Integrating Social Determinants of Health into Dental Curricula: An Interprofessional Approach

Emily Sabato, EdD; Jessica Owens, DMD; Ann Marie Mauro, PhD, RN; Patricia Findley, DrPH, MSW; Sangeeta Lamba, MD; Kim Fenesy, DMD

Abstract: Approaching patient care from a holistic perspective, incorporating not only the patient’s medical and dental history but also psychosocial history, improves patient outcomes. Practitioners should be trained to provide this style of care through inclusive education, including training working on interprofessional teams. A component of this education must incorporate social determinants of health into the treatment plan. Social determinants of health include income, race/ethnicity, education level, work opportunities, living conditions, and access to health care. Education regarding social determinants of health should be woven throughout dental curricula, including hands-on application opportunities. This education must extend to patient care situations rather than be limited to didactic settings. This article explains the need to incorporate social determinants of health into dental education and illustrates how social determinants education is being addressed in two U.S. dental schools’ curricula, including how to weave social determinants of health into interprofessional education. These descriptions may serve as a model for curricular innovation and faculty development across the dental education community.

Dr. Sabato is Assistant Dean for Academic Affairs and Instructor, Rutgers School of Dental Medicine; Dr. Owens is Predoctoral Director, Department of Periodontics and Assistant Professor, Louisiana State University School of Dentistry; Dr. Mauro is Assistant Dean for Educational Research and Innovation and Professor, Rutgers School of Nursing; Dr. Findley is Special Assistant to the Dean for Interprofessional Health Initiatives and Associate Professor, Rutgers School of Social Work; Dr. Lamba is Associate Dean for Education and Associate Professor, Rutgers New Jersey Medical School; and Dr. Fenesy is Vice Dean and Associate Professor, Rutgers School of Dental Medicine. Direct correspondence to Dr. Emily Sabato, Rutgers School of Dental Medicine, 110 Bergen Street, Newark, NJ 07101; 973-972-4440; sabatoeh@sdm.rutgers.edu.

Keywords: dental education, person-centered care, social determinants of health, patient-provider relationship, interprofessional education
doi: 10.21815/JDE.018.022

Consider this scenario: Taylor Carter is a 61-year-old homeless woman who was found passed out on the curb in a snowstorm without a coat. Emergency responders found her smelling of alcohol, incoherent, holding her hand to her left jaw, and moaning with dental pain. An interprofessional team meets her at the emergency room. What does the team need to consider for her assessment and care?

In this age of swift change in technology, research, and the human environment, the American Dental Education Association (ADEA) has recognized that dental education must evolve to remain current and best serve patients. The ADEA Commission on Change and Innovation in Dental Education (ADEA CCI) has recently been transformed into ADEA CCI 2.0, with a focus on fostering developments in dental education to enhance delivery of health care and health outcomes centered on person-centered health care provided by future-ready graduates educated in a transformative learning environment. ADEA CCI 2.0 has identified five domains as topics of interest to focus transformation: technology, education, demographics, health care, and environment. Taken together, the last three describe social factors that greatly impact patients’ health, income, and overall quality of life (e.g., rising income inequality, changes in health care access and insurance, climate change). This article explains the need to incorporate social determinants of health into dental education and illustrates how social determinants education is being addressed in two U.S. dental schools’ curricula, including the weaving of social determinants of health into interprofessional education.
Concept of Social Determinants of Health

It has long been accepted that social factors contribute greatly to health inequality. This inequality persists both globally and nationally and can lead to disparities in many areas, including overall health, life expectancy, and access to health care. In 2005, the World Health Organization (WHO) formed a Commission on Social Determinants of Health to identify conditions contributing to this inequality and to formulate recommendations for combatting these conditions. In 2008, this group concluded that, to reduce existing health disparities, both global and national leadership and advocacy would need to improve overall living conditions, address financial disparities as well as access to care, and focus more on evaluating both the underlying causes and the outcomes of interventions. In 2012, the U.S. Department of Health and Human Services published an Environmental Justice Strategy and Implementation Plan, which examined the relationship between the physical and social environments in which people are born, grow, live, work, and play and how that relationship can impact human health.

Factors that can adversely affect mental and physical health include lack of income or education, low-paying jobs, limited social support, inadequate nutrition, limitations in transportation, and a lack of available health services.

In 2016, the FDI (Federation Dentaire Internationale) World Dental Federation adopted a new definition of oral health, encompassing the dynamics of genetic and biological factors, social environment, physical environment, health behaviors and access to care, and elements that modify oral health including age, culture, income, experience, expectations, and adaptability. The federation framed these factors into a context that supports overall health and well-being. Structural determinants and conditions including income, race/ethnicity, education level, work opportunities, living in an urban or rural environment, social policy, and access to health care are recognized for their contribution to health inequities and are collectively known as social determinants of health (SDH). These determinants “contextualize the systemic and structural challenges that patients may face in addressing their health goals” (p. 13). The FDI’s broader definition of oral health incorporates SDH and supports the understanding that oral diseases can be socially patterned. Oral health is an important indicator of overall health: “the mouth is both a cause and reflection of individual and population health and well-being” (p. 1).

While a person-centered approach is critical, the most positive health outcomes may not be realized without considering SDH. Untreated caries, periodontal disease, and tooth loss continue to be pervasive problems in the U.S. population, and research now links income inequality, lower socioeconomic status, and lack of routine home care to these health concerns. In addition, dental caries in children continues to be a problem, with factors such as low family income, limited education, and poor maternal mental health found to be predictive of poor oral health.

Despite the evidence that SDH is integral to optimizing health care outcomes, targeted collection of information on social determinants is not routine. Data regarding insurance status and similar data points are piecemeal throughout electronic health records (EHRs), and the majority of EHRs do not allow providers to cohesively collect or review SDH data. Tools exist for the collection of information on SDH. For example, the Colorado Community Health Network uses the Social Determinants Needs Assessment Survey (Table 1). This survey not only informs the provider; it also gauges the patient’s understanding and knowledge of how SDH may be affecting his or her health and health care. Historically, dental students have been taught to take social histories, but have not been well trained to act on patients’ social needs to improve health outcomes. Including the SDH in the systems and dental history review can highlight specific concerns that would affect compliance and proper follow up for oral health care treatment. Using a tool like this in dental school clinics would consistently reinforce the importance of SDH in clinical decision making and future dental practice.

The Advisory Committee on Training in Primary Care Medicine and Dentistry recommended that health professions education incorporate learning that enhances access to care as well as integrates care across disciplines. Utilizing the framework proposed by the Institute of Medicine (IOM) for SDH, dental schools should seek to make their curricula integrated and collaborative and provide experiential learning across each curriculum. In the IOM framework, the learning model requires student engagement through applied learning, interprofessional education (IPE) experiences, and collaborative learning opportunities. SDH can be woven through the coursework and across the four years of the curriculum.
HEALTHY COMMUNITY: SUCCESSES AND CHALLENGES

On a scale from 1 to 5, please rank your level of confidence for each of the following areas as they exist in your community.

1 No confidence  2 Rarely confident  3 Confident  4 Somewhat confident  5 Extremely confident

Education  Community activities  Language
Employment/job skills  Police  Family
Health care  Personal space  Substance abuse
Healthy eating  Legal issues  Mental health
Parks/green space  Insurance  Physical activity
Community safety  Transportation  Housing
Workplace safety  Community activities  Language

The biggest challenge I see in this community is: ____________________________________________

What are the greatest strengths of your community? (Check boxes for all that apply.)

Education  Police  Mental health treatment access
Employment  Personal space  Substance abuse treatment access
Health care  Insurance  Affordable housing options
Healthy eating  Transportation  Parks
Community safety  Community safety  English
Workplace safety  Family  Other: ____________________________________________

What are the greatest weaknesses of your community? (Check boxes for all that apply.)

Education  Lack of community activities  Poor access to health care
Job skills  Police  Insurance
Employment  Lack of personal space  Limited transportation
Substance abuse  Lack of affordable housing  Workplace safety
Mental health  Legal issues  Language skills
Lack of healthy food  Family  Minimal recreation and green spaces
Other: ____________________________________________

AREAS OF NEED

On a scale from 1 to 4, please rank the level of need in the following areas as they exist in your community.

1 High  2 Low  3 No need  4 Don't know

Health Care: what is the greatest health care need?

Primary care  Substance abuse
Specialty care  Mental health
Dental care  Transportation to health care
Eye care  Appointment

Nutrition: what is the greatest nutritional need?

Access to affordable healthy foods  Access to healthy food in stores
Access to healthy food in school  Cooking classes

Stress: what is a source of stress in your daily life?

Relationships  Access to transportation
Fear of domestic violence  Access to safe housing
Access to health care service  Access to education
Access to food  Community violence

(continued)
Given the strong relationship between psychosocial stressors (e.g., employment status, unsafe neighborhoods, financial stress) and oral health status, it is important that dental curricula address SDH broadly and in an integrated manner, rather than in isolation. For example, the link between caries risk factors in children and family income, race, and maternal education should be discussed in a pediatric dentistry course. In this context, SDH could be addressed from a targeted intervention and disease prevention standpoint (e.g., educating patients on how changes in diet can reduce pediatric caries.
including assistance on access to affordable and healthier foods with consideration of patient culture). Furthermore, SDH education would simultaneously increase students’ awareness of the impact of their own biases and preconceived notions on patient beliefs (e.g., what is affordable, preferable, compliance level for treatment) and teach them techniques to recognize and manage these issues through effective communication and self-awareness.

### SDH in Dental Curricula

In addition to inclusion in didactic coursework, experiential learning experiences are considered an effective teaching methodology for increasing awareness of SDH. However, one study found that dental students became callous to SDH across their education and suggested that an effective curriculum include multiple SDH experiences, community engagement, and student reflection to be effective. Examples at Rutgers School of Dental Medicine (RSDM) and Louisiana State University School of Dentistry (LSUSD) may help other schools see how SDH can be incorporated into dental curricula (Table 2). In these programs, for example, students complete rotations in rural, underserved areas as well as assisted living facilities, where patients may have significant limitations with respect to oral health care.

A goal of this education is for future practitioners to gain the skillset needed to obtain SDH information from patients in an unbiased manner. At RSDM, dental students are trained in recognizing cultural differences and are educated on tools for communicating with diverse populations in the Culture and Communication course in the second year of the dental curriculum. This course addresses traditional communications issues such as use of an interpreter and also teaches students to integrate SDH into practice by learning about culturally relevant perspectives on the receipt of dental care, being aware of financial issues, and acknowledging health literacy levels. Students have the opportunity to practice their communication skills in a simulated patient experience. Fellow students and a faculty member observe this interaction, which is followed by group discussion to debrief after each simulation. Cases include a patient with a physical job and schedule affecting his physical health; another who holds cultural beliefs about her diet and health that are inconsistent with medical recommendations; and a patient who is inconsistent in relaying information to the provider. This exercise exposes students early in the second year to SDH they may learn in a patient history interview. The experience precedes the students’ experiences in the treatment planning clinic and emphasizes the importance of patients’ social history, which provides context for their health-related behaviors.

In a slightly different educational approach, dental students at LSUSD have SDH integrated throughout their curriculum. In addition to courses

<table>
<thead>
<tr>
<th>General Topic</th>
<th>Content Type</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geriatrics/aging population</td>
<td>Lecture</td>
<td>Biomedical considerations of aging</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Managing chronic disease</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Long-term care policies</td>
</tr>
<tr>
<td></td>
<td>Experiential learning</td>
<td>Cognitive changes/behavioral management of patients with cognitive concerns</td>
</tr>
<tr>
<td>Oral diagnosis</td>
<td>Lecture/exams</td>
<td>Differential diagnosis (e.g., pathology, oral diagnosis, radiology,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>treatment planning)</td>
</tr>
<tr>
<td>Pediatric dentistry</td>
<td>Experiential learning</td>
<td>Rotation in special needs clinic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Performance of caries risk assessment on a pediatric patient</td>
</tr>
<tr>
<td>Periodontics</td>
<td>Experiential learning</td>
<td>Periodontics diagnosis, including assessment of condition, identifying</td>
</tr>
<tr>
<td></td>
<td></td>
<td>etiologic factors, and formulating and communicating a home care plan to</td>
</tr>
<tr>
<td></td>
<td></td>
<td>address the condition</td>
</tr>
<tr>
<td>Community experiences</td>
<td>Experiential learning</td>
<td>Rural practice rotation experience</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Community dental clinic rotation experience in student-run federally</td>
</tr>
<tr>
<td></td>
<td></td>
<td>qualified health center and other community health centers</td>
</tr>
</tbody>
</table>
focused on aspects of SDH, such as Caring for an Aging Population, students are also enrolled in a four-year Professional Development Continuum, in which cross-cultural experiences are introduced in the first year then expanded during the second year. Examples of SDH highlighted in this course are the impact of education level in the patient population as well as health literacy. Students are given information concerning basic literacy skills of Louisiana residents broken down by regions and the ways that can influence how information should be disseminated to patients. Case scenarios are introduced, ranging from misreading prescription information to misinterpreting biopsy results. Training modeled after the U.S. Department of Health and Human Services segment on culture competence is given.\textsuperscript{26} Small student group discussions include scenarios involving verbal and nonverbal communication miscues that often occur due to language barriers or cultural differences and how that relates to all aspects of patient care in a dental setting.

Regardless of the approach, in our health care landscape and in the spirit of enhancing person-centered care, dental school curricula should be designed to specifically address SDH topics. One of the best avenues to address these topics is through IPE, which is used by both RSDM and LSUSD. At LSUSD, students are enrolled in a formal IPE curriculum titled Team Up, which emphasizes compassion, communication, and collaboration in health education. This two-year longitudinal course involves all first- and second-year students in the LSU Health Sciences Center Schools of Allied Health, Dentistry, Medicine, Nursing, and Public Health, with Graduate Studies joining in 2018. Students meet monthly in 65 teams to learn “about, from, and with each other” (p. 196)\textsuperscript{27} with the help of a faculty facilitator. Students in the first year of study participate in team building, motivational interviewing, and communication. Additionally, these interprofessional teams develop their observations skills through a Health Partner program, connecting with members of the community to learn about their health care goals, access to resources, and experience of receiving care. In the second year, these same team members analyze a series of cases with various health components such as physical and/or cognitive disabilities, substance use disorder, oral cancer, and obesity. Each team member applies his or her discipline-specific knowledge in a collaborative effort to analyze and manage the cases.

At RSDM, key interprofessional competencies are mapped across all four years of the curriculum with the other schools of Rutgers Biomedical and Health Sciences and the Rutgers School of Social Work. The IPE curriculum uses hybrid teaching modalities to promote interprofessional experiential and collaborative learning, including in-person large and small group sessions, patient care experiences at Rutgers and community sites, online learning, and simulation activities. Dental students work in teams with medical, social work, nursing, dental hygiene, and pharmacy students in varied activities. Table 3 outlines IPE activities incorporating SDH.

An illustration of a dedicated SDH IPE experience is a case used in the second year of the RSDM curriculum. The case is presented as a hybrid experience, combining an online pre-assignment with an in-class, interprofessional team-based learning format. The experience addresses such IPE competencies as team communication, roles and responsibilities, ethics, and values.\textsuperscript{28} The case (from which an excerpt appeared at the beginning of this article) focuses on social determinants of urban health and the challenges this environment may present for patient care: “Taylor Carter, a 61-year-old homeless female patient was transported to the hospital after being found unconscious and without a coat in the middle of winter in a dense, urban area. Upon gaining consciousness, the patient is determined to be intoxicated, has dental pain on the left side of her face, and says she has pre-diabetes. It is learned that the patient was widowed, has been unemployed for several years, and is living in shelters following depletion of her assets. She reports prolonged dental pain and has attempted self-medicating with alcohol and aspirin to reduce the pain. It is also noted that she is unaware of available health and social services.”

Over 300 medical, dental, nursing, and social work students complete this exercise annually. The SDH IPE session consists of four components:

1. Pre-assessment using the Interprofessional Socialization and Valuing Scale (ISVS), which measures the degree to which individuals have the affinity to work together and may be used to evaluate the efficacy of IPE.\textsuperscript{29}

2. Pre-assignments that include completion of Institute of Healthcare Improvement (IHI) modules on teamwork, communication, and the culture of safety and the viewing of a videotaped, simulated interprofessional team encounter with Taylor Carter in the emergency department. Through the IHI case studies, students learn essential communication tools that foster a culture of safety by learning to speak up to prevent medical errors and address patient concerns.
reveals otherwise. Faculty members guide students to view patient care more holistically, considering the patient’s SDH from a collaborative care perspective to identify alternatives and other treatment options. Students then begin to see how their assumptions about the patient’s homelessness may prevent a more balanced assessment of her needs. The patient reveals that she tried to self-medicate by holding an aspirin on her gum, which students usually view as ineffective and an “old wives’ tale.” While the treatment may not be recommended, it can be seen as a strength representing a patient’s attempt at self-care using a culturally relevant treatment method. Acknowledging this attempt, the team could build on this strength and provide more evidence-based patient education.

This IPE scenario shows that developing a plan of action that includes SDH with focused interventions may improve health outcomes, increase health equity, and enhance patient satisfaction. Furthermore, focusing solely on technical aspects of care (biological factors) without considering social needs (non-biological factors) can worsen outcomes. For example, some students—prior to considering the patient’s SDH—suggested extracting the abscessed tooth without considering other treatments because she was found unconscious on the curb. This rash decision could leave the patient open to a future of oral health complications.

### Table 3. Rutgers School of Dental Medicine interprofessional education (IPE) incorporating social determinants of health (SDH)

<table>
<thead>
<tr>
<th>Experience</th>
<th>Professions Involved</th>
<th>Event Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1: Orientation</td>
<td>Dental, medicine, physical therapy*</td>
<td>Presentation by vice chancellor for interprofessional programs</td>
</tr>
<tr>
<td>Year 1: Online course</td>
<td>Dental, medicine, nursing</td>
<td>Discussion regarding care of young pregnant woman; focus on value of teams and understanding roles and responsibilities of health professions in providing optional patient care</td>
</tr>
<tr>
<td>Year 2: SDH case</td>
<td>Dental, medicine, nursing, social work</td>
<td>Small-group case discussion focused on SDH and effective communication among team members</td>
</tr>
<tr>
<td>Year 3: IPE case conferences</td>
<td>Dental, medicine, nursing, social work, pharmacy, nutrition, physical therapy, occupational therapy assistant, physician assistant, clinical laboratory sciences</td>
<td>Group case discussion (students attend one of three: stroke case, veteran case, oncology/hospice case)</td>
</tr>
<tr>
<td>Years 3 and 4: Clinic experiences</td>
<td>Dental, medicine</td>
<td>Patient care experiences in dental school clinic</td>
</tr>
<tr>
<td>Year 4: IPE case conferences</td>
<td>Dental, medicine, nursing, social work, pharmacy, dental hygiene, nutrition</td>
<td>Case conferences of 10-12 students focused on patients with special needs and medically complex patients (dental students attend both)</td>
</tr>
<tr>
<td>Year 4: Community rotations</td>
<td>Dental, nursing, medicine, nutrition</td>
<td>Community rotations in student-run clinics</td>
</tr>
</tbody>
</table>

*Professions involved in 2017; different schools are scheduled annually for the session with dental and medical students as schedules permit.
To focus on the collaborative care aspects of the case and how SDH was incorporated into the discussion of furthering patient care, the ISVS pre- and posttests were used to assess students’ appreciation and understanding of including the patient as part of the team. Preliminary data analysis from an exempt, retrospective study (Rutgers IRB Pro2017000006) showed the ISVS for interprofessional students increased from pretest to posttest overall, indicating an increase in their perceived value of interprofessional patient care. All initial average scores were “to a moderate” or “to a great” extent, as were final average scores on question responses, indicating the students valued interprofessional health care before and after the learning activity. Most ISVS items showed statistically significant increases for the overall student population in reported value of interprofessional teamwork; however, this effect was much more limited for the dental student population. However, the dental students showed a significant increase in positive response to leadership of a team, debating within a team, and working within a team.

Although the ISVS largely focuses on interprofessional teamwork, several questions are strongly related to practitioner competence to successfully integrate SDH into care, including themes of the importance of the patient and his or her family as a part of the team and shared decision making. The students’ understanding of these elements was reflective of their ability to engage with patients with respect to SDH, as evidenced by increased overall ISVS scores following the interprofessional learning activity.

The Commission on Dental Accreditation (CODA) is explicit about the importance of educating future dentists to include SDH in facilitating accurate diagnosis and effective treatment as well as compliance in patients, and all U.S. dental schools must show development of a robust faculty development process. Faculty members should be encouraged to educate students about current standards of patient care reflecting state-of-the-art practice, such as inclusion of SDH, which in turn informs best practices in dental education as defined in accreditation Standard 3-2. Furthermore, Standard 2-16 discusses the importance of education regarding disparities in health status in an environment that supports diversity and inclusion, incorporating the development of solutions. This standard lends itself to innovative curricular changes by supporting collaborative didactic and clinical efforts by dental school and social work faculty, such as including a social worker as part of the dental faculty. This creative approach could improve patient access to community services to address SDH as well as reinforcing, through observation for both student and faculty member, how directly intervening on SDH can change patient health outcomes in real time. These changes in how providers approach integration of patient history into care will help patients like Taylor Carter in the future.

**Conclusion**

Health care is shifting to a more integrated, person-centered approach, and as a result, the dental community needs to change to remain current. Social determinants of health will continue to present a challenge in our society and deserve explicit focus in dental school curricula. Awareness of the psychosocial factors influencing patients’ oral and overall health will not only enhance their diagnosis, preventive care, and dental treatment but, with the proper training and tools, will facilitate dentists’ playing an integral role in health care teams.

**Acknowledgments**

The RSDM IPE curriculum is supported in part by Grant Number D85HP28497 from the Health Resources and Services Administration, an operating division of the U.S. Department of Health and Human Services. Its contents are solely the responsibility of the authors and do not necessarily represent the official views of the Health Resources and Services Administration or the U.S. Department of Health and Human Services.

**Disclosure**

This article is one in a series of invited contributions by members of the dental and dental education community as commissioned by the ADEA Commission on Change and Innovation in Dental Education 2.0 (ADEA CCI 2.0) to focus on how changes and trends in several domains of interest external to dentistry are having a global impact on the content and delivery of health care, health professions education and research, and, ultimately, how health care can benefit patients. This article is by invited authors who are members of the ADEA CCI 2.0, but it does not necessarily reflect the views of ADEA, individual members of the ADEA CCI 2.0, or the *Journal of Dental Education*. The manuscript was reviewed by the ADEA CCI 2.0 directors and Steering Committee.
REFERENCES


14. Vujicic M, Buchmueller T, Klein R. Dental care presents the highest level of financial barriers, compared to other types of health care services. Health Aff 2016;35(12):2176-82.


