Present Scenario of Women in Science and Future Prospects

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Abstract

Women being half the human resource affect the development process to great extent and their underrepresentation in any field dampens this process. The gender gap in science is leading to loss of talent, thought and ideas which in turn is hampering the way to reach to full potential of development in this area. The status of women in the world is viewed in the framework of their role as determined by culture, society or division of labour. We find that women are underrepresented in the field of science because of wrong belief of having less scientific temperament, gender biases, family reasons or inflexible hierarchical system of organisation. Our effort should be to promote women access to and their active participation in science. Attempts should be made to remove the barriers to this field for them so that unutilized human potential also contributes to development process. This paper analyzes the current situation and identifies the effective ways to empower women through and for science. It focuses on promotion and equity of women in the field of science so as to help her fill the gender gap and acquire position of power and prestige in society in this area also.

Key Words: Women in science, male domination, gender sensitization, gender inequality.

Introduction

Development of any kind is must whether it is of an individual or nation as it leads to them to acquire the ability to know and understand the problems and also the ways to solve them. Success of entire development process depends on education as it is an effective means of social transformation, economic growth and social development at any time and for any nation. Women face major challenges in the path of development as a result of changes in the world economy arising from rapid globalisation. It has been observed number of times that education of woman in different disciplines is essentially needed for fullest development of potentialities of women. Genders inequalities have been linked to growth and these when present in education have been found to dampen growth. In recent reports, we find global picture of women inequitable. Women constitute 50% of global population and they account for 66% of work done and here inequality is also visible when we find
that they have only a share of 10% in world’s income and own only 1% of world’s property. Gender equality and empowerment of women will make crucial contribution to economic development of world as they constitute half the global population and half the human resource. Even U.N. has recognized the role of women [1] in development of a country, but empowerment, enrichment and enlightenment of women is impossible without proper education. It has been found that participation of women in science education has been and is still low around the world [2] which is a matter of concern as we know that science and technology are key drivers to development. Global community has made a lot of efforts in inspiring and engaging women in science as they are still underrepresented in related fields.

**Present Scenario**

Representation of women in many areas of life and their participation in most of socio economic activities have been disproportionate to their number. The gender belief system has acted as a strong barrier to women’s participation in many important fields particularly education which leads to path of progress and development. Education is the key instrument for development of woman herself also as it intends to lead to qualitatively improved behavior which in turn develops awareness, skills and functionality. Since education plays a dialectical role and acts as a catalyst in the long term, it has to be viewed as liberating instrument and efforts have to be directed towards removing barriers to women access to science education. There exists a gender gap in the field of science which affects quality and type of education offered to women. It deprives them of opportunities in science and is also a great loss to society and science itself. The proportion of male students opting for science and engineering is much higher as compared to other streams. For males we find ratio for science graduates as one is to five and for engineering it is one is to nine. But in case of females, we find this ratio as one in twenty and one in fourteen graduates in science and engineering respectively. In India, almost 40% under graduate science students are women and 30% are in engineering. The gender gap widens in practice of science with women occupying 15% of science faculty positions. Only about 14% of government scientists are women. Recognition of the contributions of women scientists remains poor as we observe menu scale with 15 women awardees out of 461 in 2014. And moreover, acceptance of women among male dominated scientific community has always been a challenge. This issue is of great concern. Having more women in science is not only about gender equality and equity but is of advantage for scientific progress and society, as otherwise the research output will be only male centric and the loss of educated women in science work force [3] which is also a loss of national resource. It is an opportunity loss in terms of their possible contributions to science and society. If only we have gender parity, the India’s GDP would grow by one percent ore. Therefore, only way India can achieve UN sustainable goal is through gender parity. Even India’s female labor force participation is inordinately low. Only 14% of establishments in country are run by female entrepreneurs. Indian women’s contribution to GDP is less than 20%. Therefore, gender sensitization is the prime requirement to reduce the barriers created by gender inequality and to promote personal national and global development although, we
can have an insight into other factors also which are also contributing factors for disproportionate representation of women in science.

**Causes of under representation of women in science**

- Non acceptance of women in science among male dominated community.
- Wrong belief that women have less scientific temperament.
- Poor recognition of work contribution of women scientists.
- Women prioritize family over work most of the times.
- Considered less productive for quality and quantity of published research work.
- Informal policy of institution for employment purpose.
- Gender biases.
- Gender gap.
- Limited mobility.
- Workplace stress.
- Inflexible hierarchical structure of science organizations.
- Women not considered serious for job or postdoctoral work in science.

**Discussion and Analysis**

A woman can be empowered only when she learns to involve, participate and make decisions in all affairs of family, society and nation. True empowerment of her can be achieved through education as it induces the qualities, desirable skills, attitudes and habits in the individuals. Under representation of women in science is a loss of talent, thought and idea which in turn is an obstacle for maximum developmental potential as women have full potential for creation and innovation. In past, men had a major access to science education as mental set up of society was skewed towards them whereas about women, it was believed that they do not have the scientific temper as men have and were assumed to be incapable of pursuing science as career and hence, were encouraged to study humanities. It is argued here that managing the demands of family and profession simultaneously can be difficult and women prioritize family over work and, therefore, women scientist are not taken seriously for jobs or postdoctoral work. The perception, that women are unable to devote adequate time to research due to dual burden of household and workplace [4], leads to preference for men in hiring. Two commonly held notions, which act as roadblocks to women’s progress are that they are less productive in terms of quality and quantity of published research work and they have limited mobility. Another cause identified for women dropouts of science is informal policy of the institution of not employing both the spouses. Impacts of societal and workplace factors [5] which create workplace stresses or burdens for women scientists are also there. These include workplace gender bias, gender stereotyping and lack of informal networks which are responsible for low status of women in science. Unintended and subconscious gender biases also act as barriers for women to be hired, promoted or credited for their achievements. Another reason seen behind this is the lack of proactive role-played by government [6]. The little flexible hierarchical structure of the science organizations also aggravates the gender biases and prevents women from freely expressing themselves.
It has been realized that in order to enhance the participation of women in science education, it is necessary to evolve a modality of tackling women’s issues on a priority basis which are responsible for their under representation in the field. It is time for women to be more enlightened and equipped for proper development of their personality to enable themselves to play their role properly as development policies depend upon their relative decision making capabilities [7]. Our effort should be directed towards removing barriers to women’s access to science education. Scientists have made many useful suggestions to address various aspects of the problem. These include creation of supporting infrastructure, transparency in decision-making at scientific institutions, incentivizing institutions to promote gender balance, special provisions like flexible timings, special schemes and relaxations [8]. Science academies and state councils should play a key role. Scientific community should address the problem by working on mindset issues at the individual level. They should continue to focus on solutions for making the workplace environment [9] better for women and tackling gender biases at scientific institution. Scientific community should call people for a change from within including both men and women thereby acknowledging the key role that society can itself play in addressing the issue and the important role men will need to play. The scientific community also stresses on the importance of including women in institutional governance, national planning as well as in selection committees and policy making [10].

**Suggestions for Potential Agents to Bring Change**

- Create more opportunities for women at entry level so as to utilize their potential to maximum.
- Gender sensitivity should be introduced at project formulation and implementation level.
- Ethics training
- Existing support system should be strengthened to improve the performance of women in science.
- Appreciation and understanding different roles of women should be encouraged.
- Active participation of women in planning and decision making should be taken care of.
- Prospects of women regarding advancement and career building should be enhanced [11].
- Environment should be created in society in favor of women for science education.
- Entrepreneurship for women in science should be encouraged by improving present support system.

**Future Prospects**

Effectiveness of education to change social beliefs, values and practices is undoubted. Importance of women education has been recognized from ancient times though not always practiced. Imparting education to women in perspective of gender equality would be highly beneficial. Building scientific capacity is a shared responsibility. Women’s contributions and efforts, therefore, cannot be ignored any longer. They must be represented in all delegations, committees and programs not because of gender but because of merit. Women pursuing career in science face unique challenges [12, 13] and hence for professional development of women in science, lifelong training mechanism should exist to help them achieve their full potential. Governments should also
try to strengthen women ecosystem by playing a crucial role in changing the mind set of all young women [14]. In recent years, a wide spectrum of new programs and opportunities to nurture innovation has been created by many governments across number of sectors. Recognizing the importance of women entrepreneurship and economic participation in enabling the country’s growth and prosperity, many governments are ensuring that all policy initiatives are geared towards enabling equal opportunities for women. The young minds can take up emerging uncertain path of innovation and entrepreneurship in science also. Tremendous opportunities are being created and several initiatives are being taken by government to have a vibrant innovative ecosystem for women in science.

Conclusion

It is felt that number of measures is necessary to incorporate women perspective into planning and governance of scientific institutions without which it would be difficult to address the problems faced by women scientists. This requires stronger will and deeper commitments from policymakers and scientific community itself since we need more women scientists both in the scientific leadership and at academic levels and we also need them in application of science for the welfare of women. The technological empowerment of women is most critical as the educated and privileged class of women scientists will have to own the responsibility. They can make an important contribution in bridging the gender gap, remove barrier of negative attitudes and thus paving the way for fruitful participation of women in Science. As far as possible, awareness building training programs and entrepreneurship development, all these must be focused almost in a mission mode. Woman will have to believe in herself and will also have to believe that she matters for science and society also.

References