

RESEARCH ARTICLES

Relationship Between Student Leadership Activities and Prepharmacy Years in College

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Objective. To determine whether a relationship exists between the number of years of college completed before entering pharmacy school and students' leadership involvement.

Methods. All pharmacy students from 2004-2007 were classified based upon their educational level at time of matriculation: Early Assurance Program (EA); 2 years of college, but not EA (2Y); 3 or more years of college but no degree (3Y+); and bachelor's degree or higher (BD). In terms of leadership positions, students were classified as holding any office, total number of offices, and Phi Lambda Sigma (PLS) membership.

Results. Students who entered the pharmacy program as EA students held 27.1% or 71 offices compared to 31.9% or 45 for 2Y, 26.8% or 39 for 3Y+ and 30.2% or 80 for BD students. Students selected for PLS were 12.1% for EA, 15.3% for 2Y, 16.1% for 3Y+ and 13.5% for BD. There was no significant relationship between prepharmacy education and leadership measurements.

Conclusions. Although no relationship was found between pharmacy students' involvement in leadership activities and number of prepharmacy years of education, the importance of predictive factors and approaches to evaluate students' leadership activities and involvement merits further research.

Keywords: leadership, prepharmacy, early assurance, Phi Lambda Sigma, bachelor's degree, student organizations

INTRODUCTION

There has been an increased interest in promoting student leadership activities in colleges and schools of pharmacy probably because developing leadership and sponsorship skills is essential to the improvement of effective advocacy, which benefits society as a whole. Our current health care system is so complex, future pharmacists need leadership training in order to understand and simplify the effect our health care system has on its participants. Students should be given leadership opportunities and the chance to develop leadership skills while in pharmacy programs. What is not known is whether previous years in college are predictive of the extent to which students become involved in leadership activities.

Students who have more college experience prior to entering our programs may be more inclined to take on leadership roles because they have learned what is necessary to be successful students at the graduate professional level. Students with 3 or more years of college experiences may have an additional advantage because they have

had more chances for involvement in a variety of organizations and have benefited from these experiences and perhaps have come to realize the importance of leadership in their professional development. Older students could have more work experiences—both in pharmacy and outside of pharmacy—where they have seen the value of leaders in the workplace and the contributions these individuals make enhancing others' efforts and the organizational environment. In addition, students with more years of collegiate experiences may have had additional opportunities to attend leadership development activities. Students who have spent more time in college, in contrast, may be less likely to take on leadership positions while in a pharmacy program because they want to focus on their education rather than on other activities. Also, such students are older and may have commitments to family and other groups outside of college/school, and/or may use time outside of college/school to work in order to pay for their educational expenses. In contrast, students who enter pharmacy programs after only 2 years of college may not have as many financial and family responsibilities, and therefore, more time to devote to leadership roles. Furthermore, because they are younger, they may have greater enthusiasm and the energy needed to balance academic responsibilities with leadership roles.

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There has been continued interest in the academy to understand success in pharmacy programs in terms of students' academic credentials at the time of admission. One study found that students who obtained bachelor's degrees before entering pharmacy school had higher cumulative grade point averages than any other cohort of students during the P1 year.² Various factors and their relationships to student academic success have been reported.⁴⁻⁶ This study investigated whether students with varying numbers of prepharmacy years in college differed in terms of their involvement in pharmacy leadership positions. The hypothesis was that students with 3 or more years, including those with a bachelor's degree, would be more involved in leadership positions compared to students with only 2 years of college level activities, specifically those students admitted through an early assurance program or students admitted after 2 years of college.

METHODS

The Early Assurance (EA) program at the University at Buffalo School of Pharmacy and Pharmaceutical Sciences admits students into the pharmacy program after 2 years of college provided they have successfully completed the required prerequisites with a minimum grade point average. EA students are required to maintain a 3.0 cumulative grade point average (cGPA) during the first 2 years of enrollment, cannot receive any grade lower than a C in any course, and must take all courses at the University at Buffalo. If successful, they are automatically admitted into the PharmD program. Required courses for the EA program were discussed previously.²

We investigated the leadership positions for P1-P3 students from the graduating classes of 2004-2007. The students were categorized as EA, 2 years of college not early assurance (2Y), 3 or more years of college but no degree (3Y+), and bachelor's degree or higher (BD). Leadership parameters for the various categories of students included holding a leadership position calculated as the percentage of the total number of students, the total number of positions held by all students within a particular group, and the percentage of students who were members of Phi Lambda Sigma, the national pharmacy leadership society, in each of the 4 groups. These records were obtained from our list of student organizations and officers generated each academic year. The list of student organizations in our School is provided in Table 1. A total of 394 student records were evaluated for statistical differences (1) between EA and non-EA students (combination of 2Y, 3Y+ and BD students); (2) among the 4 student groups, EA versus 2Y versus 3Y+ versus BD; and (3) among entering students with only 2 years of

Table 1. Pharmacy Student Organizations at the University at Buffalo School of Pharmacy and Pharmaceutical Sciences^a

American Pharmacists Association – Academy of Students of Pharmacy
Canadian Association of Pharmacy Students and Interns
Class Officers P1 Year
Class Officers P2 Year
Class Officers P3 Year
Class Officers P4 Year
Kappa Psi Pharmaceutical Fraternity
Lambda Kappa Sigma Pharmaceutical Fraternity
National Community Pharmacists Association Student Chapter
Phi Delta Chi Pharmaceutical Fraternity
Phi Lambda Sigma National Leadership Society
SIGNA School of Pharmacy and Pharmaceutical Sciences Yearbook
Rho Chi National Pharmacy Honorary Society Student Chapter of the Pharmacist Association of Western New York
Student National Pharmaceutical Association
The Student Chapter of the American Society of Consultant Pharmacists
The School of Pharmacy and Pharmaceutical Sciences Student Association
The Student Chapter of the Western New York Society of Health-system Pharmacists

^aThere are a total of 91 elected officer positions available in organizations

college (combining EA and non EA) versus 3Y+ versus BD using the Goodness of Fit Test (G-tests).³

This study was exempted from the University at Buffalo Institutional Review Board approval because the goal was improvement in our curricular and student programs.

RESULTS

Three hundred ninety-four records for first-, second-, and third-year pharmacy students enrolled between 2004 and 2007 were compared against a list of student officers generated for the annual student and faculty handbooks. The first analysis was conducted to determine whether there was a significant difference in the leadership activities between EA students and non-EA students. Overall, approximately 29% of students were involved in leadership positions (Table 2). There was no significant difference between EA students versus non-EA students (27.1% vs 29.9% respectively, $G = 0.341$, Table 2). Students in this study group held 235 elected positions over the 4-year period. The 140 EA students held 71 leadership positions, while the 254 non-EA students held 164 elected positions. Again, there was no significant difference

between EA and non-EA students in the number of leadership positions attained ($G = 0.101$). Though there was a slightly higher percentage of students who became Phi Lambda Sigma members in the non-EA (14.6%) group versus the EA group (12.1%, $G = 1.88$), the difference was not significant ($G = 1.883$). Fourteen percent of all students became Phil Lambda Sigma members.

A second analysis was conducted to see whether there were any differences in leadership activities when the combined group was divided into 2Y, 3Y+, and BD students, and subsequently compared to the EA students. The percentage of 2Y students who held a leadership position was 31.9% compared to 30.2%, 27.1% and 26.8% for the BD, EA, and 3Y+ students, respectively (Table 2). There were no significant differences among any of the 4 groups of students ($G = 0.751$). The BD and EA students held the most number of offices (BD, 80; EA, 70; 2Y, 45; and 3Y+, 39). Again, these differences were not significant ($G = 0.703$ Table 2). When the non-EA students were divided into 2Y, 3Y+, and BD, the group with the highest percentage of students was the 3Y+ group (16.1%), followed by the 2Y group (15.3%), and the BD group (13.5%). As stated above, the EA students had the smallest percentage of students who were members of PLS with 12.1%. These differences were not significant ($G = 2.057$, Table 2). Finally, in comparisons of students with only 2 years of college (EA and non-EA combined) versus students with 3 years or more and those with a bachelor's degree, there was no significant difference in occupancy of leadership positions ($G = 0.221$) or membership in Phil Lambda Sigma ($G = 1.299$).

DISCUSSION

In a previous study, students with bachelor's degrees generally performed better than those in our EA program,

specifically during the first professional year.² However, with respect to leadership roles, no significant differences were found in the percentage of students who held leadership positions or the percentage of students who were members of Phi Lambda Sigma as a function of the pre-pharmacy years in this particular cohort of students.

An extensive review of the literature in the education of other health science students (eg, medicine, dentistry and nursing) did not result in any reports on the relationship between previous student college experiences and leadership activities. The student involvement theory during collegiate years, developed by Astin, focused on the level of motivation, and the amount of time and energy students invest in their learning process.⁸ He suggests the most precious institutional resource during the undergraduate years may be student time. This premise would also seem relevant to pharmacy and other health professions' educational programs. Furthermore, the degree of student involvement, whether it is in the classroom or in outside activities, competes for a student's time and energy while in the college setting.³ The time and energy required to pursue a professional education, often combined with that of working as a pharmacy intern, can certainly restrict a student's availability to be involved in a leadership role. Despite these demands, approximately 30% of students assumed 1 or more leadership positions in the School, which has more than 15 professional and social organizations. A study conducted by the North American Colleges and Teachers of Agriculture reported 61% of students participated in less than 3 collegiate organizations; 52% spent 2 hours or less in these organizations; and 59% of students were involved for 3 or fewer semesters in collegiate organizations. Interestingly, 37% of the students in that study indicated they were

Table 2. Student Leadership Activities of Pharmacy Students

Leadership	Early Assurance Students (n = 140)	Students w/ 2 Years of College (n = 72)	Students w/ 3 or More Years, No Degree (n = 56)	Students w/ Bachelors Degree or Higher (n = 126)	All Non-early Assurance Students ^a (n = 254)	All Students (N = 394)
Percentage of students with a leadership position, %	27.1	31.9	26.8	30.2	29.9	28.9
Total number of leadership positions held by students	71	45	39	80	164	235
Percentage of students who were members of Phi Lambda Sigma (PLS), %	12.1	15.3	16.1	13.5	14.6	13.7

^aNon-early assurance students were all students with 2 years of college (2Y), 3 or more years of college but no degree (3Y+), or bachelors degree or higher

leaders who served as officers and 28% considered themselves as one who joins committees and works rather than assuming a leadership position.⁹

So how should colleges and schools of pharmacy evaluate student leadership activities? This present work describes several possible metrics for assessing the extent to which students are involved in leadership roles while in our professional programs. It becomes critical to initially identify relevant metrics to measure and track our students' leadership activities and to evaluate the usefulness of these metrics in our analysis. Three possible metrics have been introduced in this present study. There are limitations to the metrics used in this study. Initially, this study only investigated students who were elected to positions in our pharmacy organizations. It did not include those students who served as committee chairs or in other non-elected positions. Additionally, it did not include student involvement and leadership in nonpharmacy organizations and groups. There may also be a concern regarding the use of membership in Phi Lambda Sigma as a leadership metric. The members of Phi Lambda Sigma represented those students with a 2.5 or higher cumulative grade point average who were recognized for their leadership roles and activities. However, they were selected by existing student and faculty members of Phi Lambda Sigma so one cannot rule out that collegialities and friendships play a role in the selection process. Nevertheless, Phi Lambda Sigma's mission is one that supports pharmacy leadership commitment by recognizing leaders and helping to foster their leadership development, and as such would be a useful metric to consider in evaluating leadership.¹⁰

Developing and utilizing parameters evaluating student leadership activities and the opportunities for students to become engaged in leadership activities can serve as an important baseline in colleges and schools of pharmacy. With these and possibly other assessments, a school or college, for example, could analyze student admissions credentials to determine whether these are predictors of student involvement and leadership in the organizations available in colleges and schools. Furthermore, a school or college could evaluate the extent to which changes in the curricular requirements impact student involvement and leadership.

There are numerous factors that could affect student involvement and leadership in pharmacy-related organizations. Potential changes affecting student involvement and or leadership could include modifications in the curriculum; the implementation of introductory pharmacy practice experiences; costs for tuition, books, professional fees and living expenses; membership costs of organizations; competition for students to join the wide

variety of available organizations in and outside our colleges/schools; and the time students spend maintaining personal health and fitness. Other factors could be college- or school-dependent factors, such as the structure and number of available organizations, the time and facilities allocated for organizations to meet during school hours, and the total number of students relative to the number of leadership opportunities.

With these findings, a school or college can investigate the impact of various strategies and their impact on student involvement and leadership. For example, a college or school could investigate whether blocking off free time in the typical Monday-through-Friday class schedule would enhance student participation in organizations and involvement in leadership activities. The methodology used in this study could also be used to monitor trends in student involvement and leadership in our colleges and schools, particularly with increased enrollment and a greater emphasis on distance learning in our curriculums.

The opportunity and value for developing leadership skills, whether in the classroom or through outside organizations, can be a valuable element during professional education by providing the knowledge and skill sets needed for future leadership positions in pharmacy. As such, many colleges and schools have invested time and energy in leadership development courses, programs, and opportunities for all students.¹ This is also reflected in the activities of AACP, which has stated that transformational leadership is required if we are to achieve our vision in pharmacy education and to assist our profession and other health professionals in creating a truly patient-centered, seamless and safe, outcomes-focused health care system.¹¹

While we value and emphasize student leadership roles by selecting these individuals for organizations such as Phi Lambda Sigma, there is the concern that over commitment to these activities could be at the expense of academic success. This concern has often led to the development of policies limiting student leadership roles to those who are doing well academically. When students are doing well academically, we often do not question their involvement in leadership activities. However, the question is, should we encourage students who are not as academically talented to take on leadership roles? History has certainly shown us that some of our best local, national, and world leaders were not at the top of their class academically.

Finally, this study only quantified the number of students who were involved in leadership positions as a function of prepharmacy years in college. The current study did not take into consideration any previous leadership

roles during the prepharmacy years or students' entering grade point averages. Future studies could correlate student academic success with leadership activities or the importance of student involvement or leadership with student satisfaction in colleges and schools of pharmacy.

CONCLUSIONS

Student leadership will always be a topic of discussion in colleges and schools of pharmacy given the importance of mentoring the future generations of pharmacy leaders and encouraging our students to stay involved in the profession. While there are metrics for evaluating other indices of student success in our programs, admissions credentials or student demographics have not been evaluated with respect to their predictive value for student involvement and leadership. This study represents an initial approach to quantifying student leadership activities as a function of one admission credential, specifically, the number of prepharmacy years in college. In this group of students, leadership activities were independent of the previous years in college.

The development of student leadership skills requires time and the opportunity to assume leadership roles. This would suggest the importance for future metrics in evaluating leadership opportunities and activities for students in our professional programs. It would also be useful to quantify the number of hours our students are involved in studying, working or contributing to professional organizations or the number of organizations an individual student is involved with during their pharmacy education. This latter metric may be difficult to compare across institutions given the varied structure and number of student organizations in our colleges/schools. Moreover, whether these students subsequently stay involved in professional organizations in leadership once they graduate is unclear

and has not been investigated systematically in health care students.

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