Assessing Pharmacy Students' Self-Perception of Cultural Competence

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Abstract

Pharmacists play an increasingly important role in medication therapy management, which requires communicating effectively with patients. Pharmacy students completed the Self-Assessment of Perceived Level of Cultural Competence (SAPLCC) questionnaire, and their results were used to identify patterns in self-assessment of cultural competence. In general, students rated their knowledge as less than their skills and attitudes. Important differences were found by race, comparing each group with its counterparts: African American students rated their perceived competencies regarding patient discrimination and barriers to health care at a significantly higher level; Asian American students rated their attitudes to engaging in self-reflection and their knowledge in multicultural issues at significantly lower level; and White students rated their awareness regarding racial dynamics at a significantly lower level. It is recommended to consider the students' cultural, racial, and ethnic backgrounds before developing curriculum in cultural competence and, perhaps, to develop targeted educational interventions for specific groups.

Keywords

Cultural competence; pharmacy students; minority health care providers; training; assessment; racial dynamics; curriculum

During the past 15 years, the concept of cultural competence has become increasingly relevant to the training of health-related professionals.[1,2] Goode and Dunne, in their policy brief about the need for cultural competence, identified cultural competence as a strategy 1) to respond to the multicultural, multiracial, and multilingual needs of an increasingly diverse population in the United States; 2) to reduce disparities in health and health care between

racial/ethnic minority group members and non-Hispanic Whites; and 3) to improve compliance with legislative, regulatory, and accreditation mandates.[3] Specifically, in the field of pharmacy, the Accreditation Council for Pharmacy Education (ACPE), in their revised 2011 standards, under Guideline 9.1, include the following requirement:

> In developing knowledge, skills, attitudes, and values in students, the college or school must ensure that the curriculum fosters the development of professional judgment and a commitment to uphold ethical standards and abide by practice regulations. The college or school must ensure that the curriculum addresses patient safety, cultural appreciation, health literacy, health care disparities, and competencies needed to work as a member of or on an inter-professional team.[4][p.18]

Improving pharmacy students' knowledge, skills, and abilities related to cultural competence may serve as an important strategy in reducing health care disparities. Beach and colleagues' systematic review of effective educational interventions in cultural competence provided evidence that such interventions improve the knowledge, attitudes, and skills of participants and may affect patient satisfaction.[5]

Changes in the demographic characteristics of the U.S. population require the preparation of culturally competent health care providers who are capable of practicing in a multicultural society. Pharmacists, because of their increasing role as members of health care teams, are not only more involved in delivering high-quality patient care but also in decreasing disparities in pharmaceutical therapy (e.g., disparities in prescriptions, treatments, access to medications, adherence, and response to pharmaceuticals).[6] To be able to respond to these challenges, pharmacists must be aware of their own biases and stereotypes. Pharmacists must also be cognizant of different cultural, racial and linguistic factors that become barriers to patients' understanding of and adherence to prescribed regimens and to optimal health outcomes.[7]

A survey of cultural competence training within U.S. Colleges of Pharmacy found that there is a need to develop valid methods to assess students' cultural competence.[8] In response to that call, authors of this manuscript conducted an extensive review of the published literature to identify existing measures of cultural competence and found no tool specifically developed and/or validated for pharmacy students.[9] As a result, the authors selected the Pre-Training Version of the Clinical Cultural Competency Questionnaire (CCCQ)[10] and the California Brief Multicultural Competency Scale (CBMCS)[11] as the best instruments for use in health-related professions.

Although, the CCCQ was developed to assess physicians' provision of culturally competent health care to diverse patient populations, items were written in language applicable to pharmacy students and included some of the domains used to define learning objectives (knowledge, skills, and attitudes). The CCCQ was successfully used to measure the effectiveness of training in cultural competence in nine hospitals in Europe.[9] Ladson et al. applied the CCCQ to first and second-year medical students at a historically Black medical school (74% African Americans, N = 95). Although no significant racial differences were found on any of the items or scales, they concluded that the study supports the assertion that

students in a more homogeneous racial/ethnic group, represented by an overwhelming majority, benefit more from training in diversity and cultural competence.

The second tool, the CBMCS, was developed to measure multicultural competence in mental health services providers and used items from four of the more predominant measures of multicultural counseling competence: the Cross-Cultural Counseling Inventory-Revised (CCCI-R); the Multicultural Counseling Awareness Scale: Form B (MCAS: B); the Multicultural Awareness Knowledge Skills Scale (MAKSS); and the Multicultural Competency and Training Survey (MCCTS).[11] The CBMCS included questions about barriers to health care and racial dynamics, not included in the CCCQ, which were of special interest when measuring cultural competence in health care. The CBMCS items were modified by the authors to be appropriate for pharmacy students.[6]

Because neither the CCCQ nor the CBMCS nor any other measure of cultural competence had been previously validated with pharmacy students, the authors ran exploratory and confirmatory factor analyses to examine the CCCQ and CBMCS and determined that the two instruments were reliable (Cronbach's alpha coefficient between 0.77 and 0.96).[6–9] As a result of this validation process, the shortened, combined measure (called here Self-Assessment of Perceived Level of Cultural Competence, SAPLCC), included, with permission, 68 items adapted from the CCCQ and CBMCS. Currently, the original version of the CCCQ and the SAPLCC are the only tools that have been validated with pharmacy students and that have been recommended for use in pharmacy schools.

The objective of this study is to use the SAPLCC to measure the different dimensions of perceived cultural competence (Knowledge, Skills, Attitudes, Encounters, Abilities, and Awareness) among pharmacy students at a predominately African American institution. This measurement allows the creation of student profiles of perceived levels of cultural competence, identification of student needs in training in cultural competence, and subsequent development of curricular activities to address training needs. Student cultural competence profiles include information related to individual characteristics such as race, academic degree, and program level; languages spoken and experiences with other cultures; previous training in cultural competence; and self-assessment of knowledge, skills, attitudes, awareness, and abilities in the area of cultural competence.

Methods

Participants

After obtaining institutional review board approval, a total of 467 pharmacy students, enrolled in the College of Pharmacy of a historically Black university, completed the Self-assessment of Perceived Level of Cultural Competence (SAPLCC) with a response rate of 94.7%. Questionnaires were hand-delivered on paper to pharmacy students enrolled during the 2009 spring semester in the College's four-year academic program. Students were surveyed during class, work sessions, or special meetings, and questionnaires were returned immediately after completion. The objectives of the study were explained to the students, and students interested in participation voluntarily completed and returned the questionnaire. Completion of the instrument was considered to be implicit consent for participation.

Instrument

The SAPLCC comprises 68 items, which are organized into 13 factors in six domains of cultural competence: *Knowledge*, *Skills*, *Attitudes*, *Encounters*, *Awareness*, and *Abilities* (Table 1). Because the SAPLCC is a combined measure of two instruments (the CCCQ and CBMCS), the validation process was carried out independently for each tool (see details in the papers by Echeverri, Brookover, and Kennedy[6,9]), and later for the SAPLCC as a whole (Cronbach's alpha 0.963 for the sum of scale items) confirming the applicability of the measure for pharmacy students. The scale for all the responses to the SAPLCC ranged from one to five (1 = Not at all, 2 = A little, 3 = Somewhat, 4 = Quite a bit, 5 = Very).

Statistical analyses

The following statistical procedures were used to analyze the responses and obtain the students' profiles in self-perceived cultural competence. Frequencies and mean scores were obtained for the demographic variables and the individual items included in each one of the 13 factors in the six domains of cultural competence (Knowledge, Skills, Attitudes, Encounters, Abilities, and Awareness). Total scale mean scores were calculated by adding the responses to all items and dividing by 68, the final number of items. Subscale scores (factor level) were calculated by adding the responses to the items in each factor and dividing the sum by the number of items in the factor.[12] For descriptive purposes, mean scores were categorized using the following ranges: low (below 2.5), moderate (from 2.5 to 3.5), and high (above 3.5). The sample was analyzed using academic level (year in academic program) and race (self-reported race/ethnicity) to look for statistical differences in the mean subscale scores. Analyses of variance (ANOVAs), chi-square tests, and Tukey's Honestly Significant Differences for *post hoc* analysis were conducted to test for significant differences in subscale scores between the groups (race and academic year) and to create students' profiles.

Results

Characteristics of respondents

More than half of participants (64%) were in the first two years of their pharmacy academic program, and more than half (78%) classified themselves as African American or Asian American (predominately Vietnamese American), which shows the great diversity of participants and the importance of creating the students' profiles (Table 2). Bilingualism was a common characteristic reported by the participants in response to a question if they spoke a language other than English. The most common languages other than English were Vietnamese (n = 125), Spanish (n = 20), and French (n = 12). From the 201 students reporting speaking a language other than English, 67% were Asian Americans, 20% were African Americans, and 7% were Whites. Consistent with these data was the contact with other cultures: more than half of participants reported having cross-cultural encounters in their daily life through family members, friends, work/study, neighborhood, and church, and/or that they had visited other countries (tourism, vacations, visiting friends, and/or attending conferences). Additionally, 14% of them had lived in a country other than the United States (study abroad program or actual residence).

Most of the respondents (86%) reported having received training in cultural competence. Specific training students received from the College of Pharmacy can be described as follows. During the 2008–2009 academic year a pilot curriculum in cultural competence was implemented across the entire four years of the academic program. This pilot curriculum included training for professional program year 1 students—P1s—(nine contact-hours plus research paper) and year 2 students—P2s—(six contact-hours plus online training) as well as small group discussions for year 3 students—P3s—(three contact-hours) and seminars for year 4 students—P4s—(six contact-hours plus rotation experiences). Therefore, not all students in the study had received the same level of training, and, as a result, comparisons among academic levels must be cautiously analyzed and interpreted.

Students' profiles in cultural competence

The students' profiles were divided into the six domains of cultural competence identified in the questionnaire: Knowledge, Skills, Attitudes, Encounters, Abilities and Awareness, and the 13 factors identified in the exploratory and confirmatory analyses.[6–9] The total mean scale score was 3.21 (Table 1). More than two thirds of the respondents (66%) had moderate total scores (between 2.5 and 3.5), 26% had high scores (>3.5) and 8% had low scores (<2.5). As shown in Table 1, only two subscales had mean scores in the low category, *Context of Care* (F2) and *Coping with Bias* (F9), while six were in the high category. The highest subscale mean scores were for *Self-reflection* (F7) and *Intercultural Interactions* (F6).

As shown in Table 3, statistically significant differences (p values <.05) in subscale mean scores, at factor level, were found by race (factors F5, F7, F11, F12 and F13) and by academic level (factors F2, F3, F4, F5, F7, F8 and F10).

Discussion of these differences at the factor and single-item level is presented in the following analysis by domains. Tables 4 to 9 provide statistics by race and academic level on all the individual items under each factor.

Knowledge domain (K)

Two factors are included in this domain—F1, *Addressing Population Health Issues,* and F2, *Understanding the Context of Care*. F1 groups eight items related to knowledge of socio-cultural issues in diverse populations while F2 covers five items related to knowledge of regulations, standards, and healing traditions (Table 1). Overall, mean differences for F1 were moderate, and mean differences for F2 were the lowest, indicating the need for more instruction on these topics. Significant differences in the subscale mean scores were found only for F2 (Table 3). At the single-item level (Table 4), Asian Americans had significantly lower means than African Americans in knowledge about *health disparities* (item K4) and significantly higher means than Whites and African Americans in knowledge of different *healing traditions* (item K7). Significant differences by academic level were explained by P4 students having higher means than P3 students in knowledge about sociocultural issues in *child health* (item K5C), *adolescent health* (item K5D), *geriatrics* (item K5F), *healing traditions* (item K7), *Title VI of Civil Rights* (item K9), the *National Standards on Culturally*

and Linguistically Appropriate Services—CLAS Standards (item K10) and the *use of folk healers* (item S4).

Skills domain (S)

This domain includes two factors (Table 1)—F3, *Providing Culturally Responsive and Effective Services* (5 items), and F4, *Managing Cross-Cultural Clinical Challenges* (4 items). Significant differences in the subscale mean scores were found in both factors with P4s reporting higher means than P3 (Table 3). These differences were explained at the single-item level (Table 5) by P4s having significant higher means than P3s in knowledge about *treatment plans* (item S6), *patient education and counseling* (item S7) and *clinical preventive services* (item S8) and in managing cross-cultural challenges related to problems in *diagnosis/treatments* (item S12), *patients' adherence* (item S13) and *ethical conflicts* (item S14). Although no significant differences were found at the factor level by race (Table 3), when looking at the item-level (Table 5), Asian American students had significantly lower mean values in providing services related to issues of poor *health literacy* (item S10) than their White counterparts.

Attitudes domain (A)

This domain includes three factors—F5, *Recognizing Disparities- Related Discrimination,* F6, *Improving Interpersonal and Intercultural Interactions,* and F7, *Engaging in Self-Reflection.* F5 contains six items related to the importance given to different forms of discrimination and prejudice that contribute to health disparities. F6 contains four items related to the importance given to socio-cultural issues in interactions with patients and colleagues. F7 includes four items related to the importance given to training in cultural diversity and multicultural health care and the level of students' self-awareness of their own identity, cultural stereotypes, and biases and prejudices (Table 1). Mean scores in these three factors were among the highest for the subscale and single-item levels (Table 3). While, no significant mean differences were found at the subscale or single-item scores in F6, they were found in F5 and F7 by both race and academic level (Table 6). Overall, African American students had the highest means in all the items included in this domain and had significantly higher means in the importance given to *racism,* than their counterparts. In contrast, Asian Americans had significantly lower means than African Americans in almost all the items included in F5 and all the items in F7, and Whites had significantly lower means than African Americans only in the importance given to disparities related to *ableism*—prejudice against disabled people. Significant differences by academic level were found in the low importance given by P4s to *ageism*, *sexism*, *classism*, and receiving *training* in cultural competence in comparison with P1s, and the high importance given by P1s to *racism* in comparison to all their counterparts. Additionally, P4s had significantly lower means than P3s in *self-awareness* of ones' own racial, ethnic and cultural identity.

Encounters domain (E)

This domain includes two factors—F8, *Increasing Comfort during Cross-Cultural Clinical Encounters*, and F9, *Coping with Aggressiveness and Bias*. F8 groups eight items

related to how comfortable students feel during the patient encounter, and F9 groups two items related to how comfortable students feel when working with colleagues or patients who make derogatory remarks about a specific racial, ethnic or cultural group (Table 1). Overall subscale mean scores were moderate for F8 and lowest for F9. Significant differences in this domain were found only by academic level in F8 with P3s having significantly lower mean subscale scores than P1s and P4s in all the items in this factor, except when working with patients and or colleagues from culturally diverse backgrounds (Tables 3 and 7).

Abilities domain (AB)

This domain includes two factors—F10, *Assessing Population Health Needs*, includes eight items related to the ability to accurately assess the health needs of specific population groups. F11, *Multicultural Knowledge*, groups seven items related to abilities required to work in a multicultural environment (Table 1). Overall subscale mean scores were high for both factors. Significant differences were found in the subscales by race and academic level (Table 3). P4s reported significantly higher means than the P3s in almost all the items included in F10 except for abilities to assess specific health needs of *women*, *children and adolescents*, and patients from different *cultural/ethnic backgrounds* (Table 8). Additionally, P3s had significantly lower means than all their counterparts in the items in F11 related to appraisal and differentiation of assessment tests, multicultural research, and acculturation models. By race, Asian American students had significantly lower means than African American students in the items in F11 related to identification of differences among diverse groups, reactions based on stereotypes, and research on health issues.

Awareness domain (AW)

This domain includes two factors—F12, *Barriers to Health Care*, groups four items related to awareness of cultural barriers to competent health care. F13, *Racial Dynamics*, groups three items related to awareness of structural issues that have strong roots in American society (Table 1). Mean scores were higher for F12 than for F13.

Interestingly, no significant differences by academic level were found in the subscales means or single-items included in this domain. However, by race, subscale mean differences in both factors were significant (Table 3). Regarding F12, at the single-item level (Table 9), Asian Americans had significantly lower means than African Americans in understanding values, attitudes, and beliefs that might affect patients health behaviors (item AW11), and African Americans had significantly higher means than all their counterparts in understanding barriers that might inhibit patients' use of health services (item AW14).

Regarding F13, subscale mean differences were significant (Table 3) with Whites having significantly lower mean subscale scores than their counterparts. Mean differences by race in the three items included in this factor are of special interest. As shown in Table 9, mean values in awareness of *power imbalance* (item AW8) were lower in comparison with awareness of *racial discrimination* (item AW1) and *White privilege* (AW10). Significant differences were found by race among the three groups in the *racial discrimination* (AW1) and *White privilege* (AW10) items. In both items, African Americans had significantly

higher means than Asian Americans and Whites, and Asian Americans' means were also significantly higher than the Whites' means. However, in *power imbalance* (item AW8), Asian Americans had significantly higher means than their counterparts. Respondent's self-reported race was negatively correlated with the *racial* discrimination and *White privilege* items. The majority of African American and Asian American students (83% and 63%, respectively) agreed that "being born a minority in this society brings with it certain challenges that White people do not have to face" (AW1: Racial Discrimination) and that "being born a White person in this society carries with it certain advantages" (AW10: White Privilege), with percentages of 68% and 49%, respectively. Conversely, many White students disagreed with these statements (42% and 61%, respectively). However, the majority of African American, Asian American, and White students disagreed with the statement "I am aware that I frequently impose my own cultural values upon my patients" (AW8: Power Imbalance).

Discussion

In summary, results indicate that students' self-assessment of their knowledge, skills, and attitudes in cultural competence vary by topic, race, and academic level in the pharmacy program. Overall, students rated their knowledge and skills lower than their attitudes, abilities, and awareness (Table 3). These results could have one of two interpretations or a combination of the two: 1) students are accustomed to living in a multicultural and multilingual environment and feel confident that they have the required awareness, abilities, and attitudes to perform adequately in a diverse society, and/or 2) students are more critical of their own knowledge and skills when viewed as theory-based educational competences addressed in the classroom rather than as attitudes, abilities, and awareness demonstrated at school or in the workforce. Students may perceive cultural competencies that are theory-based as easier to score than the application of cultural competence principles in real-world settings such as an exam room or community pharmacy. The latter interpretation may be supported by noting that in the Knowledge and Skills domains significant differences were found only at the academic level, while in the Awareness and Attitudes domains differences were found by race as well. In almost all cases significant differences may be attributed to (1) the instruction received in cultural competence at the time of measurement and/or (2) the experiences provided in the rest of the curriculum and clinical rotations and/or (3) the students' own experiences at the personal/familial levels. Both academic level and race are worthy of further discussion.

Differences by academic level

Most of the differences found can be summarized as P3s having significantly lower means than P4s. As explained above, the pilot curriculum was implemented simultaneously for the four-year program, and each cohort received different instruction at the time of measurement. Unfortunately, P3s received the least amount of training in cultural competence and were not exposed to the clinical rotations as the P4s were. One especially surprising finding, that may be explained by instructional methods, is that knowledge of *CLAS standards* (F2, item K10) had the lowest mean at the single-item level (Table 1) and also the lowest mean values for all the groups (by race and academic level) in the

Knowledge Domain (Table 4). We consider this topic of high importance and included a lecture about the CLAS standards in all the academic years (P1, P2, P3 and P4s). These results certainly indicate that instruction should be revised and more training is definitely needed in this topic. Perhaps, interactive learning experiences instead of lectures could improve students' understanding. According to Preszler[21] breaking large lectures into smaller sections in which students perform cooperative group work not only increases students engagement but also their performance and learning.

Differences by race

Significant differences by race were found in the Attitudes, Awareness, and Abilities domains but not in the Knowledge and Skills domains. Overall, African Americans rated significantly higher their perceived competencies regarding *patient discrimination* (F5) and *barriers to health care* (F12) than their counterparts; Asian Americans rated significantly lower their attitudes to engage in *self-reflection* (F7) and their *multicultural knowledge* (F11) than African Americans; and Whites rated significantly lower their awareness in *racial dynamics* (F13) than African Americans.

Considering the pervasive health disparities of African Americans and the long history of racism and discrimination in the United States, it makes sense that African American students are more sensitive to and aware of these issues than other students. The higher scores of the African American students on *Barriers to Health Care* (F12) and *Disparities related to Discrimination* (F5) may provide an explanation for the positive outcomes found in studies when patient-provider dyads are African American. Research studies have provided some evidence of the positive impact on health outcomes when the patient and health care provider are the same race (patient-provider race concordance).[13] However, in some studies racial concordance was not associated with positive outcomes.[13] The issue of patient-provider concordance is complex and can be based upon dimensions other than race, such as gender, communication, and length of relationship.[14] As cultural competence training is included more and more in health care professionals' curricula, future research should investigate whether such training and/or the patient-provider racial concordance is related to improvement in outcomes and a decrease in disparities and discrimination.

Interestingly, Asian American students had significantly lower means in knowledge of *health disparities* (F1, Item K4) and most all the items related to *discrimination* (F5) and *self-refection* (F7); however, they rated their awareness of *power imbalance* (F13, item AW8) significantly more highly than their counterparts. Possibly, Asian Americans are more focused on in-group interrelations than in out-group interactions. If Asian Americans consider themselves to be a fundamentally different group, these issues might not be of great importance or especially challenging for them. Certainly, racial differences in awareness about *racial dynamics* (F13), show the high sensibility of these topics when teaching cultural competence and working with a diverse student body. According to Echeverri et al., "These items are closely related to the level of exposure to experiences of power, stigma, prejudice, and discrimination."[6][p.621] Hence, it makes sense to find differences according to self-identified race.

Unfortunately, no comparisons could be made between the previously cited results from Ladson's study[15] and the results in the present study, as the former used total scale scores (summed scores of individual items in each scale) instead of mean scale scores (total scale scores divided by number of items in each scale), which are the ones strongly recommended for making comparisons across different research studies.[12] Interesting, while Ladson points out "Recent sociologic literature shows that groups that are racially homogenous are more likely to express out-group prejudice,"[p.1461] Smedley et al. state that "interaction among students from diverse backgrounds helps to challenge assumptions and broaden perspectives regarding racial, ethnic, and cultural differences."[p.6] Specifically, during the activities carried out in our study, students from the same race generally grouped themselves when receiving class instruction or performing teamwork and it was very difficult to break them into diverse groups, missing opportunities to challenge assumptions. Our results show racial differences in the factors that are more related to issues of self-reflection and discrimination, confirming that educational initiatives in cultural competence should be specially targeted to the main individual characteristics of those receiving the training and the racial composition of the group as a whole.

No differences

Although no significant differences were found by race or academic level in *Improving Interpersonal and Intercultural Interactions* (F6), and *Coping with Aggressiveness and Bias* (F9), the mean subscale scores of these factors were among the highest and lowest respectively (Table 3). The high mean score in F6 could indicate that students in the program recognize that socio-cultural issues are very important in their interpersonal and intercultural interactions. However, the low mean in F9 could indicate that students are still not prepared to face fully issues of discrimination and prejudice, and do not feel able to respond to aggression and bias.

The cultural competence curriculum emphasizes embracing culture and diversity as a way to improve teamwork and relationships, to better serve an ever-increasing diverse patient population and to being open to a globalized and interrelated world. However, the pilot curriculum is currently focused on building awareness and knowledge and does not yet include specific activities for students to challenge their personal bias and stereotypes and practice their skills and abilities in simulated (standardized patients) or real situations (professional practice experiences). These results confirm the need to explicitly include in the curriculum activities to advance students' practical skills in cultural competence. The high scores that P4s have in some factors, even though they were exposed only to a small part of the pilot curriculum, show the importance of the clinical rotations in increasing the level of perceived cultural competence. Certainly, these practical experiences should be revised and included as important components of the curriculum to develop students' skills and abilities in cultural competence.

Limitations

Main limitations present in this study, and that might have an impact on the interpretation of study results, were related to the use of self-assessment to measure cultural competence, the racial composition of the target population, and the level of implementation of the pilot

curriculum. When interpreting the self-assessments in this study careful consideration was given to the possible overconfidence in the students' reports of their level of cultural competence. Although, self-reports have been successfully used to assess a multitude of attitudes, beliefs, and abilities in many studies in multiple disciplines, Gozu et al.[15] stated that students tend to overestimate their cultural competence, which could be interpreted as having a lack of awareness regarding their own limitations or perhaps arrogance in the rating of their confidence. Other limitations are related to the racial differences in the target population. More than 75% of the students participating in this study were African Americans and Asian Americans. Although they represent the population characteristics of students in the College of Pharmacy, results could be different with a more diverse population. Another limitation of this study is the lack of full implementation of cultural competence training to all student levels (P1s, P2s, P3s, and P4s). Additionally, results could be stronger if there was more representation of students in the third- and fourth-year. Limitations will be accounted for as the cultural competence curriculum is further implemented and more results become available from later applications and validations of the SAPLCC in the same and other academic settings.

Conclusions

Findings from this study support the authors' position that assessing aspects of cultural competence is an important approach to understanding better students' perceptions of their own cultural competence, determining the impact of a cultural competence curriculum, and identifying future training needs.[16,17] Hence, assessing knowledge, attitudes, and skills is important in the development of self-directed learning—a goal of education in the pharmaceutical and medical fields.[18,19]

The SAPLCC can be used as a baseline and follow-up assessment of students' perceived knowledge, skills, and attitudes relating to the provision of culturally competent health care to diverse patient populations. As noted before, however, self-assessment of skills and abilities must be interpreted with caution and be supplemented by other forms of assessment. When curricula in cultural competence is implemented, it is recommended to apply the SAPLCC as a baseline measure before any exposure to training, as a follow-up measure for each year of instruction, and also near graduation. A self-assessment strategy applied sequentially and systematically throughout the pharmacy curriculum provides data for a comprehensive assessment of students learning and evaluation of the academic program related to cultural competence.

This study contributes to advancing educational and assessment strategies in cultural competence and to knowledge in the field about relationships among different racial and ethnic individuals receiving training. Results show that when focusing the data analysis only at the subscale level important details can be ignored, which could have an impact on the changes recommended to the curriculum. Analysis at the single-item level allows the identification of special training needs or strengths in specific groups of participants. For example, this study allowed us to identify the specific impact that the lack of enough training for P3 students had in their perception of cultural competence and the important contributions that clinical rotations may have in increasing students' cultural competence.

Additionally, this study contributes to a better understanding of racial dynamics in a highly diverse environment. Although an important criticism to studies in cultural competence is the low participation of minority students, the majority of participants in this study belong to this group. The high participation of African American and Asian American students allowed us to uncover specific issues that, if not addressed adequately, could have a negative impact on the cultural competence of our students as future health care providers. Results indicate that, when developing curriculum in cultural competence, it is important to carefully consider the racial composition of the students and, perhaps, develop targeted educational interventions for specific groups to fully engage them in addressing adequately the health care needs of a diverse population.[20,21]

Measuring cultural competence of pharmacy students is only the first step to cultivating a culturally competent health care workforce. However, determining students' profiles in cultural competence can lead to improved curricula when changes are implemented based upon assessment of training and definition of priorities in addressing the needs identified. Although all the domains, factors and items in the SAPLCC have the same weight in the scales, it should be expected to find that some of them are more important to be addressed in a specific target population, like in our case. Further work in these areas will help build a workforce of culturally competent pharmacists who will play an important role in helping the nation eliminate health disparities and improve health outcomes in populations more likely to experience negative health outcomes.

Acknowledgments

Notes

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Table 1

SELF-ASSESSMENT OF PERCEIVED LEVEL OF CULTURAL COMPETENCE (SAPLCC) QUESTIONNAIRE ITEMS GROUPED BY FACTORS AND DOMAINS

Domains, Factors, Items		Statistics			Mean Scores (% respondents)		
Knowledge Domain (K)		N	Mean[a]	SD	High[b]	Moderate[c]	Low[d]
Addressing Population Health Issues (F1)		457	2.91	0.799	20.57	49.67	29.76
K4	Knowledge on health disparities	464	3.26	0.877			
K5A	Knowledge on health promotion	464	2.99	0.878			
K5B	Knowledge on reproductive health	466	2.88	0.932			
K5C	Knowledge on child health	466	2.82	0.930			
K5D	Knowledge on adolescent health	466	2.81	0.908			
K5E	Knowledge on adult health	465	2.96	0.894			
K5F	Knowledge on geriatrics	465	2.74	0.946			
K5G	Knowledge on women's health	463	2.85	0.936			
Understanding the Context of Care (F2)		462	2.21	0.868	8.01	25.76	66.23
K7	Different healing traditions	465	2.33	1.056			
K9	Title VI of Civil Rights Act of 1964	465	2.09	1.026			
K10	CLAS standards	466	2.00	1.052			
S3	Eliciting information on use of folk remedies	467	2.46	1.081			
S4	Eliciting information on use of folk healers	465	2.15	1.069			
Skills Domain (S)		N	Mean[a]	SD	High[b]	Moderate[c]	Low[d]
Providing Culturally Responsive and Effective Services (F3)		459	2.57	0.940	16.34	35.73	47.93
S5	Physical examination and diagnosis	465	2.39	1.067			
S6	Treatment plans	465	2.51	1.055			
S7	Patient education and counseling	466	2.73	1.032			
S8	Clinical preventive services	466	2.52	1.041			
S10	Health literacy	463	2.73	0.994			
Managing Cross-Cultural Clinical Challenges (F4)		464	2.58	1.017	16.38	41.16	42.46
S12	Dealing with problems in diagnosis or treatment	465	2.54	1.058			
S13	Dealing with adherence/compliance problems	465	2.63	1.051			

Domains, Factors, Items	Statistics			Mean Scores (% respondents)		
	N	Mean[a]	SD	High[b]	Moderate[c]	Low[d]
Knowledge Domain (K)						
SI4 Dealing with ethical conflicts	464	2.57	1.066			
SI6 Dealing with issues in the informed consent	465	2.58	1.127			
Attitudes Domain (A)	N	Mean[a]	SD	High[b]	Moderate[c]	Low[d]
Recognizing Disparities-Related Discrimination (F5)	460	3.75	1.005	60.43	28.04	11.52
A1G Ageism (prejudice based on age)	465	3.69	1.100			
A1H Sexism (prejudice based on sex)	465	3.68	1.111			
A1I Racism (prejudice based on race)	464	3.89	1.090			
A1J Classism (privilege based on economic status)	463	3.90	1.077			
A1K Ableism (prejudice against disabled people)	464	3.71	1.107			
A1L Homophobia (prejudice against homosexuals)	463	3.64	1.175			
Improving Interpersonal/Intercultural Interactions (F6)	425	3.93	0.967	65.88	27.06	7.06
A2A interacting with patients	465	4.03	1.002			
A2B interacting with colleagues	465	3.92	1.010			
A2C interacting with classmates	465	3.94	1.016			
A2D Interacting with staff	425	3.81	1.077			
Engaging in Self-Reflection (F7)	463	4.17	0.830	75.59	20.73	3.67
A3A Own racial, ethnic, or cultural identity	465	4.13	0.943			
A3B Own racial, ethnic, or cultural stereotypes	465	4.11	0.948			
A3C Own biases and prejudices	465	4.08	0.987			
A4 Training in diversity and cultural competence	463	4.36	0.866			
Encounters Domain (E)	N	Mean[a]	SD	High[b]	Moderate[c]	Low[d]
Increasing Comfort During Cross-Cultural Clinical Encounters (F8)	466	3.15	0.833	31.76	49.14	19.10
E1 Caring for patients from culturally diverse backgrounds	467	3.53	1.030			
E2 Caring for patients with limited English proficiency	467	3.14	1.023			
E4 Identifying hiding beliefs that interfere with treatment	465	2.85	1.059			
E5 Understanding non-verbal communication and gestures	466	3.15	1.027			
E6 Interpreting expressions of pain, distress, and suffering	467	3.06	1.011			

Domains, Factors, Items		Statistics			Mean Scores (% respondents)		
	N	Mean[a]	SD	High[b]	Moderate[c]	Low[d]
Knowledge Domain (K)							
E7	Advising change of behaviors or practices	467	2.85	1.045			
E8	Speaking in an indirect rather than a direct way	467	2.89	1.036			
E10	Working with culturally diverse professionals	467	3.41	1.077			
Coping with Aggressiveness and Bias (F9)		457	2.45	1.104	13.35	38.95	47.70
E11	Working with colleagues who make derogatory comments	467	2.45	1.241			
E12	Treating patients who make derogatory comments	457	2.45	1.206			
Abilities Domain (AB)	N	Mean[a]	SD	High[b]	Moderate[c]	Low[d]
Assessing Population Health Needs (F10)		459	3.61	0.745	57.73	36.60	5.66
AB3	Persons with disabilities	462	3.49	0.881			
AB5-18	Lesbians, bisexuals, gays, transgender and questioning ★	464	3.43	0.913			
AB6	Older adults	464	3.63	0.822			
AB13	Men	464	3.59	0.829			
AB20	Women	463	3.71	0.833			
AB21	Poor	464	3.65	0.841			
AB22	Children and adolescents	463	3.65	0.839			
AB23	Different cultural, racial and/or ethnic backgrounds	463	3.65	0.828			
Multicultural Knowledge (F11)		454	3.57	0.715	57.27	36.56	6.17
AB7	Identify strengths and weaknesses of different tests	463	3.43	0.887			
AB9	Communicate appropriately with patients	462	3.86	0.783			
AB12	Critique multicultural research	459	3.29	0.910			
AB15	Discuss differences among racial, ethnic or cultural groups	464	3.73	0.870			
AB16	Identify reactions based on stereotypes	463	3.77	0.825			
AB17	Discuss research about health issues	463	3.53	0.939			
AB19	Differentiate acculturation models	464	3.38	0.959			
Awareness Domain (AW)	N	Mean[a]	SD	High[b]	Moderate[c]	Low[d]
Barriers to Health Care (F12)		452	3.86	0.688	71.46	25.66	2.88
AW2	Values that might affect their patients	464	3.81	0.832			

Domains, Factors, Items		Statistics			Mean Scores (% respondents)		
Knowledge Domain (K)		N	Mean[a]	SD	High[b]	Moderate[c]	Low[d]
AW4	Barriers that may affect patients	464	3.92	0.758			
AW11	Attitudes/beliefs that might affect patients	464	3.89	0.814			
AW14	Barriers that may inhibit use of health services	452	3.84	0.844			
Racial Dynamics (F13)		456	3.24	0.871	42.76	38.60	18.64
AW1	Racial discrimination	465	3.82	1.160			
AW8	Power imbalance	465	2.42	1.082			
AW10	White privilege	465	3.47	1.239			
TOTAL SCALE		383	3.21	0.524	26.37	65.54	8.09

★ $p < .05$

[a] Range 1 to 5

[b] Scores >3.5

[c] Scores between 2.5 and 3.5

[d] Scores <2.5

Table 2

DEMOGRAPHICS OF RESPONDENTS

Total participants		467	
Characteristic		**n**	**%**
Academic Level	Year 1 (P1)	151	32.33
	Year 2 (P2)	147	31.48
	Year 3 (P3)	70	14.99
	Year 4 (P4)	99	21.20
Race/ethnicity	African Americans	223	47.75
	Asian Americans	141	30.19
	Whites	81	17.35
	Other	22	4.71
Language Contact with other cultures	Speaks two or more languages	201	43.06
	Have cross-cultural encounters in the daily life	298	63.81
	Had visited other countries	251	53.74
	Had lived in a country other than United States	65	13.92
Training in Cultural Competence	In-class instruction	360	77.09
	Attending conferences, workshops and/or seminars	107	22.91
	Personal readings	98	20.98

Table 3

SUBSCALE MEAN SCORES BY RACE AND ACADEMIC LEVEL (FACTOR LEVEL)

Domains and Factors	Mean differences by Race					Mean differences by Academic Level					
	F	p	African Americans	Asian Americans	White	F	p	P1	P2	P3	P4
Knowledge Domain (K)	F	p				F	p	P1	P2	P3	P4
Addressing Population Health Issues (F1)	1.345	0.259	2.97	2.80	2.95	1.734	0.159	2.93	2.86	2.77	3.04
Understanding the Context of Care (F2)	0.798	0.496	2.16	2.29	2.16	5.064	0.002★	2.23	2.12	1.97	2.46ᵃ
Skills Domain (S)	F	p				F	p	P1	P2	P3	P4
Providing Culturally Responsive and Effective Services (F3)	1.820	0.143	2.52	2.52	2.74	4.653	0.003★	2.54	2.49	2.39	2.87ᵃ
Managing Cross-Cultural Clinical Challenges (F4)	0.237	0.870	2.54	2.60	2.64	3.545	0.015★	2.53	2.58	2.33	2.83ᵃ
Attitudes Domain (A)	F	p				F	p	P1	P2	P3	P4
Recognizing Disparities-Related Discrimination (F5)	4.605	0.003★	3.93ᵃ	3.57	3.59	5.186	0.002★	3.99ᵃ	3.71	3.69	3.50
Improving Interpersonal/Intercultural Interactions (F6)	1.156	0.326	4.00	3.84	3.84	1.058	0.367	3.98	3.98	3.94	3.77
Engaging in Self-Reflection (F7)	6.162	0.000★	4.33	3.95ᵃ	4.12	2.566	0.054★	4.24	4.12	4.33	4.01ᵃ
Encounters Domain (E)	F	p				F	p	P1	P2	P3	P4
Increasing Comfort During Cross-Cultural Clinical Encounters (F8)	0.632	0.595	3.14	3.12	3.15	3.423	0.017★	3.25	3.08	2.92ᵃ	3.26
Coping with Aggressiveness and Bias (F9)	0.414	0.743	2.47	2.43	2.37	0.544	0.653	2.40	2.45	2.39	2.57
Abilities Domain (AB)	F	p				F	p	P1	P2	P3	P4
Assessing Population Health Needs (F10)	0.329	0.804	3.61	3.56	3.66	3.550	0.014★	3.61	3.52	3.49	3.80ᵃ
Multicultural Knowledge (F11)	2.993	0.031★	3.65	3.42ᵃ	3.59	1.147	0.330	3.59	3.53	3.46	3.66
Awareness Domain (AW)	F	p				F	p	P1	P2	P3	P4
Barriers to Health Care (F12)	3.674	0.012★	3.97ᵃ	3.76	3.77	0.257	0.856	3.87	3.90	3.87	3.81
Racial Dynamics (F13)	36.517	0.000★	3.47	3.34	2.40ᵃ	1.844	0.138	3.31	3.17	3.09	3.35

★$p < .05$

ᵃThis group is significantly different from the other groups.

Table 4

KNOWLEDGE DOMAIN (K) MEAN DIFFERENCES AT THE SINGLE-ITEM LEVEL

Addressing Population Health Issues (F1)

Items		F	p	Mean differences by Race			F	p	Mean differences by Academic Level			
				African Americans	Asian Americans	Whites			P1	P2	P3	P4
K4	Health disparities	5.521	0.001 ★	3.39	3.03[a]	3.22	0.875	0.454	3.28	3.17	3.25	3.35
K5A	Health promotion	1.860	0.136	3.04	2.86	3.11	0.933	0.424	3.01	2.94	2.88	3.09
K5B	Reproductive health	0.941	0.420	2.94	2.79	2.94	1.356	0.256	2.93	2.89	2.68	2.94
K5C	Child health	0.646	0.586	2.87	2.75	2.86	2.641	0.049 ★	2.88	2.80	2.57	2.95[a]
K5D	Adolescent health	0.292	0.831	2.83	2.76	2.84	2.768	0.041 ★	2.87	2.76	2.57	2.94[a]
K5E	Adult health	1.441	0.230	3.02	2.84	3.01	1.149	0.329	2.99	2.91	2.83	3.06
K5F	Geriatrics	0.874	0.455	2.77	2.65	2.84	3.011	0.030 ★	2.68	2.71	2.59	2.98[a]
K5G	Women's health	1.958	0.119	2.92	2.71	2.95	1.336	0.262	2.81	2.85	2.72	3.00

Understanding the Context of Care (F2)

Items		F	p	Mean differences by Race			F	p	Mean differences by Academic Level			
				African Americans	Asian Americans	Whites			P1	P2	P3	P4
K7	Healing traditions	7.661	0.000 ★	2.18	2.68[a]	2.21	7.202	0.000 ★	2.38	2.09	2.22	2.70[a]
K9	Title VI of Civil Rights Act of 1964	0.271	0.847	2.13	2.03	2.09	2.887	0.035 ★	2.10	2.05	1.84	2.30[a]
K10	CLAS standards[b]	0.332	0.802	2.01	1.94	2.06	4.075	0.007 ★	2.04	1.92	1.72	2.26[a]
S3	Folk remedies	1.099	0.349	3.50	3.48	3.63	2.022	0.110	2.48	2.46	2.21	2.63
S4	Folk healers	1.164	0.323	2.07	2.23	2.15	3.429	0.017 ★	2.16	2.08	1.90	2.40[a]

★ p<.05

[a] This group is significantly different from the other groups.

[b] National Standards on Culturally and Linguistically Appropriate Services—CLAS Standards.

Table 5

SKILS DOMAIN (S) MEAN DIFFERENCES AT THE SINGLE-ITEM LEVEL

Providing Culturally Responsive and Effective Services (F3)

		Mean differences by Race					Mean differences by Academic Level					
Items		F	p	African Americans	Asian Americans	Whites	F	p	P1	P2	P3	P4
S5	Examination and diagnosis	1.427	0.234	2.31	2.38	2.57	1.794	0.147	2.42	2.34	2.19	2.56
S6	Treatment plans	0.805	0.492	2.46	2.51	2.59	4.991	0.002 ★	2.44	2.45	2.30	2.86[a]
S7	Education and counseling	1.133	0.335	2.65	2.73	2.85	5.243	0.001 ★	2.70	2.61	2.54	3.07[a]
S8	Preventive services	1.454	0.227	2.48	2.45	2.67	7.187	0.000 ★	2.45	2.42	2.29	2.93[a]
S10	Health literacy	5.465	0.001 ★	2.74	2.51[a]	3.02	1.838	0.139	2.70	2.67	2.66	2.94

Managing Cross-Cultural Clinical Challenges (F4)

		Mean differences by Race					Mean differences by Academic Level					
Items		F	p	African Americans	Asian Americans	Whites	F	p	P1	P2	P3	P4
S12	Diagnosis or treatment	0.481	0.696	2.54	2.65	2.56	3.606	0.013 ★	2.46	2.57	2.28	2.79[a]
S13	Adherence/compliance	0.066	0.978	2.62	2.62	2.67	3.695	0.012 ★	2.58	2.62	2.38	2.90[a]
S14	Ethical conflicts	0.671	0.570	2.52	2.54	2.69	4.429	0.004 ★	2.49	2.60	2.28	2.85[a]
S16	Informed consent	0.267	0.849	2.54	2.65	2.56	1.818	0.143	2.58	2.52	2.41	2.79

★ $p < .05$

[a] This group is significantly different from the other groups.

Table 6

ATTITUDES DOMAIN (A) MEAN DIFFERENCES AT THE SINGLE-ITEM LEVEL

Recognizing Disparities-Related Discrimination (F5)

			Mean differences by Race			Mean differences by Academic Level					
Items	F	p	African Americans	Asian Americans	Whites	F	p	P1	P2	P3	P4
A1G Ageism	3.383	0.018★	3.85	3.51^a	3.55	6.912	0.000	3.96	3.65	3.68	3.33^a
A1H Sexism	3.123	0.026★	3.84	3.52^a	3.53	6.881	0.000	3.97	3.65	3.59	3.35^a
A1I Racism	4.669	0.003★	4.08^a	3.71	3.69	7.178	0.000	4.21^a	3.82	3.71	3.63
A1J Classism	5.527	0.001★	4.09	3.65^a	3.77	4.463	0.004	4.13	3.86	3.86	3.64^a
A1K Ableism	3.442	0.017★	3.87	3.60	3.47^a	2.093	0.100	3.86	3.72	3.65	3.51
A1L Homophobia	3.616	0.013★	3.83	3.44^a	3.52	1.424	0.235	3.80	3.59	3.59	3.52

Improving Interpersonal/Intercultural Interactions (F6)

			Mean differences by Race			Mean differences by Academic Level					
Items	F	p	African Americans	Asian Americans	Whites	F	p	P1	P2	P3	P4
A2A Patients	1.130	0.337	4.11	3.93	3.96	2.500	0.059	4.09	4.09	4.12	3.79
A2B Colleagues	1.427	0.234	4.00	3.86	3.76	1.492	0.216	3.99	3.99	3.88	3.74
A2C Classmates	1.015	0.386	4.01	3.88	3.83	1.870	0.134	4.04	3.99	3.90	3.74
A2D Staff	0.857	0.464	3.86	3.69	3.85	0.425	0.735	3.78	3.87	3.88	3.72

Engaging in Self-Reflection (F7)

			Mean differences by Race			Mean differences by Academic Level					
Items	F	p	African Americans	Asian Americans	Whites	F	p	P1	P2	P3	P4
A3A Own identity	6.419	0.000★	4.30	3.87^a	4.14	3.315	0.020★	4.16	4.07	4.42	3.98^a
A3B Stereotypes	5.839	0.001★	4.28	3.86^a	4.08	2.337	0.073	4.19	4.03	4.30	3.97
A3C Biases and prejudices	5.550	0.001★	4.25	3.83^a	4.04	0.852	0.466	4.10	4.06	4.23	3.99
A4 Training	2.858	0.037★	4.48	4.15^a	4.23	4.197	0.006★	4.52	4.35	4.37	4.12^a

★ $p < .05$

^{a} This group is significantly different from the other groups.

Table 7

ENCOUNTERS DOMAIN (E) MEAN DIFFERENCES AT THE SINGLE-ITEM LEVEL

Increasing Comfort During Cross-Cultural Clinical Encounter (F8)

Items		F	p	Mean differences by Race			F	p	Mean differences by Academic Level			
				African Americans	Asian Americans	Whites			P1	P2	P3	P4
E1	Culturally diverse backgrounds	0.792	0.499	3.57	3.43	3.58	1.385	0.247	3.65	3.50	3.36	3.53
E2	Limited English proficiency	2.031	0.109	3.11	3.22	3.00	3.998	0.008★	3.28	3.10	2.80^a	3.23
E4	Hiding beliefs	0.316	0.814	2.81	2.89	2.85	5.070	0.002★	3.04	2.72	2.53^a	2.98
E5	Non-verbal communication	0.794	0.498	3.13	3.11	3.20	2.632	0.049★	3.17	3.18	2.86^a	3.29
E6	Expressions of pain, distress, and suffering	1.052	0.369	3.04	3.11	2.96	3.520	0.015★	3.15	2.98	2.79^a	3.24
E7	Change of behaviors	0.067	0.977	2.83	2.87	2.88	2.814	0.039★	2.95	2.75	2.63^a	3.01
E8	Speaking in an indirect way	0.549	0.649	2.91	2.84	2.86	3.675	0.012★	3.06	2.71	2.66^a	3.07
E10	Culturally diverse professionals	1.727	0.161	3.41	3.28	3.58	0.474	0.701	3.47	3.34	3.36	3.45

Increasing Comfort During Cross-Cultural Clinical Encounter (F9)

Items		F	p	Mean differences by Race			F	p	Mean differences by Academic Level			
				African Americans	Asian Americans	Whites			P1	P2	P3	P4
E11	Colleagues who make derogatory comments	0.585	0.625	2.46	2.43	2.38	0.982	0.401	2.38	2.46	2.34	2.63
E12	Patients who make derogatory comments	0.146	0.932	2.48	2.44	2.39	0.216	0.885	2.41	2.44	2.45	2.54

★ p<.05

^{a} This group is significantly different from the other groups.

Table 8

ABILITIES DOMAIN (AB) MEAN DIFFERENCES AT THE SINGLE-ITEM LEVEL

Assessing Population Health Needs (F10)

Items		F	p	Mean differences by Race			F	p	Mean differences by Academic Level			
				African Americans	Asian Americans	Whites			P1	P2	P3	P4
AB3	Persons with disabilities	0.364	0.779	3.46	3.49	3.58	4.075	0.007★	3.49	3.41	3.32	3.74^a
AB5-18	Lesbians, bisexuals, gays, transgender and questioning	0.454	0.714	3.42	3.38	3.51	5.254	0.001★	3.40	3.33	3.25	3.73^a
AB6	Older adults	0.321	0.810	3.61	3.62	3.66	3.128	0.026★	3.58	3.59	3.51	3.85^a
AB13	Men	0.256	0.857	3.59	3.56	3.61	3.918	0.009★	3.64	3.46	3.47	3.80^a
AB20	Women	1.932	0.124	3.75	3.59	3.85	1.099	0.349	3.69	3.67	3.66	3.85
AB21	Poor	0.767	0.513	3.71	3.60	3.63	4.098	0.007★	3.72	3.53	3.49	3.85^a
AB22	Children and adolescents	0.810	0.489	3.65	3.59	3.77	1.932	0.124	3.65	3.55	3.63	3.82
AB23	Different cultural, racial and/or ethnic backgrounds	0.248	0.863	3.66	3.62	3.67	2.361	0.071	3.69	3.60	3.49	3.81

Multicultural Knowledge (F11)

Items		F	p	Mean differences by Race			F	p	Mean differences by Academic Level			
				African Americans	Asian Americans	Whites			P1	P2	P3	P4
AB7	Assessment tests	0.850	0.467	3.49	3.35	3.39	4.703	0.003★	3.48	3.47	3.06^a	3.53
AB9	Appropriated communication	1.850	0.137	3.91	3.74	3.95	2.591	0.052	3.83	3.78	4.09	3.89
AB12	Multicultural research	0.773	0.509	3.33	3.26	3.21	3.634	0.013★	3.38	3.21	3.05^a	3.45
AB15	Differences among racial, ethnic and/or cultural groups	4.559	0.004★	3.85	3.51^a	3.77	0.289	0.834	3.76	3.75	3.65	3.73
AB16	Reactions based on stereotypes	5.898	0.001★	3.88	3.53^a	3.87	1.436	0.232	3.68	3.76	3.87	3.87
AB17	Research about health issues	5.421	0.001★	3.64	3.27^a	3.65	0.670	0.571	3.58	3.46	3.48	3.60
AB19	Acculturation models	1.026	0.381	3.44	3.27	3.44	4.040	0.007★	3.44	3.39	3.03^a	3.52

★p<.05

[a] This group is significantly different from the other groups.

Table 9

AWARENESS DOMAIN (AW) MEAN DIFFERENCES AT THE SINGLE-ITEM LEVEL

Barriers to Health Care (F12)

Items		F	p	Mean differences by Race			Mean differences by Academic Level					
				African Americans	Asian Americans	Whites	F	p	P1	P2	P3	P4
AW2	Patients' values	0.231	0.875	3.84	3.79	3.78	0.060	0.981	3.81	3.83	3.82	3.79
AW4	Barriers	1.989	0.115	4.00	3.84	3.87	0.454	0.714	3.93	3.96	3.90	3.85
AW11	Attitudes/beliefs	3.755	0.011★	4.02	3.74[a]	3.84	0.169	0.917	3.87	3.93	3.91	3.87
AW14	Barriers to use of health services	7.617	0.000★	4.03[a]	3.68	3.61	0.259	0.855	3.86	3.87	3.80	3.78

Racial Dynamics (F13)

Items		F	p	Mean differences by Race			Mean differences by Academic Level					
				African Americans	Asian Americans	Whites	F	p	P1	P2	P3	P4
AW1	Racial discrimination	37.528	0.000★	4.22[b]	3.81[b]	2.78[b]	1.674	0.172	3.95	3.71	3.65	3.89
AW8	Power imbalance	6.764	0.000★	2.28	2.73[a]	2.19	1.077	0.358	2.42	2.41	2.25	2.55
AW10	White privilege	41.679	0.000★	3.90[b]	3.47[b]	2.30[b]	0.977	0.403	3.56	3.36	3.36	3.56

★ p<.05

[a] This group is significantly different from the other groups.

[b] All three groups significantly different from one another.