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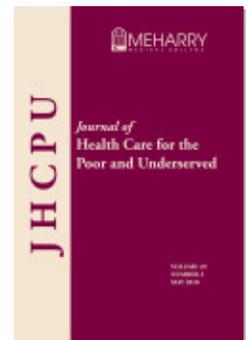
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A Cooperative Education Model for Promoting Oral Health and Primary Care Integration within a Health Care for the Homeless Program

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Summary: This report describes an innovative cooperative education model for promoting the integration of oral health and primary care in a safety-net setting for homeless populations. The model situates health sciences students as change agents within the health care team to facilitate interprofessional collaboration and medical-dental integration.

Key words: Health care for the homeless program, oral health, primary care, collaborative practice.

Problem

Lack of access to oral health care in the United States (U.S.) contributes to significant health disparities between the general population and vulnerable, underserved populations.^{1,2} A high burden of oral diseases, including periodontal disease, caries, and tooth loss persists among homeless populations.³ For homeless individuals and families, access to oral health care and routine oral hygiene practices can be particularly challenging.⁴ Barriers to oral health care for underserved populations include limited financial resources, low health literacy, and inadequate transportation.⁵ Further, homeless people often lack dental coverage or know where to seek dental care if needed.⁶ For homeless adults, access to dental coverage can be particularly challenging because Medicare/Medicaid dental benefits are not required for adults in every state, and benefits that are available through Medicare are limited to emergency coverage.² For homeless children, maintaining Medicaid coverage is difficult due to a lack of a permanent home address.² Moreover, higher rates of chronic conditions, mental illness, and drug and

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alcohol dependence further exacerbate these challenges.⁴ Integrating oral health and primary care is one proposed solution for improving access to oral health care for the poor and underserved.^{1,2} In 2014, the U.S. Department of Health Resources and Services Administration issued a set of oral health core clinical competencies for primary care providers practicing in safety-net settings.¹ The oral health competency domains serve as a framework for educating and training future and practicing health care providers about oral health risk assessment, evaluation, preventive intervention, communication and education, and interprofessional collaborative practice.¹ This report describes a pedagogic innovation designed to teach students about oral health and primary care integration by contributing toward the performance goals of a Health Care for the Homeless Program (HCHP).⁷

Approach

In 2013, Bouvé College of Health Sciences at Northeastern University established *Innovations in Oral Health: Technology, Instruction, Practice, Service*, an interprofessional education (IPE) program, which aimed to prepare future health professionals with the competencies to integrate oral health as an essential component of comprehensive health care, particularly for vulnerable and underserved populations. The IPE program leveraged cooperative education—an experiential learning method which has been the cornerstone of undergraduate curriculum at Northeastern University for more than a century. Cooperative education was designed to integrate classroom learning and real-world experience by providing students with the opportunity to alternate academic semesters with full-time employment in a career-related position. In 2014, a cooperative education model was designed for health sciences students to develop competency in oral health and primary care integration through meaningful, longitudinal engagement in unique communities of practice.

Wenger's Communities of Practice Model⁸ (CoP) was applied as a theoretical framework for learning, which posits that engagement in social practice is the fundamental process by which we learn and form our identity. Meaning and community are the hallmarks of Wenger's CoP Model. Meaning is characterized by how we experience and engage with the world through our practice; community is characterized by the process of working together in practice and negotiating the meaning of that shared practice. Thus, when individuals participate in activities that create new meanings they establish their identity as a member of the community. For students, learning is a matter of engaging in and contributing to the practices within a community.⁸ This model has been proposed as a framework for interprofessional collaborative practice in health care^{9,10} and applied across a variety of disciplines.¹¹⁻¹⁴ Cornes and colleagues applied Wenger's CoP Model as a framework for the implementation of a collaborative care model to improve health outcomes for homeless individuals and reported numerous benefits, such as improved and sustained collaborative relationships, development of new knowledge and skills, and improved care coordination.¹⁵ In a study of nursing student clinical placements in aged care facilities, CoP was found to be a useful framework for implementing a new model of clinical teaching.¹⁶ This study reported benefits for both established practitioners and students, including valued opportunities

of knowledge sharing, as well as the low cost of implementation. These studies measured the success of the application of the CoP model using various methods such as focus groups,^{15,16} interviews and surveys.¹⁶

Setting

Health Care for the Homeless Program. The cooperative education model was developed, implemented and evaluated at a HCHP in a large, urban city located in the U.S. Northeast region. The clinical setting is a Federally Qualified Health Center (FQHC) with a level-3 patient-centered medical home.¹⁷ Each year the HCHP provides integrated medical, behavioral, and oral health care to more than 12,500 homeless individuals. These services are provided in outpatient clinics located across two teaching hospitals, 50 shelters, streets, treatment programs, soup kitchens, a 104-bed medical respite in-patient unit, and an integrated medical facility which houses the HCHP's primary care and dental clinics. Since the opening of the HCHP in 1985, oral health care has been an integral component of its services. The HCHP and Northeastern University have sustained a long-standing clinical practice-academic partnership. For over a decade, the HCHP has employed cooperative education students to work in its medical outpatient clinics, shelters and respite programs.

Intervention

A cooperative education model was designed as an intervention to teach students about oral health and primary care integration, and to contribute toward the successful achievement of performance goals identified by the community of practice. The primary goals of the HCHP community of practice were to (a) increase the number of homeless patients who received an oral examination at primary care sites, and (b) provide basic oral health information to individuals and families located at family-team outreach sites. These goals are aligned with the Healthy People 2020 oral health objectives, which aim to reduce the incidence and prevalence of oral disease through timely oral health prevention and treatment.¹⁸ One specific objective is to increase the proportion of patients who receive oral health services at FQHCs each year, from a baseline of 17.5% in 2007 to 33.3% by 2020.¹⁸

With a focus on strengthening medical-dental integration, Northeastern University faculty and HCHP clinicians and administrators collaborated on the development of a student position description, orientation program, and training workshops. The cooperative education model engages students in meaningful practice to achieve HCHP performance goals. The model situates the student as an integral member of the inter-professional health care team and change agent within the community of practice, to facilitate medical-dental integration and collaborative practice. Full-time junior and senior level undergraduate students in good academic standing are eligible to apply for this position. Candidates who demonstrate a keen interest in working with vulnerable/underserved populations are screened and interviewed by HCHP administrators. Under the supervision of the HCHP's associate dental director, the student is required to work full-time (40 hours per week) for a six-month period and cover multiple

clinical locations across the HCHP. The cooperative education program is designed so that students are not enrolled in any academic courses nor paying tuition, while receiving a full-time salary based on a rate of \$15 per hour. Upon completion of the cooperative education work experience, the student receives a passing grade noted on their transcript as cooperative work experience.

Key role responsibilities were to conduct oral health risk assessments, coordinate patient referrals, organize patient group meetings and events, implement pediatric and adult oral health risk assessment tools,^{19,20} locate resources for patient education, and provide oral hygiene instruction. Because this was a new position, the first three months of the program were dedicated to student orientation, education and training, and developing new clinical workflows and processes. The student worked with HCHP personnel to integrate these activities within the clinic workflow. When working at the main primary care clinic, the student interfaced with patients when they were waiting to see a medical provider. When working at outreach sites, the student collaborated with HCHP personnel to coordinate scheduled meetings with patients and group events.

Student learning outcomes were derived from the oral health core clinical competencies for primary care providers¹ and interprofessional collaborative practice competencies.²¹ Importantly, the learning outcomes aligned with the goals of the HCHP community. A series of interactive training workshops, based on *Smiles for Life: A National Oral Health Curriculum* (www.smilesforlifeoralhealth.org), were designed for all HCHP clinicians and students to practice oral health clinical skills, including how to conduct an oral health risk assessment, perform an oral health screening, apply fluoride varnish, make a dental referral, and manage common dental emergencies. With funding from the DentaQuest Foundation, the cooperative education model was piloted from January 1, 2015 through June 30, 2015 and has continued with subsequent internships funded by the HCHP.

Evaluation Plan

Achievement of HCHP performance goals was measured by analyzing data collected in the electronic health record and student's daily activity logs. These data were tracked and trended, monthly. Initial outcome indicators included: (1) number of homeless patients who received an oral examination in the primary care clinic / total number of primary care clinic patients, and (2) number of homeless individuals/families who received basic oral health information at outreach locations. Oral examinations were coded according to the Common Dental Terminology (CDT) codes. An oral examination was counted when a patient received a comprehensive oral evaluation (CDT 0150) or periodic oral evaluation (CDT 0120). Subsequent data collection and analysis included the number of patient referrals and visits to the HCHP medical and dental clinics.

Student learning outcomes were evaluated with a 25-item pre/post-test to assess changes in oral health knowledge, skills, and attitudes (Table 1). Oral health knowledge items were scored using a three-point rating scale (1=little or no knowledge, 2=some knowledge, 3=extensive knowledge). Items pertaining to oral health clinical skills were also scored using a three-point rating scale (1=not prepared at all, 2=somewhat prepared, 3=very prepared). Survey items regarding attitudes towards oral health and

Table 1.**ORAL HEALTH KNOWLEDGE, SKILLS, AND ATTITUDES
SURVEY: PRE- AND POST-MEAN SCORES (N = 5)**

Question	Pre- Mean (SD)	Post- Mean (SD)
Knowledge—How would you rate the extent of your professional knowledge about the following oral health topics? (1=little or no knowledge, 2=some knowledge, 3=extensive knowledge)		
Impact of oral health on nutrition	1.60 (0.89)	2.80 (0.45)
Relationship between oral and systemic health	1.40 (0.55)	2.40 (0.55)
Risk factors for oral diseases	1.80 (0.45)	2.80 (0.45)
Oral/dental trauma from injuries	1.60 (0.55)	2.60 (0.55)
Oral cancer	1.20 (0.45)	2.20 (0.45)
Periodontal disease (gum disease)	1.60 (0.55)	2.40 (0.44)
Impact of conditions and medical treatments on oral health	1.40 (0.55)	2.20 (0.45)
Caries (tooth decay)	2.00 (0.00)	2.60 (0.55)
Oral infectious diseases	1.20 (0.45)	1.60 (0.55)
Strategies for oral disease prevention and health promotion	2.00 (0.71)	2.40 (0.55)
Total	1.58 (0.31)	2.40 (0.51)
Skills—How well do you think your undergraduate education and practice have prepared you in the following oral health clinical skills? (1=not prepared at all, 2=somewhat prepared 3=very prepared)		
Apply interprofessional practice principles that lead to quality patient- and population-centered oral health care.	1.40 (0.55)	2.80 (0.45)
Identify and prioritize strategies to prevent or mitigate risk impact for oral and systemic diseases.	1.00 (0.00)	2.00 (0.00)
Provide appropriate referrals to dental professionals.	1.60 (0.55)	2.60 (0.55)
Implement appropriate patient-centered preventive oral health interventions and strategies.	1.40 (0.55)	2.40 (0.55)

(continued on p. 596)

Table 1. (continued)

Question	Pre-Mean (SD)	Post-Mean (SD)
Conduct patient-specific, oral health risk assessments.	1.20 (0.45)	2.20 (0.45)
Identify patient-specific conditions and medical treatments that impact oral health.	1.20 (0.45)	2.20 (0.45)
Identify patient-specific, <u>oral</u> conditions and diseases that impact overall health.	1.60 (0.55)	2.60 (0.55)
Perform oral health evaluations linking patient history, risk assessment, and clinical presentation.	1.20 (0.45)	2.20 (0.45)
Facilitate patient navigation in the oral health care delivery system through collaboration and communication with oral health care providers.	1.40 (0.55)	2.20 (0.45)
Integrate epidemiology of caries, periodontal diseases, oral cancer, and common oral trauma into the risk assessment.	1.40 (0.55)	2.20 (0.45)
Provide targeted patient education about the importance of oral health and how to maintain good oral health, which considers oral health literacy, nutrition, and patient's perceived oral health barriers.	1.80 (0.84)	2.60 (0.55)
Exchange meaningful information among health care providers to identify and implement appropriate, high quality oral health care for patients, based on comprehensive evaluations and options available within the local health delivery and referral system.	1.40 (0.55)	2.20 (0.45)
Total	1.40 (0.54)	2.35 (0.47)
Attitudes—To what extent do you agree or disagree with the following statements about integrating oral health and primary care practice? (1=strongly disagree, 5=strongly agree).		
Accreditation and certification bodies should integrate oral health clinical competencies into primary care practitioner standards.	3.80 (1.10)	4.60 (0.55)
Health care professional education and training, as well as continuing education curricula, should incorporate the oral health clinical competencies.	4.60 (0.55)	4.60 (0.55)
Primary care clinicians should incorporate oral health clinical competencies in patient care.	4.60 (0.55)	5.00 (0.00)
Health care systems should engage and educate consumers about oral health in primary care as an expected standard of interprofessional practice.	4.40 (0.55)	4.80 (0.45)
Total	4.35 (0.72)	4.75 (0.45)

primary care integration were scored using a five-point Likert scale (1=strongly disagree, 5=strongly agree). These data were summarized using descriptive statistics by computing the mean, standard deviation and variance.

Outcomes

From January 2015 through March 2016, there was an overall increase in the number of oral examinations that were provided to patients seeking primary care services in the HCHP's primary care clinic, from a baseline of 12% ($n = 294$) to 45% ($n = 1,058$) (Figure 1). This was achieved through a combined collaborative effort by the HCHP students and clinicians. In the first three months of implementation there was a slight decrease in the number of oral examinations. This can be attributed to the extensive training and planning involved in the implementation of this new position. Students contributed by conducting oral health risk assessments and screening for oral examinations while patients were waiting for their medical appointment. When indicated, the student scheduled an appointment, most often that same day, for a comprehensive oral examination. Clinicians contributed by completing the oral examination and providing a timely referral for any unmet oral health needs. Approximately two months after the initiation of this program, oral health promotion activities were expanded to family-team sites. During this period, more than 160 individuals and 20 families at outreach locations received basic oral health education, from a baseline of zero. Based on these preliminary results, the cooperative education model for oral health and primary care integration has been sustained by the HCHP and funded through its annual operating budget.

A total of five HCHP students completed the pre/post-test. Descriptive statistics for each survey item were rank-ordered according to changes in pre- and post- mean scores (Table 1). Responses to survey items indicated an overall increase in students' oral health knowledge, skills, and attitudes.

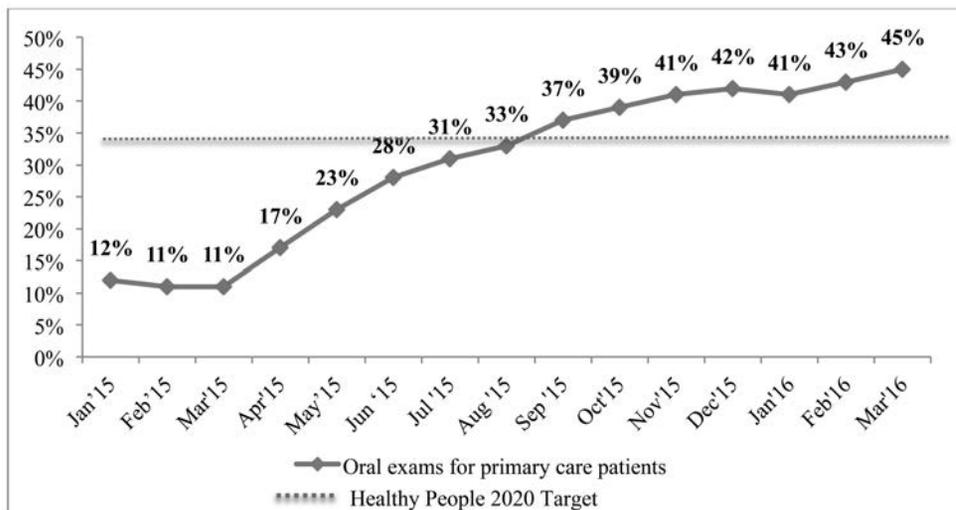


Figure 1. Percent (%) of primary care patients who received an oral examination.

Conclusion

The cooperative education program described here is a feasible model to promote oral health and primary care integration within a health care for the homeless program or other safety-net setting. The program contributed to exceeding the Healthy People 2020 oral health target for increasing the proportion of patients who received oral health services at a FQHC. Sustainability of this model requires academic-clinical practice partnership, organizational commitment, and financial support. Further research is needed to evaluate the impact of the cooperative education model on expanding access to oral health care for homeless populations within other communities of practice.

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