general health and quality of life of women.

Biomimetics

- Study the effect of hormonal status on the efficacy of guided bone and tissue engineering procedures.

Diagnostic Markers

- Investigate the utility of saliva as a matrix for studying biological markers important to women's health and diseases.
- Determine how best to utilize oral examination findings and the dental clinic encounter in domestic violence, child abuse, and eating disorders intervention programs.
- Explore whether dental radiographs can be useful in identifying aberrant skeletal bone changes.

Sjögren's Syndrome/Autoimmune Diseases

- Investigate the role of gender in autoimmune conditions, including the role of sex hormones in induction and perpetuation of these conditions.
- Study gender-controlled transcription differences that influence autoimmune disease penetrance.
- Conduct research on the impact of hormonal therapy on women with Sjögren's syndrome and other autoimmune conditions.
- Identify appropriate and sensitive clinical outcome measures for the exocrine dysfunctions associated with Sjögren's syndrome.
- Conduct controlled clinical trials testing new biological therapies for Sjögren's syndrome.

Pain

- Study the relations among fluctuations in reproductive hormones and pain experiences including cognitive, emotional, and behavioral components.
- Investigate the hormonal influences on nociception and pain modulation pathways, and investigate the effects of replacement therapies on pain and analgesia.
- Examine women's stress response to pain and coping behaviors.
- Study sociocultural effects on women's responses to pain across the life span and in different cultural milieus.
- Examine predictors of chronic pain development in women, including diminished activation of endogenous pain control systems.
- Conduct basic research to examine the effects of estrogens and other hormones on nociception and pain modulation pathways.
- Study the interactions between oral taste and pain sensations, particularly as they relate to painful oral lesions and oral pain in the absence of visible oral pathology, as in burning mouth syndrome.
- Explore the mechanisms and models (both animal and human) underlying gender differences in responses to noxious stimuli and analgesic medications.
- Study the role of genomic and nongenomic mechanisms mediating actions of gonadal hormones on pain perception and pain control.
- Investigate the role of steroid hormone response elements in regulation of gene expression in pain pathways.

Temporomandibular Disorders

- Conduct studies to elucidate the etiology and pathogenesis of TMDs, including the contributions of segmental versus heterosegmental hyperalgesia to TMD myogenous pain.
- Design evidence-based research studies to determine optimal treatments and outcomes for specific TMD clinical presentations.

HIV

- Investigate the prevalence of oral lesions among infected women and determine their prognostic significance for HIV disease progression.
- Determine if there are gender differences in response to, and compliance with, oral lesion therapies.

- Explore the relation between oral and vaginal candidiasis and study the effects of oral versus systemic antifungal therapies on oral candidal lesions.
- Determine the relationship of oral diseases in HIV-infected women and their children, including perinatal transmission.
- Investigate the barriers to accessing oral care for HIV-infected women and evaluate the resultant effects on health and oral health.

Interrelationships of Oral and Systemic Disorders

Osteoporosis

- Study the relationship of periodontal disease, alveolar bone loss, residual ridge resorption, osteopenia, and osteoporosis.
- Explore how stress, coping behaviors, and depression modify the relationship among oral bone loss, osteopenia, and osteoporosis.
- Determine whether bone density in the oral cavity correlates with systemic bone mineral density.
- Determine if common therapeutic strategies can be exploited for treating alveolar bone loss and systemic bone loss.
- Determine the influence of hormonal status and hormone replacement therapy on oral bone loss and tooth retention.

Diabetes

- Determine the role of periodontal infection as an aggravating factor for diabetes mellitus in women.

Cardiovascular Disease

- Study periodontal infection as a risk for CVD in women.

Spontaneous Preterm Births

- Study fundamental mechanisms that combine oral disease measures and microbial, immunological, and inflammatory parameters to understand how oral infection may modify the maternal-fetal interaction.
- Conduct population-based, prospective studies to assess the independent contribution of periodontal infection to the risk of spontaneous preterm birth (SPB)..
- Carry out intervention studies to determine whether periodontal therapy reduces the incidence or morbidity associated with SPB.
- Expand animal studies on the underlying mechanisms of SPB and the influence of distant infection on pregnancy.

Recommendations for Dental Education, Research, and Training

- Establish mentoring programs for girls to encourage them to pursue science courses and careers, including programs linking high schools to universities.

- Expand short-term research opportunities for female undergraduate dental students to stimulate interes in research careers.
- Develop research training programs targeted for women with the capacity to accommodate the increasing pool of women dental graduates.
- Develop clinical research training programs targeted for women as part of advanced primary care dental education programs.
- Continue to provide supplemental research training and funding opportunities to women who must often interrupt their careers because of family care responsibilities.

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Pain/Analgesia

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Oral Bone

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"An alarming shortage of research-trained, full-time female dental faculty exists at our dental schools."

Debra Studen-Pavlovich
American Association of Dental Schools

". . . Sjogren's syndrome affects women primarily, and women's health problems, especially problems occurring to middle-aged women, have been notoriously understudied."

Evelyn J. Bromet
Sjogren's Syndrome Foundation, Inc.

APPENDIX Q

PART VII. ANNOTATED BIBLIOGRAPHY*

Bishop, K, Briggs P, Schmidt E
Review Article
Topic area: Eating disorders
British Journal of Hospital Medicine
52:326, 329-34 1994
Identification and immediate management of the oral changes associated with eating disorders

Buhlmann, H
Review Article
Topic area: Eating disorders
Schweizer Monatsschrift fur Zahnmedizin
103:1450-60 1993
Anorexia and bulimia. The eating disorders anorexia nervosa and bulimia nervosa and oral health

Mehler, PS
Review Article
Topic area: Eating disorders
Hospital Practice
31:107-110 1996
Eating Disorders: 2. Bulimia nervosa

Mueller, J A
Education & Training
Topic area: Eating disorders
Dental Hygienist News
8:3-7 1995
Eating disorders: identification and intervention

Willershausen, B, Philipp E, Pirke KM, Fichter M
Research Article
Topic area: Eating disorders
Zahn-, Mund-, und Kieferheilkund, Mit Zentrallblatt
78:293-9 1990
Oral complications in patients with anorexia nervosa and bulimia nervosa
Oral health in 11 anorectic and 41 bulimic patients was compared to 50 normal controls. Subjects with eating disorders had reduced gingival inflammation, but increased enamel erosion. 27 of 41 bulimic patients had bilateral parotid swelling. A significant correlation was found between serum amylase activity and dental disease in bulimic patients.

Willette, JC
Job Title: Clinical
Topic area: Eating disorders
American Journal of Mental Retardation
97:247 1992
Interdisciplinary strategies for treating dysphagia and eating disorders should include dentistry

Bokhout, B, Hofman FXW, van Limbeek J, Kramer GJC
Research Article
Topic area: Genetic defects
Caries Research
31:8-12 1997
Incidence of dental caries in the primary dentition in children with cleft lip and/or palate
The incidence of dental caries in the primary dentition was determined in Dutch cleft lip and/or palate children. Occurrence of dental caries was significantly higher in the oral cleft group (0.037; 95% CI 0.031-0.046) than in the control group (0.004; 95% CI 0.002-0.007) All types of teeth were affected in the oral cleft group whereas in the control group dental caries occurred only in maxillary incisors and second molars.

Denk, MJ, Magee WP Jr.
Research Article
Topic area: Genetic defects
Cleft Palate-Craniofacial Journal
33:57-61 1996
Cleft palate closure in the neonate: preliminary report

Denny, AD, Kinney T
Research Article
Topic area: Genetic defects
Journal of Craniofacial Surgery
6:120-5 1995
Cleft cluster: a strategy for concurrent correction of multiple secondary clefting deformities

Emory, RE Jr., Clay RP, Bite U, Jackson IT
Research Article
Topic area: Genetic defects
Plastic & Reconstructive Surgery
99:1535-8 1997
Fistula formation and repair after palatal closure: an institutional perspective
119 consecutive patients were reviewed post cleft palate repair. Cleft palate fistulas were seen in

*This literature search was completed (2/98) and includes a broad range of research involving oral and craniofacial health and disease in women.

11.5%. Sex did not affect the rate of fistula formation. The strongest predictor of cleft palate fistula was the surgeon performing the procedure.

Erbe, M, Sloeling PJ, Leenen RJ
Research Article
Topic area: Genetic Defects
Journal of Cranio-Maxillo-Facial Surgery
24:109-17 1996
Long-term results of segmental repositioning of the maxilla in cleft palate patients without previously grafted alveolo-palatal clefts

Horswell, BB, Castiglione CL, Poole AE, Assael LA
Research Article
Topic area: Genetic Defects
Journal of Oral & Maxillofacial Surgery
51:145-9 1993
The double-reversing Z-plasty in primary palatoplasty: operative experience and early results

Jigjinni, V, Kangesu T, Sommerland BC
Researeh Article
Topic area: Genetic Defects
British Journal of Plastic Surgery
46:681-5 1993
Do babies require arm splints after cleft palate repair?
A prospective randomized trial of arm splints postoperatively after primary cleft palate repair to prevent oronasal fistula was carried out on 46 children. 6 of 21 with arm splints and 5 of 25 without arm splints developed oronasal fistula. The authors recommend abandoning the use of arm splints after cleft palate repair.

Karling, J
Research Article
Topic area: Genetic Defects
Cleft Palate-Craniofacial Journal
30:73-7 1993
Speech in unilateral and bilateral cleft palate patients from Stockholm
Speech in 84 patients with complete unilateral cleft lip and palate and 19 patients with complete bilateral cleft lip and palate was compared to that of a control group of 40 subjects. Bilateral cleft patients had poorer speech and needed more speech therapy than unilateral cleft patients. All cleft patients were found to have poorer speech than noncleft subjects in spite of speech therapy and surgical treatment.

Ohsmni, N, Onizuka T, Ito Y
Research Article
Topic area: Genetic Defects
Plastic & Reconstructive Surgery
91:433-40 1993
Use of a free conchal cartilage graft for closure of a palatal fistula: an experimental study and clinical application

Rintala, AE, Haapanen ML
Education & Training
Topic area: Genetic Defects
British Journal of Oral & Maxillofacial Surgery
33:295-71 1995
The correlation between training and skill of the surgeon and reoperation rate for persistent cleft palate speech
The correlation between surgeon training, skill and reoperation after primary repair for continued speech disorders was analyzed. The reoperation rate averaged 36% for residents and 19% for specialists

SC Lehman JA Jr Herber
Review Article
Topic area: Genetic Defects
Clinics in Plastic Surgery
20:755-68 1993
Orthognathic surgery in the cleft lip and palate patient

Witsenburg, B
Research Article
Topic area: Genetic Defects
Journal of Cranio-Maxillo-Facial Surgery
21:239-44 1993
Reconstruction of residual alveolo-palatal bone defects in cleft patients. A retrospective study

Witt, PD
Review Article
Topic area: Genetic Defects
Clinics in Plastic Surgery
20:707-21 1993
Velopharyngeal insufficiency and secondary palatal management. A new look at an old problem

Cochran, KP, Bain B, Eskes N, Ramsay DH, Eldemire D
Research Article
Topic area: HIV
Int. Conf. AIDS
11:86, Abs. 1996
A pilot study of HIV antibodies in saliva and serum of Jamaican children born to women with

HIV/AIDS
Collecting saliva from children ages 3-12 years was simple and non-traumatic. The results of serum and saliva tests were comparable in this small series.

Emmons, W
Research Article
Topic area: HIV
American Journal of Medicine
102:15-20 1997
Accuracy of oral specimen testing for human immunodeficiency virus

Ficarra, G, Shillitoe EJ, Adler-Storthz K, Gaglioti D, Di Pietro M, Riccardi R, Forti G
Research Article
Topic area: HIV
O Surg O Med O Path
70:748-55 1990
Oral melanotic macules in patients infected with human immunodeficiency virus
Of a group of 217 patients seropositive for HIV, 6.4% develop pigmented lesions of the oral mucosa over 2 years. Of a control group of 180 health care workers and 30 seronegative intravenous drug abusers, 3.6% developed melanotic pigmentation. Although oral macules do not appear more frequently in HIV-infected patients, the clinical behavior of these lesions appears to be different.

Fong, IW, Laurel M, Burford-Mason A
Research Article
Topic area: HIV
Clinical & Investigative Medicine
20:85-93 1997
Asymptomatic oral carriage of *Candida albicans* in patients with HIV infection

Kolokotronis, A, Kioses V, Antoniades D, Mandraveli K, Doutsos I, Papanayotou P
Research Article
Topic area: HIV
O Surg O Med O Path
78:36-40 1994
Median rhomboid glossitis. An oral manifestation in patients infected with HIV

Madigan, A, Murray PA, Catalanotto F, Feuerman
Research Article
Topic area: HIV
Pediatric Dentistry
18:129-36 1996
Caries experience and cariogenic markers in HIV-positive children and their siblings

Madinier, I, Doglio A, Cagnon L, Lefebvre JC, Monteil RA
Research Article
Topic area: HIV
British Journal of Oral & Maxillofacial Surgery
30:237-43 1992
Epstein-Barr virus DNA detection in gingival tissues of patients undergoing surgical extractions

Martinez-Gimeno, C, Acero-Sanz J, Martin-Sastre R, Navarro-Vila C
Research Article
Topic area: HIV
Journal of Cranio-Maxillo-Facial Surgery
20:297-302 1992
Maxillofacial trauma: influence of HIV infection
In 171 patients seen over a 5-year period for mandibular and mid-face fractures, 19% of patients with mandibular fractures were HIV positive compared to 7.75% of patients with mid-face fractures. The most important etiology of fractures was violence and the most prevalent risk factor for HIV was heroin use. HIV patients had a significantly higher rate of preoperative infections (26.4% as compared to the control group, 6.5%).

Ramos-Gomez, FJ, Petru A, Hilton JF, Canchola AJ, Wara D, Dorenbaum A, Greenspan JS
Research Article
Topic area: HIV
Int Conf AIDS
11:299, abstract 1996
Oral health status of immunocompromised children

Shiboski, CH, Hilton JF, Neuhaus JM, Canchola A, Greenspan D
Research Article
Topic area: HIV
Archives of Internal Medicine
156:2249-54 1996
Human immunodeficiency virus-related oral manifestations and gender
Oral and physical examination of 200 HIV-infected men and 218 HIV-infected women at 6-month intervals over 4 years showed a higher occurrence of hairy leukoplakia and candidiasis in men (22% and 24%) than in women (9% and 13%). Odds of having hairy leukoplakia were 2.5 times higher in men than in women.

Tukutuku, K, Muyembe-Tomfum L, Kayembe K, Odio W, Kandi K, Ntumba M
Research Article
Topic area: HIV
Journal of Oral Pathology & Medicine
19:234 1994
Oral manifestations of AIDS in a heterosexual population in a Zaire hospital
In a population of 83 heterosexual AIDS patients, fungal (94%) bacterial (335) and viral (23%) oral lesions were found by oral examination. Neoplasm occurred in 12% of cases and 14% of lesions were of unknown etiology.

Bundgaard, T, Wildt J, Frydenberg M, Elbrond O, Nielson JE
Research Article
Topic area: Oral Cancer
Cancer Causes & control
6:57-67 1995
Case-control study of squamous cell cancer of the oral cavity in Denmark
In this population-based case-control study of intra-oral squamous cell carcinoma, 161 consecutive patients were age- and gender-matched with 3 controls. Risk was significantly associated with marital status (odds ratio 2.3 for divorced versus married, 95% CI 1.1-4.6); with having fewer than 5 teeth (odds ratio 2.4, 95% CI 1.3-4.1).

Cade, JE, Lancaster, DM, Guerra LR
Education & Training
Topic area: Oral Cancer
Journal of Cancer Education
9:1.4-8 1994
Cancer education curriculum at the Louisiana State University School of Dentistry

Datta, K, Saha RK, Chakrabarti RN
Research Article
Topic area: Oral Cancer
Journal of the Indian Medical Association
95:70-1 1997
A simple risk estimates study for oral cavity cancer: practical approach in Indian context

Maier, H, Zoller J, Herrmann A, Kreiss M, Heller WD
Research Article
Topic area: Oral Cancer
Otolaryngology- Head & Neck Surgery
108:655-61 1993
Dental status and oral hygiene in patients with head and neck cancer
Case control study of 100 patients with squamous cell carcinoma of the upper aerodigestive tract and 214 age- and sex-matched control subjects. Oral hygiene and dental status in tumor patients was found to be significantly worse. Tartar of 3mm or more was found in 40.9% of tumor patients compared to 22% of control.

Matthews, DC
Review Article
Topic area: Oral Cancer
Journal of the Canadian Dental Association
61:785-91 1995
The use of diagnostic tests to aid clinical diagnosis

Morse, DE, Katz RV, Pendrys DG, Holford TR, Krutchkoff DJ, Eisenberg E, Kosis D, Mayne ST
Research Article
Topic area: Oral Cancer
Cancer Epidemiology, Biomarkers & Prevention
5:769-77 1996
Smoking and drinking in relation to oral epithelial dysplasia
Case-control study to measure association between oral epithelial dysplasia and smoking and alcohol behaviors. 127 cases were age- and gender-matched with controls. Odds ratio for current smoking was 4.1 (95% CI 2.1-7.9); the risk increased with increasing levels of smoking. Individuals drinking 7+ drinks/week had a risk of 2.4 (95% CI 1.2-4.8) compared to those consuming less alcohol. Both these estimates were corrected for mouthwash use, denture status, education and drinking or smoking, respectively.

Shugars, DC
Education & Training
Topic area: Oral Cancer
Nurse Practitioner: American Journal of Primary Health Care
22:105,109-10, 113-5 1997
Detecting, diagnosing and preventing oral cancer

Winn, DM, Blot WJ, McLaughlin JK, Austin DF, Greenberg RS, Preston-Martin S, Schoenberg JB, Fraument JF Jr.
Research Article
Topic area: Oral Cancer
Cancer Research
51:3044-7 1991
Mouthwash use and oral conditions in the risk of oral and pharyngeal cancer
In interviews with 866 patients with cancer of the oral cavity and pharynx and 1249 controls, risks of oral cancer were elevated by 60% among female mouthwash users as compared to 40%

among male mouthwash users. Increased risk was confined to users of mouthwash high in alcohol content.

Aaltonen, AS
Research Article
Topic area: Oral Health
Proceedings of the Finnish Dental Society
87:373-82 1991
The frequency of mother-infant salivary close contacts and maternal caries activity affect caries occurrence in children 4 years old. Dental caries prevalence was investigated in 248 4- year-old children. Dental caries were significantly more frequent in a) children in whose mothers caries incidence was low and salivary close contacts were frequent (40%) and b) in children in whose mothers caries were high and close contacts were rare (45%). Caries incidence was low in children whose mothers had low incidence of caries and low close contacts (18%).

Adulyanon, S, Vourapukjaru J, Sheiham A
Research Article
Topic area: Oral Health
Community Dentistry & Oral Epidemiology
24:385-9 1996
Oral impacts affecting daily performance in a low dental disease Thai population
501 people, aged 35-44, from 16 rural villages, were surveyed and then examined. In this population with low caries incidence and low utilization of dental services, 73.6% of all subjects had at least one daily performance affected by an oral impact.

Anonymous
Review Article
Topic area: Oral Health
Journal of the American Dietetic Association
96:184-9 1996
Position of the American Dietetic Association: oral health and nutrition

Anonymous
Review Article
Topic area: Oral Health
International Dental Journal
44:599-612 1994
Nutrition, diet and oral health. Report of an FDI Working Group

Anonymous
Review Article
Topic area: Oral Health
Journal of Adolescent Health
13:183-235 1992
Office of Technology Assessment--the role of Federal agencies in adolescent health

Anonymous
Research Article
Topic area: Oral Health
Public Health Reports
108:657-72 1993
Toward improving the oral health of Americans: an overview of oral health status, resources, and care delivery. Oral Health Coordinating Committee, Public Health Service

Bolden, AJ
Research Article
Topic area: Oral Health
Journal of Public Dentistry
55:18-21 1995
Differences in judgments of persuasive argument quality by three population groups in Iowa

Bolden, AJ, Henry JL, Allukian M
Review Article
Topic area: Oral Health
Journal of Dental Education
57:888-900 1993
Implications of access, utilization and need for oral health care by low-income groups and minorities for the dental delivery system

Brody, HA, Lucaccini LF, Kamp M
Education & Training
Topic area: Oral Health
Special Care in Dentistry
13:146-50 1993
Computer-based education for evaluation of oral lesions

Delaney, JE
Review Article
Topic area: Oral Health
Dental Clinics of North America
39:837-50 1995
Periodontal and soft-tissue abnormalities

Ferris, GM
Review Article
Topic area: Oral Health
Compendium
14:1558-64 1993
Alteration in female sex hormones: their effect on oral tissues and dental treatment

Fiske, J, Lewis D
Review Article
Topic area: Oral Health
Gerodontology
12:3-5 1995
Food for Thought: Guidelines for putting oral health into the context of healthy eating for older people

Folkers, SA, Weine FS, Wissman DP
Review Article
Topic area: Oral Health
Compendium
13:852,854,856 1992
Periodontal disease in the life stages of women

Fu SC, Qi ZP, Bin ZZ
Review Article
Topic area: Oral Health
Journal of School Health
60:349-50 1990
People's Republic of China: perspectives in school health

Gift, HC, Drury TF, Nowjack-Raymer RE, Selwitz RH Research Article
Topic area: Oral Health
Journal of Public Health Dentistry
56:84-91 1996
The state of the nation's oral health: mid-decade assessment of Healthy People 2000

Golletz, D, Milgrom P, Mancl L
Research Article
Topic area: Oral Health
Journal of Public Health Dentistry
55:210-7 1995
Dental care satisfaction: the reliability and validity of the DSQ in a low-income population
895 mothers of school-aged children from a low-income population in Seattle were surveyed to measure dental care satisfaction. When compared to the nonpoor, this population reported less satisfaction with pain management, quality of care, access to care and overall satisfaction.

Griep, MI, Mets TF, Vogelaere P, Collys K, Laska M, Massart DL
Research Article
Topic area: Oral Health
Tijdschrist voor Gerontologie en Geriatrie
28:11-7 1997
Odor perception in relation to age, general health, nutritional status, and dental status
73 apparently healthy adults from 53-86 years were assessed for the joint effect of general health, dental health and nutrition on odor perception. Those in poor general health had significantly higher mean odor thresholds than those in good or reasonably good health. Partial denture wearers had significantly higher mean odor thresholds than those with natural teeth. In women, muscle mass decreased with age and odor perception was inversely correlated with triceps skin thickness.

Griep, MI, Verleye G, Franck AH, Collys K, Mets TF, Massa DL
Research Article
Topic area: Oral Health
European Journal of Clinical Nutrition
50:816-25 1996
Variation in nutrient intake with dental status, age and odour perception

Hunt, RJ, Slade GD, Stauss RP
Research Article
Topic area: Oral Health
Journal of Public Dentistry
55:205-9 1995
Differences between racial groups in the impact of oral disorders among older adults in North Carolina
440 participants aged 70 and older were surveyed for the impact of oral disorders on older black adults and older white adults. For 22 of the 49 items asked, older blacks reported more frequent impact than older whites.

Ikeda, Y
Research Article
Topic area: Oral Health
Shikwa Gakuho
93:789-810 1993
Oral health status with regard to subgingival bacterial flora and sex hormone in saliva during pregnancy

Karjalainen, S, Sewon Soderling E, Lapinleimu H, Seppanen R, Simell O
Topic area: Oral Health
Caries Research
31:180-85 1997
Oral health of 3-year-old children and their parents after 29 months of child-focused antiatherosclerotic dietary intervention in a prospective randomized trial
This long-term prospective randomized dietary intervention trial of 148 families, in which 7-month-old children were enrolled and followed until age 3. The intervention group, matched by gender with a control group, received a diet controlled for saturated and unsaturated fat intake. Although the intervention diet was higher in carbohydrates, no differences in caries prevalence was seen.

Kirstila, V, Tenovuo J, Ruuskanen O, Nikoskelainen J, Irjala K, Vilja P
Research Article
Topic area: Oral Health
Journal of Clinical Immunology
14:229-36 1994
Salivary defense factors and oral health in patients with common variable immunodeficiency

Kononen, E, Saarela M, Karjalainen J, Jousimies-Somer H, Alaluusua S, Asikainen S
Research Article
Topic area: Oral Health
Oral Microbiology & Immunology
9:310-4 1994
Transmission of oral *Prevotella melaninogenica* between a mother and her young child

Leao, A, Sheiham A
Research Article
Topic area: Oral Health
Community Dental Health
13:22-6 1996
The development of a socioeconomic measure of dental impacts on daily living
662 people of both genders and two classes, aged 35-44, were surveyed for Dental Impact on Daily Living (DIDL). Differences between subgroups were found.

LeGeros, RZ
Review Article
Topic area: Oral Health
New York State Dental Journal
62:47-52 1996
Minority Oral Health Research Center.
Improving oral health and expanding opportunities

Locker, D, Ford J,
Research Article
Topic area: Oral Health
Journal of Public Health Dentistry
56:69-75 1996
Using area-based measures of socioeconomic status in dental health services research

Loesche, WJ
Research Article
Topic area: Oral Health
O Surg O Med O Path O Rad & Endo
80:43-54 1995
Dental findings in geriatric populations with diverse medical backgrounds

Martin, WE
Review Article
Topic area: Oral Health
Geriatric nutrition: A comprehensive review
pp 169-181
Raven Press
New, York 1995
The oral cavity and nutrition

Matteson, SR
Review Article
Topic area: Oral Health
Critical Reviews in Oral Biology & Medicine
7:346-95 1996
Advanced imaging methods

Miller, DK, Carter ME, Sigmund RH, Smith JQ, Miller JP, Bentley JA, McDonald K, Coe RM, Morley JE
Research Article
Topic area: Oral Health
Journal of the American Geriatrics Society
44:959-62 1996
Nutritional risk in inner-city-dwelling older black Americans
A cross-sectional descriptive study of 515 elderly black Americans from St. Louis showed a high prevalence of tooth and mouth problems when compared to a mostly white control group from New England.

Morrison, EA, Darling T, Parr AE, Zakrewska TA, Field M
Research Article
Topic area: Oral Health
British Dental Journal
179:262-6 1995
Oral mucosal screening as an integral part of routine dental care

Ogunbodede, EO, Olusile AO, Ogunniyi SO, Faleyimu BL
Research Article
Topic area: Oral Health
West African Journal of Medicine
15:158 1996
Socioeconomic factors and dental health in an obstetric population
In this obstetric Nigerian population, dental education was found to be unrelated to general level of education. There was a significant difference in the prevalence of caries in high, middle and low socioeconomic groups.

Papas, AS, Joshi A, Palmer CA, Giunta JL, Dwyer JT
Research Article
Topic area: Oral Health
American Journal of Clinical Nutrition
61:423s-429s 1995
Relationship of diet to root caries
141 middle-aged and elderly adults (54% female and 46% male) were surveyed using food diaries and oral examination. In individuals with highest scores for decayed and filled surfaces, there was a significantly higher sucrose consumption.

Rosenoer, LM, Sheiham A
Research Article
Topic area: Oral Health
Journal of Oral Rehabilitation
22:469-80 1995
Dental impacts on daily life and satisfaction with teeth in relation to dental status in adults

Ship, JA, V Duffy, Jones JA, Langmore S
Research Article
Topic area: Oral Health
Journal of the American Geriatrics Society
44:456-64 1996
Geriatric oral health and its impact on eating

White, BA, Caplan DJ, Weintraub JA
Review Article
Topic area: Oral Health
Journal of Dental Education
59:19-57 1995
A quarter century of changes in oral health in the United States

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Topic area: Oral Health
Journal of Dental Hygiene
66:264-72 1992
Evaluating oral lesions. A systematic approach with exercises

Zaklrzewska, JM
Review Article
Topic Area: Oral Health
International Dental Journal
46:548-57 1996
Women as dental patients: are there any gender differences?

Aloisi, AM, Albonetti ME, Carli G
Research Article
Topic area: Pain
Neuroscience Letters
179:79-82 1994
Sex differences in the behavioural response to persistent pain in rats

Burns, JW, Johnson BJ, Mahoney N, Devine J, Pawl R
Research Article
Topic area: Pain
Pain
64:445-53 1996
Anger management style, hostility and spouse responses: gender differences in predictors of adjustment among chronic pain patients
A sample of 127 married chronic pain patients was assessed prior to entry into a multidisciplinary pain treatment program. Significant interactions were found between Anger Expression x hostility x Gender with pain severity, activity interference and activity level. Results suggest that discriminations among patients may be made based on anger management style in interaction with level of hostile attitude and the patients' gender.

Bush, FM, Harkins SW, Harrington WG, Price DD
Research Article
Topic area: Pain
Pain
53:73-80 1993
Analysis of gender effects on pain perception and symptom presentation in temporomandibular pain
The study evaluated symptom presentation, sensitivity to pain, personality, and illness behavior in 2 samples of patients with orofacial pain. The results showed few gender differences based on

ratings of chronic or experimental pain, pain-related illness behavior, and personality.

Kavaliers, M, Innes DG
Research Article
Topic area: Pain
Peptides
14:1001-4 1993
Sex differences in naloxone- and Tyr-MIF-1-induced hypoalgesia

Lautenbacher, S, Rollman GB
Research Article
Topic area: Pain
Pain
53:255-64 1993
Categories: Pain, Research, A
Sex differences in responsiveness to painful and non-painful stimuli are dependent upon the stimulation method
Sex differences in thermo- and electrocutaneous responsiveness to painful and non-painful stimuli were investigated in 20 women and 20 men. There were significant sex differences in electrical detection, pain and tolerance thresholds, with lower thresholds in women.

Nevin, K
Review Article
Topic area: Pain
Annals of Emergency Medicine
27:424-6 1996
Influence of sex on pain assessment and management

Novy, DM, Nelson DV, Averill PM, Berry LA
Research Article
Topic area: Pain
Clinical Journal of Pain
12:23-9 1996
Gender differences in the expression of depressive symptoms among chronic pain patients
245 patients with heterogeneous chronic pain complaints were divided into a subset of 113 depressed patients and 132 controls. No significant gender differences in the scoring for the Beck Depression Inventory were found, but depressive symptoms were significantly different by gender.

Stanberg, WF, Liebeskind JC,
Research Article
Topic area: Pain
European Journal of Anaesthesiology
10:14-7, Supplement 1995
The analgesic response to stress: genetic and gender considerations

Unruh, AM
Review Article
Topic area: Pain
Pain
65:123-67 1996
Gender variations in clinical pain experience

Weir R, Browne G, Tunks E, Gafni A, Roberts J
Research Article
Topic area: Pain
Clinical Journal of Pain
12:277-90 1996
Gender differences in psychosocial adjustment to chronic pain and expenditures for health care services used
This historical cohort analytic survey of 571 patients referred to a pain clinic assessed gender effects of referral practices. Women's adjustment was accounted for by cognitive variables. Men's adjustment was by social variables. There were differential expenditures for health service use by gender.

Beighton, D, Hellyer PH, Heath MR
Research Article
Topic area: Saliva
Archives of Oral Biology
35:173S-175S 1990
Associations between salivary levels of mutans strepococci, lactobacilli, yeasts and black-pigmented Bacteriodes spp. and dental variables in elderly dental patients
In a population of 146 elderly dental patients, the salivary level of mutans streptococci was unrelated to root DFS score. Mutans streptococci levels were related to wearing of partial dentures and to the number of snacks per day. Salivary lactobacillus levels were related to the number of snacks, to dentures and inversely related to salivary buffering.

Ben Aryeh, H, Gottlieb I, Ish-Shalom S, David A, Szargel H, Laufe RD
Research Article
Topic area: Saliva
Maturitas
185-9 1996
Oral complaints related to menopause
154 women attending a menopause clinic were divided into 58 women with no systemic disease and treatments, and 96 women with systemic disease and treatments. Oral discomfort was found in 45% of the first group and 60% of the second

group. Salivary composition and flow rates did not differ significantly between the groups.

Billings, RJ, Proskin HM, Moss ME
Research Article
Topic area: Saliva
Community Dentistry & Oral Epidemiology
24:312-16 1996
Xerostomia and associated factors in a community-dwelling adult population
710 adults were surveyed and examined for prevalence of xerostomia. The observed prevalence of xerostomia was 24% in women and 18% in men. The difference in prevalence between women and men was significantly different after age 50. Young and older cohorts had different subjective responses to measured decreases in salivary flow rates.

Goyette, N, Parot M, Sutzescu D, Leduc M, Dufour L, Trahan L, Lavoie MC
Research Article
Topic area: Saliva
Journal of Oral Pathology and Medicine
24:462-67 1995
Inverse correlation between the proportion of and the percentage of untreated carious teeth

Jones, RE, Ship JA
Research Aticle
Topic area: Saliva
Journal of the National Medical Association
87:131-5 1995
Major salivary gland flow rates in young and old generally healthy African-Americans and whites
60 healthy, middle-class African-Americans and whites were evaluated for unstimulated and stimulated salivary flow rates. In general, the objective and subjective measurements of major salivary gland flow rates are independent of age, gender, and race.

Locker, D
Research Article
Topic area: Saliva
Community Dentistry & Oral Epidemiology
21:165-8 1993
Subjective reports of oral dryness in an older adult population

Muramatsu, Y, Takaesu Y
Research Article
Topic area: Saliva
Bulletin of Tokyo Dental College
35:139-51 1994
Oral health status related to subgingival bacterial flora and sex hormones in saliva during pregnancy

Nordgarden, H, Jensen JL, Areberg P, Storhaug K
Research Article
Topic area: Saliva
Special Care in Dentistry
16:128-33 1996
Salivary secretion and oral health in narcolepsy: a pilot study

Pederson, ED, Stanke SR, Whitener SJ, Sebastiani PT, Lamberts BL, Turner DW
Research Article
Topic area: Saliva
Archives of Oral Biology
40:1151-55 1995
Salivary levels of alpha-2-macroglobulin, alpha-l-antitrypsin, C-reactive protein, cathepsin G and elastase in humans with or without destructive periodontal disease

Rudney, JD
Review Article
Topic area: Saliva
Critical Reviews in Oral Biology and Medicine
6:343-67 1995
Does variability in salivary protein concentrations influence oral microbial ecology and oral health?

Rudney, JD, Krig MA, Neuvar EK, Soberay AH, Iverson L
Research Article
Topic area: Saliva
Archives of Oral Biology
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Antimicrobial proteins in human unstimulated whole saliva in relation to each other, and to measures of health status, dental plaque accumulation and composition

Simons, D, Kidd EAM, Beighton D, Jones B
Research Article
Topic area: Saliva
Caries Research
31:91-6 1997
The effect of chlorhexidine/xylitol chewing gum on cariogenic salivary microflora: A clinical trial in elderly patients

Anonymous
Review Article
Topic area: Systemic disease
Journal of Periodontology
67:627-35 1996

Periodontal management of patients with cardiovascular diseases

Blinder, D
Review Article
Topic area: Systemic Disease
O Surg O Med O Path O Rad & Endo.
83:458-61 1997
Oral manifestations of sarcoidosis

Carson, ME, Peacock RE
Research Article
Topic area: Systemic Disease
Journal of Periodontology
66:1004-7 1995
Frequency of self-reported medical conditions in periodontal patients

Hu, Y, Nakagawa Y, Purushotham KR, Humpreys Beher MG
Research Article
Topic area: Systemic disease
American Journal of Physiology
263:E607-14 1992
Functional changes in salivary glands of autoimmune disease-prone NOD mice

Loesche, WJ
Review Article
Topic area: Systemic disease
Compendium
15:976, 978-82 1994
Periodontal disease as a risk factor for heart disease

Malisa, JE, Mosha HJ, Masalu JR
Research Article
Topic area: Systemic disease
East African Medical Journal
70:799-802 1993
Periodontal status of pregnant and postpartum mothers aged 18-45 attending MCH clinics in Tanga Municipality Tanzania
100 pregnant women and l00 control women were examined for periodontal health status. Results revealed a majority of pregnant women with gingival bleeding and plaque on 50% of sextants during pregnancy and after delivery.

Mealey, BL
Review Article
Topic area: Systemic disease
Annuals of Periodontology
1:256-321 1996
Periodontal implications: medically compromised patients

Miyazaki, H, Yamashita Y, Shirahama R, Goto-Kimura K, Shimada N, Sogame A. Takehara T
Research Article
Topic area: Systemic disease
Journal of Clinical Periodontology
18:751-4 1991
Periodontal condition of pregnant women assessed by CPITN
The periodontal conditions of 2424 pregnant and 1565 non-pregnant women were assessed according to the community periodontal index of treatment needs. 95% of pregnant women and 96% of non-pregnant women had some signs of periodontal disease. The percent of pregnant women with 4-5 mm pockets was significantly higher than in non-pregnant women and reached a maximum of 31% in the eighth month. These changes were interpreted to suggest that the increase in pocket depth was caused by gingival enlargement rather than by periodontal destruction.

Narhi, TO, Muerman JH, Odont D, Ainamo A, Tilvis R
Research Article
Topic area: Systemic disease
Special Care in Dentistry
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Oral health in the elderly with non-insulin-dependent diabetes mellitus

Nery, Meister F Jr, Ellinger RF, Eslami A, McNamara TJ
Research Article
Topic area: Systemic disease
Journal of Periodontology
58:564-8 1987
Prevalence of medical problems in periodontal patients obtained from three different populations

Offenbacher, S, Katz V, Fertik G, Collins J, Boyd D, Maynor G, McKaig R, Beck J
Research Article
Topic area: Systemic disease
Journal of Periodontology
67:1103-13 1996
Periodontal infection as a possible risk factor for preterm low birth weight
124 pregnant and postpartum women were examined to determine whether the prevalence of maternal periodontal infection could be associated with preterm low birth weight. Mothers with preterm low birth weight babies had significantly worse periodontal disease than the normal birth weight mothers.

Porter, H
Education &: Training
Topic area: Systemic disease
Nursing Times
90:27-9 1994
Mouth care in cancer

Simons, D
Research Article
Topic area: Systemic disease
O Surg O Med O Path
77:615-9 1994
Comparison of stimulated parotid salivary gland flow rates in normotensive and hypertensive persons

Streckfus, CF, Wu AJ, Ship IA, Jackson-Brown L
Research Article
Topic area: Systemic Disease
O Surg O Med O Path
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Comparison of stimulated parotid salivary gland flow rates in normotensive and hypertensive persons

Van Der Reijden, WA, Van Der Kwaak JS, Veerman ECI, Niuew Amerongen AV
Research Article
Topic area: Systemic Disease
European Journal of Oral Sciences
104:335-40 1996
Analysis of the concentration and output of whole salivary constituents in patients with Sjogren's syndrome
The protein content, sialic acid content, and calcium and phosphate concentrations of whole saliva were compared between 43 patients with Sjorgren's syndrome and 17 healthy controls. The absolute concentrations of albumin, cystatin C, cystatin S, total IgA and total protein, but not amylase were increased in Sjorgen's patients. The output/minute of total protein, albumin, amylase and IgA was decreased.

Abubaker, AO, Raslan WF, Sotereanos GC
Research Article
Topic area: TMD
Journal of Oral & Maxillofacial Surgery
51:96-100 1993
Estrogen and progesterone receptors in temporomandibular joint discs of symptomatic and asymptomatic persons: a preliminary study
Seven TMJ disc specimens obtained from women with documented internal derangement and 15 normal TMJ discs were analyzed for estrogen and progesterone receptors. Receptors were found in men and women and in specimens from symptomatic and asymptomatic patients.

Anonymous
Research Article
Topic area: TMD
Journal of Oral & Maxillofacial Surgery
51:1115-28 1993
Experimental temporomandibular joint disc perforation in the rabbit: a gross morphologic, biochemical, and ultrastructural analysis

Arbree, NS, Campbell SD, Renner RP, Goldstein GR
Research Article
Topic area: TMD
Journal of Prosthetic Dentistry
74:512-6 1995
A survey of temporomandibular disorder conducted by the Greater New York Academy of Prosthodontics
167 members of the Greater New York Academy of Prosthodontics were surveyed for their opinions on the diagnosis and treatment of TMD patients. 59% of respondents treated TMD. 35% of respondents used a questionnaire to assess symptoms. More recent graduates were more likely to treat TMD.

Athanasiou, AE, Melsen B
Research Article
Topic area: TMD
Angle Orthodontist
62:9-14 1992
Craniomandibular dysfunction following surgical correction of mandibular prognathism
Craniomandibular function was studied in 36 patients with correction of mandibular prognathism. TMJ function improved in l0 and 3 patients had less pain.

Cascone, P, DiPaolo C, Rampello A, Turilli M
Research Article
Topic area: TMD
Minerva Stomatologica
40:729-37 1991
A statistical evaluation of the surgical therapy of TMJ condyle-disk incoordination

Dahl, M, Sindet-Petersen S, Jensen J, Cosentino SJ
Review Article
Topic area: TMD
O Surg O Diag
3:19-25 1992
Arthroscopy of the human temporomandibular joint

Dijkstra, PU, de Bont LG, van der Weele LT, Boering G
Research Article
Topic area: TMD
Cranio
12:149-55 1994
Categories: TMD, Research, A
The relationship between temporomandibular joint mobility and peripheral joint mobility reconsidered
TMJ and other joint mobility was studied in 55 normal females and 28 normal males. 25.9% of the total variance of maximal mouth opening could be explained by the mobility of peripheral joints, age and sex.

Eliasson, S, Isacsson G
Research Article
Topic area: TMD
Journal of Craniomandibular Disorders
6:281-7 1992
Radiographic signs of temporomandibular disorders to predict outcome of treatment

el-Sheikh, MM
Research Article
Topic area: TMD
Journal of Cranio-Maxillo-Facial Surgery
25:109-15 1997
Management of unilateral temporomandibular ankylosis associated with facial asymmetry

Fernandez Sanroman, J, Gomez Gonzalez JM, Alonso Del Hoyo J, Monje Gil F
Research Article
Topic area: TMD
Journal of Cranio-Maxillo-Facial Surgery
25:139-48 1997
Morphometric and morphological changes in the temporomandibular joint after orthognathic surgery: a magnetic resonance imaging and computed tomography prospective study

Gateno, J, Miloro M, Hendler BH, Horrow M
Research Article
Topic area: TMD
Journal of Oral & Maxillofacial Surgery
51:1081-6 1993
The use of ultrasound to determine the position of the mandibular condyle

Gerard, MW, Laughon MM, Colley JL 3rd, Glasheen WP, Hoard MA, Edlich RF
Research Article
Topic area: TMD
Medical Progress through Technology
21:171-5 1996
Trends in temporomandibular joint surgery
Insurance carrier computer records were analyzed for frequency of arthroscopy and arthrotomy in Virginia. Half of the hospitals did not perform either procedure. Repeat procedures were performed for 3% of patients.

Goss, AN
Review Article
Topic area: TMD
International Journal of Oral & Maxillofacial Surgery
22:78-81 1993
Toward an international consensus on temporomandibular joint surgery. Report of the Second International Consensus Meeting

Goss, AN
Research Article
Topic area: TMD
International Journal of Oral & Maxillofacial Surgery
22:66-70 1993
The opinions of 100 international experts on temporomandibular joint surgery. A postal questionnaire

Larheim, TA, Bjornland T, Smith HJ, Aspestrand F, Kolbenstvedt A
Research Article
Topic area: TMD
O Surg O Med O Path
73:494-501 1992
Imaging temporomandibular joint abnormalities in patients with rheumatic disease. Comparison with surgical observations

Murakami, K, Moriya Y, Goto K, Segami N
Research Article
Topic area: TMD
Journal of Oral & Maxillofacial Surgery
54:285-90 1996
Four-year follow-up study of temporomandibular joint arthroscopic surgery for advanced stage internal derangements

Nellestam, P, Eriksson L
Research Article
Topic area: TMD
Swedish Dental Journal
21:19-24 1997
Preauricular approach to the temporomandibular joint: a postoperative follow-up on nerve function, hemorrhage and esthetics
189 surgical procedures were performed on 150 patients with temporomandibular disease. Postoperative hemorrhage occurred in 1% of cases. 5% of patients had transient facial nerve weakness. Auricultemporal nerve weakness was reported in 34% of patients.

Puelacher, WC, Wisser J, Vacanti CA, Ferraro NF, Jaramillo D, Vacanti JP
Research Article
Topic area: TMD
Journal of Oral & Maxillofacial Surgery
52:1172-7 1994
Temporomandibular joint disc replacement made by tissue-engineered growth of cartilage
Tissue engineering was used to construct TMD replacement discs from bioresorbable polymer and bovine articular cartilage. Discs were placed in nude mice and assessed by non-invasive and invasive means at 12 weeks.

Raustia, A, Pernu H, Pyhtinen J, Oikarinen K
Research Article
Topic area: TMD
Journal of Oral & Maxillofacial Surgery
54:1393-400 1996
Clinical and computed tomographic findings in costochondral grafts replacing the mandibular condyle

Reckow, EM, Speidel TM, Koenig RA
Research Article
Topic area: TMD
American Journal of Orthodontics & Dentofacial Orthopedics
103:530-6, 1993
Location of the mandibular center of autorotation in maxillary impaction surgery

Rodau, SK
Education & Training
Topic area: TMD
AORN Journal
S8:929, 931, 923-6 1993
Athroscopic temporomandibular joint surgery: a new approach to temporomandibular joints disorders

Sinn, DP, de Assis EA, Throckmorton GS
Research Article
Topic area: TMD
Journal of Oral & Maxillofacial Surgery
54:671-9 1996
Mandibular exursions and maximum bite forces in patients with temporomandibular joint disorders

Takaku, S, Toyoda T
Research Article
Topic area: TMD
Journal of Oral & Maxillofacial Surgery
52:722-6 1994
Long-term evaluation of discectomy of the temporomandibular joint

Widmark G, Kahnberg E, Haraldson T, Lindstrom J
Research Article
Topic area: TMD
Cranio
13:44-9 1995
Evaluation of TMJ surgery in cases not responding to conservative treatment

Wolford, LM, Karras SC
Research Article
Topic area: TMD
Journal of Oral & Maxillofacial Surgery
55:245-51 1997
Autologous fat transplantation around temporomandibular joint total joint prostheses: preliminary treatment outcomes

APPENDIX R

Beyond Pregnancy Gingivitis: Bringing a New Focus to Women's Oral Health

Maryann Redford, D.D.S., M.P.H.

Abstract: The compromised functional status, physical confinement, medical conditions, and cognitive impairments of significant numbers of women have important implications for oral health risk and dental treatments. In addition, there are a variety of economic, social, psychological, and behavioral factors which are operative in placing women at high risk for development of oral diseases. This paper describes the available U.S. data on women's oral health and examines some of the biological, behavioral, and societal factors which may be important for a more comprehensive understanding of this subject. It is this broad array of factors which differentiate women from men and which should be considered when defining priority research and treatment issues for women's oral health.

Key Words: women, dental, gender

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Recently, considerable emphasis has been placed on systemic diseases and conditions that are unique to, more prevalent in, or manifested differently in women. Potential gender differences in the patterns of oral health, oral diseases, and their treatments have yet to receive commensurate attention. This paper describes the available U.S. data on women's oral health and examines some of the biological, behavioral, and societal factors that may be important for a more comprehensive understanding of this subject.

Assessment of Women's Oral Health

The 1985-86 National Survey of Oral Health in U.S. Adults and Seniors provides the most recent national information on the oral health status of employed persons 18 and older and elders 65 and older attending senior centers. Statistical analyses of tooth loss patterns, dental caries, and periodontal diseases conducted utilizing the public use file indicate, in general, that women have shared in the positive oral health trends identified in the overall U.S. population.[1]

Analyses of these conditions and diseases were conducted using the software SUDAAN to produce standard errors for estimates based on complex multistage sample designs.[2] Tables 1 and 2 summarize the results of these analyses. Data are reported for each gender as the percentage of persons with disease by age category along with the corresponding p value of t statistics for the hypothesis of no mean differences between genders.

Table 3 and the text that follows focus on total differences between males and females of all ages for each oral descriptor.

Tooth Loss—Analyses of tooth loss patterns for employed persons and for seniors indicate that gender differences, although present, were minimal. At the extreme end of the tooth loss spectrum, both genders demonstrated similar means in the totally edentate category. Likewise, for employed persons, similar percentages of males and females were found to have an intact dentition up to and including the first molars and hence would likely

Table 1. Gender Differences in Oral Health Status by Age Group: Percent of Persons and p Value for Corresponding Differences

Oral Descriptor	Age Group 18-24	25-34	35-44	45-54	55-64
Edentulism					
Percent Male	–	0.20	2.70	7.15	14.99
Percent Female	–	0.26	2.86	11.36	14.00
p	–	0.34	0.42	0.01	0.35
No Prosthetic Treatment Needs					
Percent Male	75.89	68.32	52.74	30.95	24.15
Percent Female	72.56	65.47	47.15	30.71	22.28
p	0.17	0.14	0.01	0.47	0.29
Coronal Caries					
Percent Male	12.90	18.54	27.23	29.85	28.77
Percent Female	14.39	20.38	28.12	31.72	31.06
p	0.02	<.01	0.25	0.12	0.15
Root Caries					
Percent Male	6.91	13.11	24.12	40.00	47.65
Percent Female	5.80	9.45	17.96	33.27	41.85
p	0.31	<.01	<.01	0.01	0.12
Gingivitis					
Percent Male	55.25	44.84	45.91	43.97	46.06
Percent Female	43.05	39.23	38.21	36.45	36.37
p	<.01	0.03	<.01	0.06	0.01
Recession					
Percent Male	1.55	5.16	11.03	21.65	28.80
Percent Female	1.25	4.09	7.98	16.34	22.32
p	0.09	0.01	<.01	<.01	<.01
Loss of Attachment					
Percent Male	2.05	8.55	18.44	32.82	46.09
Percent Female	1.28	4.18	11.46	21.31	34.77
p	0.13	<.01	<.01	<.01	<.01

Source: The NIDR 1985-86 Survey of Employed Persons

require no prosthetic treatment.[3] For seniors, more females than males were found to have intact dentitions.

Dental Caries–There were larger percentages of females than males with coronal caries among employed persons and among seniors. However, percentages of persons exhibiting root-surface caries were higher for males than females.

Periodontal Diseases–Analyses for periodontal disease indicate that employed and senior males had more gingivitis, recession, and loss of attachment than females. Advanced loss of attachment as defined by 2 sites ≥4mm or 1 site ≥6mm affected a higher proportion of males.

Soft Tissue Pathology–Epidemiologic data for orofacial neoplasms are derived from the summary of the Surveillance, Epidemiology, and End Results (SEER) information of 1983 to 1987.[4] Overall, men are affected almost three times as often as women; a probable consequence of long-term tobacco use and alcohol consumption.

Salivary Gland Dysfunction–Information on the incidence of salivary gland dysfunction, a leading cause of atrophic changes in oral mucosa, is unavailable from national data sets. Reports of dryness, local inflammatory diseases, and Sjögren's induced hypofunction are more common for women; particularly for those at or near the menopause.[5-8] Estimates of the total number of cases of Sjögrens in the U.S. range from 1 to 4 million and 90 percent of those diagnosed are women.[9]

Orofacial Pain–Using data from a 1989 National Health Interview Survey supplement, Lipton, et al. found prevalence rates among women to be consistently higher for all types of orofacial pain reported within the previous six months.[10] The NHIS findings are consistent with the clinical distributions noted for temporomandibular joint dysfunction and myofascial pain, where female-to-male ratios have been reported as high as 20:1.[11] Trigeminal neuralgia, a neuropathic condition marked by sharp, stabbing pain in the face, is somewhat more common among women than men.[12]

Oral Health Behaviors–Using data from a 1989 National Health Interview Survey supplement, Gift, et al. concluded that women not only miss more time from work and experience more restricted activity days as a consequence of their own dental visits or problems, but also miss more time from work assisting relatives or friends.[13]

Pregnancy and the Menopause–Numerous clinical studies have been undertaken to describe the oral health status of pregnant or recently pregnant women. Findings indicate that the aggravated gingival reaction to local irritants often seen during pregnancy is transient, and not correlated with any significant loss of attachment during pregnancy or postpartum.[15] Reports of increased caries activity during pregnancy remain controversial.

The menopausal influence on oral tissues has yet to be comprehensively studied. Although dry mouth syndrome is sometimes described as a menopausal symptom, Ship, et al. found no differences in salivary flow rates or self-reports of dryness between premenopausal and postmenopausal women.[16]

Table 2. Gender Differences in Oral Health Status by Age Group: Percent of Persons and p Value for Corresponding Differences

Oral Descriptor	Age Group 65-69	70-74	75-79	80+
Edentulism				
Percent Male	31.82	37.04	52.55	51.26
Percent Female	32.18	43.95	40.72	48.48
p	0.46	0.03	0.01	0.23
No Prosthetic Treatment Needs				
Percent Male	7.83	7.15	4.00	4.63
Percent Female	10.95	7.95	7.87	3.50
p	0.06	0.31	0.01	0.19
Coronal Caries				
Percent Male	20.98	18.81	17.04	16.90
Percent Female	23.32	21.98	20.47	17.02
p	0.03	0.01	0.04	0.47
Root Caries				
Percent Male	63.41	68.31	65.14	70.72
Percent Female	53.44	59.93	63.79	70.83
p	0.02	0.03	0.39	0.49
Gingivitis				
Percent Male	53.37	48.06	54.20	53.94
Percent Female	43.56	40.93	46.23	42.22
p	0.02	0.09	0.03	0.01
Recession				
Percent Male	41.24	46.62	45.65	47.47
Percent Female	31.67	32.50	40.79	42.57
p	<.01	<.01	0.10	0.06
Loss of Attachment				
Percent Male	70.57	71.64	76.48	77.34
Percent Female	52.36	59.74	66.54	67.25
p	<.01	<.01	0.03	0.01

Source: The NIDR 1985-86 Survey of Seniors

Bringing a New Focus to Women's Oral Health

At face value most available oral health statistics seem more favorable for women. Thus, why highlight the need for additional research? One reason might be that there are large areas in which information for either gender, even at the descriptive level, is partial or nonexistent. Data gaps in the areas of craniomandibular trauma, soft tissue pathologies, and salivary gland dysfunctions are notable illustrations.

Second, even in the presence of descriptive data, there are voids in understanding etiologic factors, mechanisms, and clinical course of oral diseases that limit the ability to interpret oral health within the context of gender. For instance, women are reported to be more inclined to self-care, more likely to visit a dentist, and more likely to report symptoms such as pain.[10,14] The degree to which these behaviors influence oral disease patterns is unknown. It is not clear to what extent the more favorable periodontal status of the female population has a biological or behavioral underpinning. Are tooth loss and caries as measured by tooth count and decayed filled surfaces the result of primary disease experience or treatment patterns? The literature indicates a sexual dimorphism in the distribution of estrogen receptors in the temporomandibular joint complex and salivary glands but the implications of this have not been fully examined.[17-20] Might these receptors help to explain the preponderance of females who present with pathophysiologic symptoms referable to these tissues?

Thirdly, reliance on the more commonly used descriptors may not fully represent the nature and extent of significant oral problems. For example, while providing useful information, measures of attachment loss and pocket depth focus on a narrow aspect of oral bone status. Clinical impressions suggest that the prevalence of severely atrophic mandibles and diseased periodontia that are refractory to standard treatments are higher in women than in men, yet there are no data with which to support or refute this. Do orofacial pain statistics and reports of salivary gland dysfunction reflect real differences in morbidity or gender-related differences in illness behavior?

Last, and perhaps the most significant reason for re-examining women's oral health is to consider it within the rubric of forecasted demographic, general health, economic, social, and behavioral trends. This contextual approach to considering women's health issues was successfully employed by the U.S. Public Health Service (PHS) under the auspices of the Task Force on Women's Health Issues and the National Institutes of Health's Office of Research on Women's Health. The PHS has marshalled the efforts of women's health experts from within the PHS and from external scientific and lay communities to identify substantive issues and develop recommendations for future research on women's health. The insights afforded by these experts provide a unique framework for examining women's oral health and serves as the structure for the remainder of this paper.

The following text provides a brief overview of selected issues that have been identified by PHS expert working groups as concerns for the upcoming decade. Within each issue category observa-

Table 3. Gender Differences in Oral Health Status by Oral Descriptors for All Ages Combined: Percent of Persons and p Value for Corresponding Differences

	Edentulous	No Prosthetic Treatment Needs	Coronal Caries	Root Caries	Gingivitis	Recession	Advanced Loss of Attachment
Total Employed 18+							
Percent Male	4.16	53.23	22.62	23.69	46.69	11.71	18.81
Percent Female	4.27	51.48	23.82	17.95	38.82	8.39	11.40
p	0.43	0.13	0.03	<.01	<.01	<.01	<.01
Total Seniors 65+							
Percent Male	41.60	6.17	18.92	66.41	51.78	44.77	73.24
Percent Female	40.91	7.87	21.20	60.63	43.14	35.77	60.45
p	0.38	0.02	<.01	0.01	<.01	<.01	<.01

Source: The NIDR 1985-86 Survey of Employed Persons and Seniors

tions about oral health are included and are meant to serve as points of departure for discussions of research and educational agendas presented in the papers which follow. Some observations are buttressed by strong scientific data while others remain ripe for further study.

WOMEN'S LONGEVITY, PHYSICAL HEALTH, AND WELL-BEING

Women live longer than men. As a result, elderly women outnumber elderly men 3 to 2. In 1990, this meant that there were nearly 6 million more elderly women than elderly men.[21] The female advantage in life expectancy increases the number of years of exposure to disease risk factors and enhances the probability of morbid events.

Although the associations of oral diseases with systemic health profiles are not well understood, it is evident that certain medical conditions and their treatments can induce biological or behavioral changes that adversely affect oral health.

Throughout their lives, American women report more acute symptoms, chronic conditions, and short- and long-term disabilities than men; women's activities are limited by health problems 25 percent more days each year than men's.[22,23] The gender gap in physical disability widens with advancing age.[24,25] Women in nursing homes or personal care facilities outnumber men three to one.[26]

Osteoporosis, stroke, degenerative rheumatoid arthritis, and diabetes mellitus are more prevalent among older women than older men.[22-23, 26-29] These physical conditions can create serious problems in ambulation, restricting access to services and ability for selfcare. In 1990, of the 13 million women aged 70 or older, more than 2½ million were either unable or limited in their ability to carry on major activities.[30]

The rate of affective disorders for women is almost twice that for men. Females start showing higher rates of depression at puberty and this disparity widens in later years. Senile dementia, of which Alzheimer's disease is the best known type, occurs more frequently in women than in men.[31]

Elderly women use sedatives, hypnotics, antianxiety drugs, antihypertensive medications, diuretics, and tranquilizers at a rate 2½ times that of elderly men.[32] Higher utilization patterns of medications add to the likelihood of polypharmacy, drug misuse, and drug-induced functional and mental impairments.

Breast cancer affects more women than any other cancer, accounting for almost one third of all malignancies. In 1991, 67,500 women died from cancers of the breast and reproductive tract.[33]

As the preceding information indicates, significant numbers of women experience compromised functional status, physical confinement, medical conditions, and cognitive impairments.[22-33] The literature indicates that these factors have important implications for oral health risk, and dental treatments.[34-39] They may limit the individual's ability to maintain oral hygiene self-care regimens, seek professional dental services, tolerate dental treatment, and comply with postoperative instructions.[34,35] Systemic health profiles common among women can induce biological changes which adversely affect oral health. For instance, diabetes and the presence of co-morbidities may compromise immune function leaving the patient vulnerable to oral infections, including periodontitis and oral mucosal diseases.[36] Stroke, diabetes, arthritis, and affective disorders can adversely affect oral functions and patients may exhibit oropharyngeal symptoms such as dysphagia.[37] Pharmacologic regimens common among women can promote xerostomia thereby increasing the risk of caries, periodontal diseases, and atrophic/disease changes in oral mucosa.[9] As a consequence of chemotherapy for breast cancer, women may suffer inflammation and ulceration of the oral mucosa, oral infection, hemorrhage, neurotoxicity, and salivary gland dysfunction.[38,39]

Economic, Social, Psychological, and Behavioral Factors Affecting Women's Health

A variety of economic, social, psychological, and behavioral factors may also be operative in placing women at high risk for development of diseases, including oral health problems. As a group, women are economically disadvantaged in comparison with men, regardless of age, race, ethnicity, education, or employment status. Data from the Bureau of the Census indicate that although women made up 58 percent of the elderly population in the United States in 1990, they accounted for 74 percent of the poor elderly.[21]

In 1986, 38 percent of women 18 years and older had dental insurance.[40] Although that represents a significant number of women with dental benefits, dental plans traditionally provide limited coverage and require high cost sharing. Since women overall have lower incomes than men, lack of insurance and high co-payments for dental services may represent formidable obstacles to care. In addition, women assume a disproportionate burden as caretakers for family members of all ages: the young, the sick, and the elderly.[41] This often disrupts employment and, consequently, insurance coverage.

Behavioral patterns may also contribute to the development of diseases that have implications for oral health. At present, more school age girls than boys are regular smokers by the time they reach 10th grade. Adolescent girls are now smoking at a rate of 29 percent.[42] Among adults, women as a group have been relatively resistant to smoking cessation efforts. It has therefore been predicted that in two or three years there will be more female than male smokers in the U.S. population. Similarly, sexual activity and related disease trends are adversely impacting women's health. Women are the fastest growing population with AIDS.

Finally, socialization factors and psychological determinants may be placing women in a vulnerable situation for health problems in general and for related oral health difficulties. Many women continue to demonstrate passive and dependent behaviors and low self-esteem.[43] These may relate to women's experiences with domestic violence, eating disorders, stress, and depression as well as to their general interaction with the health care system. Investigations of the health care system indicate that women are often treated with less respect and dignity and that male physicians may be less sensitive to women's needs.[32]

The social, economic, and life-style situations specified above have been implicated as correlates of oral diseases. Poverty, underinsurance, and status as single head of household may make attending to oral health and dental treatment needs problematic for many women. Complex role patterns involving employment and care-giving may influence a woman's ability and willingness to practice preventive behaviors and seek professional dental care.

Concerns for the upcoming decade relate to increases in smoking and unprotected sexual activity, which will likely be accompanied by parallel increases in oral and pharyngeal cancers and AIDS related oral pathologies. As a consequence of binging and purging, increased caries activity, thermal hypersensitivity, enamel erosion, xerostomia, and parotid gland hypertrophy may be observed.[44]

Traditional gender-role expectations or low income may influence some women to defer consideration of their own oral health status while ensuring the well-being of others. Gender-role expectations may also bear upon women's interaction with the dental care provider; possibly affecting treatment recommendations. Issues of orofacial appearance may be of particular relevance to women not only because they bear a disproportionate burden of esthetic demands, but because cultural norms also put women at greater risk of internalizing them.[43] Hence, poor orofacial appearance may pointedly affect a women's sense of worth, social interactions, career, and life options.

Conversely, some female-typed behaviors may have protective effects. For instance, concerns for esthetics and gender-role expectations may result in more attention to oral health with a positive outcome. Overall, women report engaging in oral health behaviors, such as brushing, flossing, and visiting the dentist more often than do men.[14]

The Challenge Before Us

Many women exhibit good oral health and oral health behaviors and have supportive social and environmental structures. Yet large groups of women, notably the aged, chronically ill, those adopting dysfunctional behaviors, and those in or near poverty appear to be at higher risk. These risk factors and how to address them are poorly understood.

The clustering of risk factor variables relevant to the oral health of significant numbers of women summons us to recognize and respond to their needs. Medical conditions, functional disabilities, medication use, poverty, underinsurance, and adverse behaviors appear to be associated with various risk factors for oral diseases. Each of these, taken in the context of future demographic, socioeconomic, and health trends, is serious. But it is the interplay among these various biologic, behavioral, and social forces that will continue to shape the oral health status of women.

Recognizing the array of factors that affect women's oral health can help to direct research in identifying important preventive measures and treatment recommendations. Although gender-comparative research is still needed to better describe diseases for which the rates are greater in women, it must not be the only focus. If potential areas for study are identified solely on this basis, important differences in etiologic factors, mechanisms of diseases, and responses to therapy may be overlooked. Potential areas for inclusion in a women's oral health agenda should be selected because they are important issues for women; impacting their health and/or quality of life.

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Health Services and Women's Oral Health

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Abstract: Apart from tooth loss and edentulism, data on the relative levels of oral health of men and women are scarce. Evidence from Europe and to a lesser extent from the U.S. shows that women have fewer natural teeth present than men and have higher levels of edentulism. In Europe there is some evidence that socially deprived rural women have the highest levels of edentulism. Due to the lack of adequate detail in published reports of studies, it is difficult to relate the oral health of women with the availability, acceptability, and accessibility of dental services. Women tend to attend for dental care more regularly than men though there is some evidence that women are more fearful of dental treatment and also perceive cost as a barrier to dental care. Data from the Republic of Ireland suggest that women working in the home have higher levels of tooth loss and edentulism than those working outside the home. There is a need for consensus on methods of reporting oral health data in major descriptive studies. Further research is required to investigate why women tend to lose their natural teeth at an earlier age than men.

Key Words: women's oral health, tooth loss, edentulism, oral epidemiology

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The most striking evidence of the poorer health of women as compared with that of men are the figures for edentulism reported in surveys conducted in Europe in recent years. For example, in the United Kingdom, 25 percent of the male population aged 16 years and over was edentulous in 1978 compared with 33 percent of females. While the percentage of edentulous had declined between 1978 and 1988 the differences between males and females remained, the percentages being 16 and 25 percent respectively in 1988.[1] Similar differences between males and females have been reported in studies conducted in Ireland,[2,3] Finland,[4] Yugoslavia,[5] the Netherlands,[6] and in Alvsborg County, Sweden.[7] In the U.S., females also tend to have higher levels of edentulism though the trend is not consistent in all age and race groups.[8,9]

Various explanations for the higher level of tooth loss among women have been proposed, but these have been mainly hypothetical. For example, it has been argued that tooth loss reflects the availability of dental services and attendance patterns, hence one explanation for the higher level of edentulousness among females is that they are more likely to seek replacement for an inadequate and unaesthetic dentition as indicated by their better attendance pattern.[2] Clearly tooth loss and its more positive corollary, the mean number of natural teeth present, are not merely a reflection of dental disease but reflect social and cultural factors inherent in both patients and those who treat them and in the system of delivering dental care.[8,10] No doubt these social and cultural influences are changing rapidly and partly account for the decline in the levels of edentulousness in developed countries in recent years. For example, one explanation for the high levels of edentulousness in older women from rural communities in Ireland and the United Kingdom is the fact that up to the 1940s women had all their natural teeth extracted and dentures fitted when they reached the age of 21 or as part of their marriage dowry, whichever came first. Apparently this practice was looked upon with favor by the prospective husband since dentures often replaced an unsightly broken-down dentition and also the

Table 5. The Percentage of Subjects Who Were Edentulous According to Sex and to Eligibility for Dental Services (based on income). Republic of Ireland

Age	Unemployed and Lower Paid M	Unemployed and Lower Paid F	Higher Income Groups M	Higher Income Groups F
16-24	0.0	0.0	0.0	0.0
25-34	3.2	2.0	1.0	0.6
35-44	3.2	7.8	2.7	3.4
45-54	22.6	31.9	9.8	17.7
55-64	42.4	64.2	22.6	39.3
65+	48.2	72.2	17.0	42.9

with 18 or more sound untreated teeth. In attempting to explain these differences further analysis showed that women, especially those less well off cited costs and fear as barriers to dental care more than men. As in the United Kingdom data, while the less well off attended the dentist considerably less frequently, the more affluent women were more frequent attenders than all other eligibility groups.

In response to the survey conducted in Ireland in 1979[2] that first reported higher levels of edentulousness in Irish women, anecdotal comments over the years have included the observation that Irish women working in the home (housewives) are likely to sacrifice their own health care for the sake of the rest of the family. The data collected in the recent survey in the Republic of Ireland gives some credence to this observation. For example, those women eligible under the social insurance scheme includes those eligible for care under their own PRSI (women working outside the home) and those eligible for care under their spouses PRSI working in the home (housewives). For women aged between 25 and 64 the mean number of natural teeth present in the former group (n=126) was 18.0 while for housewives (n=56) the corresponding mean was 16.7. The percentage of women working outside the home with 18 or more sound untreated teeth was 20 compared with 12 percent of housewives. The nature of the data collected in the Irish study also allows the total female sample (i.e., irrespective of eligibility) to be divided into those working outside the home and housewives. Using these subgroups and combining ages 25 to 64, the mean number of natural teeth present in the former group (n=99) was 17.7 compared with 15.3 for all housewives (n=435). The percentages of subjects with 18 or more sound untreated natural teeth were 20.2 and 13.9 respectively. Due to the low numbers in these groups it is perhaps wise to interpret these data with caution.

CONCLUSION

It is regrettable that many major national and regional surveys do not give a breakdown of the results by gender. For that reason, this presentation's description of women's oral health as compared with men's is necessarily confined to tooth loss and number of natural teeth present. While it could be argued that these outcomes represent an objective end result of the ongoing risk of caries and periodontal disease among populations and of the many complex social and cultural interactions leading to extraction of teeth, nevertheless, those conducting surveys of oral health should be encouraged to report gender differences in an agreed manner for other outcome variables. Further research is needed to investigate why women have tended to lose their natural teeth at an earlier age then men. It is important that specific studies be undertaken to explain these differences.

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Women's Health: Implications for Health Professional Education

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The purpose of this presentation is two-fold; first, to respond to the previous presentations from a woman dental educator's perspective and second to offer some suggestions, perhaps provocative ones, for the future role that dental schools as institutions, and dental educational programs as vehicles, may play in shaping how our profession and other professions recognize the importance of women's oral health as an essential component of our health care agenda and incorporate specific interventions to address current and future needs.

An Educator's Perspective

In 1986, at the annual meeting of the American Public Health Association, a gentleman in the dental health section was presenting the results of his study on the progression of periodontal disease in 100 U.S. male subjects. When a female member of the audience asked why data from women had not been included in the research, the presenter responded that he did not want to confound the data. The researcher did not include another series of parallel data for the results of progression of periodontal disease in female subjects; women were excluded from the study on the basis on gender. Although it might be argued that technically the researcher was correct, the data base outcome and health care outcome is that women have not been included as equals in health care research nor benefited equally from health care knowledge and services.

In 1993, a female dental researcher was consulting on the analysis of extensive data collected on a large sample of New England elders. The researcher suggested that the data be examined to explore whether differences exist between genders on any of the variables selected as data points. The head of the project responded, "What a clever idea. It certainly would be the politically correct thing to do."

Women's health issues and women's oral health issues are not data confounders or contaminants, nor are they political pawns. Women comprise 52 percent of the U.S. population. Knowledge and information about women's systemic diseases and primary and secondary oral manifestations of disease is only beginning to be acquired. Historically, it seems that whatever attention there has been towards women's oral health has been linked to children under the umbrella of "oral health of mothers and children." In 1989, there was a four-day workshop in Washington entitled, "Equity and access for mothers and children: strategies from the Public Health Service on oral health of mothers and children."[1] But the issues of women's health and oral health are greater in magnitude than even the significant problems of motherhood. Under the leadership of Drs. Bernadine Healy, Vivian Pinn, and Ruth Kirschstein for the National Institutes of Health, and the Office of Research on Women's Health, and Dr. Agnes Donahue at the Office on Women's Health, we are starting to formulate the questions which need to be addressed. However, in the 1991 NIH report on Opportunities for Research on Women's Health,[2] oral health was not mentioned. At a January 1993 regional hearing of the Senate Committee on Labor and Human Resources, chaired by Massachusetts' Senator Ken-

nedy and attended by Dr. Healy, the topic of discussion was women's health. All of the invited speakers were women, and although many important social and health problems were highlighted, no one discussed the issue of oral health in women.

This symposium has considered women's oral health issues. As dental educators, it is important to not only realize where gender-related differences may lie, but to question the reasons for those differences. For example, women's edentulism was cited as striking evidence of the poorer health of women. As dental educators, we have the opportunity to target outreach programs and marketing efforts towards women. And then, we need to go beyond the prima facie evidence and address possible contributing causes. Despite the fact that United States data show females to be more frequent utilizers of dental services than males, strategies to facilitate access for women who underutilize services should be explored. Perhaps providing on site child care at community health centers and dental schools might facilitate access to dental services for those women who underutilize them. How do women utilize dental school services? Information pertaining to gender of dental school patients is not reported in the American Dental Association Annual Report.[3] It might be helpful to request and assess those data to enable dental educators to better understand the patient pool profile and their needs.

Dr. Donahue discussed the *Public Health Service Action Plan for Women's Health*. Dental educators must heed each of the interventions that the plan calls for, especially in the cases of the call for "...education and information, training, and policy."[4] Dental education is already responding. The American Association of Dental Schools, under the leadership of Drs. Preston Littleton and Jean Sinkford, initiated an Office of Women's and Minority Affairs. A liaison officer has been identified at each of the dental schools for primary responsibility in each of those areas. The liaison officers for women will focus on improving the environment for female faculty and students through information exchange, networking, and mentoring.[5]

At whom are these services targeted? The most recent (1992/1993) American Dental Association supplement to the Annual Report on Dental Education,[6] indicates that in 1991-92, women comprised 36 percent of total predoctoral enrollment. However, in a ten-year period, there has only been a 15.8 percent increase in the percentage of women choosing to matriculate in dental schools. Clearly there is ample opportunity to increase the female applicant pool. The ADA data show that the number of applications to dental school by women has not grown in the 10-year reporting period, and with the exception of 1991, has actually dropped.

The reality is that the increased percentage of women in dental school classes is actually due to declining numbers of male students in dental schools. If the assumption is made that current enrollment levels for women in dental schools will maintain, then it might be expected that increased numbers of women in the school and the profession may assist in furthering awareness of women's oral health issues in the education, research, and clinical arenas. However, the fact that there are proportionately more women in dental school by no means predicts changes in curricular or research focus. It will be critically important to continue to recruit women into the profession and to encourage and facilitate their assumption of leadership positions within the power circles and decision-making bodies in education, research, and clinical practice.

Although 1990 reports[7] indicated that women dental school faculty are clustered at the low end of the faculty career ladder, more recent data show some encouraging signs are appearing. Based on a 1992 AADS survey, a number of women have risen to a decanal rank. As of this presentation, there are no female full deans at U.S. dental schools. One Canadian dental school appointed a woman dean in 1992. There are now 27 female administrators who possess the title of assistant or associate dean.[9]

It is exciting to consider the dental educator's role in helping to formulate gender-related research questions and communicating new research findings to professionals—both for current students and in continuing education courses for practicing dentists, and explaining some of the reasons behind the numbers. An instance of the latter may be seen in the statement that women requiring care in nursing homes or personal care facilities outnumber men three to one.[9] It may be as important to understand why this occurs as to acknowledge the predominance of women in long-term care facilities. Since women tend to be the primary personal caregivers in the home, it is clear that when the male spouse is gone and the woman has difficulty in meeting her own personal care needs (or activities of daily living), there is often no one to help her. Therefore the responsibility for nursing and personal care is delegated to and borne by the long-term care facility. But as the presenter pointed out, there are many social, economic, psychological, and behavioral factors affecting women's oral health. How many dental schools, one wonders, cover the following potential etiologies of women's oral health problems in differential diagnosis: sexually transmitted diseases, domestic violence, anorexia and bulimia, homelessness, child abuse, elder abuse, poverty, smoking, or depression?

STRATEGIES

What strategies might we consider to include women's oral health issues in dental education in a

meaningful way? The following are five suggested strategies for further consideration, discussion, and debate.

Strategy 1–Include women's oral health topics within appropriate AADS curriculum guidelines in such areas as biochemistry and nutrition, behavioral sciences, community and preventive dentistry, oral biology, oral diagnosis, and oral medicine, to name just a few areas. Inclusion of separate women's health guidelines where appropriate would highlight the importance of these areas within respective disciplines.

Strategy 2–Specify and include women's oral health and women's role in educating structure among accreditation curriculum guidelines. For example, under Standard 3, Faculty and Staff, Standard 3.5 might be modified to read "Describe the policies governing promotion and tenure. Of the number of faculty eligible for promotion and tenure at each academic rank during the past five years, how many of those recommended for promotion or tenure received it? *List by rank and gender* (emphasis added)." In Standard 2, Financial Resources and Facilities, Standard 2.5 might be modified to read "Describe the location, resources, and services of the library." (add) "2.5.1 Describe the number and dates of holdings related to women's oral health." Under Standard 5.3, Curriculum–Clinical Sciences, Standard 5.3.5 might be revised as follows: "Assess the ability of faculty in this department *by gender* (emphasis added) to pursue scholarly activity or conduct research, given their teaching commitments."

Strategy 3–Engender legislative/congressional support for Centers of Excellence for Women's Health (COEWH) to be located within schools of medicine, dentistry, osteopathy, and nursing and identify oral health as a primary area of attention. Stipulate that each center must address student recruitment; student performance; faculty recruitment, training, and retention; information resources and curricula; and faculty and student research.[10]

Strategy 4–Present programs regarding women's oral health issues at local, regional, and national professional meetings.

Strategy 5–Develop courses on women's oral health for continuing education seminars, workshops, and symposia.

Many of the strategies mentioned require or imply cross-disciplinary or interdisciplinary efforts or linkages. A strategy for programs which go beyond the boundaries of the dental profession is essential to achieve the impact and recognition that women's oral health issues merit.

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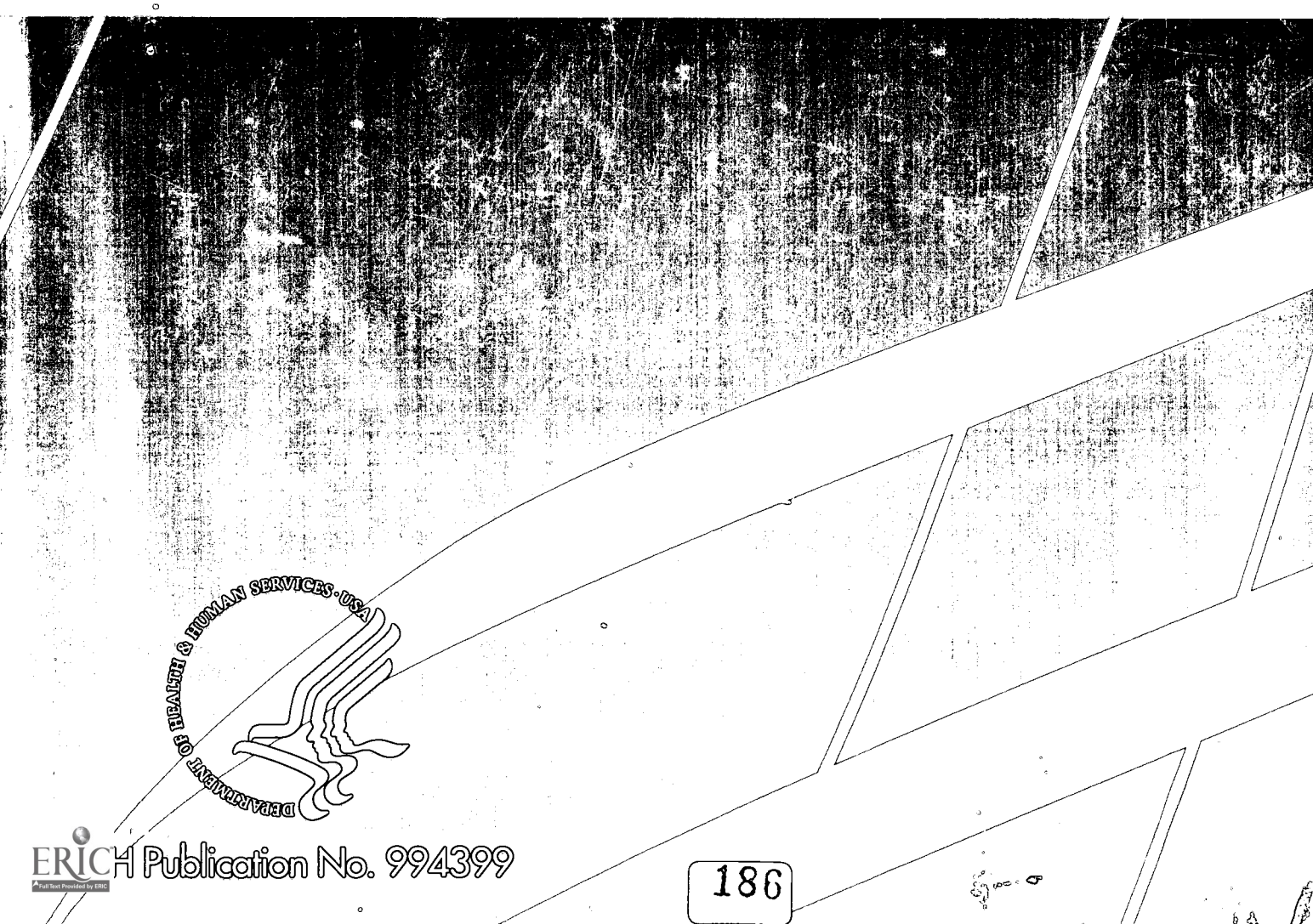

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