



THE PHENOMENON OF WOMEN SCIENTISTS IN 21ST CENTURY SCIENCE

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Abstract

In today's scientific development, the active participation of women scientists is not only a matter of gender equality, but also one of the important factors of scientific progress. The development of science in the current era is in many ways closely related to intellectual diversity, social inclusion and innovative approaches, and the role of women scientists in this process is increasingly increasing. This article analyzes the phenomenon of women scientists from a socio-philosophical and scientific point of view, highlights their contribution to the development of science, existing systemic problems and ways to overcome them.

Keywords: Women scientists, gender equality, development of science, scientific activity, innovation, academic environment, social factors, modern era, scientific policy, intellectual potential, inclusive development, scientific cooperation.

Introduction

In today's globalization and knowledge economy, science has become the main driving force of social development. The effective use of all layers of human capital, including women's potential, in scientific development processes has become an urgent issue. Especially in the 21st century, it can be observed that the phenomenon of female scientists has formed as a separate social and scientific phenomenon, bringing new approaches to the development of science. Historically, women's participation in science has been limited for a long time. However, as a result of the expansion of equal access to education in modern society, the improvement of gender policy, and the strengthening of democratic

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principles in the scientific environment, the number of female scientists and their scientific influence have increased significantly. Today, women are working as leading researchers in a wide range of fields, from fundamental sciences to technology, engineering, medicine, and social sciences. The relevance of this topic is that the contribution of female scientists to the development of science has not yet been fully studied, and the existing problems are systemic in many countries. Therefore, this article comprehensively analyzes the phenomenon of female scientists and highlights their role and importance in the modern scientific environment.

Science in the 21st century is developing rapidly on a global scale and is becoming the main driving force of social progress. In this context, the role of women scientists in science is not only related to the issue of gender equality, but also deserves attention as a priority factor of scientific efficiency and social innovation. Historically, science has been associated more with male activities, and the scientific potential of women scientists has been limited. In the late 20th and early 21st centuries, due to gender policy and equal access to education, the scientific activity of women scientists has increased dramatically.

MAIN PART

Today, women scientists are working as leading researchers in fundamental and applied research, in social and natural sciences. For example, methodologies developed by women scientists in medicine, biotechnology, ecology and social sciences are being implemented in practice in many countries. At the same time, the results of women scientists' scientific work promote the ideas of social justice, sustainable development and inclusion. UNESCO (2021) research shows that the activity of female scientists increases the adaptability of scientific results to social practice.

In addition, women scientists play an important role in introducing methodological innovations in scientific communities. For example, in the fields of engineering and technology, women scientists are developing new standards of project management and creating an effective system for managing scientific work. In the social sciences, women scientists are developing innovative

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solutions that meet the needs of society, which allows them to put scientific results into practice.

The participation of women scientists in leading positions in 21st century science still remains a serious problem. Global statistical studies show that the share of women scientists in the positions of professors, scientific supervisors and heads of institutes is significantly lower than that of men. For example, according to an analysis conducted by the World Bank in 2022, the share of women scientists in leading scientific positions in developed countries averaged 28–32%, while in developing countries this figure was around 15–20% (World Bank, 2022). In Uzbekistan, the appointment of female scientists to scientific leadership and professorship positions has been slowly increasing over the past decade, and this process is largely due to gender stereotypes, traditional values of society, and slow changes in scientific policy.

As Bourdieu (2004) has noted in his research, social and institutional stereotypes in scientific institutions limit the participation of female scientists in scientific management. In many universities and scientific research centers, female scientists, despite having scientific degrees, do not have equal opportunities with men in leadership positions. This has a negative impact in two ways: first, the approaches and ideas of female scientists are not sufficiently taken into account in the scientific decision-making process; second, new approaches are limited due to the lack of gender diversity in the implementation of innovative and interdisciplinary projects.

Gender stereotypes are also reflected in the process of distributing grants and scientific projects. According to reports from the World Bank (2022), female scientists receive fewer scientific grants than men, especially with limited opportunities to manage leading scientific projects. This not only reduces individual scientific activity, but also the innovative potential of the scientific community. At the same time, the lack of sufficient participation of female scientists in the leadership of scientific institutions leads to a lack of leadership models for young scientists, which negatively affects the long-term development of science.

Analysis shows that gender inequality is not only contrary to the principles of social justice in society, but also a significant factor limiting the possibility of

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fully utilizing the innovative potential of science. For example, when female scientists participate in scientific management, projects are more likely to take into account social needs, environmental sustainability, and inclusive strategies. Therefore, it is necessary to introduce a gender-sensitive approach to science policy, appoint female scientists to leading positions, and create equal opportunities in the distribution of scientific grants.

Studies also show that the participation of female scientists in leading positions strengthens creative approaches in the scientific community. For example, in the fields of biotechnology and ecology, new methodologies and interdisciplinary approaches are more successfully implemented in projects led by female scientists. At the same time, this process motivates young scientists, strengthens gender equality in science, and increases the social status of female scientists in society.

The activity of female scientists in science and participation in leading positions is the focus of many global studies. The most effective way to address these problems is to implement a gender policy and develop leadership programs in academic institutions. Gender policy includes the following main areas:

Transparency in the allocation of grants and research projects: The allocation of grants often determines the ability to carry out scientific results and innovative projects. Studies show that female scientists often have limited opportunities to win grants compared to male scientists. According to reports by UNESCO (2021) and the World Bank (2022), the introduction of gender-sensitive policies in the allocation of grants significantly increases the ability of female scientists to manage projects and create scientific results. This not only strengthens individual capacity, but also the overall innovative capacity of the scientific community.

In 21st century science, the phenomenon of female scientists has become an integral and strategically important component of global scientific progress. Research shows that the share of female scientists in scientific publications, patents and innovative developments has increased significantly over the past decade. This means that gender diversity in science is increasing and the scientific potential of female scientists is increasingly being demonstrated. The results of the study show that gender-sensitive scientific policies, mentoring and

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leadership programs, transparency in the distribution of grants, flexible working conditions and social support infrastructure increase the scientific efficiency of female scientists. Such measures not only ensure gender equality, but also improve the quality of scientific results, increase the number of innovative projects and serve the sustainable development of science.

CONCLUSION

In general, the phenomenon of female scientists in 21st century science is not only a matter of social justice, but also an important factor in innovative progress. Ensuring gender equality in science policy and expanding the participation of women scientists in leadership and innovation processes is one of the main strategic directions that determine the quality of future science. Therefore, supporting the scientific potential of women scientists means not only ensuring equality, but also ensuring the intellectual and innovative development of society.

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