

# Challenges for a successful career as a PhD student

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## Dear editor

Recently, we read publications relating to helping students to improve their scientific thinking and writing;<sup>1,2</sup> in which Sørensen wrote a brilliant paper entitled “I-determinants for successful PhD or postdoctoral outcome”.<sup>3</sup> There is a new world in clinical and experimental research with many challenges for training new researchers. There is notable intensification of the International Scientific Cooperation, requiring more systematic programs for PhD students and research fellow training. In this paper, the author describes his extensive experience relating on how to identify the characteristics of PhD students and postdoctoral fellows that can successfully perform the training program and became an independent researcher.

Sørensen<sup>3</sup> highlights I-determinants characteristics to predict success or failure of the student in PhD and postdoctoral programs. He describes such characteristics, such as interest; incentive; idea; initiative; integrity; and interpersonal relationships, and scored in a way to predict success on the PhD program, in which the student needs to develop a realistic, relevant, and feasible project. The candidates for a postdoctoral program must have well-developed capacity for critical thinking, conceptualization, and reflection. The I-determinants for this category are: identity, independence, and image; implementation; innovative and important topics; in-depth knowledge for research topic; interactive and integrated with the scientific community; and internationally oriented.

Sørensen<sup>3</sup> opens the possibility to discuss the differences between training programs from one country to another; thereby we will describe our experience in Brazil, and also consider some different points of view. In Brazil, there is no data collection related to the percentage of students that successfully finish the PhD program and became a postdoctoral researcher or an independent researcher. However, it has been shown that the number of PhD students increased 250% in the last 10 years.<sup>4</sup> Also, we can identify some aspects, which are probably unique to our reality. In Brazil, there are few students who really want to become researchers. The socioeconomic aspects require that health care professionals, especially nonmedical professionals such as psychologists, nurses, biomedical, among others, to seek other ways to work and expand job possibilities such as giving classes or requesting better positions in their current job. Thus, as the primary objective of the PhD candidate in Brazil usually is not necessarily to become an independent researcher, but to open up employment opportunities. In this way, unfortunately many students are either not motivated nor engaged in research

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innovation. As noted by Sørensen,<sup>3</sup> a student seeking a PhD program for financial need or seeking only a qualification for promotion in another career, the prognosis is much less favorable than when the driving force is a genuine interest in research. Thus, in Brazil we have to face the limitation that probably most of the students do not have a primary interest in research. This unfavorable local scenario makes preparing for a good and independent researcher hard work.

The gap in scientific scenario between supply and demand of PhD students and job position is also a problem in wealthy countries like the USA.<sup>5</sup> In these centers, PhD students and postdoctoral fellows carry out most of the scientific research. As a result, high-impact researchers train more scientists who are required to replace themselves; in total, thus generating more scientists than existing relevant positions in academia.<sup>5,6</sup> However in the USA, there are more researchers working in industry, in functions related to research and development and more recently in unrelated functions for research with managerial functions and business consulting than in academia.<sup>5</sup> In a Brazilian scenario, there are no vacancies in the labor market for researchers. Professionals who want to pursue a career as researchers need to become teachers, usually in major universities, which makes it a much more difficult path.

As a result of this doctoral students profile, the results are disastrous. Fernandes-Ferreira<sup>7</sup> published the text “Um exército de doutores desempregado or An army of unemployed doctors”. The author discusses the problem of the growing number of unemployed juniors PhDs and low market capacity to absorb this demand.

On the other hand, there are students that successfully conclude their PhD program and who can take advantage

of a scholarship to study and dedicate them exclusively to doing research abroad during the PhD or postdoctoral program. Still, there are no guarantees and possibilities of integration in the labor market in which are usually restricted and precarious. So that, on many occasions, the student who finishes the PhD successfully chooses to try careering abroad.

In conclusion, we agree that it is important to discuss the ways to identify the PhD or the postdoctoral profile, which will conclude the program in a successful way, but it is also indispensable to discuss the real opportunities that these professionals will have in the future in their areas of research.

## Disclosure

The authors report no conflicts of interest in this communication.

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