

# Person-Centered Care in Dental Hygiene Education: Incorporation and evaluation of person-centered care in the curriculum

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## ABSTRACT

**Purpose** Patient and person-centered care are often used interchangeably. The abbreviation PCC is used in this paper in instances where patient/person centered care reflects the definition of person-centeredness. The purpose of this study was to assess how PCC is taught and evaluated in entry-level dental hygiene education programs to prepare graduates for future collaborations with other health care professionals in a wide range of practice settings.

**Methods** A cross-sectional study was conducted using a 10-item survey emailed to directors of 325 accredited, entry-level dental hygiene education programs in the United States in December 2021. Descriptive statistics were calculated for all variables. Associations with curriculum settings, teaching, and evaluation methods for PCC, according to program degrees granted, were tested with Chi-square and Fisher's Exact tests.

**Results** The response rate was 23% (n=75). Seventy percent offered an associate degree (AS) and 29% offered a baccalaureate degree (BS); 42% reported more than half of their curriculum is allocated to teaching PCC. Didactic lectures (100%), case presentations (97%), and clinical instruction (97%) were the most common methods used for teaching PCC. Baccalaureate programs used external rotations more than associate programs for teaching and evaluation of PCC (84.2% vs. 45.5%;  $p < 0.01$ ). The most common PCC terms used in Quality Assurance Plans included providing individualized care (99%) and delivering evidence-based care (91%). Ninety-three percent strongly agree-agree that teaching PCC prepares graduates for working in different settings (e.g., schools, nursing homes, etc.), and 82% strongly agree-agree that PCC prepares graduates to work with a variety of providers.

**Conclusion** The allocation of curricula time for PCC varied widely across respondents. Conversely, the majority felt their graduates were well-prepared to work in different settings where both PCC and IPP are likely to be practiced. This study serves as a baseline for further analysis of how dental hygiene education is preparing graduates for future practice settings.

**Keywords** patient-centered care, person-centered care, interprofessional education, interprofessional collaboration, access to care, dental hygiene education

NDHRA priority area, **Professional development: Education** (evaluation).

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## INTRODUCTION

Ever since the 2000 Surgeon General's Report on Oral Health exposed the issue of lack of access to oral health care services, states have worked to expand the scope of practice for dental hygienists and provide greater direct access options.<sup>1-2</sup> The 2021 *Oral Health in America: Opportunities and Challenges* report examining progress with access to care, revealed that young children have had increased access to care since the release of the initial Surgeon General report in 2000.<sup>3</sup> In addition, the number of individuals receiving oral health services in Federally Qualified Health Centers (FQHCs) has grown from 1.4 million to 5.2 million over the past twenty years.<sup>3</sup> Yet, while there has been increased access for young children, both working age and older adults continue to face significant challenges when it comes to obtaining oral health care.

Reviewing the number of states permitting direct access to dental hygienists shows that at the time the Surgeon General's Report was released in 2000, only eight states had legislation allowing for direct access.<sup>4</sup> With the release of the 2021 *Oral Health in America* report, there are now forty-two states that allow some form of direct access to dental hygienists. In addition to direct access, a number of states have also legislated expanded scopes of practice for dental hygienists. This has allowed dental hygienists to provide care beyond the private practice environment and expand access through public health and safety net settings.<sup>3,5-6</sup>

The recent *Oral Health in America* report states the need for individual-based preventive programs as well as public health approaches to oral care; both of which can be addressed by improved models of dental-medical integration and interprofessional practice (IPP).<sup>3</sup> The report emphasizes a variety of outcomes as a result of interprofessional practice. One example is the Oral Health Delivery Framework, commissioned by the National Interprofessional Initiative on Oral Health, where medical offices and community clinics coordinate oral and primary care providers in a convenient location. This model of collaborative

practice has been implemented in school-based settings, federal- or state-affiliated health systems, academic institutions, and safety net programs within rural communities and nonmetropolitan areas. In addition to IPP, the report advocates training in patient-centered care that is integrated more fully with other health care professionals in community settings, including long-term care facilities. Patient- or person-centered care is proposed as a way to help diverse patient populations access and navigate medical and oral health care systems.<sup>3</sup> With increased direct access to dental hygiene care, and with medical-dental integration as a goal, future practice for dental hygienists will involve a wide range of settings where interprofessional practice and patient/person centered care will be standard practice.

Allowing the patient to fully participate in their health-related decisions is considered the gold standard for quality health care. From the 2001 Institute of Medicine report, *Crossing the Quality Chasm: A New Health System For The 21<sup>st</sup> Century*, where patient-centered care is one of six pillars for achieving high quality care, to the 2021 *Oral Health in America: Opportunities and Challenges* where patient and person-centered care is discussed, there is an emphasis on care that is respectful, compassionate and responsive to individuals through shared decision making.<sup>3,7</sup> Included in person-centered care is consideration of the individual's social determinants of health (SDH), non-medical factors that influence health outcomes. Some of these factors include education access and quality, employment and economic stability, health care access and quality of care.<sup>8</sup> Consequently, there has been a shift in thought, as well as practice, from the clinical and medical approach to care to one that is person-centered. Practicing person-centeredness moves the patient-provider relationship from a transactional relationship to a valued and long-lasting partnership, where the patient has an active role in their care and decision-making.<sup>9-12</sup> One way to illustrate person-centered care is to describe what it is not; person-centered care is not disease-centered,

provider-centered, institution-centered or technology-centered. In changing the language to person-centeredness, the emphasis is on the *whole* person and not just their medical condition or disease.<sup>9,13-14</sup>

As previously described, the terms *patient*-centered care and *person*-centered care are often used interchangeably. While there are many similarities between the two terms, the goals of the two approaches are different.<sup>9,15</sup> Eklund et al. proposed that the goal of *patient*-centered care is a functional life, one where disease symptoms are addressed, and patient suffering is reduced.<sup>9</sup> In contrast, Eklund et al. defined the goal of *person*-centered care as a meaningful life, with a functional life described as a component of a meaningful life. Therefore, person-centered care broadens and extends the perspective of patient-centered care by considering the whole life of the person.<sup>9</sup> Because both terms are used interchangeably in the literature, this study utilizes the global PCC abbreviation to encompass both patient and person-centered care when the term reflects the definition of person-centeredness.

## PATIENT/PERSON-CENTERED CARE IN HEALTH CARE EDUCATION

There is a significant body of literature regarding patient/person centered care in the practice of medicine,<sup>7,10,12,16-17</sup> nursing,<sup>7,18-22</sup> and pharmacy.<sup>23-27</sup> This literature documents how patient/person centered care is being used in various practice settings such as nursing homes, dementia care, long-term care, and medication adherence.<sup>7,10,18-20,22,23,26</sup> In contrast, the literature on how dentistry and dental hygiene are using patient/person center care in practice is very limited.<sup>28-29</sup> Examination of the literature to identify how patient/person centered care is taught in the previously mentioned health care fields is also very limited.<sup>29-30</sup> Therefore, a review of the accreditation standards for medicine,<sup>31</sup> nursing,<sup>32</sup> pharmacy,<sup>33</sup> dentistry, and dental hygiene<sup>34</sup> education was conducted to evaluate how the standards address patient/person centered care in the various professional education programs. Four of the five

health care professions reviewed have standards for patient/person centered care. Patient/person centered care was found in one of five standards for accreditation in nursing, four of twenty-five in pharmacy, and two of six in dentistry and dental hygiene.<sup>32-34</sup> However, there was no mention of patient/person centered care in any of the twelve accreditation standards in medicine.<sup>31</sup>

The literature shows that patient/person centered care is not being implemented in the practice of dental hygiene at the same rate as it is being implemented in the practice of medicine, nursing, and pharmacy. Yet, the accrediting body for dental hygiene education specifically includes standards where patient/person centered care is incorporated.<sup>34</sup> The Commission on Dental Accreditation Dental Hygiene (CODA DH) Standard 2-13 states: Graduates must be competent in providing the dental hygiene process of care which includes the provision of *patient-centered* treatment and evidence-based care in a manner minimizing risk and optimizing oral health.<sup>34</sup> CODA DH Standard 6-2 states the following: The program must have a formal written patient care quality assurance plan that includes standards of care that are *patient-centered*, focused on comprehensive care, and written in a format that facilitates assessment with measurable criteria.<sup>34</sup> Since the *Oral Health in America* report emphasized both interprofessional practice (IPP), and patient/person-centered care (PCC) it was determined that a study examining how PCC is being taught and evaluated in dental hygiene educational programs was needed. An extensive review of the literature found no studies specifically evaluating this topic in dental hygiene education. The purpose of this study was to assess how PCC is taught and evaluated in entry-level dental hygiene education programs to prepare graduates for future collaborations with other health care professionals in a wide range of practice settings.

## METHODS

A cross-sectional study was conducted using a survey administered to accredited entry-level dental hygiene education programs across the United States (US) to investigate how PCC is taught and evaluated. The

University of Missouri-Kansas City Institutional Review Board (IRB) approved the study with the status exempt and assigned it project # IRB2080244.

The research questions were as follows:

1. To determine what percentage of an entry-level dental hygiene program's curriculum is allocated to teaching PCC.
2. To describe key terms used for PCC as per CODA DH Standard 6-2.
3. To describe the curriculum settings and teaching methods that entry-level dental hygiene education programs use to teach PCC as defined by CODA DH Standards 2-13 overall and by degree type awarded.
4. To describe the methods that entry-level dental hygiene programs use to evaluate PCC as defined by CODA DH Standards 2-13 overall and by degree type awarded.
5. To describe program directors' perception of how teaching PCC prepares graduates to work in different settings with various providers (IPP).

## INSTRUMENTS

Two CODA DH Standards were addressed. Standard 2-13 states: Graduates must be competent in providing the dental hygiene process of care which includes the provision of *patient-centered* treatment and evidence-based care in a manner minimizing risk and optimizing oral health. Standard 6-2 states: The program must have a formal written patient care quality assurance plan that includes standards of care that are *patient-centered*, focused on comprehensive care, and written in a format that facilitates assessment with measurable criteria.<sup>34</sup>

The ten-question electronic survey focused on three domains: program characteristics, how patient-centered care is taught and evaluated in their entry-level dental hygiene curriculum with respect to Standards 6-2 and 2-13, and opinions on teaching patient-centered care and practicing in interprofessional practice (IPP) environments (Appendix 1).

In preparation for survey development, an extensive literature review was conducted. Before finalizing the survey, the instrument was evaluated for clarity, content, and time required for completion by two faculty members with a combined 46 years of dental hygiene teaching experience at the University of Missouri-Kansas City School of Dentistry. Changes were made to provide greater clarity based on their feedback. The survey was then created within the Research Electronic Data Capture (REDCap) for administration and distribution.<sup>35</sup> The survey was hosted at the Center for Health Insights of the University of Missouri-Kansas City School of Medicine; REDCap allows for data collection and secure information storage.

## PARTICIPANTS

Accredited entry-level dental hygiene programs in the US that were identified through the Commission on Dental Accreditation (CODA) and the American Dental Hygienists' Association (ADHA) were included in the sample (n=325). Dental hygiene education programs located in Canada and Puerto Rico were excluded. Dental hygiene program director email addresses were found on the ADHA program website and were corroborated by the individual program website, the Commission on Dental Accreditation (CODA) database, and the institutional faculty directory list. The initial survey was launched in early December 2021 with a two-week follow-up email. Data collection was completed by the end of December 2021.

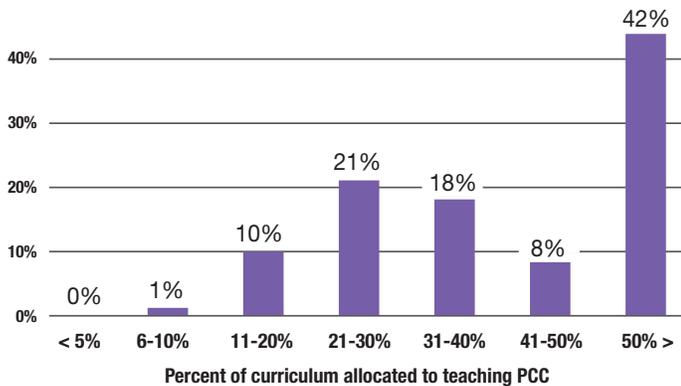
## ANALYSIS

Statistical analyses were performed with a statistical data analysis program (Stata Version 14.2; StataCorp., College Station, TX, USA) with the level of significance set at  $\alpha=0.05$  for all testing. Descriptive statistics (means, standard deviations, counts, and percentages) were calculated for all variables from the survey. Associations with curriculum settings, teaching methods, and evaluation methods for PCC and entry-level degree types were tested with Chi-square and Fisher's Exact tests.

## RESULTS

Of the 325 entry-level dental hygiene education program directors contacted, a total of 75 responded and completed the survey for a 23% response rate. Most respondents reported offering an associate degree (AS) (70%, n=55), followed by a baccalaureate degree (BS) (29%, n=19), and a Certificate degree (1%) in dental hygiene. Approximately 42% reported that more than half of their curriculum is allocated to teaching PCC (Figure 1). The most commonly reported key PCC terms used in their Quality Assurance plan (CODA DH 6-2) were: “providing individualized care” (99%) and “delivering evidence-based care” (91%) (Figure 2).

**Figure 1. Distribution of curriculum allocated to teaching PCC**



**Figure 2. Patient-centered care component contained in quality assurance plan**

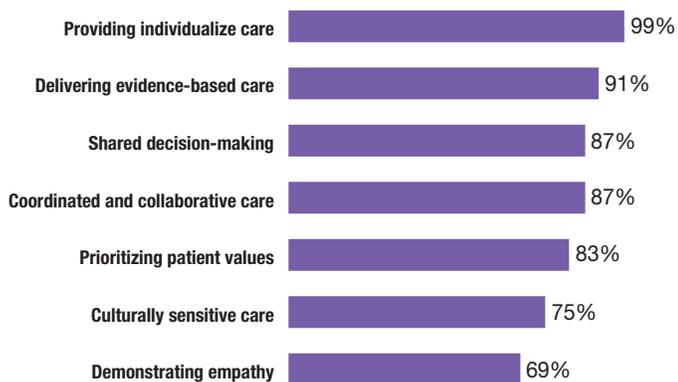


Table I shows participants reported options for their curriculum settings, methods, and evaluation method used for teaching PCC (Standard 2-13) overall and by degree type. The most frequent settings reported for teaching PCC were didactic lectures (100%) and clinical care (100%). The most common methods for teaching PCC were lectures (100%), case presentations (97%), and clinical instruction (97%). The most frequently reported evaluation methods included examinations (99%), student self-reflection (95%), and faculty observation in clinic (95%). The only significant difference found between degree types regarding teaching PCC was regarding external rotations. Baccalaureate programs were more likely to teach PCC in external rotation settings than programs offering an associate degree (74% vs 46%,  $p < 0.01$ ). The BS programs were also more likely to evaluate PCC using external rotations than associate programs (79% vs 36%,  $p < 0.01$ ). There were no differences between degree types regarding the methods used for teaching PCC (Table I).

In terms of program directors' perceptions of their graduates' preparedness to work in various settings (e.g., schools, nursing homes, etc.) with different providers (IPP) (e.g., with physicians, nurses, etc.), nearly all (93%) strongly agree/agree that teaching PCC prepares graduates to work in different settings and 82% strongly agree/agree that teaching PCC prepares graduates to work with a variety of providers (IPP) (Figure 3).

## DISCUSSION

This study is an initial attempt at evaluating how patient/person centered care is being taught in entry-level dental hygiene education programs as outlined in the CODA DH accreditation standards. From the 2021 *Oral Health in America* report, it is clear that dental hygienists need to be prepared to practice in settings beyond private practice (e.g., schools, nursing homes, etc.). Many of these additional practice settings involve working collaboratively with a variety of other health care providers (IPP) and practicing in a way that supports patient/person centered care (PCC). Dental

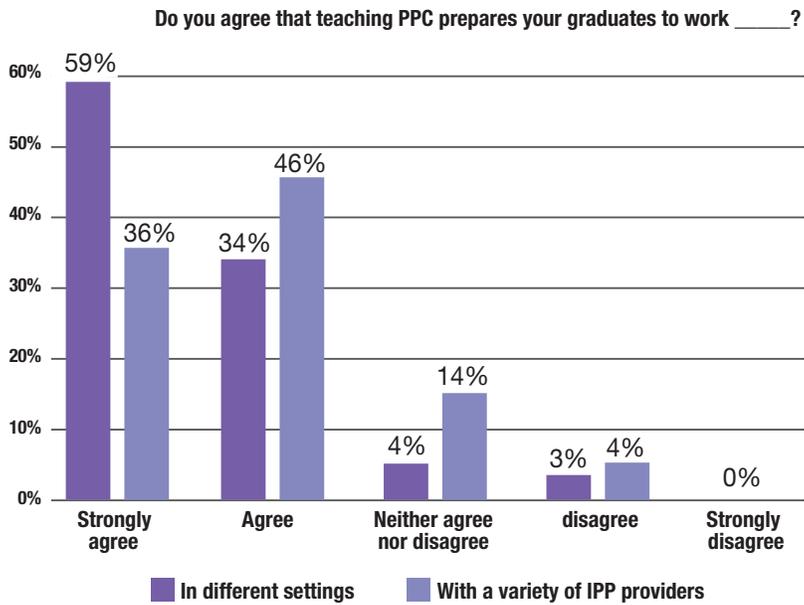
**Table I. Settings and methods used to teach PCC overall and by degree type**

	Entire Sample (n=74)	Associate (n=55)	Baccalaureate (n=19)	
	n (%)	n (%)	n (%)	p-value†
<b>Settings used to teach patient-centered care</b>				
Didactic lectures	74 (100%)	55 (100%)	19 (100%)	N/A‡
Clinical care	74 (100%)	55 (100%)	19 (100%)	N/A‡
Laboratory (e.g. simulations)	57 (77.0%)	43 (78.2%)	14 (73.7%)	0.76§
External rotations	41 (55.4%)	25 (45.5%)	16 (84.2%)	<0.01
<b>Methods used to teach patient-centered care</b>				
Lectures (in-person or virtual)	74 (100%)	55 (100%)	19 (100%)	N/A‡
Online learning (videos, short-courses, etc.)	52 (70.3%)	36 (65.5%)	16 (84.2%)	0.12
Case presentations	72 (97.3%)	53 (96.4%)	19 (100%)	0.99§
Role play	53 (71.6%)	41 (74.6%)	12 (63.2%)	0.34
Peer review	44 (59.5%)	34 (61.8%)	10 (52.6%)	0.48
Student recordings	22 (29.7%)	16 (29.1%)	6 (31.6%)	0.84
Simulations	51 (68.9%)	37 (67.3%)	14 (73.7%)	0.60
Clinical instruction	72 (97.3%)	54 (98.2%)	18 (94.7%)	0.45§
Observation	60 (81.1%)	42 (76.4%)	18 (94.7%)	0.10§
<b>Methods used to evaluate patient-centered care</b>				
Exams/Quizzes	73 (98.7%)	54 (98.2%)	19 (100%)	0.99§
Post-appointment patient surveys	68 (91.9%)	50 (90.9%)	18 (94.7%)	0.99§
Standardized patients	19 (25.7%)	12 (21.8%)	7 (36.8%)	0.23§
Assessment of simulations	41 (55.4%)	31 (56.4%)	10 (52.6%)	0.78
Student self-reflection/Self-assessment	70 (94.6%)	51 (92.7%)	19 (100%)	0.57§
Peer assessment	33 (44.6%)	23 (41.8%)	10 (52.6%)	0.41
Reflective writing	51 (68.9%)	35 (63.6%)	16 (84.2%)	0.10
Competency testing	64 (86.5%)	47 (85.5%)	17 (89.5%)	0.99§
OSCEs	45 (60.8%)	30 (54.6%)	15 (79.0%)	0.06
Critically appraised topic summaries (CATS)	7 (9.5%)	5 (9.1%)	2 (10.5%)	0.99§
Evaluations by supervisor at external rotations	35 (47.3%)	20 (36.4%)	15 (79.0%)	<0.01
Faculty assessment by observation in school clinic	70 (94.6%)	51 (92.7%)	19 (100%)	0.57§
Presentations related to patient-centered care	67 (90.5%)	49 (89.1%)	18 (94.7%)	0.67§
Evaluation of student recordings of patient-centered care	20 (27.0%)	14 (25.5%)	6 (31.6%)	0.60
Portfolios	35 (47.3%)	25 (45.5%)	10 (52.6%)	0.59

†Calculated using a Chi-square test or a §Fisher's Exact test (if any expected cell counts are < 5)

‡Statistical tests could not be performed since there was no variability in the responses.

**Figure 3. Opinions on teaching patient-centered care on preparedness for working in different settings and with a variety of providers**



hygiene education must provide the foundation needed for IPP with an emphasis on PCC for students to transition into the practice settings highlighted in the 2021 report.<sup>3</sup>

The study participants' most frequently reported settings used to teach PCC were didactic lecture, clinical care, laboratory (e.g., simulations) and external rotations. Teaching methods most commonly used included lectures, case presentations, and clinical instruction. The strategies most frequently reported for evaluating PCC were exams/quizzes, student self-reflection/self assessment, and faculty assessment by observation in school clinic. The allocation of curricula time for PCC varied widely across respondents. Approximately 42% reported more than half of their curriculum is allocated to teaching PCC, with the remaining 58% reporting curricular time ranging from 6-50%. The most common PCC terms used in Quality Assurance Plans included providing individualized care (99%) and delivering evidence-based care (91%).

All respondents reported that they were teaching PCC as required by the accreditation standards, yet the standards provide little guidance on how much of the curricula should be dedicated to teaching PCC. When asked if they agreed that teaching PCC prepares graduates to work in different settings (e.g., schools, nursing homes, etc.) and with a variety of providers (IPP), responses were less varied (93% agreed-strongly agreed, and 82% agreed-strongly agreed, respectively). Both the literature

and results from this study affirms the importance that the respondents put on patient/person centered practice and interprofessional practice.

When examining differences between degree types, baccalaureate programs were more likely to teach (74% vs 46%,  $p < 0.01$ ), and evaluate (79% vs 36%,  $p < 0.01$ ) PCC in external rotation settings than the associate programs. Accreditation standards for dental hygiene define "clinical education" as patient care experiences required for all students in the attainment of clinical competence and completion of the dental hygiene program. These educational experiences are to be provided in the program's clinical facilities (either on campus or extended campus facilities) and are to be supervised and evaluated by program faculty.<sup>34</sup> In contrast, the standards define "enriching clinical experiences" as experiences that exceed the basic clinical education requirements of the program and are provided to enhance basic clinical education.

Enriching experiences can be provided on campus and/or in extramural clinical facilities and may be supervised by non-program personnel.<sup>34</sup> Possible reasons for the differences found between AS and BS programs' use of external rotations for teaching PCC and IPP are multifactorial. One factor may be the difference in credit hours between AS and BS dental hygiene programs. While the typical associate degree in the U.S. consists of 60 credit hours, dental hygiene AS programs across the US require 80-90 credit hours for the awarding of an associate degree in dental hygiene.<sup>36-37</sup> The average baccalaureate degree program consists of 118-120 credit hours, which is in alignment with the credit hours required for a dental hygiene program's awarding of a baccalaureate degree.<sup>37</sup> Students in baccalaureate degree

programs may be able to get more of the required dental hygiene curriculum completed earlier, freeing up time for additional external rotations. Another factor could be that many of the dental hygiene baccalaureate degree programs are housed in dental schools or co-located in health science centers, thereby increasing opportunities for external rotations and collaboration with other health care professions. Considering that dental hygiene AS programs are already well past the average credit hours needed for an associate degree, matriculation agreements between AS and BS programs, which are endorsed in the accreditation standards, would be a strategy for ensuring that all dental hygiene students have the opportunity to gain additional experiences in both PCC and IPP for future readiness for practice while completing their baccalaureate degree. There are currently 58 dental hygiene degree completion programs in the US that could provide these experiences.<sup>38</sup>

Four of the five health care fields studied, nursing, pharmacy, dentistry, and dental hygiene, have accreditation standards addressing PCC but there is little literature to show how PCC is actually being taught in these health care fields. There is an interesting disconnect between medical education and medical practice where there are no accreditation standards for PCC, yet a good deal of literature is available to confirm the incorporation of PCC in the practice of medicine.<sup>7,10,12,16-17</sup> This discrepancy could be a result of the very nature of practice environments in medicine. For example, practice settings in medicine are multi-dimensional, including not only private practice, but also settings such as hospitals, nursing homes, and long-term care facilities. The practice of PCC in these environments may be mandated from an organizational level that is not being translated into education and accreditation standards. An example can be found in the literature where caregivers in long-term care settings are trained in PCC because of the positive outcomes (eg., improved outcomes for patients, better use of resources, decreased costs and increased satisfaction with care) that result from this approach to long-term care.<sup>39</sup> Extensive research has been conducted to measure person-centered care and these measures are being used in long-term facilities as a

way to quantify quality assurance outcomes.<sup>40</sup> The fact that a majority of dentists and dental hygienists work in private practice settings could explain the disconnect between PCC inclusion in the accreditation standards and educational programs, versus how PCC is actually being practiced in dentistry and dental hygiene. The literature is lacking regarding the documentation of this type of quality assurance data in the practice of dentistry and dental hygiene.

Limitations of the study include a low response rate, which may contribute to non-response bias. Program directors to whom PCC is a focus may have been more likely to respond to the survey. These results may not be generalizable to other health care professions, particularly dentistry. Additional limitations include cross-sectional study design, only reflecting a snapshot in time as well as potential recall bias of the respondents. More research will be needed in dentistry and dental hygiene as practice settings change to meet the needs of all people in the US. Research exploring how PCC is carried into practice will help to inform the educational readiness of oral health care providers.<sup>3</sup> External rotations may become a more standard practice for teaching PCC in interprofessional practice settings.

## CONCLUSION

This study explored how dental hygiene education is meeting accreditation standards related to patient/person centered care. A wide variation was found between participants in regard to the allocation of time in the curriculum for teaching patient/person-centered care. There were many similarities in settings, methods for teaching and evaluating patient/person centered care regardless of degree awarded (AS vs BS), however there were significant differences in the use of external rotations. Findings from this study should serve as a resource for dental hygiene education programs in the development of curricula to prepare future-ready dental hygiene practitioners. Further research is needed as legislative changes continue to expand access to dental hygiene oral health care services and increase scopes of practice.

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**REFERENCES**

1. U.S. Department of Health and Human Services. Oral Health in America: A report of the surgeon general [Internet]. Rockville (MD): U.S. Department of Health and Human Services, National Institute of Dental and Craniofacial Research, National Institutes of Health; 2000 [cited: 2022 Oct 25]. Available from: <https://www.nidcr.nih.gov/sites/default/files/2017-10/hck1ocv.%40www.surgeon.fullrpt.pdf>
2. Langelier M, Continelli T, Moore J, et al.. Expanded scopes of practice for dental hygienists associated with improved oral health outcomes for adults. *Health Affair*. 2016 Dec;35(12):2207–15.
3. National Institutes of Health. Oral Health in America: Advances and challenges [Internet]. Washington DC: National Institute of Dental and Craniofacial Research; 2021 [cited 2022 Oct 25]. Available from: <https://www.nidcr.nih.gov/oralhealthinamerica>
4. American Dental Hygienists' Association. Direct access [Internet]. Chicago (IL): American Dental Hygienists Association; 2021 [cited 2022 Oct 25]. Available from: <https://www.adha.org/direct-access>
5. Theile CW, Strauss SM, Northridge ME, et al. The oral health care manager in a patient-centered health facility. *J Evid Based Dent Pract*. 2016 Jun; (suppl):34-42.
5. Braun PA, Kahl S, Ellison MC, et al. Feasibility of colocating dental hygienists into medical practices. *J Public Health Dent*. 2013 Jun; 73(3):187– 94.
7. Institute of Medicine. Crossing the quality chasm: A new health system for the 21st century [Internet]. Washington DC: National Academies Press; 2001 [cited 2022 Oct 25]. Available from: <http://www.ncbi.nlm.nih.gov/books/NBK222274/>
8. World Health Organization. Social determinants of health [Internet]. Geneva (CH): World Health Organization; 2022 [cited 2022 Oct 17]. Available from: [https://www.who.int/health-topics/social-determinants-of-health#tab=tab\\_1](https://www.who.int/health-topics/social-determinants-of-health#tab=tab_1)
9. Håkansson Eklund J, Holmström IK, Kumlin T, et al. “Same same or different?” A review of reviews of person-centered and patient-centered care. *Patient Educ Couns*. 2019 Jan;102(1):3–11.
10. Manthorpe J, Samsi K. Person-centered dementia care: Current perspectives. *Clin Interv Aging*. 2016 Nov;11:1733–40.
11. Walji MF, Karimbux NY, Spielman AI. Person-centered care: Opportunities and challenges for academic dental institutions and programs. *J Dent Educ*. 2017 Nov;81(11):1265–72.
12. Kim SK, Park M. Effectiveness of person-centered care on people with dementia: a systematic review and meta-analysis. *Clin Interv Aging*. 2017 Feb;12:381–97.
13. Rosenzweig J, Blaizot A, Cougot N, et al. Effect of a person-centered course on the empathic ability of dental students. *J Dent Educ*. 2016 Nov;80(11):1337–48.
14. Lambert BL, Street RL, Cegala DJ, et al. Provider-patient communication, patient-centered care, and the mangle of practice. *Health Communication*. 1997 Jan 1;9(1):27–43.
15. Rathert C, Wyrwich MD, Boren SA. Patient-centered care and outcomes: a systematic review of the literature. *Med Care Res Rev*. 2013 Aug;70(4):351–79.
16. Purkale BA, Mold JW, Chen S. Encouraging patient-centered care by including quality-of-life questions on pre-encounter forms. *Ann Fam Med*. 2016 May;14(3):221–6.
17. Constand MK, MacDermid JC, Dal Bello-Haas V, et al. Scoping review of patient-centered care approaches in healthcare. *BMC Health Serv Res*. 2014 Jun 19;14:271.
18. Li J, Porock D. Resident outcomes of person-centered care in long-term care: A narrative review of interventional research. *Int J Nurs Stud*. 2014 Oct;51(10):1395–415.
19. Robinson JH, Callister LC, Berry JA, et al. Patient-centered care and adherence: definitions and applications to improve outcomes. *J Am Acad Nurse Pract*. 2008 Dec;20(12):600–7.
20. Coyle J, Williams B. Valuing people as individuals: Development of an instrument through a survey of person-centredness in secondary care. *J Adv Nurs*. 2001 Nov;36(3):450–9.
21. Fleischer S, Berg A, Zimmermann M, et al. Nurse-patient interaction and communication: A systematic literature review. *J Public Health*. 2009 Jan;17(5):339–53.

22. Hacıhasanoğlu R, Gözüm S. The effect of patient education and home monitoring on medication compliance, hypertension management, healthy lifestyle behaviours and BMI in a primary health care setting. *J Clin Nurs*. 2011 Mar;20(5–6):692–705.
23. Stanhope V, Ingoglia C, Schmelter B, et al. Impact of person-centered planning and collaborative documentation on treatment adherence. *Psychiatr Serv*. 2013 Jan;64(1):76–9.
24. Janodia MD. Health Related Quality of Life (HRQOL) Measures in healthcare delivery system: Indian perspective. *J Young Pharm*. 2016 Apr;8(3):164–7.
25. Sánchez AM. Teaching patient-centered care to pharmacy students. *Int J Clin Pharm*. 2011 Feb;33(1):55–7.
26. Bosworth HB, Fortmann SP, Kuntz J, et al. Recommendations for providers on person-centered approaches to assess and improve medication adherence. *J Gen Intern Med*. 2017 Jan;32(1):93–100.
27. DaCosta D, Dodds LJ, Corlett SA. Development of a tool to support person-centred medicine-focused consultations with stroke survivors. *Patient Educ Couns*. 2019 Jul;102(7):1263–72.
28. Scambler S, Gupta A, Asimakopoulou K. Patient-centred care - what is it and how is it practised in the dental surgery? *Health Expect*. 2015 Dec;18:2549–58.
29. Gadbury-Amyot CC, Austin KS, Simmer-Beck M. A review of the oral health-related quality of life (OHRQL) model for dental hygiene: Eighteen years later. *Int J Dent Hyg*. 2018 May;16(2):267–78.
30. McKeon LM, Norris T, Cardell B, et al. Developing patient-centered care competencies among prelicensure nursing students using simulation. *J Nurs Educ*. 2009 Dec;48(12):711–5.
31. LCME. Standards, publications, & notification forms [Internet]. Chicago (IL): American Medical Association and American Association of Medical Colleges; 2022 [cited 2022 Oct 25]. Available from: <https://lcme.org/publications/#Standards33>.
32. CNEA. Standards for Accreditation [Internet]. Washington DC: NLN Commission for Nursing Education Accreditation; 2022 [cited 2022 Oct 25]. Available from: <https://cnea.nln.org/standards-of-accreditation>
33. Accreditation Council for Pharmacy Education. PharmD program accreditation. [Internet]. Chicago (IL): Accreditation Council for Pharmacy Education; 2022 [cited 2022 Oct 25]. Available from: <https://www.acpe-accredit.org/continuing-education-provider-accreditation/>
34. Commission on Dental Accreditation. Current accreditation standards [Internet]. [Internet]. Chicago (IL): American Dental Association; 2022 [cited 2022 Oct 25]. Available from: <https://coda.ada.org/en/current-accreditation-standards>
35. Harris PA, Taylor R, Minor BL, et al. The REDCap consortium: Building an international community of software platform partners. *J Biomed Inform*. 2019 Jul;95:103208.
36. Johnson N, Reidy L, Droll M, et al. Program requirements for associate's and bachelor's degrees: a national survey [Internet]. Washington DC: Complete College America; 2012 [cited 2022 Oct 25]. Available from: [https://www.insidehighered.com/sites/default/server\\_files/files/Program%20Requirements%20-%20A%20National%20Survey%281%29.pdf](https://www.insidehighered.com/sites/default/server_files/files/Program%20Requirements%20-%20A%20National%20Survey%281%29.pdf)
37. American Dental Education Association. Program types [Internet]. Washington DC: American Dental Education Association; 2022 [cited 2023 Jan 13]. Available from: [https://www.adea.org/GoDental/Future\\_Dental\\_Hygienists/Program\\_types.aspx](https://www.adea.org/GoDental/Future_Dental_Hygienists/Program_types.aspx)
38. American Dental Hygienists' Association. Dental hygiene education programs [Internet]. Chicago (IL): American Dental Hygienists' Association; 2022 [cited 2022 Oct 25]. Available from: <https://www.adha.org/dental-hygiene-programs>
39. Viau-Guay A, Bellemar M, Feillou I, et al. Person-centered care training in long-term care settings: Usefulness and facility of transfer into practice. *Can J Aging*. 2013 Mar;32(1):57-72.
40. Edvardsson D, Innes A. Measuring person-centered care: A critical comparative review of published tools. *Gerontologist*. 2010 May;50(6):834-46.

## Appendix 1. Survey

### SECTION 1 – Program characteristics

The survey is intended to evaluate only **entry-level** dental hygiene programs. For the following questions, please refer to your program that awards a minimum degree that is needed to prepare graduates for dental hygiene licensure. For example: if an institution offers an associate degree that transitions into a bachelor's degree, the associate degree will be considered **entry-level**.

1. Please select the degree awarded at your institution for the **entry-level** dental hygiene program:
  - a. Certificate \_\_\_ If selected: how many months from start to finish in your program until certificate awarded. \_\_\_\_
  - b. Associate \_\_\_ If selected: how many months from start to finish in your program until degree awarded. \_\_\_\_
  - c. Bachelor's \_\_\_\_ If selected: how many months from start to finish in your program until degree awarded. \_\_\_\_
2. What is the total number of first-year students enrolled in the program selected above? \_\_\_\_\_

### SECTION 2 – The following questions refer to how patient-centered care is *taught* and *evaluated* in your **entry-level** dental hygiene curriculum with respect to CODA **Standards 6-2 and 2-13**.

3. **Standard 6-2** states that *the program must have a formal written patient care quality assurance plan that includes: standards of care that are patient-centered, focused on comprehensive care, and written in a format that facilitates assessment with measurable criteria*. Please select all components that your **entry-level** dental hygiene program includes in your written patient care quality assurance plan.

Select all that apply:

- |   |                                   |
|---|-----------------------------------|
| a. Coordinated and collaborative care   | e. Demonstrating empathy          |
| b. Shared decision-making (with patient, patient's family, provider input, etc) | f. Culturally sensitive care      |
| c. Providing individualized care  | g. Delivering evidence-based care |
| d. Prioritizing patient values  | h. Other: Please specify _____    |

Please use the following CODA standard for the next three questions:

**Standard 2-13:** Graduates must be competent in providing the dental hygiene process of care which includes: provision of patient-centered treatment and evidence-based care in a manner minimizing risk and optimizing oral health.

4. With respect to patient-centered treatment in **Standard 2-13**, please select *all settings* where your **entry-level** dental hygiene program *teaches providing the dental hygiene process of care with the provision of patient-centered treatment*?

Select all that apply:

- |                                  |                                |
|----------------------------------|--------------------------------|
| a. Didactic Lecture              | d. External Rotations          |
| b. Clinical Care                 | e. Other: Please specify _____ |
| c. Laboratory (e.g. simulations) |                                |

5. With respect to patient-centered treatment in **Standard 2-13**, please select all methods that your **entry-level** dental hygiene program uses to *teach providing the dental hygiene process of care with the provision of patient-centered treatment*.

Select all that apply:

- |  |                                |
|--|--------------------------------|
| a. Lectures (in-person or virtual)                             | f. Student recordings          |
| b. Online learning (e.g., YouTube videos, short courses, etc.) | g. Simulations                 |
| c. Case presentations  | h. Clinical instruction        |
| d. Role play   | i. Observation                 |
| e. Peer review   | j. Other: Please specify _____ |

6. With respect to patient-centered treatment in **Standard 2-13**, please select all methods that your **entry-level** dental hygiene program uses to *evaluate providing the dental hygiene process of care with the provision of patient-centered treatment*.

Select all that apply.

- |   |  |
|---|--|
| a. Exams/Quizzes                              | k. Evaluations completed by supervising practitioner at external rotations |
| b. Post-appointment patients surveys          | l. Faculty assessment by observation in school clinic                      |
| c. Standardized patients                      | m. Case or oral presentations related to patient-centered care             |
| d. Assessment of simulations                  | n. Evaluation of student recordings of patient-centered care               |
| e. Student self-reflection/Self-assessment    | o. Portfolios  |
| f. Peer assessment                            | p. Other: Please specify _____   |
| g. Reflective writing                         |  |
| h. Competency testing                         |  |
| i. OSCEs                                      |  |
| j. Critically appraise topic summaries (CATS) |  |

7. With respect to the formal written patient care quality assurance plan, approximately what portion of your curriculum is allocated to teaching patient-centered care?

- |                 |              |                  |
|-----------------|--------------|------------------|
| a. Less than 5% | d. 21% - 30% | f. 41% - 50%     |
| b. 6% - 10%     | e. 31% - 40% | g. More than 51% |
| c. 11% - 20%    |              |                  |

**Section 3** – The following questions refer to opinions on teaching patient-centered care and practicing in interprofessional practice (IPP) environments

8. Do you agree that teaching patient-centered care in your **entry-level** dental hygiene curriculum prepares your graduates to work in *different settings* (e.g., schools, nursing homes, etc.) as allowed within the scope of practice in your state?

- |                               |                      |
|-------------------------------|----------------------|
| a. Strongly agree             | d. Disagree          |
| b. Agree                      | e. Strongly disagree |
| c. Neither agree nor disagree |                      |

- 
9. Do you agree that teaching patient-centered care in your **entry-level** dental hygiene curriculum prepares your graduates to work with a variety of IPP providers (e.g., with physicians, nurses, etc.) as allowed within the scope of practice in your state?
- a. Strongly agree
  - b. Agree
  - c. Neither agree nor disagree
  - d. Disagree
  - e. Strongly disagree
10. If you have additional comments that you would like to make regarding your **entry-level** program's curriculum and patient-centered care, please do so in the box below.
-