

## Uneven playing field: women scientists in research laboratories

Women scientists in India constitute a small proportion of the total scientific personnel. According to an INSA report<sup>1</sup>, women constituted only 13% of the total scientific community in CSIR laboratories at the turn of the 21st century and about 16% according to a more recent DST report<sup>2</sup>. According to the latter report, there are only three women directors in the science and technology institutions in India. The lone woman ever to head a CSIR laboratory was appointed in 2013. Women are seldom appointed as chairpersons of institute-level committees or as heads of departments (HODs). In the entire CSIR group there is only one woman scientist at the scientist-H level (which is the highest level, introduced in 2008 and is an appointment for five years to an outstanding scientist). Women recipients of the prestigious Bhatnagar award for young scientists were only 3.0% of the total till 2010 (14/463) according to the Press Information Bureau (Ministry of Science and Technology, Government of India, 26 September 2011) and the proportion of women elected fellows of national science academies is not more than 4.6% (ref. 1). Thus, gender and power are linked structurally, which is reflected in the overall greater representation of men in jobs with higher pay, more status and more formal organizational, political and institutional power. It is generally believed that women scientists are unable to utilize their potential fully due to dual burden of managing work and family. Hence, the focus is on reducing the burden through setting up crèches, increasing child care and pregnancy leave, flexi working hours, work-from-home option and encouraging women with break in careers to return to science. While all these measures are highly desirable, the gendered work environment within the laboratories is seldom discussed. In fact, a study shows that women scientists are sometimes perceived as privileged in terms of fewer expectations from them, lesser responsibilities being placed on their shoulders and greater government provisions for them<sup>3</sup>. This indicates substantial ignorance regarding the issues facing women scientists. Two major factors which contribute to a gendered environment include dual-burden perceptions and hierarchical culture.

Dual burden is often relegated to the realm of domestic issues, unrelated to organizational inequality, except when discussing the leave and flexi-working hours required for a better work–family balance. A dual burden is believed to be part of a generally unequal and gender-based social system. While the latter is true, the perception of dual burden in maintaining a gendered work environment is not so obvious. For example, the assumption at the time of hiring is that since a woman is likely to devote time to both work and domestic duties, she should be better than a male candidate if she has to be hired. A male is generally preferred (for appointment) because he can work for a longer period, while a woman is seen to have other responsibilities.

Because of the perception of dual burden on women scientists, men are preferred for responsible positions such as membership of the institute committees, which in turn affects the rise of women to leadership positions. There is a sense among women scientists of being left out of significant departmental tasks. However, there are some women scientists who themselves do not wish to take up any administrative position or committee headship. Women usually do not lobby for such positions, but if offered, many will not refuse.

Work is conceptualized as separation of public and private matters<sup>4</sup> and hence, family-related concerns faced by women are considered their private problems. Further, a scientific career presupposes a ‘male model’ of long working hours and full-time devotion<sup>5</sup>. Thus, women are considered less efficient if they do not follow this ‘male model’ irrespective of the amount of work they might actually be doing.

The dual-burden assumption leads to a perception that women have less time for science and so they are unable to do good research. However, the facts indicate that women are not lagging behind men in terms of research productivity. According to a study based on a survey of papers in the *Web of Science*, about 13% of the total output from the CSIR group of institutions has been contributed by women scientists<sup>6</sup>. This contribution is commensurate with their proportion in these institutions (13%) at the time of survey. Similarly, on the

basis of analysis of research productivity of male and female scientists at CSIR laboratories, Gupta *et al.*<sup>7</sup> concluded that the average productivity of Indian female and male scientists in the physical sciences, biology and engineering sciences is not significantly different. Further, the proportion of less productive scientists is higher among males than females and the proportion of scientists not publishing any paper is also higher among men in physical and engineering sciences compared to women. In terms of quality of research, Hasan *et al.*<sup>8</sup> found that there was no difference in the quality of output and also the proportion of scientists publishing in *SCI* journals was the same for men and women at 63%.

There is hierarchy in every organization. Here the term is used in the sense of seniors asserting their seniority and influencing decisions and day-to-day interactions. It is often alleged that ‘most scientists at the national laboratories merely consider themselves as just any other government employee with a desire to wield bureaucratic power’<sup>9</sup>. This coupled with the fact that Indian society traditionally has been a caste-based society and has a hierarchical culture renders the system, comprised of both scientific and non-scientific members, excessively respectful of those in power with members seeking contacts with the powerful. Scientists<sup>10</sup> and scholars<sup>11</sup> acknowledge that science and its institutions are not free from feudal, authoritarian values prevalent in Indian society. However, there is a lack of awareness of its consequences for the work environment of women scientists.

Studies of gender and organizations acknowledge that hierarchical structures are sites of male dominance<sup>12</sup>. Further, studies on women in science have found that generating ‘effective management practices’ is important for improving workplace climate in order to improve efficiency and achieve gender equality in research<sup>13</sup>. Hierarchy coupled with the inefficiencies of the organizational procedures in research laboratories marginalize women scientists and maintain gender-segregation in these institutions. One consequence of a hierarchical culture is that seniors get things done easily. The procedural matters of purchase and funding involve non-scientific staff and

the latter is usually male-dominated. In such a situation, a junior woman scientist might face harassment.

Informal interaction within any institution is important as it counters hierarchy and structure. For example, sometimes contacts and mentors are helpful in quickly going up the career ladder. This culture, while imposing a burden on all scientists, puts women at a greater disadvantage as they tend to have less contacts and networks. This is mainly due to their minimal interaction with colleagues within the organization<sup>14</sup>.

In CSIR laboratories, the confidential report (CR) of the immediate supervisor formed the basis for promotions. The significance of CR has lessened with the introduction of 'performance mapping' since April 2010, which involves self-appraisal method and evaluation by a collegium and empowered committee. However, the report of HOD is still important and the system of promotions is not completely transparent. Women scientists, due to lack of networking, might lose out on timely promotions more often than men scientists. Lack of rapport with the supervisor could occur with male as well as female scientists, but in the case of a woman scientist versus a male supervisor, it can take the form of gender bias and gender segregation.

There are contradictory perceptions amongst scientists regarding women leaders, with some perceiving no gender difference in leadership abilities of men and women and some believing that women 'hesitate in taking decisions'. There is acceptance by some men scientists that women leaders might be at a disadvantage and many of their male colleagues find it difficult to work under a woman boss<sup>3</sup>.

Gendered beliefs are common in the institutions. Some women scientists also believe that women themselves are to be blamed for their status because they are not working to their full potential. However, this statement does not reflect the

reality. Often women scientists are unable to reach their potential fully due to a work environment, which does not allow a level playing field for them.

A low position of women scientists in the institute hierarchy and a lack of visibility and recognition feed into the assumption that most women scientists are not good enough and this is reflected in the women scientists' perception of a lack of respect for themselves.

However, there are signs of change. An interdisciplinary centre in one of the CSIR laboratories constructed recently has a substantially reduced hierarchy and is managed by a collegium. Further, the scientists at the centre meet once a week informally at a club within the premises. Women scientists at this centre perceive gender equality and a cooperative research environment. Change is also driven by society where dual-earning couples are becoming common and men scientists with working spouses are perceived to be more sensitive to the work-family balance issues.

An efficient administration (of funds, grants, projects) so as to eliminate harassment by male staff, transparency in promotions and recognition of merit, and creation of spaces for greater interaction among scientists could go a long way in improving the work environment for women and in creating a level playing field for both men and women scientists. The most important aspects that could lead to a greater gender equality in India are a reduction of a hierarchical structure and recognition (in terms of promotions, leadership positions and awards) to the deserving women scientists.

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