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A Proposal to Study the Experience of Female Scientists in Mexico: Physicists as a Case Study

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To Yola, in memoriam.

Abstract: Although the design of public policies to support and improve the status and opportunities for female scientists requires reliable data, studies of this type have not been done in Mexico. We present a proposal to conduct such a study at the national level, with physicists as a test group.

Keywords: women, science, physics, public policies, Mexico

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SCIENTISTS IN MEXICO

During the second half of the 20th century, public policies were planned to develop scientific research in Mexico. The National Council of Science and Technology (CONACyT, Consejo Nacional de Ciencia y Tecnología) was founded in 1970. After an economic crisis, a brain drain threatened the nascent scientific community. The National System of Researchers (SNI, Sistema Nacional de Investigadores) was created in 1984 to promote and reinforce the quality of research and innovation through evaluation of published papers and thesis advisement. Being named a National Researcher through SNI means being recognized for the quality and productivity of one's work, as well as an important monthly bonus. SNI currently has 5,919 women members and 11,718 men members [1].

Figure 1 compares male and female membership in the SNI. In Figure 1A a steady increase ($\sim 1\%$) of the total percentage of women can be observed during the last decade, with a total number increase at an annual rate of 10% and 7% for the physics/math/earth sciences area (PME). (We attribute the decrease in 2004 to an error in the database.) Figure 1B shows the percentages of men and women in PME for the last three years. Mexico is among

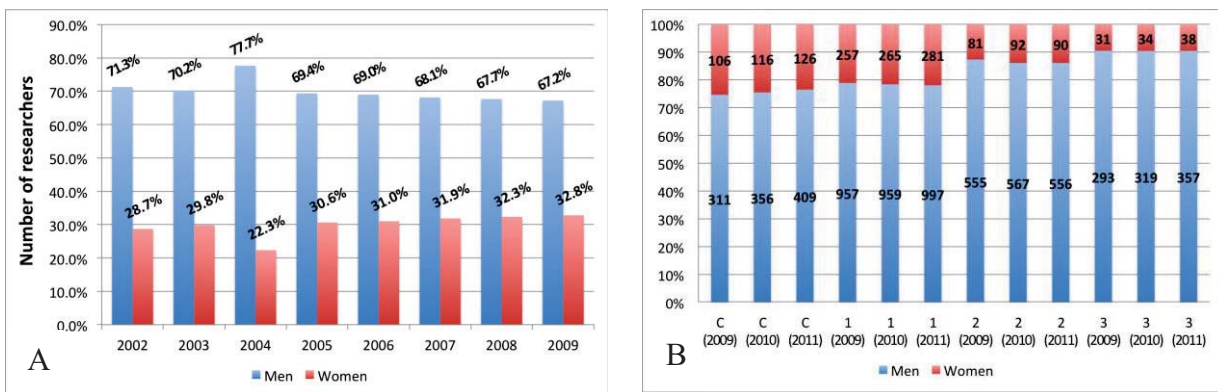


FIGURE 1. Women in the National System of Researchers (SNI): (A) Total percentages during the last decade; (B) Total in the physics, math, and earth sciences during the last three years. C = candidate and 1–3 = SNI membership levels [1].

the countries that has more than 50% female physicists earning the first university degree [2], which explains why the lowest SNI member shows an increase as well as the highest percentage. However, levels 1 and 2 have decreased slightly, while the highest level, level 3, remains constant. A global analysis by age shows that 24% of the women are younger than 39 years old, which may explain why a considerable number remain at the lower levels.

Although some disaggregated data are published regularly (mainly student population and proportion of women in the SNI areas), a detailed study of the situation of women in science still needs to be conducted. For example, the correlation between gender, age, and levels by discipline has not been analyzed. We know that physics is the largest category in in the PME area, but precise data about physicists are unavailable. Moreover, we know little about the distribution of women throughout different faculty positions, their salaries, the differences between universities and research centers, etc. This lack of information prevents development of public policies that could influence gender equity in the scientific community. Our purpose is to develop a project to collect and analyze data regarding female scientists then use the results to develop public policies.

PHYSICISTS AS A CASE STUDY

Physicists are an ideal group with which to study women in science in Mexico. As a profession, physics is rather recent in Mexico, and though the number of physicists is small, it is still large enough for a statistical study. Since 1988 the Mexican Physical Society has published a biannual catalog of programs and human resources in physics [3], in which universities and centers report the academic degrees and research areas of their faculty members, the heads of their departments and programs, and the authors of theses and publications. From these data we can obtain disaggregated trends on productivity, regional differences, mentoring, and occupancy of high-rank positions.

Beyond Statistics: Incorporating Gender Issues into History of Science

Several approaches should be considered, such as analysis of the participation of women, focusing on limitations and obstacles and their roles in institutions and scientific societies. In addition, we plan to show achievement through biographies, emphasizing the barriers to participating in science. It will allow us to understand the gender dimension in academia and develop role models, including the roles of pioneers and their contributions [4].

After finishing the project, we will present results and a proposed plan to the scientific community and government offices such as CONACyT, the National Institute of Women, and the National Association of Universities for implementation.

Female Physicists Recently Awarded

We celebrate that Silvia Torres-Peimbert, professor of the Institute of Astronomy at our national university (Universidad Nacional Autónoma de México) became the first female physicist to receive the National Prize of Science (2007) and the L’Oreal-UNESCO Award for Women in Science for Latin America (2011). More female physicists are receiving awards in Mexico, indicating a vigorous participation of women in science.

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