INSTRUCTIONAL DESIGN AND ASSESSMENT

A Spanish Language Module in a First-Year Pharmaceutical Care Laboratory Course

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Objective. To assess the impact of incorporating Spanish language lectures and activities in a required Pharmaceutical Care Laboratory course on first-year doctor of pharmacy (PharmD) students' perceptions of and comfort level with Spanish-speaking patients and basic knowledge of Spanish pharmacy terms.

Design. The 6-week module consisted of attendance at a 1-hour lecture on medical Spanish and Hispanic culture, and completion of 4 small-group activities: drug and product information, patient information, counseling and side effects, and a written scenario that involved filling a prescription for and counseling a Spanish-speaking patient.

Assessment. All students enrolled in the Pharmaceutical Care Laboratory course in fall 2008 (153) and fall 2009 (152) completed a pre- and post-intervention questionnaire (100% response rate). Less than 4% of students considered themselves fluent in Spanish prior to participating in the Spanish language module. Students agreed or strongly agreed that it was important for pharmacists to be able to translate common pharmacy label instructions from English to Spanish (89.8%) and Spanish to English (73.8%). Student-reported confidence in their ability to pronounce common pharmacy and medical terms in Spanish significantly increased, as did their ability to correctly interpret pharmacy label instructions.

Conclusions. While incorporation of a Spanish language module in a first-year Pharmaceutical Care Laboratory course did not result in students achieving fluency in Spanish, it was a beneficial method of exposing students to Spanish language and culture.

Keywords: Spanish, pharmaceutical care laboratory, cultural competency

INTRODUCTION

The Hispanic population accounts for 16.3% (50.5 million people) of the US population.¹ It has grown by 43% since 2000, making it the largest ethnic minority in the United States.^{1,2} In the Southern United States, the Hispanic population continues to experience wide growth margins in 9 states, including North Carolina.^{1,2} A study by the Pew Hispanic Institute showed the majority (77%) of Hispanics are pleased with their health care.³ However, of the 23% that were not satisfied, poor care was attributed to inability to communicate in English with their provider. These findings are further supported by a 2007 study of elderly Spanish-speaking patients in Boston, where patients felt that limited English proficiency decreased patient care.⁴ Outcomes studies have reinforced these findings. A large systematic review of these studies found that lack of bilingual health care

providers or trained medical interpreters has negative effects on patient outcomes, including poor adherence to medications, increased medication errors, unnecessary diagnostic tests, and poor follow up after hospitalization.⁵ The review also highlighted that using poorly trained or "ad hoc" interpreters, especially children, are frequent reasons for medical errors and poor outcomes. While the exact number of Spanish-speaking health care providers is not known, there are not enough trained providers to match population growth.⁶ To close the gap, Spanish culture and language education is needed in health professions schools.

Students and practitioners are interested in receiving Spanish language education.⁷⁻⁹ The University of North Carolina (UNC) Interdisciplinary Development Committee surveyed 500 health professional students in 2000 and 92% of respondents reported that there was a need for instruction on how to communicate with and appreciate cultural differences in Spanish-speaking patients.¹⁰ Several pharmacy, nursing, and medical schools have implemented successful elective courses in Spanish culture and language for their students.¹¹⁻¹⁷

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In light of the 2000 UNC study findings and in order to better meet the needs of students and patients in North Carolina, 2 curricular changes were instituted at UNC Eshelman School of Pharmacy starting in 2008. The Curriculum Committee approved for students to receive credit for the Spanish for Health Care Professionals elective courses (introductory, intermediate, and advanced) offered by the UNC School of Public Health. Also, a Spanish language module was created for the required first-year Pharmaceutical Care Laboratory I course. We conducted a 6-week study to assess the effects of incorporating Spanish language lectures and activities on first-year pharmacy students' perceptions of and comfort level with Spanish-speaking patients.

DESIGN

Study participants included first-year PharmD candidates enrolled in the Pharmaceutical Care Laboratory I course in fall 2008 and fall 2009 on the main (Chapel Hill, NC) and satellite (Elizabeth City, NC) campuses. Following participation in the Spanish module, we anticipated that students would develop:

- enhanced cultural competence with regard to Spanish-speaking patients
- increased confidence and competence in communicating basic pharmacy information to Spanish-speaking patients
- increased interest in pursuing further educational opportunities to learn and apply medical Spanish

Because of the brief and elementary nature of the module, students were not expected to be fluent in Spanish after completing it. Students were required to purchase *Essential Spanish for Pharmacists*, second edition, by Glenn L. Kisch.¹⁸ This pocket guide provides translations of common pharmacy phrases from English to Spanish and vice versa. Additionally, a course teaching assistant developed a quick reference chart of Spanish phrases commonly used in community pharmacy practice, and this was provided as a secondary reference for students. (A copy of the reference chart is available by request from the corresponding author.) Students were also provided links to online voice recordings created by the course coordinator and a local native Spanish speaker, which provided opportunities for students to hear and practice Spanish pronunciations in class and through self-study.

Students attended a 1-hour required lecture introducing medical Spanish. The interactive lecture included Hispanic demographics in North Carolina, innovative approaches to patient counseling in Spanish, and the importance of strong communication between pharmacists and Spanish-speaking patients. Because previous exposure to

Spanish varied widely within the student population, the lecture covered common medical terms, Spanish grammar, and introductory materials such as numbers, months, years, etc. Students were taught the proper pronunciation of common pharmacy terms in Spanish through a call-and-response exercise. The instructor also provided several references and resources that students may find useful in future pharmacy practice.

Throughout the module, students participated in small group (8 students) activities during their regular laboratory session, completing 1 Spanish culture and language-related activity per week. Activities were led by course teaching assistants, and designed to provide students with practice in translating commonly used pharmacy language from English to Spanish and vice versa. Specific topics included pharmacy label instructions and drug or product administration instructions (activity 1), patient information questions (activity 2), and counseling points and common medication side effects (activity 3). In addition to written exercises on these topics, students practiced pronunciation of Spanish terms within their laboratory groups, referring to the online recordings for correct pronunciation. The final group activity incorporated the concepts learned from the preceding weeks' activities in a patient scenario. Students were given a written scenario in which a Spanish-speaking patient presented to a pharmacy with a new prescription. Students were informed that an interpreter was not available and, as the pharmacist, they needed to proceed with gathering patient information and filling the prescription. Students progressed through 4 processes, describing how they would handle the encounter in Spanish by (1) gathering patient information, (2) preparing a prescription label (directions in Spanish), (3) listing 2 important counseling points, and (4) practicing patient counseling with a partner.

EVALUATION AND ASSESSMENT

Efficacy of the Spanish learning module was assessed using a pre-/post-intervention questionnaire. The 13-item questionnaire was based on a tool created by the UNC Interdisciplinary Development Committee.¹⁰ Two of the questionnaire items asked about students' previous training in Spanish and contact with Spanish-speaking patients in prior pharmacy work experience. Because type of pharmacy practice has a direct bearing on the frequency of encounters with patients, another questionnaire item was developed by investigators to distinguish between students who interacted often with patients and those who did not. Two additional items were developed to assess interpreter availability and frequency of use in students' pharmacy work setting. The questionnaire was

also used to gauge students' anticipated use of Spanish in future pharmacy practice, current comfort level with Spanish, and interest in further study of the Spanish language. Questions about Spanish language that were specific to pharmacy practice were also included. Finally, the questionnaire assessed student retention of common pharmacy label instructions and terms from English to Spanish and vice versa. The terms chosen for the questionnaire were based on phrases commonly encountered in a community pharmacy serving Hispanic patients, so as to assess a practical application of Spanish terminology. (The questionnaire is available by request from the corresponding author.)

While participation in the Spanish learning module was a course requirement, participation in the study by completing the pre- and post-intervention questionnaire was optional. Students who agreed to participate signed a consent form. Students' grades were not affected by their decision to participate or not participate in the study, and investigators and course coordinators were blinded to which students did or did not participate. The UNC Institutional Review Board approved this study.

Questionnaire data were collected and analyzed using descriptive statistics. Statistical support was provided by students and a faculty advisor in the University of North Carolina at Chapel Hill Department of Statistics and Operations Research.

All students enrolled in Pharmaceutical Care Laboratory I in fall 2008 (153) and fall 2009 (152) agreed to participate in the study, resulting in a 100% response rate on the pre- and post-intervention questionnaire ($n = 305$). Seventy-seven percent of participants were North Carolina residents, and 4% claimed Hispanic ethnicity. This corresponded with Hispanic enrollment information provided by the registrar (25/615 students; 4.1%). Only 3.6% considered themselves fluent in Spanish prior to participating in the Spanish language module. A significant number of students received little or no Spanish training at various

stages of their previous education (Table 1). Eighty-five percent of students reported pharmacy work experience prior to beginning the PharmD program, and approximately half of those (57.7%) had worked in a retail community practice setting. While 30% of students reported no contact with Spanish-speaking patients in their previous pharmacy work experience, almost 18% reported daily contact and 31% reported weekly contact.

An overwhelming number of students (93.8%) felt that pharmacists should be aware of cultural differences between themselves and Spanish-speaking patients. Additionally, 93.5% of students valued what Spanish-speaking patients thought of them professionally. Students agreed or strongly agreed that it was important for pharmacists to be able to translate common pharmacy label instructions from English to Spanish (89.8%) and Spanish to English (73.8%). No significant changes were seen when comparing pre- and post-intervention questionnaire data. On the post-intervention questionnaire, 78% of students agreed or strongly agreed that a Spanish-speaking patient would trust them with his/her medical information and care, compared to 63% who agreed or strongly agreed with this item on the pre-intervention questionnaire ($p < 0.001$).

Significant improvements were observed with regard to students' confidence and competence in Spanish communication following completion of the module. Student-reported confidence in their ability to pronounce common pharmacy and medical terms in Spanish increased from 33.5% to 63.6% following the module ($p < 0.001$). The percentage of students stating they could not communicate in Spanish decreased from 35.1% to 21.3% on the pre- and post-intervention questionnaires, respectively ($p < 0.001$). A trend toward increased comfort level communicating with Spanish-speaking patients was noted, but was not significant between pre- and post-intervention questionnaire data (23% and 28.2%, respectively; $p = 0.076$). Students' ability to correctly translate pharmacy label instructions from English to

Table 1. Pharmacy Students' Self-reported Level of Training in Spanish Culture and Language (N = 305)

Educational Setting	Level of Training			
	None, No. (%)	Introductory, No. (%)	Intermediate, No. (%)	Advanced, No. (%)
Elementary school	169 (55.4)	121 (39.7)	4 (1.3)	2 (0.7)
Middle school	168 (55.1)	115 (37.7)	13 (4.3)	1 (0.3)
High school	118 (38.7)	51 (16.7)	107 (35.1)	26 (8.5)
College, undergraduate	134 (43.9)	23 (7.5)	112 (36.7)	33 (10.8)
College, graduate	250 (82.0)	2 (0.7)	1 (0.3)	0
Non-credit/continuing education course(s)	254 (75.1)	5 (1.6)	1 (0.3)	0
Immersion experience(s)	229 (75.1)	16 (5.2)	11 (3.6)	13 (4.3)
Self-study program (audiocassettes, CD-ROMs, etc)	239 (78.4)	16 (5.2)	7 (2.3)	2 (0.7)

Table 2. Assessment of Pharmacy Students' Ability to Correctly Translate Pharmacy Label Instructions From English to Spanish or Spanish to English (n = 305)

Instructions	Percent Correct on Pre-intervention Questionnaire	Percent Correct on Post-intervention Questionnaire	P
Take 1 tablet every day for arthritis	22.6	54.8	<0.001
Apply to affected area	17.0	49.8	<0.001
Translation from Spanish to English			
Use 1 inhalacion cada cuatro o seis horas si la necesita	70.8	83.6	<0.001
Inyectar 20 unidades debajo de la piel	52.1	73.4	<0.001

Spanish and Spanish to English was significantly greater following the module (Table 2).

Prior to completion of the module, 97% of students reported a desire to be able to communicate with Spanish-speaking patients on some level and were interested in future Spanish language learning opportunities in a variety of educational settings (Table 3).

DISCUSSION

This study reinforced that, like the majority of practicing pharmacists, most students are aware of the increasing need for Spanish-speaking pharmacists and are interested in pursuing further education to improve their knowledge of and communication with Hispanic patients. Although our study was not designed to track requests by students for elective opportunities, we noticed the following: a spike in enrollment in the Spanish for Health Care Professionals elective (introductory level increased from 11 to 26 pharmacy students from 2008 to 2011; intermediate level increased from 9 to 12 pharmacy students from 2008 to 2011); maximum participation in the annual service learning experience in Honduras; and participation (4 students) in a new independent study immersion course in Costa Rica in summer 2011. While the 6-week module within the Pharmaceutical Care Laboratory did not result in a significant increase in students'

comfort level with Spanish communication, it did increase correct translation of Spanish/ English pharmacy label instructions and confidence in pronunciation of Spanish terms. After completing the module, more students responded that they could communicate with Spanish-speaking patients, with or without the aid of a translator.

The study had limitations, including the short length of the teaching module and study. Also, because teaching assistants were used to facilitate small group exercises, some minor variations in the students' learning experience were introduced, depending on the comfort and experience of the group's teaching assistant with the Spanish language. Additionally, while the study questionnaire was based on a validated instrument from the UNC study in 2000,¹⁰ it was not validated prior to implementation in this study. Also, conducting the study at only 1 school of pharmacy may limit the application of its results in other settings. However, the authors believe a similar module could be implemented effectively in other Pharmaceutical Care Laboratory, cultural competency, and professional development courses with similar success due to its simplicity, brief course time used, and limited materials and faculty time required. The study assessed only student comfort and learning of the Spanish language; however, the authors believe that modules created for other languages and cultures would have similar efficacy. On a broader scale, short modules or brief exposure to any topic may prove beneficial in the education of future pharmacists. Similar modules may be effective in exposing students to a variety of cultures and professional development activities, which may in turn spark their interest in further studies and professional growth in those areas. While pharmacy curricula are overwhelmed with numerous course and elective offerings, development of short, introductory modules may offer students a more well-rounded education within the structure of existing courses.

As mentioned earlier, Spanish language education is not new to the pharmacy, nursing, and medical literature. Several papers have been published on elective courses, classroom lectures, and experiential opportunities created

Table 3. Pharmacy Students Interested in Pursuing Further Medical Spanish Education (n = 305)

Educational Setting	Students Interested, %
Elective in the PharmD curriculum	71.1
Distance education certificate program to increase health professionals' competency in working with the Spanish-speaking population	29.2
Non-credit/continuing education course	33.1
Interdisciplinary course for all health affairs students on UNC campus	36.7

for students to learn more about Spanish culture and language. For example, a 2011 article reported on a large, multifaceted elective opportunity that encompassed creation of 5 courses and hiring a dedicated faculty member to oversee the program.¹¹ Although our module was much smaller in scope, it is, to our knowledge, the first study of a required laboratory learning module on Spanish language and culture in a PharmD program.

As demonstrated by our study, exposure to Spanish language and culture once in a 4-year PharmD curriculum will not create fluency. Repetition and immersion are techniques that have been shown to develop fluency in a second language. We would like to expand Spanish activities into all 5 of the required Pharmaceutical Care Laboratory courses at our institution. In addition to offering Spanish learning opportunities in more semesters of the Pharmaceutical Care Laboratory courses, we would also like to develop ways to encourage and use the skills of the 3.6% of students who are fluent in Spanish. Perhaps these students could participate as teachers within the laboratory groups, covering basic Spanish grammar, demonstrating correct pronunciation, and/or participating in role plays. Other ideas for future expansion include working with the office of experiential education to develop advanced pharmacy practice experiences to provide students with more immersion opportunities. We also hope to expand service learning opportunities beyond the annual trip to Honduras.

CONCLUSION

While incorporation of a Spanish language module in a first-year Pharmaceutical Care Laboratory course did not result in students achieving fluency in Spanish, it was a beneficial approach to exposing students to Spanish language and culture. This introduction may inspire students to pursue further Spanish training in order to meet their patients' needs. Though it may not be feasible for all institutions to develop comprehensive Spanish language training for all PharmD students, incorporation of short, introductory learning modules as part of an existing course improves students' ability to translate common pharmacy label instructions and increases students' confidence in their ability to pronounce common pharmacy terms.

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REFERENCES

1. Cohn D, Passel JS, Lopez MH. Hispanics account for more than half of nation's growth in past decade. Pew Hispanic Center. March 24, 2011. <http://www.pewhispanic.org/2011/03/24/hispanics-account-for-more-than-half-of-nations-growth-in-past-decade/>. Accessed March 25, 2012.
2. Ennis SR, Rios-Vargas M, Albert NG. The Hispanic population 2010. U.S. Census Brief. 2011 May. <http://www.census.gov/prod/cen2010/briefs/c2010br-04.pdf>. Accessed April 13, 2012.
3. Livingston G, Minushkin S, Cohn D. Hispanics and health care in the United States: access, information, and knowledge. August 2008. <http://pewhispanic.org/files/reports/91.pdf>. Accessed March 25, 2012.
4. Mutchler JE, Bacigalupe G, Coppia A, et al. Language barriers surrounding medication use among older Latinos. *J Cross Cult Gerontol*. 2007;22(1):101-114.
5. Flores G. The impact of medical interpreter services on the quality of health care: a systematic review. *Med Care Res Rev*. 2005;62(3):255-299.
6. Flores G. Language barriers to health care in the United States. *N Engl J Med*. 2006;355(3):229-231.
7. Muzyk AJ, Muzyk TL, Barnett CW. Counseling Spanish-speaking patients: Atlanta pharmacists' cultural sensitivity, use of language assistance services, and attitudes. *J Am Pharm Assoc*. 2004;44(3):366-374.
8. Sleath B. Pharmacists' experiences in and perceptions toward serving the needs of Spanish-speaking patients in North Carolina community pharmacies. *J Pharm Teach*. 2002;9(4):77-91.
9. Lear DW. Spanish for working medical professionals: linguistic needs. *Foreign Language Annals*. 2005;38(2):223-235.
10. UNC Interdisciplinary Development Committee. Spanish for students in the health professions. July 2000. http://salud.unc.edu/report_executive_summary.pdf. Accessed March 25, 2012.
11. VanTyle WK, Kennedy G, Vance MA, et al. A Spanish language and culture initiative for a doctor of pharmacy curriculum. *Am J Pharm Educ*. 2011;75(1):Article 4.
12. Bereknyei S, Nevins A, Schillinger E, et al. Beyond knowledge, toward linguistic competency: an experiential curriculum. *J Gen Int Med*. 2010;25(Suppl 2):S155-S159.
13. Jacobs EA, Diamond LC, Stevak L. The importance of teaching clinicians when and how to work with interpreters. *Patient Educ Counsel*. 2010;78(2):149-153.
14. Kelley FJ, Klopff MI. Second language learning in a family nurse practitioner and nurse midwifery diversity education project. *J Am Acad Nurs Pract*. 2008;20(10):479-485.
15. Bloom M, Timmerman GM, Sands D. Developing a course to teach Spanish for health care professionals. *J Nurs Educ*. 2006;45(7):271-274.
16. Oderkirk W. Challenging Spanish: ways for nurses to become bilingual. *J Cont Educ Nurs*. 1999;30(2):88-93.
17. Schneider V, Thompson BM, Celis MI. Multicultural sensitivity of physician assistant students after instituting cultural competence instruction. *Persp Phys Assist Educ*. 2005;16(2):103-106.
18. Kisch GL. *Essential Spanish for Pharmacists*. 2nd ed. APhA; 2005.