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WOMEN IN RESEARCH FIELD

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Abstract:
As we are living in the 20th Century equal participation of women plays a vital role in development. In today's era due to the rising competition, India moving towards becoming a political and economic superpower, gender favoritism remains a major and incessant blot on our achievements. The Global Gender Gap data shows that women's economic participation and opportunity is least inIndia than in 95% of the 135 other countries studied. Men workers engaged inthe formal sector earn more than women. From 2011 to 2012, there was a 7.5% increase in domestic violence, while over 5,000 dowry deaths were reported in 2018 in the country. According to a 2018 fact sheet prepared by UNESCO on women in science, only 28.8% of researchers are women. From 1901 to2019, 334 Nobel Prizes have been awarded to 616 Laureates in Physics, Chemistry, and Medicine, of which only 20 have been won by women. UNESCO data from the year 2014-16 shows that only around 30% of female students select Science, Technology, Engineering, and Mathematics-relatedfields in higher education. There are multiple reasons, which has held the growthof women such asthewrong approach of society for female participation in suchfield, responsibility, urge, and the most important one is the mindset, which hasbeen earmarking women right from their framework. The country, therefore, has a long way to go to attain the Sustainable Development Goal of attaining gender inequality and empower all women and girls (SDG5). The Government of India has taken the various initiative to encourage the women participation such as GATI Scheme, KIRAN scheme, Beti Bachao Beti Padhao (BBBP) SchemeBeti Bachao Beti Padhao (BBBP) Scheme**,** and Vigyan Jyoti Scheme**.** This paper provides us details about the initiative by Indian Government and importance of women's participation in research field.

Keywords: Science, Technology, Engineering, and Mathematics, field professions.

1. INTRODUCTION

As we have seen women has become a neck to neck competitions for men. But somehow the active participation of women is lagging even today. Major problems for the less participation are as stated:

1) The idea that you have to choose between family and the academic work: Due to the responsibilities of family many times women need to sacrifice their dreams. In certain stage of the life the perspective of life is money and family. Due to such conditions women losses her passion towards her carrier and education. She devotes herself fully towards family. This problem can be overcome if she is encourage and supported from her family side. Though the country is at developing stage still today a lot of women are illiterate. Hence for encouraging education for girls plays an important role.

2) The idea that you have to be extremely competitive and aggressive in order to succeed.

3) Women are making less money than men for doing the same job with the same number of qualifications.

Women are highly underrepresented in STEM (Science, Technology, Engineering, and Mathematics) field professions. Women's professional participation is cut in half when looking at STEM fields and is not representative of the overall employment of women. Thus, women are largely entering fields that are not STEM related. The gender difference in STEM fields is an issue of equity. While some have suggested that women choose not to pursue careers in STEM because of a lack of interest, overwhelming evidence indicates that women are socialized away from STEM. In other words, sexism is a real current issue that cannot be ignored. Sexism makes it difficult for women to pursue a career about which they are interested. Having more women in STEM fields would also "lessen occupational segregation and reduce the level of gender inequality in the labor force". Therefore, it is likely that STEM fields will become a warmer and more welcoming climate, as it would not be abnormal for women to be working as STEM professionals. From a financialpoint of view, STEM jobs are currently amongst the fastest growing and highest paying careers (Preston, 2004). With more women in STEM fields, the national wage gap would likely shrink. Social status is often associated with a greater fiscal

income, and professions in the STEM fields are seen as more prestigious within the labor force. This contributes to the divide of social status between men and women because there are currently far less women with these occupations than men. The gender imbalance in STEM fields also has implications for the quality of STEM work in general. It is clear that we need more women in STEM professions, but in order to make this happen, we need to determine what factors impact their participation. This thesis analyzes the way the media, stereotype threat, education, and the work environment impact women in STEM, and it concludes with some ideas for the future

2. MATERIALS AND METHODS Factors affecting:

Factor 1: Biology

Many people believe that the gender gap in STEM fields can be explained by biological differences between men and women. As technology develops, there is growing research on this topic, which has led to varying conclusions. First, it should be noted that on average men's brains are larger than women's.. This could lead many to believe that menare thus innately smarter than women. However, men and women on average have the same amount of brain cells, meaning that they are equally intelligent (Boaler, 2008). There is no biological explanation for intelligence variations between the sexes. In a study with newborns, it was found that girls are more likely than boys to pay attention to a face as opposed to a mobile (Boaler, 2008). Similarly, when looking at emotionally charged images, women's brains were accessing and using nine different sections, but men only used two. All of these different studies lead to the idea that men and women are biologically suited to excel in different areas. For women, this means being more inclined to shine in disciplines about communication and making connections. For many, this would prove that men are naturally better at math and science. However, if this were true, then we would expect to see a trend in gender achievement gaps across countries.

Factor 2: Stereotypes, Media, and Society

Although many believe that biology plays a significant role in the mathematics achievement gap between men and women, there is more evidence that social factors have a more of an impact. For women as it pertains to this review, this means that they are at risk of confirming an inferiority in math and science compared to their male counterparts. Stereotype threat places added pressure on women to either overcome the stereotype or reinforce it, and this pressure can often lead to self-fulfilling the stereotype after all. This added pressure causes women to underperform on math assessments and not live up to their full potential. Therefore, "women bear the extra burden of having a stereotype that alleges a sex-based inability" whenever they are exposed to a situation requiring math skills. These situations could be more high-pressure, like a math test, or low-pressure, like calculating a tip at a restaurant. More seriously, this stereotype can lead women and men alike to feel that women do not have a place in the STEM community, which makes stereotype threat one of the most important factors impacting women's participation in STEM fields. Girls are also sent messages from the media through toys that aim to reach different genders. Toys that are aimed at boys are quite different than toys aimed at girls. Bussey and Bandura (1999) explored the impact of this idea and found that gender-linked toys prime children to fall into traditional gender roles. Looking into a child's room at what the parents have provided, one can see the gender differences. Boys' rooms often have toy vehicles and sports equipment, while girls' rooms are likely to have dolls, dollhouses and other domestic items (Bussey & Bandura, 1999). These toys prepare boys for activities and interests outside of the home, and prepare girls for homemaking and childcare. The toys are reinforcing traditional gender roles at young ages. The toy market is not entirely to blame, however, becauseparents could always buy toys for their children that are gender-nontraditional. Nevertheless, parents are also victimsto societal norms. When their children request a toy, parents are unlikely to purchase the toy if it is gender- nontraditional (Bussey & Bandura, 1999). Stereotypes affect children starting at their homes. Parents' beliefs about their child's math aptitude can greatly impact that child's achievement. By middle school, and carrying through high school, students' parents tend to believe that boys have greater math ability than girls.

Factor 3: "Chilly Climate"

One of the many reasons women may not choose to enter into STEM fields is because they are male-dominated and not welcoming to women. There are several factors that make careers in STEM more challenging for women. These include the impact of negative stereotypes on women's abilities to perform math and science, attitudes from educators and peers, and assumptions of employers. These factors create an uninviting or "chilly climate" for women, contributing to the impact on women's participation in STEM fields.

Factor 4 : "Work Place"

As a result of the factors discussed previously, women are less likely to continue to pursue and enter STEM fields than men. At a time when they would be professionalizing their talents, women are not as confident about their abilities, and look to other occupations. Yet even for women who choose to join the STEM community professionally, there are still gendered challenges to face. It appears that for women it is incredibly difficult to have a successful career, social life, and family life without compromising one or more aspects. Firstly, it is typical that women in STEM fields who want to raise a family have to make sacrifices to their career more commonly than men who have children. Social norms dictate that men are the breadwinners and women are the caregivers. Even though modern family structures are

redefining these roles, there is still a conservative nature and stigma surrounding women in the workforce and men staying at home. For this reason, this paper will focus on how family life affects mothers, though it should be noted that all parents are affected and that changes would benefit fathers as well. Sacrifices made by mothers are seen in wages, rate of advancement, and stress. The dual role of being traditionally feminine and in a traditional science field is not societally commonplace enough to warrant professional policies that would ensure women do not have to make compromises in this manner. Such policies include paid parental leave, flexible schedules, and time working at home. These policies could benefit both men and women who want to dedicate time to their families and not just to work. Even when these accommodations are provided, however, parents face scrutiny of being seen as less dedicated and less motivated to succeed in their field. Thus, mothers may feel pressured not to accept the accommodations, or to work more hours afterwards so as to make up for time spent on maternity leave. Simply having the policies in place is not enough to provide women with balanced career and family lives while the stigma of being a caregiver exists in male-dominated fields. Family matters are not the only factor impacting women's presence in the STEM workplace. For many women, dissatisfaction with lower salary and lack of advancement prospects were more influential than familial limitations in decisions to exit their careers.

2.1 STUDY SITE:

We believe that it is very important be vocal about what needs to be done to retain female in science after graduation and support them in their career development and path.

1. EU initiatives and directives: The EU should continue in its initiatives and action plans and gender equality strategies in the European research and innovation policy. The EU could possibly play an important role in achieving gender equality in the Member States and public institutions. Equal opportunities in the labour market go hand in hand with this.

2. Transparency in the recruitment process: In order to ensure more women are in leading positions transparency in the recruitment process really matters. Since there are still cultural trends in our society that have been formed for many years, it is necessary to ensure that scientists are hired, especially to leading positions based on their experiences, education, and skills regardless of gender. Thus we cannot omit the importance of the composition of the recruitment board which should be gender-balanced.

3. Women and girls' education and training: To achieve gender equality for female scientists it is necessary to provide them with effective training and education they need to be able to compete at all levels and in all scientific domains.

4. Good examples and soft tools: There are many institutions and universities around the world which have implemented gender action plans and internal strategies to achieve gender equality. Positive examples as these might be followed by other institutions and universities. Furthermore, use of soft tools (for example a label HRS4R) might also be useful.

5. University leadership engaged: University leadership should be fully engaged and should be aware of the importance of gender equality and also the importance of necessary measures that are able to create a welcoming environment for female scientists (maternity leave, work-life balance).

6. Gathering data and evidence/Monitoring: It is significant to gather evidence and data on gender equality showing that the gender agenda should be taken more seriously. Data and statistics reflect the state of play which is not favorable for women in science and innovations and their representation in leading positions. Subsequently, these data may contribute towards evidence-based policymaking.

7. Role models and mentoring: Mentors and roles models can have a positive impact on female scientists and on girls who want to step into the scientific career. This is also very important in society and modern culture where stereotypes are still present. Along with good mentors, the support of family and friends is essential.

8. Work-Life balance: It is not enough to say that we need more women in science and more women in leading positions. We have to try to change the conditions female scientists have. The Member States, organizations, and universities should show women that they are willing to support them, for example with their maternity leave or childcare, among others. These issues are not exclusive to women of course, but they do affect women more.

9. Equal treatment: Having a good support system in place and making sure that every person is treated fairly is a very important step to keep women in academia and increase their participation in leading positions.

10. Listen to women: Listening to the scientific and personal experiences of women in science is paramount to achieving gender diversity and equity in science. Effective listening requires paying attention to, understanding, not interrupting, believing, responding to, and remembering what is being said. The simple act of listening to women's science promotes their work, while acknowledging the barriers they face validates their experiences and improves the institutional climate.

11. Stop Harassing women: Most women in science experience sexual harassment at some point during their career, most of it perpetrated by men. In the geosciences, field research environments, which can isolate victims from reporting systems and support networks, amplify the frequency and severity of sexual harassment. One reason for the prevalence

of sexual harassment in science may be the harasser's ignorance of which behaviours are merely inappropriate and which ones constitute sexual harassment, as defined by a recent report on sexual harassment of women by the National Academies of Sciences, Engineering, and Medicine (NASEM).It is widely recognized that sexual harassment includes unwanted sexual touching (unwelcome physical sexual advances, which can include assault) and sexual coercion (favorable professional or educational treatment that is conditioned on sexual activity). However, the vast majority of sexual harassment consists of verbal, unwanted sexual attention or gender harassment (verbal and nonverbal behaviours that convey hostility, objectification, exclusion, or second-class status toward women).All forms of sexual harassment have quantifiable negative consequences for victims. These consequences include eroding their sense of security in the workplace, slowing their productivity, and causing them to skip professional meetings where they do not feel safe. Men in the scientific community must confront the reality that many of us have sexually harassed women and that the harassment must stop.

12. Implement Policies that support victims of sexual harassment: The responsibility of implementing policies that support women lies with those who hold most of the power, namely, male institutional leaders. Following the recommendations of the NASEM report Sexual Harassment of Women, leaders in science should implement the following concrete policies (the report contains a more complete list): Leaders of scientific departments, institutions, and organizations must make it clear that sexual harassment is a form of scientific misconduct that carries clear and appropriate negative consequences for proven harassers. When a victim files a harassment claim, the priority of the institution should be to ensure that the victim can safely continue their work. Institutions need to consider the confidentiality of the target while also directing that person toward systems of support for victims of harassment. Sexual harassment policies should be clear, accessible, and consistent. They should address all forms of sexual harassment, including gender discrimination. Anonymized annual reports should be available to the entire community, detailing statistics of recent and ongoing sexual harassment investigations, including any disciplinary actions taken. Academic institutions have a poor track record when it comes to punishing sexual harassers, especially when the harassers are faculty members. Disciplinary consequences should be progressive: They should correspond to the frequency and severity of the harassment. For example, disciplinary consequences might escalate from requiring counseling to reductions in pay to dismissal. Progressive consequences have the co-benefits of appropriately punishing harassers and reducing the fear of retaliation for victims. Funding agencies and professional organizations should rescind existing funding and awards from proven harassers.

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