Women in physics: Students and faculty members in Turkish higher education

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Gender gap in higher education and career

In recent years, although there have been efforts to eliminate the gender gap in education, science, and the workforce worldwide, statistics indicate that inequality has not completely disappeared [1].

Previous research reported the lowest representation of women in physics among the other science majors, and many reasons for the gender gap in higher education and career, such as inadequate physics and mathematics preparation in high school, few women role models and mentors in physics, counternarratives about physics, motivational, socio-cognitive, socio-cultural, social-psychological factors, and family responsibilities [2-11].

The latest statistics show that the number of male and female students enrolled in primary and secondary schools is close, and the total number of women enrolled at universities is higher than that of men in Turkey [12-13].

Methodology

Research Aim

This study focused on university-level physics majors and examined the status of women in physics over the last ten years in Turkey, employing information provided by the Council of Higher Education [13].

Data Analysis

Women students in undergraduate and graduate-level physics programs were examined regarding the number of admitted, registered, and graduated students.

In addition, for the same period, women faculty members in the undergraduate physics programs and the women teaching staff in graduate schools and research centers were analyzed.

Results

Women Physicists

The percentage of female faculty members increased from 31% in 2013 to 32% in 2023, exceeding previous findings in Turkey of 30% in 2008 [14], 26% in 2005 [15], and 29% in 2001 [16].

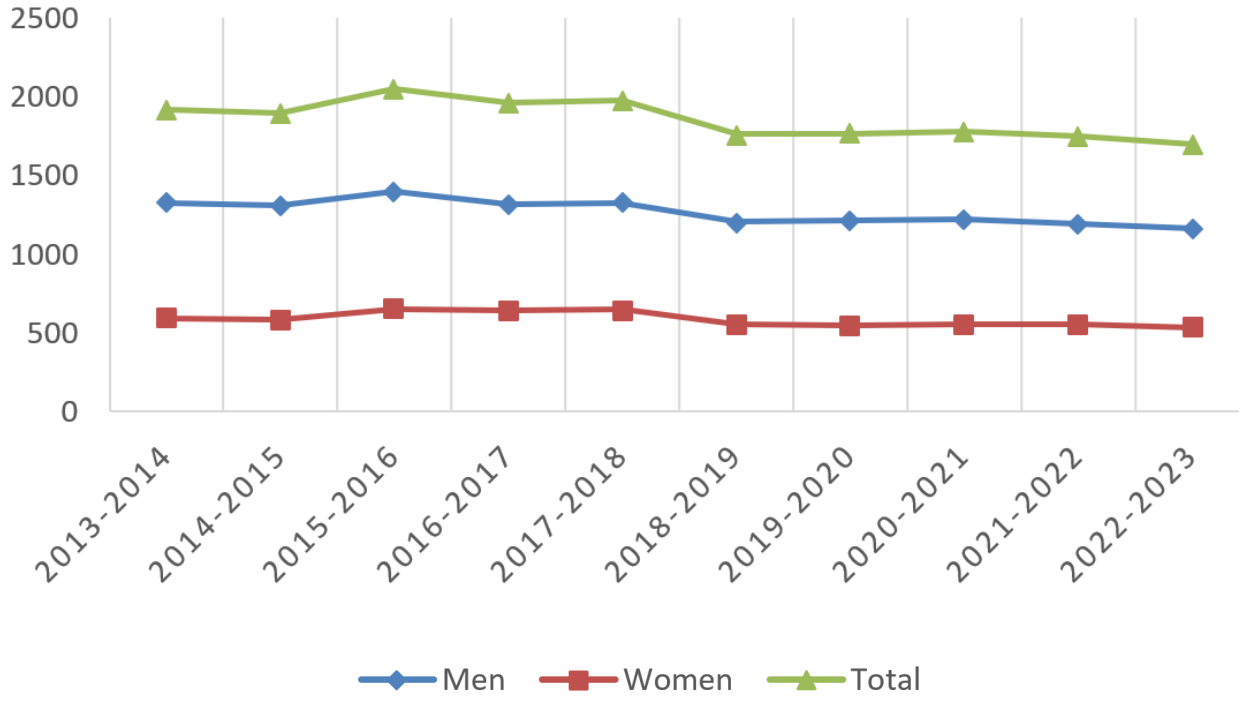

Figure 1. Distribution of faculty members across 2013-2023

Results

Women Undergraduate Physics Students

In 2013-2014, 37% of newly enrolled students in physics programs were women, and this percentage rose to 41% in the 2022-2023 academic year.

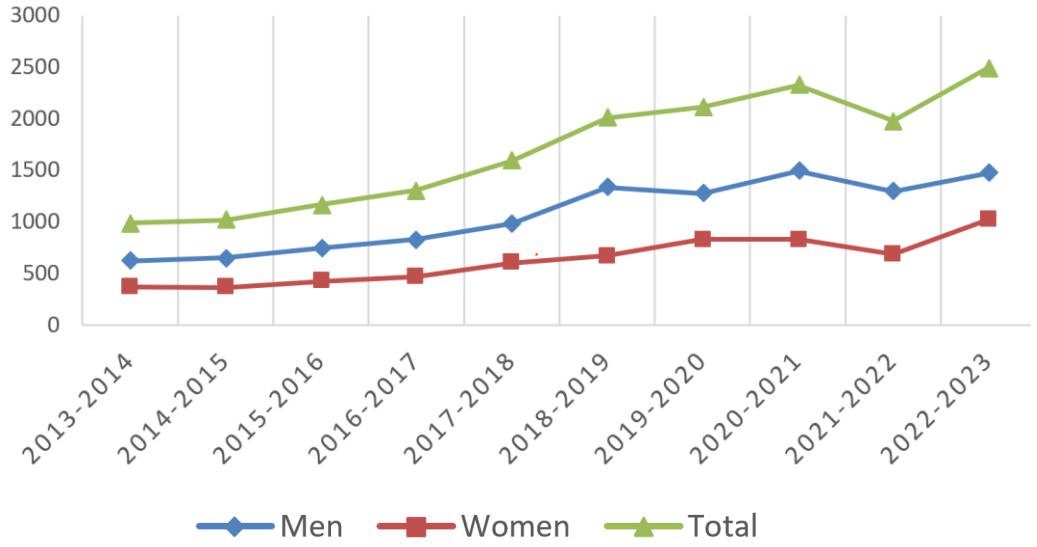

Figure 2. New admission to bachelor's degree in physics across 2013-2022

Between 2013 and 2022, the percentage of women in physics with bachelor's degrees varied between 42%-50%, where it was a minimum of 38% in the 2017-2018 academic year.

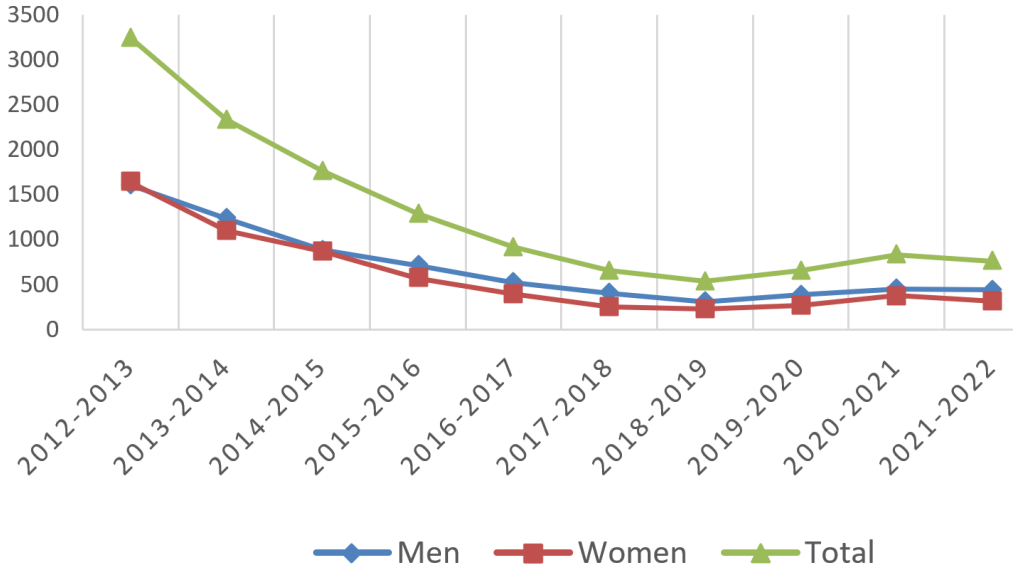

Figure 3. Number of students graduated with bachelor's degree in physics across 2013-2022

Results

Women Graduate Physics Students: Master's and PhD

The number of women obtaining a physics master's degree has fluctuated, with the highest number of graduates recorded in the 2018-2019 academic year. However, following the COVID-19 pandemic, the percentage of women MS graduates has remained below 50%.

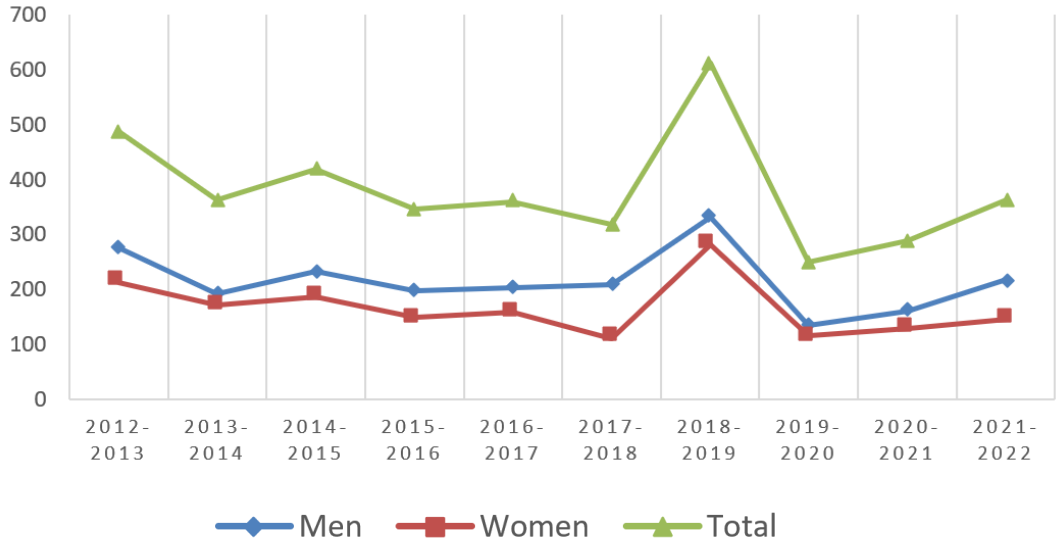

Figure 4. Graduates with Master's degree

The percentage of women obtaining a doctoral degree in physics still lags the number of men by 41% in the 2021-2022 academic year.

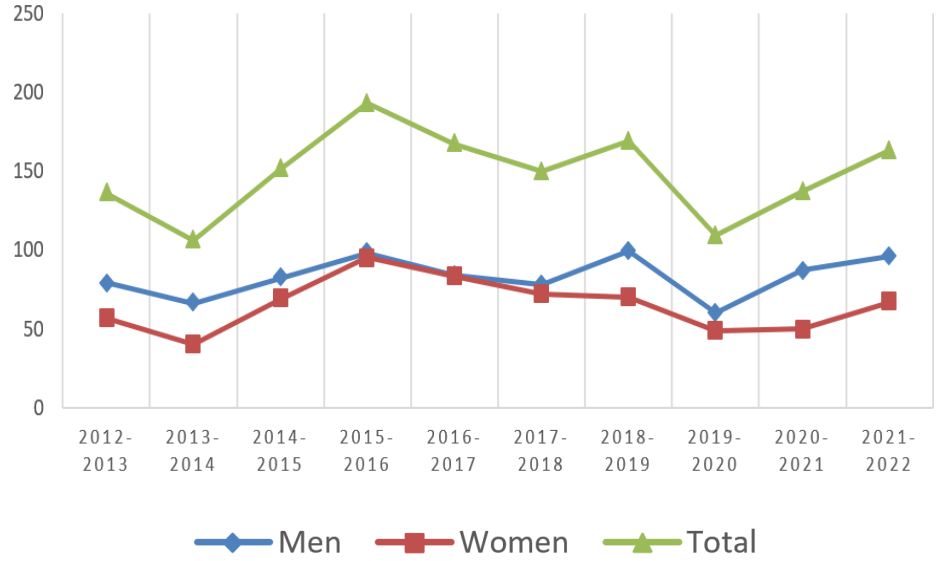

Figure 5. Graduates with PhD degree

Conclusion and Discussion

- In conclusion, while there is still a gender gap in physics majors in Turkey, the percentage of women in admission to physics bachelor's degrees has increased between 2013 and 2023.
- The Turkish education system is designed to ensure that both female and male students have the same opportunities to take science and mathematics courses at the same level of skill in high school [3]. This has contributed to the participation of more women in academic life, along with efforts to promote women's involvement in the workforce [11].
- According to the statistics, despite a considerable decrease in the number of graduate students during the COVID-19 pandemic, the percentage of graduate physics students has gradually increased since then. While the numbers have increased for both men and women in Master's and Ph.D. programs, the rate of women still lags behind the rate of men.
- While the number of both female and male faculty members in physics has decreased in the last decade, the rate of women faculty members has decreased at a slower rate than the rate of men faculty members. In addition, the percentage of men increased in early career (e.g. research assistant) and the percentage of women increased in advance career levels (e.g. professorship) comparing to male faculty members in physics within ten years. However, the number of women is still lower than men. These conclusions suggest that women are more likely to stay attached to academic life in physics than men, even in the face of challenges and more stable in advancing in career.
- Despite facing a number of challenges, women faculty members in Turkey generally find satisfaction in their work and love being an academician [17].

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