RESEARCH ARTICLE

Cultural competency in a physician assistant curriculum in the United States: a longitudinal study with two cohorts

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Abstract

Purpose: Many physician assistant (PA) programs have recently integrated cultural competency into their curricula. However, there is little evidence of the longitudinal effectiveness of such curricula on cultural competency. This study tested whether the amount of exposure to a cultural competency curriculum affected self-assessments of cultural awareness in two cohorts of students. **Methods:** Cohort 1 and Cohort 2 students completed a cultural awareness survey at the beginning of the program and retook the survey at three intervals during the first year. **Results:** Regression analyses confirmed a significant linear relationship (two-tailed 0.05) between the responses and the interval number on all questions for each cohort, with the exception of Question 8, on the ability to identify discrimination, for Cohort 2. **Conclusion:** Results from Cohort 2 replicated those from Cohort 1, suggesting that cultural awareness among PA students benefits from repeated exposure to lessons on cultural competency. Schools attempting to develop or expand cultural awareness among students should consider integrating cultural competency training throughout the PA curriculum.

Key Words: Cultural competency; Medical education; Curriculum; Physician assistant

INTRODUCTION

Over the past 50 years, Americans have experienced improved health as evidenced by increased life expectancy and decreased infant and adult mortality [1]. However, people of color still experience higher rates of many health conditions than Whites, including breast cancer, heart disease, diabetes, hypertension, and respiratory illness [2]. On average, African-Americans, Hispanics, Native Americans, Pacific Islanders, and some Asian-American groups have shorter life expectancies than Whites [1,2]. The Institute of Medicine report *Unequal Treatment* [3] recommends cultural competency training for all health care professionals to help reduce racial and ethnic health disparities. Physician assistant (PA) programs have responded by integrating cultural competency into existing courses, and developing and implementing new courses and curricula focused on cultural competency [4-8]. The 2010 Physician Assistant Education Association (PAEA) Curriculum Survey indicated that 74 PA programs contained curricula that addressed a combination of psychological, interpersonal, and cultural health factors [9]. To date, the quantitative evidence gathered on the longitudinal effectiveness of these curricula has been limited. This study tested whether the amount of exposure to a cultural competency curriculum affected self-assessments of cultural awareness in two cohorts of students.

METHODS

Curriculum description and participants

In 2010, Carroll University received US Health Resources and Services Administration (HRSA) and American Recovery

and Reinvestment Act (ARRA) funding to develop and implement a cultural competency curriculum for a new two-year master's in science physician assistant studies program. Carroll's two-year program consists of didactic training in year one and clinical training in year two. During the didactic year, PA students participate in four semester-long courses specifically devoted to cultural awareness training. Each semester addresses a different cultural component, including self-awareness, general cultural knowledge, the intersection of culture and health care, and strategies to improve communication with diverse populations. In addition to the didactic training in year one, students also participate in a variety of community-based experiences working with the underserved. At the conclusion of the first year, students have received approximately 62 hours of formal cultural competency training [10].

Cohort 1 (19 females, 3 males) enrolled in the program in June 2011. By the end of the first term, three students (2 females) de-accelerated and re-entered the program the following June. The average age in years of the remaining 19 students was 23 with a range from 21 to 33 years. Eighteen students self-identified as Caucasian, 6 as economically or educationally disadvantaged, 12 with a suburban/urban background, and 7 with a rural/frontier background. Frontier is a term used by the US government to identify very rural communities. This was one of the categories offered to students when they self-reported their hometowns. Cohort 2 (17 females, 5 males) enrolled in the program in June 2012. By the end of the first term one student (female) de-accelerated and re-entered the program the following June with the next cohort. The average age of the remaining 21 students was 25 years (range, 22 to 38 years). Nineteen students self-identified as Caucasian, 7 as economically or educationally disadvantaged, 14 with a suburban/urban background, and 7 with a rural/frontier background.

Curriculum evaluation

Each student completed a cultural awareness survey at the beginning of the program and then retook the survey at the conclusion of each subsequent term. The survey featured 31 questions answerable on a 4-point Likert-type scale (1, not at all; 2, slightly; 3, fairly well; 4, very well) (Table 1). The survey included questions from published cultural awareness surveys adapted for use with PA students [11-13]. Prior to taking the survey for the first time, students learned that 1) test administrators, who were not members of the PA faculty, would be the only individuals with access to tests; 2) administrators had no access to student names; and 3) unique identification numbers would be used for tracking each student's answers across semesters. Hence, students learned that their survey responses were effectively anonymous. Carroll University's Institutional Review Board approved the survey and the procedure.

RESULTS

Table 1 lists the mean responses to each question by term and cohort. Regression analyses confirmed significant linear relationships (two-tailed $\alpha < 0.05$) between responses and terms on all questions for each cohort, with the exception of Question 8, on the ability to identify discrimination, for Cohort 2. Failure to find a significant linear relationship between scores and terms for Question 8 in Cohort 2 may have been due to a ceiling effect that prevented improvement beyond the first term. A visual analysis of Table 1 shows that at the beginning of the program, Cohort 2 reported higher self-ratings of cultural awareness for each question, except Question 16, on knowledge of culture-specific health research findings, compared to Cohort 1. For Question 16, self-ratings for the two cohorts were the same. Students in both cohorts reported that their least improvements were on abilities to identify racism, prejudice, discrimination, and stereotypes (Questions 6-9; $\beta < 0.11$). However, Cohort 2 also reported only limited improvements in their ability to discuss their own ethnic/cultural heritage, its influence on their thinking, and their family's perspectives on acceptable and unacceptable behavior (Questions 1, 3, and 5, respectively; $\beta < 0.11$). Cohort 1 and 2 students reported their greatest improvements were on their ability to apply concepts and material covered in the cultural competency curriculum (Questions 24-29; $\beta > 0.24$), while the students of Cohort 2 also reported similar improvements on their ability to integrate screening/diagnostic tests based on race/ethnicity and gender in diagnostic protocols (Questions 22, 23; $\beta > 0.27$).

DISCUSSION

With each successive semester, students in both cohorts responded with progressively higher cultural survey scores. Replication of results from Cohort 1 adds support for the effectiveness of long-term exposure to cultural curriculum. While the focus of the curriculum for each term remained the same for both cohorts, there were slight variations between the cohorts in delivery of the curriculum and community-based experiences that may help explain Cohort 2's limited improvements in Questions 1, 3, and 5, and their additional improvements in Questions 22 and 23, compared to those of Cohort 1. For instance, the Cohort 2 students were the first group of Carroll PA students to participate in a kidney screening for underserved populations that may have contributed to their higher self-ratings for Questions 22 and 23. Likewise, Cohort 1 received the self-awareness component through lecture, whereas Cohort 2 covered the material by completing interactive exercises. Follow-up studies should include detailed documentation of the changes in the curriculum content and pedagogy

Table 1. Self-ratings of cultural awareness in each cohort by term

Question	Cohort	Survey 1	Survey 2	Survey 3	Survey 4	r^2	β	F	P
1. I can discuss my own ethnic/cultural heritage.	1	2.82^a	3.27^a	3.53^b	3.74^b	0.27	0.15	29.94	< 0.0001
	2	3.09^a	3.41^a	3.52^c	3.57^c	0.10	0.08	9.02	0.004
2. I am aware of how my cultural background and experiences have influenced my attitudes about medical care.	1	2.46^a	3.27^a	3.26^b	3.84^b	0.42	0.21	62.27	< 0.0001
	2	2.81^c	3.50^d	3.52^c	3.67^c	0.21	0.13	23.31	< 0.0001
3. I am able to discuss how my culture has influenced the way I think.	1	2.46^a	3.27^a	3.21^b	3.74^b	0.33	0.19	42.73	< 0.0001
	2	2.91^a	3.50^a	3.57^c	3.57^c	0.14	0.10	14.42	0.0003
4. I know how to verbally communicate my acceptance of culturally different clients.	1	2.29^c	3.14^c	3.21^b	3.63^b	0.31	0.21	37.10	< 0.0001
	2	2.77^a	3.14^a	3.38^c	3.52^c	0.21	0.12	22.16	< 0.0001
5. I can discuss my family's perspective regarding acceptable and unacceptable codes of conduct.	1	3.00^a	3.64^a	3.53^b	3.79^b	0.17	0.11	17.65	< 0.0001
	2	3.19^c	3.45^a	3.71^c	3.67^c	0.11	0.09	10.45	0.002
6. I can identify racism.	1	3.05^a	3.23^a	3.11^b	3.58^b	0.07	0.07	5.94	0.02
	2	3.18^a	3.36^a	3.33^c	3.33^c	0.06	0.06	4.88	0.03
7. I can identify prejudice.	1	2.86^a	3.14^a	3.00^b	3.58^b	0.12	0.10	11.55	0.001
	2	3.00^a	3.36^a	3.29^c	3.48^c	0.06	0.07	5.79	0.02
8. I can identify discrimination.	1	2.82^a	3.27^a	3.05^b	3.47^b	0.10	0.09	9.58	0.003
	2	3.23^a	3.50^a	3.33^c	3.57^c	0.03	0.04	2.53	> 0.05
9. I can identify stereotypes.	1	2.86^a	3.14^a	3.32^b	3.47^b	0.14	0.10	12.34	0.0007
	2	3.27^a	3.50^a	3.43^c	3.43^c	0.05	0.06	4.39	0.04
10. I can identify the cultural biases of my communication style.	1	2.09^a	2.91^a	2.79^b	3.58^b	0.34	0.22	44.90	< 0.0001
	2	2.55^a	3.13^a	3.35^d	3.47^c	0.25	0.15	27.52	< 0.0001
11. I can articulate the possible differences among the verbal behaviors of the five major ethnic groups (i.e., African/Black, Hispanic/Latino, Asian, Native American, European/White).	1	2.00^a	2.36^a	2.63^b	2.95^b	0.20	0.16	19.01	< 0.0001
	2	2.50^a	2.55^a	2.71^c	2.90^c	0.06	0.07	4.94	0.03
12. I can articulate the possible differences among the nonverbal behaviors of the five major ethnic groups (i.e., African/Black, Hispanic/Latino, Asian, Native American, European/White).	1	1.77^a	2.09^a	2.58^b	2.84^b	0.30	0.18	30.32	< 0.0001
	2	2.32^a	2.36^a	2.71^c	2.85^c	0.11	0.10	10.18	0.002
13. I can discuss within-group differences among ethnic groups (e.g., low socioeconomic status [SES] Puerto Rican client vs. high SES Puerto Rican client).	1	1.59^a	2.23^a	2.47^b	2.74^b	0.27	0.18	30.32	< 0.0001
	2	1.95^a	2.36^a	2.81^c	2.81^c	0.18	0.15	18.28	< 0.0001
14. I can discuss how culture affects the help-seeking behaviors of clients.	1	1.96^a	2.76^c	3.00^b	2.99^b	0.38	0.21	51.35	< 0.0001
	2	2.45^a	2.95^a	3.19^c	3.33^c	0.19	0.14	20.16	< 0.0001
15. I can explain how factors such as poverty and powerlessness have influenced the current conditions of at least two ethnic groups.	1	2.05^a	2.91^a	3.26^b	3.42^b	0.39	0.22	54.89	< 0.0001
	2	2.32^a	3.05^a	3.33^c	3.33^c	0.24	0.18	27.71	< 0.0001
16. I can discuss research regarding health issues and culturally different populations.	1	1.82^a	2.64^a	2.90^b	3.11^b	0.33	0.21	42.25	< 0.0001
	2	1.82^a	2.86^a	2.76^a	3.24^c	0.32	0.21	42.24	< 0.0001
17. To what extent do you know the income differentials within different cultural communities?	1	1.59^a	2.23^a	2.47^a	2.73^b	0.24	0.18	25.94	< 0.0001
	2	1.77^a	2.27^a	2.57^a	2.90^c	0.29	0.18	33.89	0.0001
18. To what extent do you know the educational attainment within different cultural communities?	1	1.82^a	2.36^a	2.63^b	3.00^b	0.30	0.19	33.24	< 0.0001
	2	2.00^a	2.36^a	2.67^c	2.86^c	0.20	0.14	20.27	< 0.0001
19. To what extent do you know about informal supporters and natural helpers of people from different cultural communities?	1	1.36^a	2.14^a	2.05^b	2.79^b	0.37	0.21	50.33	< 0.0001
	2	1.64^a	2.18^a	2.52^c	2.86^c	0.32	0.20	39.07	< 0.0001
20. To what extent do you know about formal social service agencies for people from different cultural communities?	1	1.36^a	1.91^a	2.53^b	2.63^b	0.40	0.22	55.38	< 0.0001
	2	1.64	1.95	2.38^c	3.10^c	0.46	0.24	70.61	< 0.0001
21. If you graduated today, would your treatment plans contain a cultural perspective (e.g., role of the extended family, spiritual/religious beliefs, issues related to the formation of cultural identity) that acknowledges different value systems of people from different cultural communities?	1	2.15^d	3.14^a	3.32^b	3.53^b	0.34	0.22	43.17	< 0.0001
	2	2.38^c	3.27^a	3.67^c	3.71^c	0.39	0.22	58.45	< 0.0001
22. I can integrate screening/diagnostic tests based on race/ethnicity in diagnostic protocols.	1	1.29^c	1.76^a	2.26^b	2.42^b	0.30	0.20	33.63	< 0.0001
	2	1.71^c	2.45^a	3.00^c	3.38^c	0.48	0.28	75.78	< 0.0001
23. I can integrate screening/diagnostic tests based on gender in diagnostic protocols.	1	1.59^a	2.29^a	2.68^b	2.84^b	0.29	0.21	33.56	< 0.0001
	2	1.90^c	2.64^a	3.33^c	3.62^c	0.49	0.29	80.00	< 0.0001

(Continued to the next page)

Table 1. Continued

Question	Cohort	Survey				r^2	β	F	P
		1	2	3	4				
24. I can integrate screening/diagnostic tests based on socioeconomic status in diagnostic protocols.	1	1.32[a]	1.86[c]	2.42[b]	2.79[b]	0.50	0.25	77.22	< 0.0001
	2	1.71[c]	2.41[a]	2.86[c]	3.33[c]	0.46	0.27	69.18	< 0.0001
25. I can integrate screening/diagnostic tests based on sexual orientation in diagnostic protocols.	1	1.36[a]	1.90[d]	2.63[b]	3.00[b]	0.55	0.28	96.95	< 0.0001
	2	1.76[c]	2.54[a]	2.90[c]	3.43[c]	0.44	0.27	64.23	< 0.0001
26. I can counsel for risk factors based on gender.	1	1.64[a]	2.52[c]	3.11[b]	3.21[b]	0.45	0.27	70.45	< 0.0001
	2	2.15[d]	2.95[a]	3.33[c]	3.67[c]	0.50	0.25	81.78	< 0.0001
27. I can counsel for risk factors based on race/ethnicity.	1	1.41[a]	2.14[a]	2.79[b]	2.90[b]	0.42	0.25	52.60	< 0.0001
	2	1.86[c]	2.68[a]	3.19[c]	3.62[c]	0.54	0.29	96.28	< 0.0001
28. I can counsel for risk factors based on socioeconomic status.	1	1.59[a]	2.18[a]	2.68[b]	3.11[b]	0.40	0.25	60.78	< 0.0001
	2	1.86[c]	2.64[a]	3.14[c]	3.52[c]	0.51	0.27	87.77	< 0.0001
29. I can counsel for risk factors based on sexual orientation.	1	1.50[a]	2.23[a]	2.79[b]	2.95[b]	0.42	0.25	60.78	< 0.0001
	2	1.86[c]	2.73[a]	3.14[c]	3.60[d]	0.54	0.28	99.04	< 0.0001
30. I can modify my approach in serving individuals with disabilities and their families in the explanation of treatment options.	1	1.86[a]	2.33[a]	2.58[b]	3.16[b]	0.31	0.21	34.75	0.0029
	2	2.29[c]	3.00[a]	3.29[c]	3.67[c]	0.36	0.22	47.56	< 0.0001
31. I can modify my approach in serving individuals with disabilities and their families in referral and resources.	1	1.77[a]	2.41[a]	2.47[b]	3.16[b]	0.32	0.21	38.86	< 0.0001
	2	2.24[c]	2.95[a]	3.24[c]	3.57[c]	0.34	0.21	43.52	< 0.0001

Analyses used GraphPad InStat ver. 3.06 (GraphPad Software, La Jolla, CA, USA; http://www.graphpad.com).
[a] n = 22; [b] n = 19; [c] n = 21; [d] n = 20.

to determine their potential impact on student self-ratings. Cohort 2's higher initial self-ratings for 30 of the 31 questions are more difficult to explain, as both cohorts had similar demographic characteristics. However, anecdotal information from the students of Cohort 2 suggests that they had more experience working with diverse populations, both domestic and international, prior to starting the PA program, compared to those of Cohort 1.

We recognize that demand characteristics from the cultural competency emphasis may have biased students towards giving progressively higher self-report ratings on the cultural awareness survey. However, an argument against the influence of demand characteristics is the drop in scores on four of five "I can identify…" questions (questions 6-10) in each cohort. We believe the lowered scores across these related questions, replicated in each cohort, represent a tendency for students to reassess their understandings of racism, prejudice, discrimination, and cultural biases in communication styles, as a result of exposure to the cultural competency curriculum.

We also realize that the cultural awareness survey measures the self-reported impact of the cultural competency curriculum on the students, but does not assess students' ability to provide more culturally sensitive care. We have developed a community health objective structured clinical exam (OSCE) administered during the clinical rotation year, which assesses students' ability to provide more culturally competent care in a clinical setting. The OSCE has been administered to one cohort and assessment data is being evaluated.

Multiple strategies are needed to help reduce the persistent racial and ethnic health disparities in the US. One such strategy is to increase cultural competence of health care providers, including PAs. This study suggests that cultural competency training for PAs that is integrated throughout the first year of curriculum can positively impact students' cultural awareness.

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CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

SUPPLEMENTARY MATERIAL

Audio recording of the abstract.

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