Dentists as Primary Care Providers: Expert Opinion on Predoctoral Competencies

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Dentistry and medicine traditionally practice as separate professions despite sharing goals for optimal patient health. Many US residents experience both poor oral and general health, with difficulty accessing care. More efficient collaboration between these professions could enhance health. The COVID-19 pandemic disclosed further disparities while underscoring concerns that physician supply is inadequate for population needs. Hence, enhancing healthcare provider education to better meet the public’s health needs is critical. The proposed titles “Oral Physician” or “Oral Health Primary Care Provider” (OP-PCP) acknowledge dentist’s capacity to diagnose and manage diseases of the orofacial complex and provide some basic primary healthcare. The US Surgeon General’s National Prevention Council and others recommend such models. Medical and dental education already overlap considerably, thus it is plausible that dental graduates could be trained as OP-PCPs to provide primary healthcare such as basic screening and preventive services within existing dental education standards. In 2018, 23 dental and medical educators participated in an expert-opinion elicitation process to review educational competencies for this model. They demonstrated consensus on educational expansion and agreed that the proposed OP-PCP model could work within existing US Commission on Dental Accreditation (CODA) standards for predoctoral education. However, there were broader opinions on scope of practice details. Existing CODA standards could allow interested dental programs to educate OP-PCPs as a highly-skilled workforce assisting with care of medically-complex patients and to helping to reduce health disparities. Next steps include broader stakeholder discussion of OC-PCP competencies and applied studies including patient outcome assessments.

Keywords: oral physician, primary care dentist, dental student, oral health primary care provider (OP-PCP), oral-systemic, interprofessional education/care (IPE/IPC), dental education, dentistry
INTRODUCTION

Definition of the Problem

Many Americans experience poor health and lack adequate access to care. This is especially true for underserved populations such as low-income and minority groups. Dentistry and medicine practice as separate professions despite their shared missions to optimize their patients' health. Yet more efficient interprofessional collaboration could broaden access to oral and general healthcare, potentially reducing disparities and costs (1–4). Dental team disease screening could save between $42.4 million and $102.6 million in U.S. healthcare costs annually (2). The U.S. Surgeon General’s National Prevention Council and others support the use of dentists in primary care roles (6–8). Meanwhile, concerns about lack of an adequate physician supply in the US have only increased during the COVID-19 pandemic.

This paper was submitted in response to a Frontiers in Dental Medicine challenge to “contribute to the development of evidence-based, cost-effective disease prevention and healthcare strategies applicable across diverse populations” on integrating oral and systemic health (9). It evaluates new dental education competency statements for training dentists to provide primary care tasks. To make this curriculum more cost-effective, it proposes to deliver this education during predoctoral education, within existing Commission on Dental Education (CODA) Standards (10). Hence, this educational action step augments recently published aspects of dental and medical integration related to the challenge (3, 4, 11–15).

Oral Health Primary Care Provider

“Oral Physician” or “Oral Health Primary Care Provider” (OP-PCP) are potential titles acknowledging general dentist's prospective expanded roles in basic primary healthcare (16–18). The American Dental Association (ADA) refers to dentists as “doctors who specialize in oral health” (19). The OP-PCP would be an enhanced dental practitioner functioning as part of an interprofessional healthcare team, connected virtually or in-person (20).

When dentists perform a thorough examination of dental patients, they typically assess the patient's blood pressure, and review medical, pharmaceutical, and psychosocial histories. They examine the oral cavity and head and neck, looking for oral diseases ranging from gingivitis to oral cancer. Dentists may detect signs and symptoms of other diseases beyond the oral cavity such as diabetes (21–24), cardiovascular disease (25–27), substance abuse (28, 29), eating disorders (30, 31) and child abuse or intimate partner violence (32–34), among others (35).

At the same time, an increasingly complex patient population requires dentists to become more sophisticated providers with greater knowledge of systemic conditions, and to be familiar with emerging approaches such as precision healthcare, salivary diagnostics, and new medical therapeutics (12). It is within the current legal scope of practice for dentists to diagnose and manage oral manifestations of systemic diseases, and to detect and help prevent systemic manifestations of oral diseases (14, 26, 36).

Appropriately trained dentists could build on these procedures to include some basic primary care in an integrated oral health practice, as described by Myers-Wright and Lamster (1). Expansion of primary screening within dental practice has been shown to be acceptable to the public. For example, random blood glucose testing in the dental setting was well accepted by American patients and clinicians (21). Saudi Arabian patients accepted screening for hypertension and diabetes from dentists (37). In response to the pandemic, viral screening and immunizations became part of dentistry’s scope of practice in many states (38).

The establishment of OP-PCPs within dentistry could shift dentistry’s primary focus from restoring patient's oral health to maintaining their overall health. They could spend more time examining, diagnosing, and counseling patients and less time performing preventive procedures. As leaders of dental teams, they can selectively delegate care to dental hygienists, expanded function dental assistants, or dental therapists as permitted by law (5, 20) and this could free their time to accommodate this expanded scope. Referral of more complex procedures to specialists makes room for more prevention in their practices an option (20).

Recent Changes and Timelines

The COVID-19 pandemic caused major disruptions in higher education, creating financial and logistical challenges for dental and other health professional schools. As schools struggled to provide adequate patient experiences while maintaining infrastructure and meeting other requirements, challenges led to innovation.

At the University of Washington (UW), the advent of the pandemic coincided with the construction of a new interprofessional health sciences education building, sparking new interprofessional bonds. The Health Sciences deans designed the building together to foster shared education and began planning a merged core curriculum in which dentistry is an equal partner with the other health professions. With the pandemic, scope of dental practice was already changing at the policy level. In Washington, dentists were permitted to prescribe or administer coronavirus screening (39). UW School of Dentistry successfully proposed that the state allow dentists, dental students, and dental hygienists to administer COVID-19 vaccines (40). Subsequently all UW health professions schools attended hands-on vaccination trainings together (with some dentist-trainers).

Immunization and disease testing by dentists are not new concepts. In 2005, Illinois Public Act 49-409 gave dentists status as “emergency dental responders” (Illinois Public Act 99-0025 changed this term to “dental responders”) who could provide emergency medical care, triage, and immunizations during a disaster if appropriately certified (41). Illinois dentists were authorized to provide influenza vaccines in 2016 (41) and Oregon has permitted dentists to vaccinate patients since 2019 (42). The US Public Readiness and Emergency Preparedness (PREP) Act extended COVID-19 vaccinator status to all US dentists, dental students, and dental hygienists in 2021 (43). Similarly, the
pandemic led to approval and expansion of telehealth services, including certain tele dentistry services.

Beyond vaccination, the broader concept of training pre-and/or postdoctoral students in additional skills for primary care has received national attention within the profession. The American Dental Education Association’s (ADEA) 2021 Annual Session featured a Chair of the Board Symposium entitled A Two-way Street: Primary Care and Oral Health Integration Training with speakers from Harvard’s Center for Integration of Primary Care and Oral Health. A key takeaway was that “the integration of oral health and primary care won’t happen overnight, but it won’t happen at all if we do nothing” (44). Previous ADEA panel sessions have examined curricular innovations to foster integrated mastery of biomedical concepts (45).

CODA determines the minimum competency standards that graduating dentists must meet but does not dictate how dental schools teach skills or measure competency (10). Thus, as long as it meets existing CODA Standards, an accredited predoctoral dental education program may require its graduates to demonstrate competency in standards that exceed this national benchmark—such as assuring competency in expanded roles in basic, primary healthcare. The intention of this project was to evaluate the feasibility of developing a new curriculum to provide such training in pre-doctoral dental programs, beginning at the level of expert opinion, the base of the evidence-based pyramid (46).

**Purpose**

The purpose of this study was to gain expert opinion about whether a pre-doctoral dental program could train its dental graduates as OP-PCP to competently provide primary healthcare in a specific set of proposed professional activities while the program remained in compliance with existing dental competency standards of the Commission on Dental Accreditation (CODA).

**METHODS**

**Study Design**

This expert opinion elicitation process (47) was a component of an Institutional Action Project for the Executive Leadership in Academic Medicine (ELAM) program at Drexel University by one author (SG). The study was deemed exempt from the institutional review board (IRB) human subject research review at UW.

**Participants**

The expert opinion elicitation took place between January and May 2018, engaging a convenience sample of educators in healthcare professions. The participant pool was structured to provide diversity by including different academic positions, areas of expertise, sex, and geographic location. Most participants were invited while attending the annual session of ADEA, where the chair-elect of the Section on Academic Affairs/Academic Deans (SG) was able to meet educational leaders face-to-face, explain the project, and request their participation. Some participants were added before and after the meeting to provide more range in expertise and teaching positions. Those who agreed to participate could respond in their preference of format: by email via questionnaire or discussion (SG), or through a verbal discussion (SG) by telephone or in-person.

**Questionnaire Development**

Sources representing expectations for dental and interprofessional competency were initially examined to create a list of professional skills an OP-PCP would need: Standards of the Commission on Dental Accreditation (10), American Dental Education Association (ADEA) Competencies for the New General Dentist (48), and Interprofessional Education Collaborative (IPEC) Core Competencies for Interprofessional Collaborative Practice (49). The competency statements in these three documents were grouped by content similarities. This revealed skills that an OP-PCP might need, which might not be covered or stressed in current dental education.

Each skill that a dental program could adopt to train OP-PCPs was restated in order to describe the level of competency proposed for new OP-PCP graduates. For some new skills, several alternative competency statements were proposed to determine how far the experts felt scope of practice should extend. All skills were examined to see whether they corresponded to any existing CODA standards. Then they were framed in a questionnaire, reviewed by study collaborators, and adjusted for content and clarity. In the final questionnaire, each respondent indicated whether they agreed with each proposed OP-PCP competency statement and optionally provided comments.

**Data Analysis**

As the intent was to collect qualitative data for a convenience sample of experts, the data were viewed at response distributions without statistical testing. These response distributions were categorized by two investigators as “agree/yes,” “disagree/no,” or “conditionally agree” (supported by comments). For questions requiring professional knowledge of clinical procedures (correlating with CODA Standard 24), only clinicians’ responses were included. The investigators categorized comments into one of three groups: editorial directions for rewording or rewriting the proposal; affirmative statements, in which the respondent expressed enthusiasm; and conceptual/contextual observations or questions. The investigators (LM and SG) discussed any disparate categorizations to finalize this classification.

**RESULTS**

All proposed OP-PCP competency statements corresponded with existing CODA standards. These statements, grouped with their related CODA Standards, are presented in Tables 1, 2, separating Standard 2-24 from the others. Respondents proposed three additional OP-PCP competency statements that also corresponded with existing CODA standards.

The convenience sample of experts captured distributions by sex, US location, professional field, academic role, and survey method (Table 3). No statistically significant differences were found among the characteristics when assessed by sex, professional field, or academic role (data not shown).
| STD number | CODA Standard (CS) and Proposed Competency Statements (PCS) |
|------------|----------------------------------------------------------|
| CS 2-10    | Graduates must be competent in the use of critical thinking and problem-solving, including their use in the comprehensive care of patients, scientific inquiry and research methodology. |
| PCS 2-10-1 | OP-PCP graduates must be competent in performing clinical case reviews individually and in interprofessional healthcare teams. |
| CS 2-11    | Graduates must demonstrate the ability to self-assess, including the development of professional competencies and the demonstration of professional values and capacities associated with self-directed, lifelong learning. |
| PCS 2-11-1 | OP-PCP graduates must be competent in routinely self-assessing progress toward overall competency and individual competencies, considering needs for interprofessional as well as oral health knowledge. |
| PCS 2-11-2 | OP-PCP graduates must be competent in educating others about health, including clinicians from other health professions, using critical thinking and feedback techniques. |
| CS 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. |
| PCS 2-14   | OP-PCP graduates must be competent to identify the etiology, epidemiology, differential diagnosis, pathogenesis, prevention, treatment and prognosis of oral, orofacial, and major systemic diseases that present in clinical care. |
| CS 2-15    | Graduates must be competent in the application of biomedical science knowledge in the delivery of patient care. |
| PCS 2-15-1 | OP-PCP graduates must be competent in describing a plan to regularly update their knowledge of advances and changes in modern biomedical sciences that apply to their clinical practice. |
| PCS 2-15-2 | OP-PCP graduates must be competent in establishing a plan to regularly review “best practice” standards with their clinical team, including oral health standards with the general health team, and all relevant health standards with the oral health team. |
| CS 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. |
| PCS 2-16-1 | OP-PCP graduates must be competent in the use of effective techniques to discuss sensitive or embarrassing topics with patients, in delivering difficult news in a respectful manner, and in communicating with patients who are angry, fearful, sad, or otherwise highly emotional. |
| PCS 2-16-2 | OP-PCP graduates must be competent in the use of nutritional counseling to promote, improve, and maintain oral and systemic health. |
| PCS 2-16-3 | OP-PCP graduates must be competent in the use of evidence-based methods, including referral, to help patients rid themselves of unhealthy habits or disorders including those related to food intake, habits, substance abuse, and addictions. |
| CS 2-17    | Graduates must be competent in managing a diverse patient population and have the interpersonal and communications skills to function successfully in a multicultural work environment. |
| PCS 2-17-1 | OP-PCP graduates must be competent in communicating and collaborating with patients, families, interprofessional team members, and the public in a respectful and responsible manner to communicate health information and to make healthcare decisions. |
| PCS 2-17-2 | OP-PCP graduates must be competent in working together with local communities, subpopulations, and other members of the interprofessional team to develop, deliver, and evaluate patient/population-centered care and population health programs and policies that are safe, timely, efficient, effective, and equitable. |
| CS 2-18    | Graduates must be competent in applying legal and regulatory concepts related to the provision and/or support of oral healthcare services. |
| PCS 2-18-1 | OP-PCP graduates must be competent in describing the boundaries between dental and medical licensure. |
| PCS 2-18-2 | OP-PCP graduates must be competent in delegating professional responsibilities according to each oral health team member’s individual competencies and licensure. |
| PCS 2-18-3 | OP-PCP graduates must be competent in identifying when a patient problem requires consultation with or referral to a member of a different health profession. |
| CS 2-19    | Graduates must be competent in applying the basic principles and philosophies of practice management, models of oral healthcare delivery, and how to function successfully as the leader of the oral healthcare team. |
| PCS 2-19-1 | OP-PCP graduates must be competent in accessing and documenting patient information in medical and dental records. |
| PCS 2-19-2 | OP-PCP graduates must be competent in describing how to use medical and dental billing to receive compensation for patient care, as allowed by the laws of the state. |
| CS 2-20    | Graduates must be competent in communicating and collaborating with other members of the healthcare team to facilitate the provision of healthcare. |
| PCS 2-20-1 | OP-PCP graduates must be competent in comparing and contrasting the scope of licensure, roles, and responsibilities of the dentist working as a primary care provider with that of the medical doctor, the physician assistant, the nurse, the nurse practitioner, and the pharmacist. |
| PCS 2-20-2 | OP-PCP graduates must be competent in participating in an interprofessional team approach that integrates oral health for the promotion and maintenance of overall health, and the prevention and treatment of disease. |
| PCS 2-20-3 | OP-PCP graduates must be competent in accessing and documenting patient care and communications in medical or dental health records in an organized, accurate, and complete manner. |
| PCS 2-20-4 | OP-PCP graduates must be competent in performing and documenting clear and concise referrals and consultations with other health professionals and follow up in a timely manner. |
| PCS 2-20-5 | OP-PCP graduates must be competent in negotiating consensus on a shared plan of treatment with the other members of the interprofessional healthcare team. |
Graduates must be competent in the application of the principles of ethical decision making and professional responsibility.

OP-PCP graduates must be competent in describing the ADA ethical principles and applying them to patient cases involving interprofessional healthcare.

Graduates must be competent to access, critically appraise, apply, and communicate scientific and lay literature as it relates to providing evidence-based patient care.

OP-PCP graduates must be competent in deciding whether new evidence-based advances in biomedical science are pertinent to oral healthcare in their practice, and if they are, creating “best practice” standards which members of their interprofessional health team can use.

OP-PCP graduates must be competent in explaining evidence-based oral healthcare decisions and policies to their patients and interprofessional colleagues in terms they can understand.

Graduates must be competent in providing oral healthcare within the scope of general dentistry to patients in all stages of life.

OP-PCP graduates must be competent in assessing the systemic and oral health of infant, child, adolescent, adult, pregnant, and geriatric patients.

OP-PCP graduates must be competent in provision of appropriate preventive counseling and referrals for the systemic health needs of infant, child, adolescent, adult, pregnant, and geriatric patients.

Graduates must be competent in assessing the treatment needs of patients with special needs.

OP-PCP graduates must be competent in assessing the unique care, communication, psychosocial and diagnostic considerations, and treatment needs of patients of any ability, gender, sex, or age, within the scope of general dentistry.

OP-PCP graduates must be competent in explaining how patients’ lives have been shaped by both biologic and psychosocial factors and identify aspects of the patient’s abilities and needs that require special consideration by the oral and/or general health team.

OP-PCP graduates must be competent in identifying and following legal guidelines for reporting neglect and/or abuse of people with intellectual and/or developmental disabilities, special physical health needs, children, elders, and other vulnerable people.

OP-PCP graduates must be competent in providing a safe and comfortable clinical atmosphere for all patients.

OP-PCP graduates must be competent in serving patients with special health and/or psychosocial needs and considerations as the oral health expert on the healthcare team.

Dental education programs must make available opportunities and encourage students to engage in service learning experiences and/or community-based learning experiences.

OP-PCP graduates must be competent in serving on the healthcare team in a community-based setting as a primary care dentist or as a general dentist, in order to appropriately assess and address the healthcare needs of patients, and to promote and advance the health of populations.

OP-PCP graduates must be competent in functioning as a team member in a primary care setting, adapting to the role of dentist or primary care dentist as patient, community, and clinic needs dictate.

Distribution of support for the proposed OP-PCP competency statements showed general acceptance by the experts (Figure 1). Diversity of opinion occurred in some proposals associated with CODA Standard 2–24. The broadest range of opinion was seen with alternative competency statements proposed within Standard 2-24-A-1. Respondents considered how far they recommended OP-PCPs should develop skills in patient assessment, especially concerning use of an otoscope (2-24-A-1g) or stethoscope (2-24-A-1i, k, and n), assessing the abdomen (2-24-A-1n and o) or limbs (2-24-A-1n), or performing a peripheral neurologic examination (2-24-A-1q).

Respondents provided 261 comments. Fifty percent were editorial directions, including recommendations for wordsmithing or combining the proposal with another or grouping it with a different CODA standard. Twenty six percent were affirmative statements, agreeing with the proposal. Twenty four percent were conceptual/contextual observations or questions. This third group of comments revealed lack of uniformity in current dental education. Some commentators said certain suggested skills are already being taught and assessed at some dental schools, while others commented that those same skills are unrealistic to teach or impossible to assess. Respondents mentioned obstacles such as scope of practice, lack of time in the curriculum, and challenges in achieving appropriate levels of competency.

Illustrative and notable comment examples particularly occurred regarding 2.24. Proposal 2.24A.1 suggests various elements of an expanded physical examination. One expert commented on their agreement with the entire list, “This will be a big part of training.” Another agreed that OP-PCPs should learn to examine the abdomen and commented: “Yes, any relation to having swallowed crown etc.? “A third’s comment on examining the limbs was: “Yes, visual, only if exposed,” meaning that the OP-PCP should not, for example, pull up a patient’s sleeves or pant legs to examine their patient’s arms or legs for dermatologic features supporting a diagnosis of lichen planus or lupus erythematosus.

Proposal 2.24D.1 is that OP-PCP be competent to provide health promotion and disease prevention plans, strategies, and interventions for oral diseases and for common major systemic diseases. Comments included, “I am not sure about breadth here either,” “I agree with all except interventions for major systemic diseases. This is where referral comes in,” and “As written–implies responsibility to treat primarily major systemic
**TABLE 2** | CODA Standard (CS) 2-24 only, and related Proposed Competency Statements (PCS) for Oral Physician – Oral Health Primary Care Provider (OP-PCP).

| STD number | CODA Standard (CS) and Proposed Competency Statements (PCS) |
|------------|----------------------------------------------------------|

**CS 2-24**

At a minimum, graduates must be competent in providing oral healthcare within the scope of general dentistry, as defined by the school, including:

**CS 2-24 PART A**

OP-PCP graduates must be competent in gathering information about the patient and their health including:

a. Expanded patient interview
b. Generally assess patient status
c. Assess of mental status (orientation x 4)
d. Assess weight + BMI
e. Review medical + dental health records
f. Examine skin of face + neck
g. Examine head, neck, nose, eyes, ears, throat, + neck with the use of specialized equipment (i.e. otoscope)
h. Examine head, neck, nose, eyes, ears, throat, + neck without the use of specialized equipment
i. Assess respiration with stethoscope
j. Assess respiration without stethoscope
k. Assess heart with stethoscope
l. Assess heart without stethoscope
m. No assessment of abdomen
n. Assess abdomen with palpation, with stethoscope
o. Assess abdomen with palpation, without stethoscope
p. Assess limbs
q. Peripheral neurologic examination

**PCS 2-24A-2**

OP-PCP graduates must be competent in selecting, obtaining, and interpreting appropriate clinical tests, blood tests, and diagnostic imaging including salivary testing and assessment, glucose testing, A1C testing, and others as appropriate, including rapid testing for HIV with referral for confirmation and appropriate behavior counseling.

**PCS 2-24A-3**

OP-PCP graduates must be competent in screening and providing basic counseling and referral for diseases and conditions such as (but not necessarily limited to) these examples listed below:

- **Blood and Immune:** allergic diseases; anemias; benign and malignant vascular tumors; bleeding disorders; HIV and other immune deficiencies; Kaposi sarcoma; leukemia; lymphoma; neutropenia; polycythemia; others.
- **Cardiovascular:** angina; arrhythmia; carotid artery calcification; dyslipidemia; hypertension; MI; stroke; transient ischemic attack; others.
- **Endocrine:** adrenal disease; diabetes mellitus (Perform chairside glucose, a1c); multiple endocrine neoplasia; polycystic ovarian syndrome; obesity; parathyroid pathology; thyroid pathology; Turner syndrome; others.
- **Genetic and Developmental:** inherited diseases and syndromes, especially those with craniofacial manifestations.
- **Gastrointestinal:** atrophic gastritis; Barrett’s esophagus; celiac disease; dysphagia; Gardner syndrome; GERD; inflammatory bowel diseases; others.
- **Hepatobiliary:** gallstones; hepatitis; jaundice; liver failure; pancreatitis; others.
- **Musculoskeletal:** bone fractures; bone tumors; muscle tumors; muscular dystrophy; osteogenesis imperfecta; osteopetrosis; osteoporosis; Paget disease; syndromes; others.
- **Nervous system:** cranial nerve defects; dementia; multiple sclerosis; nerve sheath tumors; neurodegenerative diseases; sensory disorders; syndromes; others.
- **Psychiatric:** anxiety and depression; cognitive disorders; eating disorders; psychiatric disorders; substance use disorders; suicidal ideation; others.
- **Respiratory:** asthma; COPD; lung malignancy; oropharyngeal and pharyngeal malignancy; sinonasal polyps; sinusitis; sleep apnea; others.
- **Dermatologic:** acne; actinic damage; allergic conditions; esthetics; rosacea; skin cancers; syndromes; vesiculobullous diseases; others.
- **Social:** food insecurity; gender identity dysphoria; homelessness; sexual, physical, self, or emotional abuse; others.

**CS 2-24 PART B**

**screening and risk assessment for head and neck cancer**

**PCS 2-24B-1**

OP-PCP graduates must be competent in selecting and applying diagnostic tests for oral conditions.

**PCS 2-24B-2**

OP-PCP graduates must be competent in selecting, performing, and submitting simple oral biopsies.

**PCS 2-24B-3**

OP-PCP graduates must be competent in working with the oncology team to prevent and manage the oral complications of cancer treatment, including chemotherapy, immunotherapy, and radiotherapy.

(Continued)
TABLE 2 | Continued

| STD number | CODA Standard (CS) and Proposed Competency Statements (PCS) |
|------------|----------------------------------------------------------|
| CS 2-24 PART C | ... recognizing the complexity of patient treatment and identifying when referral is indicated |
| PCS 2-24C-1 | OP-PCP graduates must be competent in using a systematic approach to identify a potential systemic condition and identify when consultation or referral is appropriate. |

CS 2-24 PART D | ... health promotion and disease prevention |

| PCS 2-24D-1 | OP-PCP graduates must be competent in providing health promotion and disease prevention plans, strategies, and interventions for oral diseases and for common major systemic diseases. |
| PCS 2-24D-2 | OP-PCP graduates must be competent in providing basic nutritional, safety, and other lifestyle counseling, including administration of vaccinations where permitted by law. |
| PCS 2-24D-3 | OP-PCP graduates must be competent in screening and providing interventions and prevention for patients with addictions and drug dependency, including alcohol, nicotine, and opioids. This includes recommendations regarding availability of opioid reversal agents. |
| PCS 2-24D-4 | OP-PCP graduates must be competent in assessing the patient’s medication profile to achieve medication optimization, including consultation with pharmacists, and refer for adjustment of medications not prescribed by dentists. |
| PCS 2-24D-5 | OP-PCP graduates must be competent in detecting and managing patient abuse and neglect, and contributing to prevention efforts. |
| PCS 2-24D-6 | OP-PCP graduates must be competent in functioning effectively as a medical team member in disaster relief efforts. |

CS 2-24 PART E | ... local anesthesia, and pain and anxiety control, including consideration of the impact of prescribing practices and substance use disorder |

| PCS 2-24E-1 | OP-PCP graduates must be competent in diagnosis, prevention, and management of substance use disorder, including that which may arise in association with prescribing practices. |

study diseases—practicing medicine under current laws.” Similarly, 2.24D.4 proposes that OP-PCP be competent to assas the patient’s medication profile to achieve medication optimization, including consultation with pharmacists, and refer for adjustment of medications not prescribed by dentists. One expert’s reaction was, “Too far outside scope.” 2.24D.6 proposes that OP-PCP be competent to function effectively as a medical team member in disaster relief efforts. One expert commented, “Already should be doing this.” Another commented “Must define the role. They cannot do emergency amputations, for example, ☛[sic]. Need to define this carefully.”

Proposal 2.24B.3 for OP-PCP competency is to work with the oncology team to prevent and manage the oral complications of cancer treatment, including chemotherapy, immunotherapy, and radiotherapy. One comment hinted at potential for antagonism between specialists and those choosing expanded scope of practice for OP-PCPs: “This is now overlapping with the specialty of Oral Medicine.”

DISCUSSION

Expert opinion indicated proposed OP-PCP training is rooted in existing ADEA, CODA, and IPEC competencies, especially interprofessional practice. Experts supported teaching and assessing these skills within the existing framework of predoctoral dental education, and felt it was realistic to do so to the “competency” level. They agreed OP-PCPs would require extra education in critical thinking, patient assessment, diagnosis and treatment planning, prevention and health promotion, medical management of conditions already within the scope of dental care, and in certain primary care medical tasks. The respondent’s comments, made in 2018, demonstrated a lack of agreement on some details related to scope of practice.

But factors beyond expert opinion are also influencing the practice of dentistry and the shape of dental education. Changes wrought by the pandemic and the evolving recognition of oral-systemic interactions (3, 50) support increased interest in expanding the role of dentists. A growing emphasis on IPE and integration of oral health into primary care is evident in curriculum development, specific funding programs, and other efforts (51–55). Ongoing changes in dentistry and dental education are in keeping with these OP-PCP competency statement proposals: 2.20.2, participate in an interprofessional team approach that integrates oral health for the promotion and maintenance of overall health, and the prevention and treatment of disease; 2.24D.2, perform basic nutritional, safety, and other lifestyle counseling, including administration of vaccinations where permitted by law; and 2.24D.6, function effectively as medical team members in disaster relief efforts.

Barriers to Change: Market Factors

Difficulty obtaining compensation for medical screening and counseling could potentially discourage dentists from primary care despite the obvious benefits to patient’s health. Medical insurance coding is different from the claims coding used in dental insurance (56). The range of allowable diagnoses and procedures that can be billed to medical insurance is limited (57). Even if dentists could potentially bill medical insurance for some services, they and their staff are usually not trained to do so. Without compensation, dentists could not feasibly screen for hypertension, diabetes, obesity, missed vaccinations, and other timely primary care tasks. Therefore, Proposal 2-19-2 is that OP-PCP graduates must be competent in describing how to use medical and dental billing to receive compensation for patient care, as allowed by the laws of the state. Medical insurers would also need to be willing to compensate them for these additional services.
TABLE 3 | Characteristics of respondents.

| Characteristics of respondents | N   | Percentage |
|--------------------------------|-----|------------|
| Total                          | 23  | 100%       |
| Sex                            |     |            |
| Female                         | 12  | 52.2%      |
| Male                           | 11  | 47.8%      |
| Geographic location            |     |            |
| US East Coast                  | 5   | 21.7%      |
| Mid-US                         | 9   | 39.1%      |
| US West Coast                  | 8   | 34.8%      |
| Non-North American             | 1   | 4.3%       |
| Professional Field             |     |            |
| Dentistry                      | 18  | 78.2%      |
| Anesthesiology                 | 1   | 4.3%       |
| Dental Hygiene                 | 1   | 4.3%       |
| Dental Public Health           | 2   | 8.7%       |
| General Practice Dentist       | 4   | 17.4%      |
| Oral Medicine w/wo Oral Radiology | 4 | 17.4%     |
| Oral Pathology w/wo Pediatric Dentistry | 5 | 21.7%   |
| Pediatric Dentistry            | 1   | 4.3%       |
| Non-Dentistry                  | 5   | 21.7%      |
| Medicine (GI, Internal Med, Pediatrics, Psych) | 4 | 17.4%     |
| Educational Psychology         | 1   | 4.3%       |
| Academic Role                  |     |            |
| Administrator                  | 14  | 60.9%      |
| Faculty Member                 | 9   | 39.1%      |
| Survey Method                  |     |            |
| Written Form                   | 11  | 47.8%      |
| Email Contact                  | 7   | 30.4%      |
| Verbal Interview               | 5   | 21.7%      |

Integrated dental and medical systems may provide the ideal setting for the OP-PCP (14, 54, 58–61). Large systems can institute value-based care models that incentivize desired changes; such models already occur in the dental marketplace. The rise of dental service organizations can also facilitate value-based changes, and their acquisition by larger health insurers. Larger health systems can feature interoperable electronic health records (E.H.R.) which improve collaboration and communication, reduce discrepancies and misunderstandings, and facilitate medical billing for dental care (62). Proposals 2-20-1, 2-20-2, 2-20-3, 2-20-4, and 2-20-5 describe competencies an OP-PCP must have to function successfully in such an integrated care setting.

**Barriers to Change: Professional Identity**

The self-identity of dentists is a barrier to change, whether by a new label or changing dentist’s roles without re-branding them (63, 64). The increasing medical complexity of patients and broad calls for action to address systemic conditions such as hypertension (65) and diabetes (66) point to issues in which dentists could play a larger role. Nevertheless, dentistry retains a relative emphasis on technical skills (evident in the lengthy FIGURE 1 | Distribution of support for Proposed Competency Statements (PCS) for OP-PCP related to CODA Predoctoral Standards 2–10 to 2–26 (separate file).
CODA Standard 2-24). Reluctance to cut any traditional skills to make way for new ones is likely.

It may be more difficult to convince dental students of the value of OP-PCPs than it would be to convince their patients (21, 36, 67, 68). Students enter school with expectations about being a dentist that don’t include “primary care” tasks. They may say to themselves, “If I wanted to do that, I would have gone to medical school” (63, 64). Over the years, ADEA student surveys have shown that the top reasons students choose dentistry are personal dental experiences (54%), the influence of a family member or friend who is a dentist (38%) and the influence of their family dentist (33%) (69). Current models of dental practice, which have been slow to change, set expectations for students. However, recent events described already could influence a change in public and student expectations.

**Barriers to Change: Cost of Dental Education**

Given the high costs of dental education (reflected in tuition and high student debt), funding new programs will always be challenging. Dental school clinics operate primarily to train students and require a high faculty-to-student ratio. This model is less fiscally efficient than medical training that is embedded within hospitals and other clinical practice sites.

Dental schools are also typically safety net providers. While Medicaid covers pediatric dental care, adult dental benefits under Medicaid vary substantially between states, some states lacking them entirely. When money is tight, states often discontinue adult dental benefits. Traditional Medicare has no general dental benefit and Medicare Advantage Plans vary in coverage. Dental residencies with significant hospital-based training such as oral surgery or pediatric dentistry receive Graduate Medical Education (GME) funding but that money goes primarily to the hospitals, not the hospitals (70).

Students may be reluctant to participate in OP-PCP training if it would require additional time in dental school because 83% of dental students graduate with educational debt, averaging $304,824 in 2020 (71). Therefore, this proposal adapts predoctoral education within existing length of training. IPE could also advance this goal. If medical, dental, and nursing students all learned blood pressure measurement together, they would have greater confidence in each other’s skills as future health professionals. Among others, Proposal 2-11-2, educate others about health, including clinicians from other health professions, using critical thinking and feedback techniques promotes this collaboration.

**Barriers to Change: Scope of Practice**

State laws govern the scope of practice of dentistry and other health professions. Changes in law allow healthcare practitioners, including faculty and students under their supervision, to perform tasks such as vaccinations and point of care diagnostic testing and counseling for systemic diseases (19).

For an expanded scope of dental practice to be successfully implemented, the profession would need to clearly define the desired scope of practice for the OP-PCP and achieve consensus on that definition. As Mathews ([72] Mathews 2010) mentions, this requires buy-in from all specialties. It would also be more likely to succeed if the change were supported by medical colleagues and those in other health professions. Such a conversation needs to begin somewhere, and the proposals presented to the experts in this project were aimed to begin such a discussion. Standard 2-24, the group of competency statements that lists specific clinical procedures, sparked the greatest diversity of opinion among the experts, as it was designed to do. Examples of comments provided by the experts, shared in the results, illustrate the need for further discussion and consensus on the scope of practice. Issues to be addressed include boundaries with dental specialties and other healthcare professions. Graduates would need to be cognizant of those limits, hence Proposal 2-18-1 is that OP-PCP graduates must be competent in describing the boundaries between dental and medical licensure.

Of relevance, historical changes that allowed advanced practice registered nurses (APRNs) and nurse practitioners (NP) in several states to be recognized as primary care providers are instructive. Such changes occurred in Massachusetts through legislation that recognized NPs as primary care providers (73). In Hawai’i, APRNs successfully introduced legislation to remove “barriers to full utilization of APRNs as primary healthcare providers with global signature authority and with prescriptive authority for controlled substances, medical equipment and therapeutic regimens in accordance with their scope of practice” (72). Key factors for a successful collaborative initiative were a comprehensive approach including all APRN specialties; key political champions who grasped the healthcare issues; the excellent reputation of APRNs; continuous communication and willingness to compromise on issues; and the support of nursing educators (72).

**Limitations**

This assessment is limited in its very nature, by design. Baseline expert opinion is challenging to acquire, especially using a grassroots, unfunded mechanism, yet it is valid to elicit opinions from a group of experts at the beginning of a bold new educational endeavor. The convenience sample is not generalizable to “population” but represents a valuable range of opinions. The expert opinion participant group had representation from females, males, deans, faculty members, and experts with geographic dispersion. The group included various ADA recognized dental specialty areas (74) whose definitions emphasize focus on patients or populations as opposed to procedures or specific anatomy.

Limitations of expert opinion are multifold. Foremost is the reliance on opinion versus synthesis of peer-reviewed scientific evidence. A high level of consensus was achieved in this one-round process, lending prima facie credibility to the findings. Nevertheless, this expert opinion assessment’s function is simply to provide a starting point from which to define competencies for the OP-PCP, as demonstrated in similar processes in other professions (75). Further independent work based on this study is needed to progress toward finalizing OP-PCP educational competencies.
Next Steps
To become competent OP-PCPs, dental students would need authentic clinical experiences (76). Thus IPE must extend beyond didactic, simulation, and project-based learning, to include immersion in authentic collaborative clinical care settings where dentists function as OP-PCP (76–78).

Dental educators would need appropriate knowledge, skills, and attitudes to teach potential OP-PCPs. Many dental specialists in oral medicine, oral pathology, and oral surgery already have this expertise. Collaboration with other health professions education programs could help meet this need. Video teleconferencing could allow for more efficient faculty development across sites (76, 77).

Pilot projects could tackle key questions related to the modified curriculum’s effectiveness and financial viability. Endpoints should include outcome measures that are student-centered (i.e., pass rates on national licensure examinations or alumni surveys), patient-centered (i.e., satisfaction of patients treated by these students), clinic-centered (i.e., satisfaction of health professionals who work with these students), finance-centered (i.e., differences in their clinical productivity as well as added training costs), and eventually community-centered (for example, improved healthcare outcomes in populations treated by these students and graduates).

CONCLUSIONS
No previous efforts have defined additional spheres of competency that should be required for dentists to function as OP-PCPs. These initial findings by 23 experts provide a platform for further discussion and action among dental and medical educators, policymakers, funders, health systems, patient groups and others. The healthcare system could gain high-quality capacity by using dentists as primary care providers within the scope of dental licensure to improve oral and overall health outcomes and achieve health equity.

DATA AVAILABILITY STATEMENT
The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

AUTHOR CONTRIBUTIONS
SG conceived and designed the study and wrote the first draft of the competency statements and questionnaire. JB and WM reviewed the study design. LK, WM, PB, and CM-K reviewed the competency statements and questionnaire. SG recruited participants and collected comments. LK organized the database and analysis. SG and LK wrote the introduction, methods, results, and conclusions. SG, LK, and WM wrote the abstract. WM, PB, JB, and CM-K wrote sections of the discussion. LK, WM, and SG contributed to manuscript revision. All authors read and approved the submitted version.

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