

BIOMEDICAL RESEARCH IN FRANCE AND BRAZIL: AN ANALYSIS OF SIGNIFICANT DIFFERENCES AND ETHICAL ISSUES

Editorial

At first sight, Brazil and France seem pretty distant from one another, but on the map, they are not separated by the Atlantic Ocean, but by the Oyapock River, located between the state of Amapa and French Guiana (French overseas department), creating a 730 km long international border. If the distance does exist, it is very different when we finely analyze some similarities in the field of biomedical research.

France is the biggest country of Western Europe and covers 1/5 of the European Union. Apart from Metropolitan France, the country contains overseas territories, remnants of its colonial past. Over the centuries, France has known several political systems, from Ancient History to the current Republic. According to Ernest Renan, the French nation is more an ideology than a reality, primarily based on “the desire of living together and the wish to highlight our legacy”⁽¹⁾. The tragic attacks of November 2015 and all the reactions over the next days illustrate this.

Brazil, discovered by the Portuguese explorer Pedro Alvares during the 16th century, is established on half of South America and is about 16 times bigger than France. This giant does not look to the past but is always moving forward. The concept of nation is really strong throughout the country, as shown by the enthusiasm of soccer players wearing the national *auriverde* jersey and the National Team supporters. Furthermore, they possess a strong culture of entrepreneurship defined by Stefan Zweig as the legacy of the early colonial era⁽²⁾.

Biomedical research is a human activity which aims to give expected solutions, and sometimes unexpected ones too, to a major and insoluble problem at a given time. This research is based on knowledge and will question it with a scientific approach, spread between what is known today and what will be known tomorrow. Ideally, the point of getting new knowledge is to improve a group of people or the entire population’s health. The researcher is a creator of knowledge but is also a pioneer, what imposes an ethical responsibility. For the last 20 years, the way how biomedical research is led has changed with the definition of “good clinical practice”. The globalization of the biomedical research is explained by the fact that we have made many improvements so far but we always need more and more patients to prove the superiority of a treatment to another. Many patents about “blockbusters treatments” expire soon, so the pharmaceutical industry speeds up to discover new ones to replace them, which explains the multiplication of clinical trials. The pharmaceutical industry and the emerging markets share common interests, which lead them to work together, increasing the phenomenon of globalization.

The good clinical practice refers to standards shared by Europe, North America, Japan and Australia, about international ethical and scientific quality defining the conception, the conduct, the registration and the presentation of data during trials involving human beings. Emerging markets are not obliged to follow these standards, what implies that part of the modalities can be dissimulated. The International Conference on Harmonisation⁽³⁾ has elaborated recommendations related to the research and the development of new medications which clearly aim

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to limit human, animal and material resources to decrease the time for the trials.

The Brazilian health law respects these international standards and is the most advanced in Latin America along with the Argentinian and Mexican systems. In addition, many Brazilian doctors have studied overseas and respect these rules. However, if consensuses on theoretical notions about bioethics exist, there are still differences on the way research policies are applied. If respecting all international standards about ethics (Declaration of Helsinki 1964, Belmont Report 1978, International Ethical Guidelines for Biomedical Research Involving Human Subjects and the Resolution of the National Health Council CNS 196/96) is required by every Brazilian scientific review and the National Commission for Ethics in Research, it is surprising that this resolution, which aimed to protect the patients, the institutions and the country, has been recently (12/12/12) dismissed⁽⁴⁾. It is easy to acknowledge a whole scientific community of a country a dignity of principle, but it is harder to define the modalities of its implementation on the border of life (birth and death) when these nations have fundamental cultural, economical, historical and societal differences. The following examples illustrate the various ethical challenges.

Geopolitics

Brazil has many advantages favoring the development of biomedical research on its territory. Its situation in the Southern hemisphere with inverted seasons compared to Europe allows trials all along the year. Its proximity with the US and Canadian pharmaceutical companies, compared to Asia, is more convenient for logistics. The incidence of many diseases is pretty similar to Europe and North America with a high incidence of cardiovascular diseases (42% of men aged 65 or older), type 2 diabetes (6.9 million adults), breast and prostate cancer. The *Agência Nacional de Vigilância Sanitária – ANVISA* (Brazil's National Health Surveillance Agency) registers every clinical trial, and shows that breast cancer and type 2 diabetes are the two most studied pathologies with respectively 20.5% and 26%. Those data highlight the problem of neglected or “orphan” diseases for pharmaceutical companies that have a local impact on mortality or economy, such as dengue fever or Chagas disease⁽⁵⁾.

Economy

Brazil has had a 4% continuing economic growth for the last ten years. This economic development has been seriously reduced since 2011. Its prime mover is its domestic

consumption – with 200 million inhabitants – coupled with advantages of its huge vegetal and mineral resources. Nevertheless, Brazil is ranked 120 out of 189 by the World Bank for the ease of entrepreneurship. In biomedical research, countries are rated regarding their attractiveness from 1 to 10. Brazil is scored 5.26 – just behind China⁽⁶⁾.

According to Goldman Sachs' economist Jim O'Neill⁽⁷⁾, Brazil is one of the five BRICS countries with Russia, India, China and South Africa. Those countries represent the five major emerging national economies. Their markets should grow until the sum of their GDP reaches the one of the G6 countries around 2040 (Japan, USA, UK, France, Germany, Italy). This notion helps the investigators/investors to find the countries which offer the best opportunities. Brazil is definitely one of those; its Human Development Index (HDI), a composite score of life expectancy, education, and income per capita indicators is 79/187 versus 20/187 for France. This index has been created to highlight that people and their abilities should be the main indicators used to evaluate the potential of growth for a country and not only economic criteria. It can be used to question political choices. The reasons why Brazil is often solicited for clinical trials are explained by the following elements. An important growth of its pharmaceutical market over the last years, a highly urbanized population with an easy access to medications due to a generous government health program, important infrastructures in large metropolises (São Paulo, Rio de Janeiro) gathering the major part of the resources, a high relevance in clinical expertise, an important part of the population is treatment naive, which seduces the pharmaceutical industry, reasonable costs for research with a low-constraining regulation, an eased patient recruitment, and a surprising transdisciplinarity⁽⁸⁾.

Culture

The French “*exception culturelle*” (cultural exception) designates past or actual French specificities compared to other countries in the cultural field. This definition implies pride, pretentiousness and the feeling that French culture is superior to others. This cultural diversity is closely related to the organization of the society. In France, national collective solidarity is highly developed to facilitate the access to the health system. Some other societies, like Brazil, allow more importance to the familial or local communities and a low national investment in the health system. In this way, the decision for a woman to participate in a clinical trial will be made by a man of her family, either her husband, her father or her brother and not by herself. Those cultural differences between our two countries explain why clinical research on the embryo is forbidden in France and allowed in Brazil

since the Biosecurity law (2005). On the other hand, abortion is forbidden in Brazil and is allowed in France.

The excess of some investigators associated with the pressure from clinical trials leaders led those “body hunters” to get established in developing markets, losing the perspective of the final objective of any biomedical research, which is supposed to be the improvement of the conditions of life for the whole human community. The complexity of the actual context for biomedical research – multiple financial sources, multicenter trials, variable regulatory constraints, risky trials – must alert permanently the researcher so he will be able to apply an ethics of responsibilities more than convictions, as theorized by German sociologist Weber⁽⁹⁾.

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Table 1 - Comparison between France and Brazil based on 12 criteria.

Criteria	France	Brazil
Population and density (Pop. per km ²)	66 million; 121	201 million; 24
Urban population	79.3 %	85.4 %
Inflation rate	0.5 %	5.5 %
Unemployment rate	10.5 %	5.8 %
Human Development Index	20/187	79/187
Language	French	Portuguese
Child mortality	3.34 ‰	19.83 ‰
Life expectancy	81.75	73.53
Medical Doctors per 1000 inhabitants	3.19	1.9
Prevalence of obesity	16 %	16.2 %
Literacy rate	99 %	88.6 %
World rank for scientific publications	6th	13th

