

Research

Investigation of the Cultural Competence of Dental Hygienists Practicing in a Region of Low Diversity

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Abstract

Purpose: The profession of dental hygiene is lacking in racial and ethnic diversity, a contributory factor to providing culturally competent patient care. The purpose of the study was to determine the cultural competence (CC) of licensed dental hygienists (DHs) in a region of low racial and ethnic diversity and explore the contributory factors.

Methods: A modified version of the Cultural Competency Assessment (CCA), a survey developed using the 3-D Model of Culturally Congruent Care was used to identify the levels of (CC) of DHs practicing in a area of low diversity. Utah was identified as a region of low racial and ethnic diversity. DHs holding a license to practice in the state of Utah were invited to participate in the 35-item, electronically delivered survey. Multiple regression was used to analyze associations between cultural competence and salient participant characteristics.

Results: Of the 3,231 RDHs invited to participate, 673 responses were included for analysis, for a 20% response rate. The mean score was 10.153 ($SD=1.3$), indicating moderate cultural competence, unequally distributed between cultural awareness and sensitivity and culturally competent behavior scores. Possessing a graduate degree, cultural education during dental hygiene school, cultural continuing education, and employment in public health, significantly predicted CC. The regression model was significant $F(8,664)=8.616$ ($p<0.0005$) with a small effect size ($R^2=0.094$).

Conclusion: Education and types of practice experiences were predictors of CC. Specific educational interventions that may influence the various components of cultural competency were not determined. Dental hygiene providers possessed moderate CC however there was a disconnect in translating awareness into behavior, possibly reinforced by environments lacking racial and ethnic diversity with limited opportunities to develop and exercise CC.

Keywords: dental hygienists, cultural competence, health disparities, culturally competent health care, professional development, dental hygiene education

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Introduction

Health disparities among racial and ethnic minority groups have been extensively recognized and documented.¹⁻⁴ The cultural competence (CC) of health care providers has been found to be a significant factor in racial and ethnic minority population health^{2,4-5} and has been identified as an essential component in the provision of culturally competent patient care.⁶ Health care provider CC contributes to improved patient provider understanding and trust, thus increasing patient adherence to provider recommendations and subsequently improving health outcomes.^{2,4-5}

When considering overall patient health, oral health plays a substantial role and is vital to patient wellness.⁷⁻⁹

Oral infections represent some of the most prevalent chronic conditions and are often more widespread in racial and ethnic minority populations.¹⁰ Among racial and ethnic minority populations, oral diseases may remain untreated and progress due to lack of access to care caused by fear and misunderstanding, cultural differences, socioeconomic disparities and geographical isolation.^{2-4,11} Dental hygienists are integral members of the oral health care team, providing both clinical, and educational patient services. As disease prevention and health promotion specialists, they are uniquely positioned to provide preventive oral care and health promotion services to underserved populations, including

racial and ethnic minority groups.¹² Therefore, in order to provide comprehensive, culturally competent patient care, it is critical that dental hygienists possess CC themselves.

Several factors have been identified that contribute to increased provider CC, including provider attitudes, patient-provider interactions, experiences with racially and ethnically diverse populations, organizational culture, educational programs, and the racial and ethnic diversity of providers themselves.¹³⁻¹⁷ However, limited conclusions have been drawn due to various research limitations and the multifaceted components involved.¹³⁻¹⁷ Considering that practitioner racial and ethnic diversity may be a possible contributing factor for provider CC, it should be noted that dental hygiene practitioners in the United States (US) exhibit limited racial and ethnic diversity,¹⁸ with approximately 85% identifying as white.¹⁸ In a profession with limited racial and ethnic diversity, in order to provide complete, culturally competent patient care, it is essential for providers to possess CC.

However, provider possession of CC is only one characteristic necessary for the provision of complete culturally competent care. Additional factors including organizational culture, patient perceptions and patient provider interactions, contribute to the provision of culturally competent care and lead to optimal patient outcomes.¹⁹ This multifaceted construct is demonstrated in the Three-Dimensional Puzzle Model of Culturally Congruent Care (3-D Model), which asserts that outcomes are highly interconnected. The 3-D model is a highly appropriate theoretical framework upon which to base research related to the relationships between provider cultural competence and patient outcomes.¹⁹⁻²⁰

The 3-D Model was developed from the Schim and Miller Cultural Competence Model (SMCCM). The Components of the SMCCM are cultural diversity, cultural awareness, cultural sensitivity, and culturally competent behaviors. In this model cultural competence is defined as the incorporation of experience, awareness and sensitivity (attitude) into behaviors.²⁰ The components of provider cultural competence, cultural diversity, awareness, sensitivity, and behavior as defined in the SMCCM have been likened to the pieces of a jigsaw puzzle as these components are interconnected. The 3-D Model builds on the first dimension of the four interconnected constructs proposed in the original SMCCM, those of cultural awareness, diversity, competence, and sensitivity. The 3-D Model then adds a second dimension of interpersonal relationships, relationships between providers and patients, as well as those between providers of different disciplines. The third dimension presented in the model is the desired result or outcome, to provide not just culturally competent but culturally congruent care.¹⁹⁻²⁰

Recently, the dimension of patient/provider relationship has been further expanded, resulting in the identification of the following four additional patient/provider relationship constructs: caring and trust, communication, social and spiritual support, and organizational environment.²¹

When considering the impact of provider CC on the provision of culturally congruent care, provider education may play an important role. However, while the majority of dental hygiene programs in the US report including cultural competency education within the dental hygiene curriculum, fewer than half report actually assessing students' ability to demonstrate the specific components of CC.²² Additionally, only the state of Connecticut requires continuing education in CC as a condition of dental hygiene licensure renewal, with a minimum of one contact hour every 2 years.²³⁻²⁴

Considering the importance of provider CC in the provision of optimum patient care and acknowledging current health disparities experienced by racial and ethnic minorities, there is a need for more information about the dental hygienist's role in the provision of culturally competent care. Currently there are no universal, post-graduation CC education requirements for licensure in the US and there is limited evidence of dental hygiene practitioner CC in addition to the limited practitioner racial and ethnic diversity within the profession. Dental hygienists practicing in regions of the US lacking in mandatory CC continuing education licensure requirements and located in areas of low racial and ethnic diversity, have fewer opportunities and no incentive to develop CC. This dental hygiene provider group may represent the lowest expected level of CC within the dental hygiene profession and provided an opportunity to conduct research into the CC levels dental hygiene practitioners and and the possible contributory factors. Utah is a Western state exhibiting extremely limited racial and ethnic diversity (approximately 88% White, 73% affiliated with a Christian-based faith)²⁵ and also lacks any specific CC continuing education requirements for dental hygiene licensure.^{23,26} The purpose of the study was to determine the cultural competence of licensed DHs in a region of low racial and ethnic diversity and explore the relationships of possible contributory factors.

Methods

The study was reviewed and approved by A.T. Still University Institutional Review Board. A quantitative, cross-sectional, correlational design was used with a modified version of the Cultural Competency Assessment (CCA) survey. The CCA was developed using the 3-D Model of Culturally Congruent Care¹⁹⁻²¹ and has been determined to be both a valid and reliable instrument to assess CC.²⁷⁻²⁸

Permission to use and modify the CCA was granted by the developers of the instrument.

The survey was administered online using REDCap™, a secure web-based survey application, over a period of four weeks. A convenience sample of 3231 registered dental hygienists (RDHs) licensed in Utah was recruited using an email list obtained from the Department of Occupational and Professional Licensing (DOPL) and through personal contact at a regional state dental conference. Initial e-mails containing an invitation to participate in the study and a link to the external secure survey were sent, followed by two reminder emails to participants who had not responded, or who had only partially completed the survey. To encourage participation, an incentive for an opportunity to be included in a drawing for one of two \$50 Visa gift cards was offered.

The survey was comprised of 35 items including three qualifying questions, seven demographic items to establish sample population characteristics,¹¹ items to determine participant cultural sensitivity and awareness (CSA) and 14 items to determine participant culturally competent behaviors (CCB). To reduce survey length and enhance participation, questions pertaining to the Marlowe-Crowne Social Desirability Scale (MCSDS) were not included.²⁸ Participants achieved total CC scores (CCS) of 2-14 inclusive, composed of a CSA score of 1-7 and a CCB score of 1-7, with higher scores indicating higher CC. The participants' separate and summative scores were used to determine the separate and combined dimensions of CC for each participant. Surveys with incomplete responses were forfeited.

Data were exported to SPSS (IBM, Armonk, NY) and univariate analyses were conducted to describe the sample and determine the CSA, CCB and CCS of participants and total CCS by the level of degree obtained and the area of practice. Statistical assumption testing and regression analyses were conducted to determine the association of CC of the participant and the level of provider degree, the hours of CC education received as part of formal degree education, the hours of CC continuing education received since graduation, the amount of time elapsed in years since graduation, and the type of dental hygiene practice setting. The minimum required sample size to protect external validity and account for attrition was 120, determined using G*Power for a multiple regression with alpha level of 0.05, power of 0.80, and medium effect size ($f^2 = 0.15$).

Results

Data were inspected for missing responses and outliers, which were removed. In addition to incomplete surveys

and those with irrational outlying values, responses from participants who did not hold a current Utah license and those failing to agree to the informed consent were removed. Of the 3,231 RDHs invited to participate, 879 responses were recorded. After data cleaning, 673 responses were included for analysis, for a 20% response rate ($n=673$). Demographics are presented in Table I.

Table I. Demographics (n=673)

Category	n	%
Sex		
Female	661	98.2
Male	12	1.8
Race		
White	628	93.3
Hispanic or Latino	15	2.2
Asian	6	0.9
Black/African American	3	0.4
Native Hawaiian or Other Pacific Islander	2	0.3
American Indian or Alaskan Native	1	0.1
Choose not to answer	18	2.7

Frequency and percentages of responses in each category are reported in Table II, along with the mean and standard deviation for the CC score of participants. The majority of participants were employed in a private office (85%), and held a bachelor's degree (65%). The mean number of hours of CC education or training during dental hygiene school was 20 ($SD=25$), while mean number of hours of professional development continuing education was 8.5 ($SD=26.5$). The data for both number of hours of dental hygiene school-based education and professional development continuing education are heavily right-skewed, with the majority of respondents ($n=143$) reporting no CC hours during school and over half ($n=378$) reporting no professional development CC education. This extreme skew of the data accounts for the high standard deviations observed. Respondents had been out of school for a mean of 12 years ($SD=10.5$).

The mean CCS for all respondents was 10.1 ($SD=1.3$), comprised of a mean CSA score of 5.9 ($SD=0.4$) and a mean CCB score of 4.2 ($SD=1.1$), indicating a moderate level of overall CC, unequally distributed between CSA and CCB. The highest mean CCS of 12 was exhibited by respondents holding doctoral degrees ($SD=1.5$) and those practicing in public health settings, with a mean of 10.9 ($SD=1.5$). The lowest CCS mean of 10.0 was found in respondents holding

Table II. Characteristics, and mean cultural competency scores for degree level and area of practice (n=673)

			Cultural Competency Score	
	n	%	M	SD
All participants	673	100	10.1530	1.31291
Level of degree				
Associate	191	28.4	10.0403	1.23931
Bachelor's	436	64.8	10.1106	1.29104
Master's	42	6.2	10.9168	1.52134
Doctorate	4	.6	12.1331	1.03142
Area of practice				
Private office	571	84.8	10.0954	1.27362
Educator	39	5.8	10.7415	1.41171
Public health	23	3.4	10.9036	1.32675
Other	40	5.9	9.9695	1.51556
Researcher	0	0	0	0

associate degrees ($SD=1.2$) and for respondents indicating “other,” as the practice setting, with a mean of 9.9 ($SD=1.5$). Little difference in mean CCS was observed between respondents holding an associate degree or bachelor’s degree or those reporting the private office as the area of practice. The lowest CCS mean of 9.9 ($SD=1.3$) was reported from respondents identifying “other” as their area of practice.

Multiple regression results were reviewed to determine how well the regression model fit the data and the output was analyzed for associations. The adjusted R^2 was .083, indicating a low level of explained variance (8.3%). The regression model was significant $F(8,664) = 8.616, p < 0.0005$. A summary of the multiple regression analyses is reported in Table III Possessing a graduate degree, hours of CC content during dental hygiene school, hours of continuing education, and working in public health significantly predicted CCS. There was no difference observed between the associate and bachelor’s degree as predictors for CCS. Length of time since graduation did not significantly predict respondent CCS.

Discussion

The racial and ethnic diversity of providers has been demonstrated to contribute to increased CC; ideally the racial and ethnic diversity of providers should mirror the patient population served.^{4,13-14} Dental hygienists practicing in regions of low racial and ethnic diversity have fewer opportunities to interact with racially and ethnically diverse populations, thus have fewer experiences to develop, and subsequently practice

Table III. Summary of multiple regression analysis*

Variable	B	SE _B	β	Sig
Intercept	9.7			
Education hours in school	0.009	0.002	0.175**	0.000*
Continuing education hours	0.006	0.002	0.121**	0.002*
Time since graduation	0.002	0.005	0.020	0.634
Area of Practice				
Other	ref	ref	ref	ref
Dental office	0.041	0.21	0.011	0.844
Education	0.237	0.314	0.042	0.450
Public health	0.689	0.336	0.095*	0.040*
Education				
Associate's	ref	ref	ref	ref
Bachelor's	0.037	0.111	0.013	0.740
Graduate degree	0.749	0.249	0.144*	0.003*

*B = unstandardized regression coefficient; SE_B = standard error of the coefficient; β=standardized coefficient. Sig=p ** $p < .05$

CC. Utah is much less racially and ethnically diverse when compared to national demographics for dental hygienists.¹⁸ Additionally, there are no specific CC continuing education requirements for dental hygiene licensure.²⁶ Therefore, it might be reasonable to assume that because the sample population exhibited comparatively low racial and ethnic diversity, and practiced in a state that lacked CC continuing education requirements for licensure, that the participants would have exhibited low CC; however, this was not the case. Results from this study are encouraging, with moderate levels of CC reported in contrast to limited research suggesting that the CC of dental hygiene practitioners may be lacking.²⁹⁻³¹ While the participants in this study exhibited moderate CC, possessing high cultural awareness and sensitivity, they did not report practicing culturally competent behaviors; which was consistent with previous findings.³² Both the amount of CC education during dental hygiene school and the number of professional development CC courses were determined to be predictors of provider CC, which was consistent with previous findings.³²⁻³³ An additional expected finding consistent with previous research was that holding a graduate degree was a predictor of provider CC.³³

Working in a public health setting was also identified as a significant predictor of the respondent’s CC. This finding may be explained by the fact that providers in the field of public health are more likely to have greater exposure to

populations with higher racial and ethnic diversity and thus have a greater chance to interact with these diverse populations and, subsequently, more opportunities to develop CC.¹⁴⁻¹⁷ These results are encouraging considering the lack of racial and ethnic diversity of both the participants and the general population of Utah, as well as the lack of CC continuing education requirements in the state.²⁶ In order to increase the CC of dental hygiene practitioners, the professional association leadership could encourage members to participate in CC continuing education, such as the free online Cultural Competency Program for Oral Health Providers offered through the U.S. Department of Health and Human Services Office of Minority Health.³⁴

This study had limitations. Data collected via survey may be subject to social desirability bias and, as such, is subject to the honesty of respondents. Modification of the survey instrument involved removal of questions pertaining to the Marlowe-Crowne Social Desirability Scale to limit participant response burden.²⁸ Because the questions from the MCSDS, a measure of social desirability bias, were not included in the survey instrument, the effect of potential social desirability on participant responses was not determined.

Lack of racial and ethnic diversity among the participants, as compared to national statistics, may also have affected survey responses. Study participants were recruited solely from the dental hygiene profession; therefore, results are only generalizable to dental hygienists. Additionally, because participants were recruited from the state of Utah, the results may not be generalizable to dental hygienists practicing in other areas of the US or other countries. The lowest level of CC was recorded from participants who reported “other” as the area of practice. Since there was no opportunity for respondents to elaborate about their individual practice areas, it was not possible to determine how or why those providers scored at a lower level of CC.

Future research is recommended to repeat the study in a region of high racial and ethnic diversity, to determine whether the CC of dental hygienists is increased by exposure to a more diverse patient population. Alternatively, this study could be repeated to include the entire population of dental hygienists in the US and those practicing in other countries to determine the level of CC exhibited by dental hygienists practicing across the United States, as compared with dental hygienists practicing in other countries.

Continuing educational requirements for licensure vary across the US.^{23-24,26} The study could be repeated in the state of Connecticut which has a specific CC continuing education requirement,²⁴ to determine whether requiring continuing

education in CC has an effect on the cultural competency of providers and to what extent. Additionally, the effect of specific educational strategies to increase provider CC is undetermined;³²⁻³³ thus, future studies should determine the differential effects of specific educational interventions on provider CC. The need for increased racial and ethnic diversity in dentistry and dental hygiene was recently recognized by the American Dental Education Association (ADEA).³⁵⁻³⁶ Repeating this study with different health care professionals from different fields of differing racial and ethnic diversity, may be useful to determine the impact of the racial and ethnic diversity of providers on the CC of the profession.

Conclusion

Possessing and applying CC enables dental hygiene practitioners to provide optimal care to racially and ethnically diverse populations as integral members of the oral health care team. Respondents exhibited high cultural awareness and sensitivity but lacked culturally competent behavior, resulting in moderate overall CC. Holding a graduate degree, continuing education, and type of practice setting were predictors of CC. A disconnect in translating cultural sensitivity and awareness into culturally competent behaviors was identified. Dental hygiene students and practitioners need exposure to racial and ethnic diversity to provide culturally competent patient care. Steps should be taken to further explore the disconnect between cultural awareness and the implementation of culturally competent behaviors, standardize CC education requirements and address the need for a more racially and ethnically diverse oral health care providers.

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