Body Donation Programs in Brazil

Programas de Doação de Corpos no Brasil

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ABSTRACT
Pedagogical studies indicate reduction in the number of corpses in some universities, linked to the diminishing of classes time and of the bodies for dissection in health courses, causing a decrease or extinction of dissection practices. In order to maintain the use of body dissection for anatomy teaching, universities in different countries as the United States, Germany, Japan, Malaysia, Thailand, China, France and Greece have sought to increase the obtaining of corpses via Body Donation Programs (BDPs). The creation and implementation of the (BDPs) although are happening incipiently in several Brazilian universities. To evaluate the general scenario of body donation in Brazil and to verify the continuous appearing of new programs created by Brazilians universities the BDPs were quantitative survey of the existing Body Donation Programs in Brazil. In addition, a survey on the quantity and distribution of medical schools in Brazil and then to correlate it with the distribution of BDPs. For data analysis, it was used descriptive statistics. A total of 28 BDPs were found in Brazil, it was observed that there is a higher prevalence of BDPs in public universities. Most of BDPs are concentrated in the Southeast, followed by the South, Northeast, Midwest and North. It is evident the importance of the corpse for teaching anatomy in health courses, especially in medicine due to the practice of dissection. In this way, when analyzed the amount of BDPs with the number of medical courses, can be observed that there is a discrepancy. Thus, possibly, there is a necessity to stimulate the creation of new BDPs in Brazil, especially in the Southeast and Northeast regions, where are the places with the largest number of medicine schools.

Keywords: Medical Education, Body Donation, Anatomy, Health Teaching, Dissection.

RESUMO
Estudos pedagógicos indicam redução no número de corpos em algumas universidades, que está ligada à diminuição da carga horária de aula prática da dissecação em cursos da área da saúde, o que causa decréscimo ou extinção das práticas de dissecação. Para manter às práticas de dissecação com uso de corpos no ensino de anatomia, universidades em diferentes países como Estados Unidos, Alemanha, Japão, Malásia, Tailândia, China e Grécia tem aumentado o número de corpos via Programa de Doação de Corpos (PDCs). A criação e implementação dos PDCs embora incipiente estão acontecendo em várias universidades brasileiras. Para avaliar o cenário geral dos PDCs no Brasil e verificar o contínuo aparecimento de novos programas criado em universidades brasileiras, foi feito um levantamento quantitativo dos PDCs no Brasil. Além disso, foi realizando um levantamento quantitativo e distribuição das faculdades de medicina no Brasil e sua correlação com os PDCs. Para análise de dados foi utilizado estatística descritiva. Foi encontrado um total de 28 PDCs no Brasil, e foi observado que a maior prevalência destes programas é em universidades públicas. A maioria dos PDCs estão concentrados no Sudeste, seguidos do Sul, Nordeste, Centro-Oeste e Norte. É evidente a importância dos corpos para ensino de anatomia nos cursos de saúde, especialmente na medicina, devido às práticas de dissecação. Nesse sentido, quando analisado a quantidade de PDCs com o número de faculdades de medicina, podemos observar que existe discrepância. Então, possivelmente, existe uma necessidade de estimular a criação de novos PDCs no Brasil, especialmente no Sudeste e Nordeste, que são os locais com o maior número de faculdades de medicina.

Palavras-chave: Educação Médica, Doação De Corpos, Anatomia, Ensino De Saúde, Dissecação.
1 INTRODUÇÃO

The history of Anatomy shows a period of alternation between prohibitions and permissions on the use of corpses according to the epoch (Prifmer et al., 2012). Nonetheless, pedagogical advances in the development of anatomy occurred after the systematization of cadaver dissection (Quironga-Garsa et al., 2017; Singer, 1957). Along these lines, the use of bodies in teaching has brought an important change in the way anatomy is taught (Aversi-Ferreira et al., 2009; Aversi-Ferreira, Nascimento, Vera, & Lucchese, 2010; Mota, Mata, & Aversi-Ferreira, 2010; Souza, Toledo Neto, & Bravo, 2016; Kostorrizos et al., 2018).

Until the correct understanding about the importance of dissection, the history of anatomy was controversial and not linear in relation to its knowledge storage. While in ancient Greece only the corpses of convicted criminals were used and gave the idea that this act was a punishment (Prifmer et al., 2012). In the Middle Age bodies dissection was considered to be blasphemous and so was prohibited. In the Renaissance dissections were popularized and the number of body of convicted criminals became insufficient, which led to grave robbing known as “resurrectionists”, this act became increasingly common in the Modern age (Ghosh, 2015). In the way, for regulatory purposes, the British government passed the Warburton Anatomy Act in 1832, which regulated the dissection by corpses of the disenfranchised poor. In the recent years, there is a growing movement for bodies donation via donor consent (da Rocha, Tormes, Lehmann, Schwab, & Canto, 2012; Ghosh, 2015; Souza et al., 2016; McHanwell et al., 2017; Habicht, Kiessling, & Winkelmann, 2018).

After, the use of bodies for teaching in many countries starts to be ruled and the contemporary anatomy teaching strongly recommends the use of corpses in health courses and dissection practices in medicine schools as a facilitator of the teaching-learning process (Aversi-Ferreira et al., 2009; Aversi-Ferreira et al., 2010; Mota et al., 2010; Kostorrizos et al., 2018).

On the other hand, pedagogical studies indicate reduction in the number of corpses in some universities (Quironga-Garsa et al., 2017), linked to the diminishing of classes time and of the bodies for dissection in health courses (Castro, Nishijo, & Aversi-Ferreira, 2018), causing a decrease or extinction of dissection practices (McLachlan & Patten, 2006; Aversi-Ferreira et al., 2009; Aversi-Ferreira et al., 2010).

The use of artificial material as an adjuvant in anatomy teaching using corpses is suggested, but the exclusive use of these materials may lead the student too far from the clinical reality and could affect the abilities of surgery and invasive procedures (Aversi-Ferreira et al., 2010).

In this sense, the deficit of corpses in universities have been a problem that requires a more realistic study, since it is has occurred in several countries besides Brazil (da Rocha et al., 2012; Asl et al., 2016; Quironga-Garsa et al., 2017; Ciliberti et al., 2018). This fact has may to justify the choice of
synthetic models as an alternative, as well as multimedia and interactive tables with image simulation (Aversi-Ferreira et al., 2010; da Rocha et al., 2012; Prifmer et al., 2012; Chen et al., 2018). In fact, artificial resources have hardly been considered able to replace the bodies in teaching-learning processes adequately (Techataweewan et al., 2017; Chagas, Câmara, & Nascimento Júnior, 2018; Chen et al., 2018; Ciliberti et al., 2018).

In order to maintain the use of body dissection for anatomy teaching, universities in different countries as the United States, Germany, Japan, Malaysia, Thailand, China, France and Greece have sought to increase the obtaining of corpses via Body Donation Programs (BDPs) (Arráez-Aybar, Bueno-López, & Moxham, 2014; Hasselblatt, Messerer, Keis, Böckers, & Böckers, 2017; Techataweewan et al., 2017; Chen et al., 2018; Habicht et al., 2018; Saw, 2018). This way is also advocated by The International Federation of Associations of Anatomists (IFAA) (Habicht et al., 2018; IFAA, 2012).

In Brazil, in recent years were created programs for voluntary bodies donation of self-body, in life, and also for not looking for bodies. These programs are supported by the Civil Code according the Laws 8.501 / 92 (da Rocha et al., 2012) and 10.406 / 02 (Brazil, 1992; Brazil, 2002) and in some states such as São Paulo, Pernambuco and Rio Grande do Norte there are provisions (Provision CG No. 16/97, Provision 28/2008 and Provision No. 93/2012, respectively) that complement the existing legal provision, regulate and clarify these processes (Chagas et al., 2018). In other states as Paraná, Pernambuco e Ceará are organized as a “state program”.

In this kind of program, they have a state center that organizes the acquisition of corpses for all the universities in those specific states.

Then, these centers distribute the bodies according to a schedule.

The creation and implementation of the BDPs although are happening incipiently in several Brazilian universities, possibly could be a way to increase obtaining corpses for anatomy teaching. Indeed, the BDPs is a fundamental source of the cadavers for health sciences teaching (Kostorrizos et al., 2018). However, there is little information about the reality of these BDPs in Brazil.

Therefore, the objective of this paper is to evaluate the general scenario of corpses donation in Brazil and to verify the continuous appearing of new programs created by Brazilians universities.

2 MATERIAL AND METHODS

A quantitative survey of the existing Body Donation Programs in Brazil was conducted using search websites, with the following descriptors: Body Donation Program and Voluntary Organ Donation for Teaching. When information was incomplete, the BDPs teams were contacted by email, phone calls and via social media. Data were selected from May to July 2019.
In addition, a survey on the quantity and distribution of medical schools in Brazil was conducted using data from the Ministry of Culture and Education (MEC) and then correlated with the distribution of BDPs.

For data analysis, it was used descriptive statistics calculated using Microsoft Excel v. 2019 (Microsoft Corp., Redmond, WA).

3 RESULTS

A total of 28 BDPs were found in Brazil, as shown in Table 1. Most of BDPs are concentrated in the Southeast (35.7%), followed by the South (32.1%), Northeast (17.85%), Midwest (10.71%) and North (3.6%) (Table I). It was observed that there is a higher prevalence of BDPs in public universities (in public universities the students don’t pay for their education, the government support the publics universities with tax paid by the population) than in private ones, according to Table I.

| Region      | Institution                                           | Administration | Foundation |
|-------------|-------------------------------------------------------|----------------|------------|
| North       | Federal University of Tocantins (UFT)                 | Federal        | 2019       |
| Northeast   | Federal University of Pernambuco (UFPE)               | Federal        | 2008       |
|             | Federal University of Rio Grande do Norte (UFRN)      | Federal        | 2012       |
|             | Federal University of Paraíba (UFPB)                 | Federal        | 2019       |
|             | Federal University of Sergipe (UFS)                  | Federal        | 2016       |
|             | Federal University of Ceará (UCF)                    | Federal        | 2018       |
| Midwest     | University of the State of Mato Grosso (UNEMAT)      | State          | 2014       |
|             | Federal University of Mato Grosso do Sul (UFMS)      | Federal        | 2018       |
|             | University of Brasília (UnB)                         | Federal        | 2012       |
| Southeast   | Federal University of Juiz de Fora (UFJF)            | Federal        | 2015       |
|             | Federal University of São João del-Rei (UFSJ)        | Federal        | 2016       |
|             | Federal University of Uberlândia (UFU)               | Federal        | 2018       |
|             | Federal University of Triângulo Mineiro (UFTM)      | Federal        | 2016       |
|             | Federal University of Minas Gerais (UFMG)            | Federal        | 1999       |
|             | University of São Paulo                              | State          | 2013       |
|             | Medicine school of Jundiaí (FMJ)                     | Private        | 2013       |
|             | Federal University of Rio de Janeiro (UFRJ)          | Federal        | 2009       |
|             | University of the State of Rio de Janeiro (UERJ)     | State          | 2009       |
|             | Federal University of Espirito Santo (UFES)          | Federal        | 2018       |
| South       | Federal University of Health Sciences of Porto Alegre (UFCSA) | Federal        | 2008       |
|             | University of Santa Cruz do Sul (UNISC)              | Private        | 2017       |
|             | FEEVALE University                                    | Private        | 2015       |
|             | Regional University of the Northwest of the State of Rio Grande do Sul (UNIJUL) | Private | 2019 |
|             | Federal University of Technology of Paraná (UTFPR)   | Federal        | 2017       |
|             | Federal University of Pelotas (UFPEL)                | Federal        | 2015       |
|             | Federal University of Santa Maria (UFSM)             | Federal        | 2003       |
|             | Federal University of Santa Catarina (UFSC)          | Federal        | 2013       |
|             | State University of Ponta Grossa (UEPG)              | State          | 2017       |
In Figure 1 can be observed the growing in the number of new programs in Brazil, majority very recently, and from 2010.

Figure 1: The growth of Body Donation Programs in Brazil (n=28)

According to the National Register of Higher Education Courses and Institutions (e-MEC, 2017), there are 283 medical courses in Brazil recognized by MEC, with the largest amount in the Southeast (40.98%) followed by the Northeast (22.96%), South (18.72%), the Midwest (8.12%) and the North region with the lowest amount (9.18%). The ratio between the distribution of BDPs in relation to medical courses in Brazil can be seen in Table II. Thus, in relative terms, there are more BDPs in relation to the number of medical courses in the South and less in the North region, according to Table II.

| Region     | BDP | Medicine school | Ratio between BDPs and medical school |
|------------|-----|-----------------|--------------------------------------|
| North      | 1   | 26              | 0.03                                 |
| Northeast  | 5   | 65              | 0.07                                 |
| Southeast  | 10  | 116             | 0.08                                 |
| Midwest    | 3   | 23              | 0.13                                 |
| South      | 9   | 53              | 0.16                                 |

4 DISCUSSION

According to Lopes et al. (2017), 96% of Brazilian universities use corpses, which is best indicated in health education teaching and academic research, especially for medicine schools (due to dissection practices) (Aversi-Ferreira et al., 2009; Aversi-Ferreira et al., 2010; Mota et al., 2010; Souza et al., 2016). This allows students to better associate theoretical and practical content, to train fine motor skills for surgical practice, to observe anatomical variations (Aversi-Ferreira et al., 2009; Aversi-
Ferreira et al., 2010) and the relation between structures, to distinguish normal from pathological, to learn from kinesthetic experiences, and also reflect on humanistic care and death (da Rocha et al., 2012; Arráez-Aybar et al., 2014; Souza et al., 2016; Saw, 2018; da Rocha, Maués, Chies, & da Silva, 2019).

The majority of Universities in Brazil still use unclaimed corpses to teach anatomy and since there is a decrease in unclaimed corpses donations to universities, which is a result of bureaucratic difficulties and large access to information technology for identification, BDPs seem to be an alternative to supply this demand (da Rocha et al., 2012; Souza et al., 2016; da Costa Sobrinho et al., 2018). The number of universities that use no reclaimed bodies is directly linked to the few programs of the BDPs (table II), especially when compared to the large number of medicine courses (da Rocha et al., 2012; da Costa Sobrinho et al., 2018). Possibly this is related to the fact that the Brazilian legislation about it is recent, just in 2002 the voluntary body donation was regulated. Then, most program started after 2010.

Thus, striving for the best quality of education, it is necessary to find strategies to increase body capitation in Brazilian universities (da Rocha et al., 2012; Techataweewan et al., 2017; Chagas et al., 2018; Chen et al., 2018), according to the data showed in tables I and II.

A study conducted by da Costa Sobrinho et al. (2018) with biological and health sciences undergraduate students from the Northeast region showed that only 16.70% of them would like to donate their bodies for studies. da Rocha et al. (2019) in cross-sectional study, suggest that the ceremony in honor of the body donors that work feelings of humanism and empathy can change the students' perception and increase the intention to donate their bodies approximately 60%. This fact might possibly point out the importance of BDPs strategies dissemination and general Brazilian population awareness. In addition, it is still suggested to reinforce the ethical values of the legislation involving corpses.

In Brazil, an example of good results with the development of a BDP can be observed in the Federal University of Health Sciences of Porto Alegre, which keeps teaching, academic research and extension activities exclusively using bodies donated by BDPs (da Rocha et al., 2012), similar to what happens in developed countries.

The IFAA recommendation is only followed by 32% of countries most part of Europe, North America, Australia, New Zealand and some parts of Asia and South America (Arráez-Aybar et al., 2014; Chen et al., 2018; Hasselblatt et al., 2017; Techataweewan et al., 2017; Saw, 2018; Habicht et al., 2018). In Brazil, it is observed that the public universities have been adapting to this reality with the increase in the number of new BDPs creation in 2018 as it is happening at the Federal University of Uberlândia in the Southeast, for instance.
In order to be successful and to increase the number of corpses in anatomy laboratories, BDPs recommend a large propaganda for population. The information offered to people should be clear and descriptive so that it helps those who are undecided to make a conscious decision, which increases their willingness to donate and helps promoting the selfless action (da Rocha et al., 2012; Quironga-Garsa et al., 2017). Increasing the dissemination of information on university websites, printed media, television, radio and panels such as flyers, posters, billboards are strongly recommended communication strategies (da Rocha et al., 2012; Chagas et al., 2018).

To keep an efficient communication channel between BDPs and donors is also a relevant factor to make donations effective and generating security and trust for information seekers (da Rocha et al., 2012; Asl et al., 2016; Quironga-Garsa et al., 2017; Chagas et al., 2018; Kostorrizos et al; 2018; Saw, 2018; da Rocha et al., 2019).

Another strategy of general population sensitizing is to promote closer ties among the donor, his family and the university, by holding religious and tribute ceremonies in which the academics would express their gratefulness to donors and their families and to exalt the importance of this altruistic act in the professional formation (Quironga-Garsa et al. 2017; Kostorrizos et al., 2018; Saw, 2018; da Rocha et al., 2019), a common fact some years ago in which an ecumenical cult was held at the beginning of the semester, as the example of the Federal University of Health Sciences of Porto Alegre and Federal University of Bahia and Federal University of Rio Grande do Norte which celebrates masses thanking those whose death teaches (da Rocha et al., 2019).

Art can also be a form of sensitization, such as the “Monument to Body Donors to the University of the Basque Country (UPV/EHU)” monument located in Spain, which gives the following idea: “We living think beyond our lives to give our bodies like a book for you to read” (Saw, 2018).

The presence of non-formal education spaces such as anatomy museums and the promotion of exhibitions of anatomical prosections involving the university and the community are excellent spaces for awareness dissemination of these donation projects, furthermore, demystifies body use for study (da Rocha et al., 2012; 2019). These actions impact all involved, reinforce respect for the human being and, finally, resignify death in favor of life.

This kind of activity is performed in some universities in Brazil and sometimes with great creativity such as Unesp (State University of São Paulo), whose museum is located in one of the corridors of the institution and recently at the Federal University of Palmas where the new museum allows students to perform dissections, preparation of prosections and scientific studies.

In order to comply with the IFAA recommendation and to increase the number of bodies received by universities, it is recommended that Brazilian universities ones invest and develop their BDPs, which will contribute to the paradigm change regarding the alternative destination of bodies.
after death. This altruistic gesture better prepares the students of health courses and consequently will contribute to the improvement of the quality of services rendered to the society. Then, obtaining cadavers for anatomical studies with dissection is plausible as can be seen from the examples cited via the creation of BDPs.

5 CONCLUSION

It is evident the importance of the corpse for teaching anatomy in health courses, especially in medicine due to the practice of dissection. In this way, when is analyzed the amount of BDPs with the number of medical courses, can be observed that there is a discrepancy in numbers. Thus, possibly, there is a necessity to stimulate the creation of new BDPs in Brazil, especially in the Southeast and Northeast regions, where are the places with the largest number of medicine schools.

In addition, it is important that Brazilian universities comply with IFAA recommendations and the creation of new BDPs seems to be the best way forward. It is still necessary to reinforce the dissemination and communication mechanisms between the BDPs and society in order to strengthen relations and raise awareness about the importance of this act for the training of health professionals.
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