RESEARCH

Factors Associated With Pharmacy Student Interest in International Study

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Submitted September 4, 2012; accepted November 10, 2012; published April 12, 2013.

Objectives. To examine the interest of pharmacy students in international study, the demographic factors and involvement characteristics associated with that interest, and the perceived advantages and barriers of engaging in international opportunities during pharmacy school.

Methods. A self-administered electronic survey instrument was distributed to first-, second-, and third-year pharmacy students at the University of Kentucky College of Pharmacy.

Results. There were 192 total respondents, for a response rate of 50.9%. Seventy-two percent reported interest in international study. Previous international study experience ($p=0.001$), previous international travel experience ($p=0.002$), year in pharmacy school ($p=0.03$), level of academic involvement ($p<0.001$), and level of diversity involvement ($p<0.001$) were associated with international study interest. Positive influences to international study included desire to travel and availability of scholarships. Perceived barriers included an inability to pay expenses and lack of foreign language knowledge.

Conclusions. The needs and interests of pharmacy students should be considered in the development and expansion of internationalization programs in order to effectively optimize global partnerships and available international experiences. Colleges and schools of pharmacy should engage students early in the curriculum when interest in study-abroad opportunities is highest and seek to alleviate concerns about expenses as a primary influence on study-abroad decisions through provision of financial assistance.

Keywords: study abroad, curriculum, international education

INTRODUCTION

Globalization and internationalization have become key areas of focus for university educators over the past decade, with an increasing emphasis among universities on global health programs and international experiences. In 2009, the Consortium of Universities for Global Health presented the results of a survey of universities in which 37 responding institutions reported a dramatic increase in the number of global health programs over the preceding 3 years.¹ Health professional colleges are no exception to the rapid expansion of global health initiatives across university campuses; many medical and nursing programs have incorporated teachings on cultural competency and disparities education into their curricula and broadened their opportunities for international experiential training through service, education, and research

activities.²⁻⁷ Engagement in global health programs seems to provide significant benefits to health professional students, including an ability to appreciate cultural diversity, the capacity to adapt to societal change, knowledge of alternative perceptions of health and disease, and an understanding of public health and its implications for underserved populations.⁸⁻¹⁰

Although much of the increased attention to global health initiatives in universities has been focused on colleges of medicine and nursing, pharmacy colleges and schools also have been active in pursuing international programs and partnerships. A 2007 survey of American Association of Colleges of Pharmacy institutional members revealed that approximately 62% had active international programs, and a majority of the total respondents indicated an intention to increase their level of global involvement.¹¹ Results of a follow-up survey in 2010 indicated an increase in the number of colleges and schools of pharmacy engaging in formal affiliations agreements with international institutions, largely focusing on student experiential education and research partnerships.¹¹

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These concepts have been incorporated into the strategic plans of the University of Kentucky and the University of Kentucky College of Pharmacy.¹² The university has seen an 38.8% overall increase in enrollment in international study across all departments from the 2010-2011 to the 2011-2012 academic year. The college has seen a dramatic increase in education-abroad enrollment across the same time span, with 17 pharmacy students (2.7% of college enrollment) choosing to participate in international study from 2011 to 2012.¹³

To effectively optimize global partnerships and available international experiences, the needs and interests of pharmacy students should be considered in the development and expansion of internationalization programs. Little literature exists regarding US pharmacy students' preferences for and concerns about international study. A 2000 survey at the University of Texas at Austin College of Pharmacy revealed that pharmacy students were more likely to express interest in international experiences if it was possible for them to receive full funding, to have the opportunity to select a site from a list of choices, to select a site in which English is the native language, and to receive university credit that is equivalent to clerkship practice experiences.¹⁴ A 2005 study discusses New Zealand pharmacy students' preferences for international study; however, these results are likely not generalizable or even comparable to preferences of pharmacy students in the United States.¹⁵ Research motivations and expectations for undergraduate college students studying abroad include development of self-knowledge and maturation, increased competitiveness for domestic career and educational opportunities, and the ability to maintain close contact with family and friends while abroad through the use of social media.¹⁶ These observations were gained from students who had already made the decision to study abroad. Equally important to the development of international programs are the barriers that hinder student participation in international opportunities; knowledge of these factors would allow educators the opportunity to target new experiences and modify existing ones in a way that addresses and alleviates students' primary concerns.

The University of California's Cooperative Institutional Research Program (CIRP) Freshman Survey instrument is administered annually to a sample of entering college freshmen across the country and has been used to correlate factors related to student involvement with student desire to study internationally during college.¹⁷ Rust and colleagues determined that students who reported greater participation in social, academic, community, political, and diversity activities on the CIRP Freshman Survey instrument were more likely to be interested in

international study than those who were less involved in these functions.¹⁷ While this study sheds additional light on characteristics likely to distinguish students more interested in international study, the findings can really only be generalized at best to college undergraduates and, more appropriately, just to entering freshmen. These students likely differ greatly from those in a health professions program, such as pharmacy school.

The intent of this study is to establish foundational knowledge about the desires and interests of pharmacy students as they relate to engaging in international study opportunities for the purpose of assisting colleges and schools of pharmacy to develop and encourage international experiences. This research seeks to inform that process by capturing pharmacy students' interest in studying abroad, the factors positively and negatively associated with that interest, and the involvement and demographic characteristics of students most likely to be interested. Students who are actively engaged and involved in their pharmacy school experience may be more likely to be interested in international study and international practice experiences.

METHODS

A survey instrument containing 46 questions, with the possibility of an additional 29 questions contingent upon answers to branching logic, was developed to capture data in 3 broad areas: students' travel experience and interest in international study; participation in activities related to academic, social, political, diversity, and community involvement; and demographic information. The survey instrument and research proposal were reviewed by the University of Kentucky Medical Institutional Review Board and were determined to meet federal criteria to qualify as an exempt study.

Respondents were first asked about previous travel and international study experience as well as their desire to study abroad during pharmacy school. International study was defined as an international advanced pharmacy practice experience (APPE), an international summer research study, a short-term medical mission trip, or a semester abroad. All respondents were asked by means of multiple-answer questions to report factors that might positively or negatively influence their desire to study abroad. If the respondent expressed interest in international study, follow-up questions using branching logic were used to narrow the world regions of interest as well as the factors influencing desire to study in a particular region.

Subsequent questions were adapted from the CIRP Freshman Survey instrument and targeted 1 of 5 involvement domains: academic, social, political, diversity, and

community service involvement.¹⁸ Using ordinal single-response questions, respondents were asked to report how much time they spent performing specific activities in the past and present as well as the likelihood of such events occurring within the next year. Academic questions assessed the likelihood of tutoring and studying with other students, talking to teachers outside of lecture, missing class, and maintaining a B average. To target social involvement, questions about participation in student clubs and organizations, use of online social networks, and socialization with friends were used. Political interest was determined by addressing issues such as participation in political demonstrations, discussing politics, engaging in student government, and personal importance of keeping up with political affairs. Questions probing the personal importance of improving understanding of other cultures and promoting racial understanding, as well as the likelihood of socialization with someone of another race/ethnic group, were used to ascertain diversity involvement. Community participation was measured by involvement in volunteer opportunities, both within and outside the pharmacy curriculum.

The survey instrument concluded with questions about demographic information and targeted factors hypothesized to be associated with interest in international study, including age, gender, race, year in pharmacy school, level of completed undergraduate coursework, employment status, level of parents' education, grade point average (GPA), and state in which high school coursework was completed. (The complete survey instrument is available from the corresponding author upon request.)

The study population included all students enrolled in the first, second, and third years of the pharmacy program at the University of Kentucky College of Pharmacy. The decision was made not to include fourth-year students, as they had already chosen whether to pursue international study during pharmacy school. The survey instrument was internally reviewed for face validity by colleagues and a focus group of fourth-year students ($n=10$), some of whom had diverse international study experiences and some of whom had chosen not to participate in international opportunities.

The survey instrument was self-administered electronically. An e-mail invitation to participate with a link to the electronic survey instrument was sent to the individual e-mail addresses of 377 pharmacy students. The only first-, second-, and third-year students excluded were those whose e-mail addresses could not be released by the university because of privacy requests. Additionally, an announcement by 1 of the study investigators describing the study's purpose and time commitment was made

and an invitation to participate extended to each of the 3 pharmacy classes prior to a lecture given on the day the survey launched. To aid in recruitment, students were offered the opportunity to enter themselves into a drawing for a \$25 iTunes gift card upon survey completion. The survey instrument remained open for 12 days; nonresponders were sent reminder e-mails on days 3, 6, and 11 following the survey launch. Research Electronic Data Capture (Vanderbilt University, Nashville, TN), a secure, Web-based survey application, was used to allow for branching logic during survey administration; study data were collected and managed using this tool.¹⁹

Responses were coded and entered into SAS 9.3 (SAS Institute Inc., Cary, NC). Each question within the involvement domains was scored on a 0 to 2 point scale; the number of possible answers was subdivided into fractions of those 2 points. A higher score indicated greater involvement. For example, future activities were assessed on a 4-point response scale ranging from "very good chance" to "no chance." If a student reported the likelihood of making a B average in the next year as "very good chance" a value of 2 was assigned to that item response; a response of "some chance" received a value of 1.33; "very little chance" received a value of 0.667; and "no chance" received a value of 0. The scores for each question within the domain were then averaged to produce 1 overall score for each domain. For example, the scores for all 9 academic questions were averaged to generate 1 overall academic score ranging from 0 to 2 for each respondent. This process was repeated for each domain, so that respondents had 1 overall score for each of the 5 involvement domains: academic, social, political, diversity, and community involvement. These involvement domain scores were analyzed for association with interest in international study using a Student *t* test.

Demographic characteristics along with previous travel and international study experience were analyzed using the Fisher exact test. Respondents' pharmacy GPAs were analyzed using the Student *t* test. All other data, including positive and negative influences to international study in general as well as factors affecting interest in specific world regions, were examined through descriptive statistics.

A logistic regression model was used to combine both involvement scores and demographic data as possible explanatory variables in predicting interest in international study experiences during pharmacy school. All continuous variables included in the logistic regression were standardized to facilitate the interpretation of odds ratios calculated from the regression model. Missing data were not imputed or used in the analyses.

RESULTS

Of 377 potential survey participants, 192 students responded to the survey instrument, yielding a response rate of 50.9%. Respondents' demographic characteristics are presented in Table 1. The majority of respondents were female (74%), between the ages of 21 and 24 (67%), reported being Caucasian/white (91%), and had

Table 1. Selected Demographic Information of Participants in a Study of Factors Associated with Pharmacy Students Interested in International Study, N=192^a

Variable	Participant Response
Gender, No. (%)	
Male	49 (25.9)
Female	140 (74.1)
Age in years, No. (%)	
21-24	127 (66.8)
25-29	52 (27.4)
30-39	9 (4.7)
40-54	1 (0.5)
Prefer not to answer	1 (0.5)
Year in pharmacy school, No. (%)	
P1	65 (34.2)
P2	62 (32.6)
P3	63 (33.2)
Race, No. (%) ^b	
White/Caucasian	174 (90.6)
African American/Black	2 (1.0)
American Indian/Alaska Native	1 (0.5)
Asian American/Asian	11 (5.7)
Native Hawaiian/Pacific Islander	1 (0.5)
Puerto Rican	1 (0.5)
Other	2 (1.0)
Prefer not to answer	1 (0.5)
English as native language, No. (%)	
Yes	184 (96.3)
No	7 (3.7)
Undergraduate years completed, No. (%)	
2	21 (11.1)
3	77 (40.7)
4	72 (38.1)
5	11 (5.8)
≥6	7 (3.7)
Prefer not to answer	1 (0.5)
Prior degree, No. (%)	
Yes	85 (45.2)
No	103 (54.8)
GPA, mean (SD), range	3.45 (0.4), 1.96-4.0

Abbreviations: GPA=grade point average

^a Percentages may not sum to 100% due to rounding and/or missing data.

^b Percentages do not sum to 100% because respondents were able to select all choices that apply; groups are not mutually exclusive.

completed high school in Kentucky (80%). Fifty percent of the first-year class, 48% of the second-year class, and 53% of the third-year class responded to the survey instrument. Each class of first-, second-, and third-year students represented approximately a third of the overall responses. Most respondents had previous international travel experience (61.3%), but only one-fifth of survey participants reported any previous study-abroad experience.

Seventy-two percent of respondents reported interest in international study during pharmacy school; of those interested, 90% reported that they would like to participate in an international APPE. Over two-thirds reported interest in a short-term medical mission trip. Less than half of students interested in international study expressed a desire to participate in a summer research study and only one-fourth conveyed interest in spending a semester abroad. Approximately a third of total survey respondents reported that they would be willing to spend between \$1,000 and \$1,999 on study-abroad expenses, excluding tuition costs and souvenirs. Twenty-one percent indicated that they would spend \$2,000 to \$2,999, while 17% specified that they were not willing to spend more than \$1,000 on travel and study-abroad expenses. Only 9% reported being willing to spend \$4,000 to \$4,999, and just 5% would be willing to spend at least \$5,000.

Students who had previous international travel experience and those with previous study-abroad experience were significantly more likely to report an interest in international study during pharmacy school. The students' year in pharmacy school was also associated with interest in studying abroad; interest appears to be highest among first-year students, decreasing as students progress through the pharmacy curriculum.

The relationship of all demographic factors as well as the 5 involvement domain scores to interest in international study is reported in Table 2. The general trend was that students who reported interest in international study opportunities had higher involvement in each of the 5 areas measured. Student responses did not vary widely in range, as demonstrated by the fairly small standard deviations. More active involvement in academic activities, such as studying, attending class, communicating with faculty members, and maintaining a B average, was significantly associated with greater interest in international study ($p<0.001$). As demonstrated by diversity involvement scores, interaction and socialization with other ethnic groups as well as the personal desire to promote racial understanding and improve one's own understanding of other cultures were also highly correlated with interest in international opportunities ($p<0.001$). The other 3 scales, measuring social, political, and community involvement, did not appear to be associated with interest in international study.

Table 2. Demographic Information and Involvement Domain Scores, by Interest in International study, in a Study of Factors Associated with Pharmacy Students' Interest in International Study, N=192

Variable	Interested in International Study ^a	Not Interested in International Study ^a	P
Previous international travel experience, No. (%)			0.002
Yes	94 (49.2)	23 (12.0)	
No	43 (22.5)	31 (16.2)	
Previous international study experience, No. (%)			0.001
None	100 (52.4)	53 (27.8)	
Short-term study (<1 month)	20 (10.5)	1 (0.5)	
Intermediate-term study	5 (2.6)	0	
Semester study	11 (5.8)	0	
Year study	1 (0.5)	0	
Gender, No. (%)			0.47
Male	33 (17.5)	16 (8.5)	
Female	102 (54.0)	38 (20.1)	
Age in years, No. (%)			0.71
21-24	94 (49.7)	33 (17.5)	
25-29	35 (18.5)	17 (9.0)	
30-39	6 (3.2)	3 (1.6)	
40-54	1 (0.5)	0	
Year in pharmacy school, No. (%)			0.03
P1	54 (28.4)	11 (5.8)	
P2	42 (22.1)	20 (10.5)	
P3	40 (21.1)	23 (12.1)	
Race, No. (%)			0.24
White/Caucasian	122 (64.2)	52 (27.4)	
All other races	14 (7.4)	2 (1.1)	
English as native language, No. (%)			0.68
Yes	131 (68.6)	53 (27.8)	
No	6 (3.1)	1 (0.5)	
Undergraduate years completed, No. (%)			0.37
2	17 (9.1)	4 (2.1)	
3	53 (28.2)	24 (12.8)	
4	52 (27.7)	20 (10.6)	
5	9 (4.8)	2 (1.1)	
≥6	3 (1.6)	4 (2.1)	
Prior degree, No. (%)			0.75
Yes	62 (33.0)	23 (12.2)	
No	72 (38.3)	31 (16.5)	
Work for pay during school year, No. (%)			0.63
Yes	79 (42.0)	34 (18.1)	
No	55 (29.3)	20 (10.6)	
Receive financial support from parents, No. (%)			0.75
Yes	70 (38.3)	31 (16.9)	
No	59 (32.2)	23 (12.6)	
Father's highest education level, No. (%)			0.86
Some high school	2 (1.1)	1 (0.5)	
GED	2 (1.1)	2 (1.1)	
High school graduate	24 (12.8)	11 (5.9)	
Postsecondary school other than college	7 (3.7)	2 (1.1)	
Some college	18 (9.6)	5 (2.7)	
College degree	50 (26.6)	23 (12.2)	

(Continued)

Table 2. (Continued)

Variable	Interested in International Study ^a	Not Interested in International Study ^a	P
Some graduate school	1 (0.5)	0	0.07
Graduate degree	31 (16.5)	9 (4.8)	
Mother's highest education level, No. (%)			
GED	2 (1.1)	1 (0.5)	
High school graduate	15 (7.9)	8 (4.2)	0.17
Postsecondary school other than college	4 (2.1)	3 (1.6)	
Some college	15 (7.9)	13 (6.9)	
College degree	61 (32.3)	23 (12.2)	
Some graduate school	2 (1.1)	0	0.64
Graduate degree	36 (19.1)	6 (3.2)	
State attended last year of high school, No. (%)			
Kentucky	103 (53.9)	46 (24.1)	
Other states	34 (17.8)	8 (4.2)	0.0007
GPA, Mean (SD)	3.4 (0.4)	3.5 (0.4)	
Academic involvement, mean (SD) ^b	1.3 (0.2)	1.2 (0.2)	
Social involvement, mean (SD) ^b	1.4 (0.2)	1.4 (0.2)	
Political involvement, mean (SD) ^b	0.7 (0.4)	0.6 (0.3)	0.10
Diversity involvement, mean (SD) ^b	1.5 (0.3)	1.2 (0.4)	<0.0001
Community involvement, mean (SD) ^b	1.5 (0.3)	1.4 (0.3)	0.49

Abbreviations: GED=general educational development; GPA=grade point average

^a Percents may not sum to 100% because of rounding and/or missing data.

^b Involvement scores were calculated on a 2-point scale, with 2 indicating maximum possible involvement.

Table 3 outlines the positive and negative influences that students consider in making decisions about participating in international study. Over 95% of all survey participants cited a desire to travel as potential motivation to international study. The availability of scholarships for international study and the desire to learn about another culture also appear to be positive predictors. Encouragement from others, including family, significant others, and faculty members, was least cited as a motivation to international study. Ninety percent of respondents reported that an inability to pay expenses had a negative influence on their decision to study internationally during pharmacy school. Lack of foreign language knowledge and unwillingness to be separated from family members or a significant other were cited by over half of respondents as bearing a negative influence on their interest in studying abroad.

Of the various world regions, Europe was selected as a region of interest by more than 90% of students desiring to participate in international study; approximately two-thirds reported interest in Oceania, which includes Australia, New Zealand, and the Pacific Islands, and 57% reported interest in Latin America and the Caribbean, which includes the Caribbean, Central America, and South America. Figure 1 depicts the percentage of students interested in international study who reported a desire to study in each world region.

Respondents who expressed a desire to study in specific world regions were asked to report which factors influenced their interest in that world region; a comprehensive description of these results can be found in Table 4. Some influences, such as "I enjoy traveling" and "I want an adventure," were universally reported by a large percentage of respondents interested in each world region. A dramatically greater proportion of students interested in Africa (79%) and Latin America (64%) reported, "I am interested in helping those less fortunate than I" as a motivation to international study than in other world regions (18%). Family heritage and friends/family living in the region were factors most frequently cited as positive influences by respondents who expressed an interest in Europe and Asia. A greater proportion of students interested in studying in Latin America reported a desire to improve their language skills as a motivation compared with students interested in other world regions. Many students conveyed that speaking the language of the region was a motivation to study in regions such as Europe, North America, Oceania, and Latin America. With the exception of students interested in studying in North America, few students reported influences such as "It will help my employment prospects in the United States," "I want a future job in this region," and "It is similar to the United States."

Table 3. Positive and Negative Influences on Pharmacy Students' Interest in International Study, N=192

Variable	Participant Responses ^a
Positive influences, No. (%)	
Desire to travel	183 (95.3)
Availability of scholarships for international study	151 (78.6)
Learning about another culture	143 (74.5)
Availability of Internet to stay in contact with home	107 (55.7)
Improve CV/resume	105 (54.7)
Positive previous travel experience	94 (49.0)
Learning more about myself	90 (46.9)
Desire to gain independence	52 (27.1)
Gain self-confidence	47 (24.5)
Become more mature	43 (22.4)
Family/significant other encouragement	31 (16.1)
Faculty/advisor suggestion	19 (9.9)
Negative influences, No. (%)	
Inability to pay expenses	173 (90.1)
Lack of foreign language knowledge	114 (59.4)
Don't want to leave family/significant other	102 (53.1)
Worried about safety	76 (39.6)
Worried about homesickness	48 (25.0)
Worried GPA will not be high enough for participation	38 (19.8)
Lack of internship credit for practice experience hours	38 (19.8)
Concerned about extended absence from job	37 (19.3)
Lack of previous travel experience	21 (10.9)
Family/significant other discouragement	18 (9.4)
Worried about culture shock	17 (8.9)
Faculty advisor discouragement	5 (2.6)
Negative previous travel experience	2 (1.0)

Abbreviations: CV=curriculum vitae; GPA grade point average.

^a Percentages do not sum to 100% because participants were able to select all applicable responses. Percentages reflect the number of participants who chose each response out of total survey participants.

Demographic information asked of each survey respondent and scores from the 5 involvement domains were entered into a logistic regression model to determine student characteristics that are predictive of interest in international study during pharmacy school. Only

164 survey records were included in the regression, as responses with missing data were excluded from the model. The model indicates that for every 1 level increase in a student's mother's education level, the student is 44% more likely to be interested in international study during pharmacy school ($p=0.03$). The number of undergraduate years completed prior to pharmacy school is also significant; for every additional year of undergraduate coursework completed, a student was 65% less likely to express interest in international study opportunities ($p=0.01$). Although not significant, the presence of a prior degree tended to decrease the likelihood of interest in international study ($p=0.06$). According to the model, academic involvement is predictive of international study interest ($p=0.04$). A student was 77% more likely to indicate desire to study internationally for every increase in academic involvement score by 1 standard deviation. Diversity involvement was also highly predictive. A student with an increase in diversity score by 1 standard deviation was 2.5 times more likely to be interested in opportunities to study abroad during pharmacy college ($p<0.001$).

Figure 1. University of Kentucky College of Pharmacy Students Interested in International Study, by World Region. Percentages were calculated based on the total number of students interested in international study (N=137). Percentages do not sum to 100% because respondents were able to select all applicable answers.

Table 4. Influences on Pharmacy Students to Participate in International Study by World Region

Variable	Participant Responses by World Region, ^a N (%)					
	Africa (N=42)	Asia (N=44)	Europe (N=128)	Latin America (N=78)	North America (N=33)	Oceania (N=89)
Family heritage	0	8 (18.2)	24 (18.8)	0	0	1 (1.1)
Friends/family in region	2 (4.8)	7 (15.9)	19 (14.8)	5 (6.4)	4 (12.1)	4 (4.5)
I am interested in helping those less fortunate than I.	33 (78.6)	16 (36.4)	16 (12.5)	50 (64.1)	8 (24.2)	14 (15.7)
It will help my employment prospects in the United States.	3 (7.1)	9 (20.5)	28 (21.9)	20 (25.6)	13 (39.4)	17 (19.1)
I enjoy traveling.	32 (76.2)	35 (79.5)	107 (83.6)	63 (80.8)	24 (72.7)	66 (74.2)
I have been there before.	1 (2.4)	13 (29.5)	42 (32.8)	22 (28.2)	3 (9.1)	10 (11.2)
I have never been there before.	37 (88.1)	27 (61.4)	74 (57.8)	38 (48.7)	12 (36.4)	65 (73.0)
I speak a language of this region.	1 (2.4)	7 (15.9)	46 (35.9)	22 (28.2)	18 (54.5)	20 (22.5)
I want a future job in this region.	0	3 (6.8)	13 (10.2)	5 (6.4)	7 (21.2)	4 (4.5)
I want an adventure.	34 (81.0)	30 (68.2)	90 (70.3)	44 (56.4)	16 (48.5)	69 (77.5)
I want the type of pharmacy experience available in this region.	13 (31.0)	17 (38.6)	42 (32.8)	23 (29.5)	13 (39.4)	30 (33.7)
I want to improve language skills.	4 (9.5)	7 (15.9)	41 (32.0)	33 (42.3)	6 (18.2)	6 (6.7)
It is different from the United States.	29 (69.0)	32 (72.7)	70 (54.7)	47 (60.3)	7 (21.2)	45 (50.6)
It is exotic.	16 (38.1)	15 (34.1)	22 (17.2)	30 (38.5)	1 (3.0)	36 (40.4)
It is similar to the United States.	0	0	17 (13.3)	1 (1.3)	11 (33.3)	10 (11.2)

^a Because of branching logic, only those who reported interest in international study were asked this question (N=137). Percentages were calculated based on respondents who reported interest in each given region. Percentages do not sum to 100% because respondents were able to select all applicable answers.

DISCUSSION

Given that interest in opportunities to study internationally is highest early in the curriculum, it is important for colleges and schools of pharmacy to engage students in the first year of the pharmacy curriculum to make them aware of available opportunities. Familiarity with available international experiences may make them more confident in a later decision to study abroad, as these choices are frequently made toward the end of the pharmacy curriculum. This concept is reinforced with the emergence of the number of undergraduate years completed as a predictor of interest in studying abroad. Because an increase in the number of undergraduate years completed predicts a significant decrease in the likelihood of interest in international study, this occurrence may be at least partially attributable to the respondent's age. As a greater number of undergraduate years are completed, students are slightly older and possibly more reluctant to temporarily relocate internationally. The presence of a prior degree also follows this trend, as it decreases the odds that a student will be interested in international study. Students who have a prior degree are likely to be slightly older than those students who do not. Although age itself was not significantly associated with international study interest and actually appeared to trend slightly toward

increased interest with increasing age, the role of age is potentially masked by the categorical nature of the question. Ages 21 to 24 years, which were grouped together, represented 67% of survey respondents. If age had been recorded at a finer resolution, a more noticeable trend might have emerged.

Another possible explanation for the significant decrease in international study interest associated with increasing undergraduate study is the level of debt accumulated during postsecondary training. Spending a greater number of years in college likely increases the amount of debt that students accrue. Thus, students who have spent more time in undergraduate study may be reluctant to take on the additional financial expenses associated with participating in international study.

Language appears to be a critical factor in influencing interest in international study opportunities. Interest in English-speaking regions, such as Oceania and some parts of Europe, was high, and respondents interested in these areas reported that speaking a language of that region was a substantial motivation to their interest. Pharmacy students are more likely to participate in a study-abroad program conducted in English.¹⁵ However, this desire is not limited to just English-speaking regions; approximately 28% of students interested in international

study in Latin America reported, “I speak a language of this region” as a positive influence in their desire to study in that region. Additionally, over half of all survey respondents indicated that a lack of foreign language knowledge was a barrier to their interest in international study. Thus, the desire to study in a specific region seems to be influenced by familiarity with the host language. This fact presents a 2-fold challenge to colleges and schools of pharmacy seeking to increase enrollment in international study across all regions. They need to not only maximize available experiences in English-speaking regions because these appear to generate high demand but also mitigate language as a barrier to studying in non-English-speaking regions. Creating additional awareness of opportunities to study abroad early in the pharmacy curriculum gives students the chance to consider international study as well as the time to gain additional foreign language knowledge, if needed, possibly as part of an elective component of the pharmacy curriculum.

Another interesting factor found to be predictive of international study interest is the education level of a student’s mother. For every increase in the mother’s education level, a student was 44% more likely to be interested in international study during pharmacy school ($p=0.03$). An analysis of the international study decision-making process among undergraduates found that combined average parental education level was positively associated with likelihood of planning to participate in international study.²⁰ Additionally, a 2003 literature review concluded that the level of the mothers’ education strongly impacted the extent of parental involvement and that parental involvement in turn had a significant influence on their children’s achievement, even after accounting for other socioeconomic variables.²¹ This observation is consistent with findings in existing literature and may indicate that students with mothers of high educational attainment have parents who are generally more involved in their development. Greater parental involvement subsequently drives these students to pursue greater accomplishments, which, in this case, is international study.

In this study, only 2 of the 5 involvement domains, academic and diversity involvement, were significantly predictive of interest in international study among pharmacy students. Thus, students with greater academic involvement would be more inclined to participate in international study experiences, which require a strong commitment to learning beyond the minimum curricular requirements. Students with greater diversity involvement have an increased level of socialization with other racial and ethnic groups and, therefore, are more likely to be open to experiencing foreign cultures through international study. These results are also consistent with previous

literature demonstrating that openness to diversity increased the probability that a student would be interested in studying abroad.²⁰

The potential role for faculty members and advisors to encourage students’ interest in international study is unknown. In the observational report by Kelly, many students cited having been actively discouraged by faculty members from participating in international study.¹⁶ In the present study, faculty advisor suggestion was the least-reported positive motivation for participation in international study. It is unclear, however, whether this finding is attributable to the small weight that students give to faculty advisor suggestions or to lack of faculty encouragement to participate in international learning experiences.

A discrepancy appears to exist between the amount of money pharmacy students are willing to spend on international experiences and the actual costs of such experiences, although the difference between willingness and inability to pay for international study is difficult to distinguish. Fifty-one percent of surveyed pharmacy students reported that they would not be willing to spend over \$1,999 on study-abroad expenses. However, students would be unlikely to find international travel for less than \$1,000. Combined with the costs of housing and food for the course of their stay, most international study-abroad experiences would cost between \$2,000-\$2,999 at a minimum, without allowing for additional expenses, such as sightseeing and souvenirs. Students not interested in international study at all are unlikely to be willing to pay significant amounts of money for such experiences and may represent the bulk of respondents reluctant to pay for international study expenses. Still, with 72% of respondents reporting interest in international study, there is a substantial overlap of students reporting interest in international experiences but without reasonable expectations of what those experiences may cost.

Expenses as a whole seem to weigh heavily on students’ interests in international study. Inability to pay expenses was the most frequently cited barrier to interest in studying abroad, and the availability of scholarships for international study was the second most-cited positive influence desire to study abroad. These results are consistent with findings from the Norris and colleagues study, which demonstrated that pharmacy students would be more likely to participate in an international study program if it were fully funded.¹⁵ Financial assistance could be made available in the form of scholarships, grants, funding from the host institution, or as personal contributions set up as endowments. Colleges and schools of pharmacy that are resolute in pursuing expanded international programs should explore all potential sources of funding

for international study experiences to reduce the financial burden as a significant barrier to motivated students' participation in international study.

There are several limitations that may reduce the validity of this study's findings. Because the study population included only students at the University of Kentucky, generalizing the findings to the entire population of pharmacy students may be questionable. There is a potential for non-response bias as well as the Hawthorne effect, in which subjects might alter their survey responses with the knowledge that they are participating in a study. Also, the survey instrument developed for this study was new, and its reliability and validity had not been established.

CONCLUSIONS

Factors found to be predictive of interest in international study include the number of undergraduate years completed prior to pharmacy school, mother's education level, and the extent of academic and diversity involvement. Financial expense was the most frequently cited barrier to interest in international study. Colleges and schools of pharmacy should engage students early in the curriculum when interest in international study opportunities is highest and seek to alleviate concerns about expenses as a primary influence on international study decisions through financial assistance. The needs and interests of pharmacy students should be considered in the development and expansion of internationalization programs in order to effectively optimize global partnerships and available international experiences. Research on a national level examining those interests is needed to inform colleges and schools of pharmacy so that the demand for desirable international study experiences can be met while addressing the barriers that often hinder students' participation.

ACKNOWLEDGEMENTS

The authors would like to thank Anthony Ogden, PhD, for his guidance and contributions to the review of this project.

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