

# Science without Borders in professional training: perceptions of Dental students from UFSM

Sílvia Ataíde Pithan\*; Marília Forgearini Nunes\*\*; Luíza Chagas Pires\*\*\*

\* Professora Adjunta do Curso de Odontologia da Universidade Federal de Santa Maria

\*\* Professora Adjunta da Faculdade de Educação da Universidade Federal do Rio Grande do Sul

\*\*\* Cirurgiã-dentista, Universidade Federal de Santa Maria

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## ABSTRACT

This work aimed to evaluate student's perceptions about the Science without Borders program in the Dental School, Universidade Federal de Santa Maria. Qualitative research was carried out using a semi-structured interview with dentistry students who have participated in the program. The interview was recorded, transcribed and analyzed. From the analysis, six thematic categories were identified, Foreign Language: elements of motivation and difficulty; Personal growth: expectations fulfilled; Poor planning when the program was created; differences in higher education methodology; Science without Borders impact on professional education; and the Contributions of Science without Borders for the institution and for the country. These themes have led to the conclusion that the scholars who participated in the program have noticed the positive effects on their personal lives, but the professional development was of secondary importance.

**Descriptors:** Education, Dental. International Educational Exchange. Education, Higher.

## 1 INTRODUCTION

Academic internationalization and mobility at the various levels of production of knowledge in Brazil, is recognized as being important for the country, on today's global stage<sup>1</sup>, as it offers an array of opportunities for the expansion of scientific knowledge and world vision, providing the scholar with a broad view that is reflective and critical with regard to social,

political, economic, personal and professional issues<sup>2</sup>. Alert to this need, the Brazilian government created, in 2011, the Science without Borders (SwB) program with the aim of fostering the consolidation, expansion, and internationalization of science and technology, innovation and competitiveness in Brazil through international exchange programs and mobility<sup>3</sup>. It is an ambitious program aimed at internationalizing

the production of Brazilian knowledge, which uses, as its central tool, the mobility of trainee or qualified professionals<sup>4</sup>, and was the first public policy that focused on the internationalization of higher education in Brazil, now one of the most significant international mobility initiatives in the world<sup>5</sup>.

The SwB program estimated that 101,000 study grants would be offered, over a period of four years, to undergraduate and postgraduate students in universities around the world, with 64,000 intended for sandwich degree courses<sup>3</sup>. Program evaluation data showed that the total number of grants made available by the SwB for graduation courses was 78,000 rather than the 64,000 previously forecast. This increase was explained by the high demand<sup>6</sup>.

Although it is still too soon to estimate the impact of the program regarding technology and innovation issues in Brazil, or even to evaluate the contribution of SwB to the internationalization of Brazilian universities, the initial results are encouraging. However, with the first phase of the program now completed, there is clearly a need for a number of modifications, including fostering greater participation of postgraduate students; sending undergraduates to a smaller number of predefined institutions and increasing the participation of the scholars' institutions of origin; assigning the students to more countries and fostering exchange programs to grow the number of foreign students coming to Brazil; eliminating foreign language training overseas; including different areas of knowledge; ensuring that the course credits earned overseas are utilized on the return to Brazil; increasing private sector funding for grants; developing mechanisms for consolidating the knowledge obtained in these programs, on returning to Brazil<sup>7</sup>.

The evaluation, from the point of view of scholars, is also important as little is known about

the results of the SwB program in respect of undergraduates. Therefore, this study aimed to evaluate the perceptions of students, concerning the program, from Dental School, Universidade Federal de Santa Maria (UFSM). It also aimed to evaluate the main difficulties experienced by scholars of the Dentistry Course, to recount their experiences and evaluate the impact on the professional training of these students.

## 2 METHODS

The study employed a qualitative approach which was descriptive and exploratory. The study was conducted with undergraduate dentistry students at UFSM, who took part in the SwB program developed by the federal government and who had already resumed normal activities, or who had finished their courses. The scholars took part in the program between 2012 and 2015, and all of them were invited to take part in the study.

Between July and October 2015, semi-structured interviews were conducted with open questions being put to the students. The interviews were performed by a single interviewer and were recorded and subsequently transcribed. The interview questions considered issues relating to knowledge of the program; how the choice of destination university was made; how much the foreign language influenced the process; the advantages and disadvantages of having taken part in the program; what were the personal and academic experiences in the destination university; and the potential contributions of SwB to the university of origin, the country and to professional development.

A thematic content analysis was carried out following the model suggested by Minayo<sup>8</sup>. The study is in agreement with current legislation which governs studies involving human beings (Resolution 466/2012), and was submitted for the appraisal and approved by the institution's

Research Ethics Committee (CAAE 46850015.3.0000.5346). All the participants signed a free and informed consent form before any interview could begin. Confidentiality was guaranteed concerning any data that might be able to identify the participants.

### 3 RESULTS AND DISCUSSION

Of the 14 students on the Dentistry course who took part in the SwB program and who had already completed it, 13 took part in the study.

Based on a reading of these interviews, categories were established to analyze and interpret the material, as follows: Foreign language; motivational factor and difficulty factor; personal development; expectations fulfilled; lack of planning with the creation of the program; differences in higher education methodologies; impact of SwB on professional development, and SwB contributions to the institution and country.

#### **Foreign language: motivational factor and difficulty factor**

Taking as an initial reference the motivations which led the students to take part in the SwB program, we noted that the knowledge of other languages stood out.

*The desire to learn a foreign language was even quoted as the reason for choosing a country and/or university.* (Student 1).

*"I believe that the question of languages because I was doing English [...] and I wasn't making any progress. I really wanted to learn a different language. I didn't pay a great deal of attention to the academic side of things."* (Student 2).

The importance afforded to the language with which the student would have contact and, mainly, the opportunity to learn it, reveals social, economic and political issues associated with a

world inhabited by scholars. Advances in the means of transport and communication have lessened the distance between people, and the knowledge of a foreign language, particularly English, allowing this borderless communication to exist<sup>9,10</sup>.

In the interviews, proficiency in a foreign language was mentioned, quoting different points of view, sometimes paradoxical; as a motivational factor and, at the same time, an obstacle to selection; as a driver in the choice of country and as a difficulty during the exchange period; the problem of lack of fluency in a second language, but at the same time the opportunity to achieve it through SwB shows the way that foreign languages were an important factor in the experience, as typified by the words of a number of interviewees.

*"I went there with no English. Perhaps if I had already known how to speak English, I might have opted for a different country, another university, a university which would facilitate the study of Dentistry."* (Student 3).

Other students referred to the difficulty of communicating:

*"Taking a class and communicating in a language that is not your own?! You think in your native language and have to speak in another. It is quite complicated."* (Student 4).

A study conducted between 2009 and 2011 confirmed that Brazilians are poor English speakers. Brazil was ranked 46<sup>th</sup> out of the total of 54 nations surveyed with regard to proficiency in the English language<sup>11</sup>. This reinforces the need for public policies for training in foreign languages. Given the difficulty in finding suitable students to participate in the SwB program, the Ministry of Education, through the Department of Higher Education (SESu) in conjunction with the Brazilian Agency for

Support and Evaluation of Graduate Education (CAPES), created the Languages Without Borders program (ISF) with the aim of encouraging the learning of foreign languages, as well as affording a comprehensive and structural change in the teaching of foreign languages in the country's universities<sup>12,13</sup>, since deficiencies in the understanding of foreign languages were evidenced<sup>1</sup>. One example of this is the large number of students that opted for universities in Portugal<sup>14</sup> and the low number of scholars approved to visit the United Kingdom (only 1,800 of the 4,000 grants offered were filled)<sup>15</sup>.

Other measures adopted to increase the possibility of participation included the reduction in the level of the requirement to know a foreign language and the implementation of the possibility of funding a linguistic work placement scheme in the destination country. Both measures received some criticism as, given the program's aims, knowledge of foreign languages should be taken for granted<sup>16</sup>.

### **Personal growth: expectations achieved**

Apart from the foreign language issue, personal experience surfaced in the majority of interviews as both a motivation and consequence.

*“Venturing outside the comfort zone of the university and getting to know different things”* (Student 5). [...] *“was more for the experience and not so much for professional betterment”* (Student 6). [...] *“an exchange program with something more than the usual exchanges, that only have English”* (Student 7). [...] *“the possibility of studying in a university that has cutting-edge technology, in short, in another country”* (Student 1).

The process of internationalization of Institutes of Higher Education in Brazil began with the backing of government agencies that

believed that, despite the difficulties, professional and personal development of students could be achieved<sup>17</sup>. Exchange programs represent an exchange of information, beliefs, cultures and knowledge<sup>18</sup> that can lead to growth and emotional empowerment<sup>2</sup>. These objectives and possibilities appeared in many of the interviewees' statements, as the SwB program, for many of them, was about acquiring cultural and social values through intense personal experiences in which the interviewees reported having learned, through contact with different cultures, to live together with different people. They unanimously reported having matured personally by virtue of having to “muddle through” alone, in a different country, and this could be applied in their professional lives. This growth process could have been initiated in the period prior to the exchange, when the student has to get involved with the bureaucracy of obtaining passports and visas, and reaching its fullness during the exchange visit, when required to adapt to the culture and to legal issues in the destination country.

The interviewees stated that this process of personal development helped them, on returning to Brazil, to relate to patients and to cope with challenges that they had previously considered difficult to overcome.

*“I matured a lot, today I realize that even the way I am going to treat the patient is completely different from the way in which I treated them before Science without Borders, I can deal better with the situation”* (Student 8).

*“The opportunity to have gone over there and experienced all of this made me lose a little of the fear I had of doing things [...] it allowed me to build confidence in myself to be able to do certain things”* (Student 9).

*“Personal growth that we achieve is*

*great. We go there with one mentality and come back with a completely different one. A totally open mind prepared for fresh challenges”* (Student 10).

The recognition of this personal growth is nothing new. Although the SwB program is relatively recent, academic mobility had been experienced in other forms. According to Oliveira and Pagliuca<sup>19</sup>, the advantages of exchange programs go beyond learning, also manifesting themselves in psychological development, self-confidence, acquisition of maturity, independence and ability to relate and feel what it is to be a “citizen of the world”.

Additionally, international experience could be an important component in the analysis of national education systems, of familiar differentiation strategies in the market of higher education and the qualification of professional sectors. Therefore, it is important to monitor the individuals who took part in this experience by considering the relative importance that the circulation of people and knowledge has achieved, the contribution that this process has brought to professional groups and cultural innovation resulting from this use of public funds<sup>20</sup>.

### **Lack of planning with the creation of the program**

From the interviews, it could be seen that there was a lack of program organization in terms of providing support during the process of choosing the university and a lack of planning to offer universities within the student’s area of involvement. Academic criteria often ended up taking a back seat. These gaps can be seen in the reports of the scholars:

*“There are universities that have no student selection criteria. You enroll and it is the university that decides... therefore it ends up being “tourism without*

*borders”... (Student 3).*

From these statements, it can be seen that, among the scholars, there is the notion of the program providing an opportunity for tourism, due to the lack of selection criteria, both in terms of the destination university and the scholars participating in the program.

Advance contact with the international institutions was also criticized by the students.

*“[...] the program was created in a top-down manner. They created the program, handed out the grants and then went to speak with the foreign universities [...]”* (Student 7); *“I did not choose the university, I was sent there at random (Student 11)”*.

The problems pointed out by the exchange students did not escape the notice of those responsible for the SwB program who, during the 67<sup>th</sup> annual meeting of the Brazilian Society for the Advancement of Science (SBPC), presented data on the program. One of the National Council for Scientific and Technological Development (CNPq) representatives responsible for SwB stated that *“the program was put together using a sledgehammer”*. He continued by saying that, in the first phase, the agencies struggled to implement the program as they had no experience of dealing with graduate scholarships overseas<sup>21</sup>.

It was also observed from the analysis of the interviews that, due to legislation in some of the destination countries requiring a stage prior to acceptance in healthcare-related courses, many students were not able to study subjects relating to their area<sup>2</sup>.

*“In the choice of university, I looked for what was closest to Dentistry. I went where it was the most similar”*. (Student 10).

*“Precisely because it was a university-related program, what I expected was at*

*least to get to know how Dentistry worked in the country I went to. That the university would provide an opening to be able to attend the classes, because I had my university course, I had Dentistry, but they were very closed to the point that I was not even able to do any theoretical material linked to Dentistry.”* (Student 3).

The usefulness of the course subjects was also discussed during the presentation of data related to the SwB and the difficulty experienced by scholars on the Dentistry course was also observed in other areas, as 24% of the subjects taken by program participants were not utilized and a further 8% were partially utilized in their respective courses in Brazil<sup>7,21</sup>.

So, it is up to the administrators of the SwB program to monitor and select institutions that can truly contribute to the professional qualification of scholars and to ensure the program meets its objectives of providing new professional experiences focusing on quality in areas strategic to Brazil.

It is important to explain that the internationalization of higher education does not take place evenly<sup>22</sup>, and may be either passive or active. Active internationalization is restricted to just a few countries, the core countries that have state policies that focus on attracting and welcoming scholars, the supply of education services abroad, involving the mobility of experts in areas of strategic interest, the exporting of programs and the establishment of institutions or campuses overseas. Passive internationalization, on the other hand, occurs in the countries on the periphery that end up participating as suppliers of students<sup>23</sup>. The United States, for instance, exemplifies active internationalization. This country is the principal guest country for international students from across the world and, if we consider the seven countries with the

greatest capacity to attract students (United States, United Kingdom, Germany, France, Australia, Canada and Japan), one can see a correspondence between the capacity to attract students, academic strength, political strength and economic power. Moreover, it should be stressed that these countries are responsible for two-thirds of the global enrollment of those peripatetic students<sup>24</sup>.

These higher education institutions across the world make use of internationalization of study as a sales product where students who are looking for an academic experience in foreign universities, to enrich their résumés and give them a more intense personal experience, agree to pay the charges imposed by the destination university<sup>25</sup>. The fact is that less prestigious, but financially blessed universities are accepting the program's students without any selection criteria and without being concerned about the quality of education to be provided<sup>26</sup>.

There follow a few thoughts on the subject: Can Dentistry course scholars who go abroad on the mobility program and do not manage to enroll in their course of origin contribute to the qualification in their area of excellence? Is the scholarship granted to this scholar, using public funds, serving the country or the university that gets the fees? Wouldn't Brazil, in these cases, just be financing higher education in foreign universities?

### **Differences in higher education methodology**

Classes in Brazil center around the lecturer and are informative in nature<sup>27</sup> unlike the methods used in many universities where the course hours are shorter and education concentrates on research and academic works. Based on the students' responses, we saw that many universities to which the students were sent, use different methodologies and pedagogical knowledge to educate.

*“[...] you don’t go to class if you would rather to stay in your own little corner. You have to study beforehand otherwise you get lost”.* (Student 3).

*“Here, in our university, I think that in Brazilian universities in general, the lecturers go to the classrooms and present the classes. They are most unlikely to approach the class with a critical view, in a way which allows for discussion”.* (Student 2).

Some students reported the use of the pedagogic model known as Problem Based Learning (PBL) in their destination universities. This is a methodological proposal used in faculties of Medicine around the world where a student-centered approach is used. The student is encouraged to look actively for information to resolve cases that he/she will receive, “aimed at developing critical rationale, communications skills and an understanding of the need to continue to learn throughout their lifetimes<sup>28</sup>.” Unlike traditional pedagogic practices, this is not merely informative<sup>29</sup>.

*“Here there was a lecturer who had a PhD in Education. They are very concerned with teaching methods. Therefore, the idea is to invest at least 50% of the curriculum in problem based learning, the famed PBL. It is VERY, VERY much about learning on one’s own.”* (Student 7).

*“One of the things that was said in immersion week is that there the students had to study by themselves. This was the reason that people had fewer classes. We would have to study at home.”* (Student 12).

The study conducted by Gomes *et al.*<sup>28</sup>, a review of literature about PBL, showed that those courses that used the method achieved better results than the traditional courses. The author found that undergraduates felt more prepared and

were evaluated more positively by their supervisors than the undergraduates of traditional courses, particularly from a social perspective.

The evaluations were also highlighted as another important difference in the methodology of higher education.

*“The evaluation is not very objective. If they ask something, you have to write down everything you know about it, and not just what they ask you. This was very difficult for us [...]”* (Student 1).

*“There was no multiple choice evaluation, it was just written work, and this gave me the opportunity to develop my academic writing. They were works written in the form of articles, reviews of the literature, comparative studies. Everything with references, with rules. The works were submitted to the anti-plagiarism program. Since the first year of university it has been like that, they focus on this, this part of the evaluation is very detailed.”* (Student 3).

One of the statements was particularly striking, that talks of the priority that has been given to memorizing content for evaluations.

*“I had got out of the habit of memorizing things”.* (Student 11).

This phrase should serve as a reflection on lecturers in higher education as the students themselves recognize the limitations of the method in terms of effectiveness of learning.

Differences were also noted with regard to course content. These differences were noted particularly by scholars on the overseas Dentistry courses.

*“[...] I came to realize that here we are not prepared as dentists and students to deal with medical emergencies in the dentist’s office and, from a legal point of view, we are held liable for this.”* (Student 2).

In Brazil, no matter what we have integrated clinics, patient treatment is still fragmented, with one lecturer for each area only working on his own specialty. Lemos<sup>30</sup> talks of the influence of the specialization that the lecturers exercise in integrated clinics, contributing to the logic of fragmentation to which the students are subjected. This logic is created by the resistance of the specialist teaching staff to cross over into other specialties besides their own<sup>31</sup>.

*“Their academic training was more general in nature. Even though there were specialist lecturers, in the integrated clinic the lecturer was responsible for all the activities, irrespective of the area.”* (Student 8).

The fact is that many professionals working as university lecturers in higher education institutions are teachers by profession, but are not natural educators<sup>32</sup>. To carry out this job of university lecturer one must be aware of teaching methods and their applications and not just transmit knowledge. It is necessary to have didactic skills.

The scant attention paid in schools of higher education to the area of healthcare, for the training of university lecturers in the field of pedagogy, can be attributed to the fact that hiring and career progression criteria are more related to studies developed in research and scientific publications than to the work of a university lecturer and the ability to teach<sup>33</sup>.

### **Impact of SwB on professional development**

When questioned about the impact of SwB on professional development, conflicting opinions were given. Some students reported a fairly positive impact but others could not see the benefit for professional development. Life experience however was quoted as fundamental for almost all the scholars.

*“Only really as a life experience, experience for our personal lives [...]. As far as our professional lives are concerned, very little, only the decision that I had to change my area, I decided not to do a Master’s and Doctorate any more but go back to my professional life in the clinic.”* (Student 5).

The lack of a positive impact on professional lives may be attributable to the possible flaws in the selection of scholars and destination universities, which came to light when the SwB first phase evaluations were performed<sup>5</sup>. In many cases, the choice of destination university was made by international agencies, excluding the scholars from this stage of the process<sup>7</sup>. The fact that scholars were sent to universities that did not allow the participation of students in the Dentistry course has already been discussed. This may be to blame for the negative evaluation by the participants<sup>2</sup>.

*“[...] professional influence of the science without borders program.... none... our profession is extremely practical and here I do not do research, I do not get into this academic part. Perhaps if I had gone into this area, it may have helped a bit.”* (Student 13).

On the other hand, some positive impacts were noted.

*“The question of learning to deal with different peoples, different cultures, was important. Even in the profession it is important to know how to deal with this.”* (Student 8).

*“I think this question of internationalization is also important for the students to remain in contact with the lecturer while overseas, to succeed in getting work later on or even for a subsequent Master’s or Doctorate sandwich course. It is also necessary to consider the knowledge that each student*



*brings to his/her own university, whether it be scientific technical knowledge or teaching methodology.”* (Student 8).

### **Contributions of SwB to the institution and the country**

An internationalization program benefiting universities from all over the country, in addition to its specific objectives, focusing on the participating students, also proposes, albeit implicitly, to contribute so that its institutions can open their doors and welcome new students and, principally, new ideas. However, the fact it is simply an intention and not an explicit objective ends up producing very little, as the words of the students demonstrate.

*“I returned from overseas and when I motivated myself to change something that was not even part of my everyday routine, people would say to me: this was there, abroad – you’re in Brazil now. I always ended up having the same discussion. Is it the case that because we are here in Brazil that we have to settle for the things we live with? This is why Brazil is in the situation it is, today.”* (Student 2)

The words of the interviewees demonstrate a negative vision of the country but this can be regarded as a positive as at least these criticisms are being heard. As stated by one of the interviewees,

*“the very fact we are having this discussion [...] to try to stimulate a more critical vision [...] is already important for the country’s development.”* (Student 2).

In 2014, the Brazilian Association for International Education (FAUBAI)<sup>34</sup> held a conference, the aim of which was to further the discussion on policies for international education and to present practices for cooperation between

Brazilian and overseas institutions. This movement shows that the creation of partnerships is considered a priority and an excellent opportunity for development. This internationalization movement is even more evident given the National Education Plan (PNE) approved in 2014. Goal number 14 focuses on increasing enrollment in *stricto sensu* postgraduate courses, one of the strategies being to internationalize research studies<sup>35</sup>.

Some of the participants in the study reported that SwB can help in this regard, by emphasizing the development of partnerships. “I believe that SwB can help with the relationships between universities.” (Student 5)

Another point of view regarding this issue is revealed by other interviewees who stated that the country could be acting as an “exporter” of talent.

*“The SwB took one of the best students we had here and funded him there. Given the intelligence he possessed, he thought: I’m not going to stay in Brazil, I’m going back there [...] and that is what happened. Brazil lost this one!”* (Student 4).

The “brain drain” issue was addressed by Moura *et al.*<sup>26</sup> who stated that this should not be a concern, given that the institutions, CAPES (Brazilian Agency for Support and Evaluation of Graduate Education) and CNPq (National Council for Scientific and Technological Development), maintain strict rules about returning to the country and punish students who do not return to Brazil. As the majority of students have public grants, it is believed that they have ties that make them come back. However, for the program to be of benefit and to avoid the loss of scientists to other countries, policies should be created that involve infrastructure, laboratories and lecturers working at a postgraduate level in Brazil<sup>36</sup>, so a veritable circulation of brains can be achieved<sup>7</sup>.

Among the negative and positive impacts, apprehension concerning the loss of new talent or the scope of the development of talent based on opportunity, the words of one of the interviewees show that, in a sense, the end result is a positive one, demonstrating that the impacts and positive contributions of the program for the community and for the country can be perceived.

*“I believe the program produces a different type of citizen. You are more demanding when you get to know a country where things work properly. The money is applied well, you aren't afraid to go out on to the street, you are not afraid of anything. You come back with a different form of insistence. You want something different and I think that we have changed our attitudes to try and make things better. I think that this, more than academic knowledge, is the most striking result.”* (Student 11).

#### 4 FINAL CONSIDERATIONS

The analysis of the statements by the SwB program participants enabled us to demonstrate essential aspects of the personal development of these individuals. The experience served as a facilitator in the definition of the paths they would be following professionally. Associated with the professional aspect, these students also faced living in a foreign country with all the challenges inherent to the process. Still on the subject of professional development, in a more specific sense, it can be said that the Program experience made it possible to access new technologies, solutions, ideas recognized overseas and bring them into the Brazilian healthcare scenario, sending off the graduating professional to work in a way that is more integrated with the growing intellectual globalization. The students bring back with them, in their baggage, new ideas that can inspire other

students and teaching staff to adopt them and put them into practice in Brazil. Moreover, the possibilities of establishing interrelationships with the overseas universities are broadened as many students, once back in Brazil, end up maintaining ties with the universities in which they studied.

Despite the positive aspects in personal terms, the study also reveals negative issues with regard to the Program's organization. There is clearly a need for a reorganization and restructuring of the Program so that the desired benefits can be achieved in a more consistent manner, reaching all participants. Accordingly, the internationalization, the fundamental aim of SwB, will be in the service to the country and the development of its professionals, with the funding for higher education in foreign universities becoming a means rather than an end.

#### RESUMO

##### **Ciência sem Fronteiras na formação profissional: percepções de estudantes de Odontologia da UFSM**

O objetivo deste trabalho foi avaliar a percepção de estudantes sobre o programa Ciência sem Fronteiras (CsF) no curso de Odontologia da Universidade Federal de Santa Maria. Foi realizada pesquisa de caráter qualitativo, utilizando entrevista semiestruturada com acadêmicos que participaram do programa CsF. A entrevista foi gravada em áudio, transcrita e, após, procedeu-se a análise dos dados. A partir das entrevistas foram elaboradas seis categorias para análise: Língua estrangeira: fator motivacional e fator de dificuldade; Amadurecimento pessoal: uma expectativa concretizada; Falta de planejamento na criação do programa; Diferenças de metodologia do ensino superior; Impacto do Ciência sem Fronteiras na formação profissional e Contribuições do Ciência sem Fronteiras para a instituição e para o país. Conclui-se que os acadêmicos de Odontologia que participaram do

programa perceberam mais impactos positivos na sua vida pessoal, ficando a formação profissional em segundo plano.

**Descritores:** Educação em Odontologia. Intercâmbio Educacional Internacional. Educação Superior.

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Correspondence to:  
Sílvia Ataíde Pithan  
e-mail: [silpithan@yahoo.com.br](mailto:silpithan@yahoo.com.br)  
Alameda dos Ipês, 159/03  
Nossa Senhora Medianeira  
97015-30 Santa Maria, RS