Scientific mentorship, academic experiences and undergraduate performance of Dentistry and Medicine students

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Received February 11, 2019. Accepted December 27, 2019.

ABSTRACT

The Scientific Mentorship Program (SMP) seeks to foster vocational aims and encourage the development of scientific thought in undergraduate students, and participation in the program has been found to have a positive impact on the performance coefficient (PC) of Dentistry students, but not in students from the Medicine course. The present observational study was therefore conducted to identify the personal, contextual and vocational aspects of the academic experiences of Medicine and Dentistry students, which may have influenced this finding. A total of 123 students participated in the study, of whom 74 (60.2%) were from the Dentistry (D) course and 49 (39.9%) from the Medicine (M) course. The short version of the Student Academic Experience Questionnaire (or QVA-r) was applied (54 questions/Likert Scale responses). The data were tabulated and submitted to statistical analysis using the Student's t-test (α=5%). The main results revealed that the career, study and institutional dimensions differed between the groups, with higher mean scores obtained by the students of the Medicine course in the career dimension (M=4.1±0.6a; D=3.8±0.4b). Higher scores were obtained for students from the Dentistry course in the study (M=3.6±0.5 b; D=3.9±0.7a) and institutional (M=3.7±0.2 b; D=4.1±0.2a) dimensions. There was no difference between the courses in the personal and interpersonal dimensions, or in the overall QVAr score. It was concluded that different academic experiences may have influenced the contrasting impact of the SMP on the PC of the Dentistry and Medicine students.
Descriptors: Scientific Research. Academic Achievement. Professional Education.

1 INTRODUCTION

Recognition of the strategic importance of science and the need to establish incentivization and fostering strategies within institutions culminated in the creation of the National Council for Scientific and Technological Development (or CNPq) in 1951. Among the attributes of this body were the promotion and stimulation of scientific and technological research in any field of knowledge[1]. Since then, the development of such research has been encouraged in Brazil, with the regularization and fostering of research during undergraduate courses, with the aim of combining teaching with research and stimulating the practice of scientific mentorship[2].

This teaching and learning method is not limited to the simple introduction of students to the area of science, instead exposing individuals to learning situations that go beyond those found in the classroom, aiming to awaken a vocation for science, encouraging talents and potential among undergraduate students[3]. A previous case-control study conducted at the higher education institution (HEI) where the present study was carried out sought to investigate the impact of SM on the performance of students of its two undergraduate courses, Dentistry and Medicine, and found that the performance coefficient (PC) of the undergraduate students involved in the SMP was always higher than non-participants. However, when only SMP students were considered, it was found that after inclusion in the program there was an increase in the PC of students from the Dentistry course[4], while there was a significant decline among those from the Medicine course[5], making it important to understand the reasons for this difference.

Several aspects have been studied in literature in an attempt to understand the factors that may influence the academic performance of students. Cunha and Carrillo (2005)[6] argue that the difficulties involved in integrating students into the university context involve personal issues and also arise from the new academic demands and environment, described by Soares et al. (2014) as including[7]: greater autonomy and organization of timetables and schedules, classes that take place less sequentially than at school and professors who perform various roles. The diversity of experiences in the university context leads to the search for changes in personal, contextual and institutional contexts, as the student must develop autonomy in their studies and the institution must contribute to the development of relational and cognitive skills[8].

In this context, it is important that the personal, contextual and vocational aspects of the academic experience[9] are considered when approaching this theme[10,11]. The present study assessed the personal, interpersonal, career, study and institutional aspects of Dentistry and Medicine students from a private institution in Campinas, São Paulo, seeking to understand the contrasting impact of SM on their PC.

2 METHODOLOGY

This observational, cross-sectional, quantitative analytical study was conducted according to the precepts determined by Resolution No. 466 dated 2012 and was approved by the Ethics Committee (CAAE 77378917.2.0000.5374 / Opinion: 2.345.870).

The study period comprised the first five editions of the SMP (2013-2017), in which 161 students were enrolled, including 92 from the Dentistry course and 69 from the Medicine course. All students registered with the SMP during this period were contacted and invited to participate in the study.

Students were approached personally and for those who could not complete the questionnaire in person, after a number of attempts, the form was sent in electronically. Fifteen days after the invitation was sent, contact was made via WhatsApp, Facebook and e-mail to confirm receipt, request a reply or resubmit the electronic form. In the case of non-contact, a further personal approach was undertaken to answer questions about the study and request the completion of the instrument.

The 123 students who agreed to participate completed the Academic Experience Questionnaire - Reduced Version (or QVA-r), adapted to the Brazilian reality[12]. This instrument seeks to evaluate how students perceive their academic experiences in the HEI they attend. The QVA-r version used consists of 54 items with Likert-type scale responses ranging from 1 (does not concern me) to 5 (concerns me greatly) in five dimensions:

1. personal dimension, which integrates the assessment of physical and psychological well-being, emotional balance, emotional stability and optimism;
2. interpersonal dimension, which assesses peer relationships, relationship skills in situations of greater intimacy, friendships, and seeking help;
3. career dimension, which includes the evaluation of feelings related to commitment to the course, career perspectives and vocational plans;
4. study dimension, which includes study skills, work habits, time management, use of library and other learning resources; and
5. institutional dimension, which includes students' appreciation of the institution they attend, the desire to remain at or change institutions, knowledge and appreciation of infrastructure; also understood as a sense of belonging to the HEI.

The data collected from the questionnaires were analyzed through the necessary statistical procedures, with the aid of Bioestat 5.0 software. For each dimension the sum of the points were considered, as well as the intermediate values (mean, standard deviation and median) of each dimension, obtained through the Likert scale, and of the complete instrument. The student's t-test was used to analyze the scores obtained between the courses. Statistically significant associations were those with *p* values equal to or less than 5% (0.05).

3 RESULTS

The population of the study was 161 students (92 from Dentistry and 69 from Medicine) (table 1) and the final sample included 123 participants, 60.2% of whom were enrolled in Dentistry and 39.9% in Medicine. The loss of individuals was due to absence at various times during the application of the questionnaire (37 students) and refusal to participate in the study (one student). The response rate of 76.4% was considered satisfactory, considering similar studies.

Table 2 presents the findings for each dimension, based on the mean of the sum of the points and the mean Likert scale responses from the groups. The career, study and institutional dimensions differed between the groups, with higher mean scores for students from the medicine course in the career dimension and higher scores for dentistry students in the study and institutional dimensions.

4 DISCUSSION

The results found a difference in the academic experiences of the students, depending on the courses on which they were enrolled, in the career, study and institutional dimensions. There

were no differences between the courses in the personal and interpersonal dimensions.

Table 1. Frequency of student participation in the Scientific Mentorship Program according to course and editions of the program

	Medicine		Dentistry	
SMP edition	**n**	**%**	**N**	**%**
1ª - SMP 2013	2	2.9	9	9.8
2ª - SMP 2014	7	10.2	19	20.6
3ª - SMP 2015	6	8.7	16	17.4
4ª - SMP 2016	15	21.7	15	16.3
5ª - SMP 2017	39	56.5	33	35.9
Total	69	100.0	92	100.0

Table 2. Analysis of sum of points and mean and median of the five dimensions of the QVA-r for the Dentistry and Medicine courses.

	Sum of points		Mean (±SD)		Median	
Dimensions	**Dentistry**	**Medicine**	**Dentistry**	**Medicine**	**Dentistry**	**Medicine**
Personal	52.9	52	3.9±2.2 A	3.9±2.4 A	4.6	4.3
Interpersonal	44.1	44.8	3.7±0.4 A	3.8±0.4 A	3.7	3.8
Career	45.8	49.6	3.8±0.4 B	4.1±0.6 A	3.9	4.3
Studies	34.8	31.6	3.9±0.7 A	3.6±0.5 B	4.1	3.6
Institutional	28.9	25.9	4.1±0.2 A	3.7±0.2 B	4.1	3.7
QVAr	222.3	220.4	3.7±0.7 A	3.7±0.6 A	3.9	3.8

Means followed by different letters for each dimension and for the complete instrument differ from one another, based on course (Student's t-test)

Participation in a scientific mentorship program during an undergraduate course contributes to vocational training and should be valued by HEIs, fostering a complete and critical vocational training[3,6,13,14]. The possibility of participating in a SMP is one of the main opportunities that HEIs can offer their students to facilitate their integration into the academic environment, and leads to the premise that the creation of such institutional programs provide a benefit[15]. In England, early participation in research programs encouraged undergraduate medical students to undertake an interim research internship, a voluntary "sabbatical" year during medical training, to carry out research[14].

A previous study in the HEI evaluated[5] found that in the first four editions of the SMP the academic performance of students linked to the program differed from those who did not participate, but there were differences between

courses: for students of the Dentistry course, there was a significant increase in PC, calculated before and after the SMP, while for medical students there was a significant decrease in this coefficient in the same period.

In order to understand this finding, the academic experience of SMP students was evaluated considering both the individual dimensions and the overall QVA-r score, comparing the groups by course. The instrument in question allows the understanding of the personal, contextual and vocational aspects of academic experiences[9]. It has been used in several similar studies[10,11] and presents satisfactory levels of internal consistency in all dimensions of evaluation[16].

There was no difference between the courses in the personal and interpersonal dimensions. The first category includes aspects related to emotional balance, physical well-being, psychological, optimism and decision making. The second assesses the ability to make and cement new friendships, which includes the ease of establishing and cementing bonds of trust. With these findings it can be inferred that, in general, personal life and the relationship with one's fellow students are not related to the differences between the courses in academic performance after SMP.

In the study dimension, the score of the Dentistry students was significantly higher than that of the Medical students. In this dimension it can be inferred that Dentistry students manage their time better, finding ways to study and prepare for the tests applied by the institution, suggesting that they have the ability to self-regulate learning, a conscious and voluntary process that involves cyclical planning, execution and assessment of learning. In this sense, students exercise, based on their personal goals and standards of conduct (behavioral, thoughts and feelings), the management of their studies[17]. However, a more specific investigation is needed to validate this hypothesis.

The institutional dimension, the scores of which were also higher for Dentistry students, addresses affinity with the institution in which the students are enrolled, their desire to remain and their satisfaction with the infrastructure offered. From this information it can be suggested that Dentistry students have a greater involvement with the institution, which is, in turn, a predictor for learning, development and permanence in higher education[18], making it a factor that positively influenced the PC in Dentistry.

It can also be reported, in relation to the study and institutional dimensions, that the current characteristic of the labor market for dentists[19], the competitiveness of applications for public service positions, and the results of the National Student Performance Exams (ENADE) for the course in this HEI in recent years, may have had an effect on the level of responsibility of students, creating the opportunity for a more structured study routine in order to have a better chance of success in such application processes, in addition to maintaining IES scores at the levels of previous years. The result of this behavior is a sense of belonging, a bond, often expressed as a commitment and/or common interest, that serves to connect the student to the institution even when challenges arise[20].

For medical students, the career dimension had the most expressive scores, and relates expectations about the career, satisfaction and competence that the course imposes, which corroborates the previous study[21]. Medical students showed greater confidence regarding entry in the labor market and prospects of remuneration with regard to their course. Dentistry

students, meanwhile, scored lower in the career dimension, which is probably related to insecurity regarding the profession and career prospects, as Dentistry graduates have reported difficulties in entering the job market[19], due to its saturated and competitive nature, with a concentration of professionals in the most developed and richest regions of Brazil[22]. In contrast, it is worth noting that the inclusion of oral health in the Family Health Strategy[23] has expanded the career prospects of dental surgeons, with the public service emerging as a promising alternative[24], sought after by many[25], which leads to the need for training aimed at Public /Collective Health so that individuals can perform in accordance with this strategy.

It is important to note that the minimum study workload for medical courses, according to the National Curriculum Guidelines[26] is 7,200 hours, while the minimum workload of the Medical School of the HEI studies is greater (9,057 hours), which may have influenced the results, as students may have less free time to conciliate research and study. The pedagogical plan of this course is being reevaluated with a view to implementing free periods for study, configured as an indicator of the quality of international and national medical schools[27,28]. The average number of teaching hours per week on the course is 38, while the average in Brazil is 30h/week. In international curricula, meanwhile, the workload is always lower, and includes free time that allows research to be carried out[14].

The Dentistry students demonstrated, through the results, a greater interest in the institution and a better knowledge about the infrastructure and what it can provide. A possible explanation for this finding is that this course, which started in 2004, has a consolidated history. The Medicine course, meanwhile, is more recent, with its first class graduating in 2018. Like all undergraduate courses, it will reformulate its Pedagogical Plan at the end of its first cycle, including more free periods so that students can dedicate themselves to extra activities such as SM, Academic Leagues, and cultural and sports activities.

5 CONCLUSION

The differing academic experiences of students from the courses may have influenced the contrasting impact of SMP on the PC of Dentistry and Medicine students. Their academic experiences, especially considering the career, study and institutional dimensions, were different, with more positive experiences for Medicine students in the first of the dimensions mentioned and more positive experiences for Dentistry students in the others.

Financial support: São Leopoldo Mandic Institutional Scientific Mentorship Scholarship (001-AIE-2017)

RESUMO

Iniciação científica, vivências acadêmicas e rendimento de graduandos em Odontologia e Medicina

O Programa de Iniciação Cientifica (PIC) busca despertar a vocação e estimular o desenvolvimento do pensamento científico em graduandos, tendo sido identificado previamente que a participação no PIC institucional apresentou impacto positivo no coeficiente de rendimento (CR) de estudantes de Odontologia, o que não ocorreu com os de Medicina. Desta forma, desenvolveu-se o presente estudo observacional, que visa avaliar aspectos pessoais, contextuais e vocacionais das vivências acadêmicas que possam ter influenciado este achado. Participaram 123 alunos PIC, sendo 74

(60,2%) do curso de Odontologia (O) e 49 (39,9%) do curso de Medicina (M). A versão reduzida do Questionário de Vivências Acadêmicas (QVA-r com 54 questões e resposta em escala do tipo Likert) foi aplicada. Os dados foram tabulados e analisados utilizando-se o teste t de Student (α=5%). Os principais resultados apontaram que as dimensões carreira, estudo e institucional diferiram entre os grupos, com maiores pontuações médias para estudantes do curso de Medicina na dimensão carreira (M=4,1±0,6; O=3,8±0,4). Para os do curso de Odontologia, maiores pontuações médias foram observadas nas dimensões estudo (M=3,6±0,5; O=3,9±0,7) e institucional (M=3,7±0,2; O=4,1±0,2). Não houve diferença entre os cursos considerando as dimensões pessoal e interpessoal e o QVAr geral. Conclui-se que vivências acadêmicas diferenciadas podem ter influenciado o antagônico impacto do PIC no CR dos estudantes de Odontologia e Medicina.

Descritores: Pesquisa Científica. Rendimento Escolar. Formação Profissional.

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