



# Gender climate in Indian oncology: national survey report



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## ABSTRACT

**Introduction** There is evidence of under-representation of women in leadership roles and publications in oncology. However, there is little knowledge about their perceptions of professional environment, unique challenges and opportunities compared with male counterparts. The problem is more prominent in lower-income and middle-income countries like India and merits exploration.

**Materials and methods** A survey, 'Exploratory Study on the Challenges of Female Oncologists in India', was conducted among oncology professionals. We included questions on demography, working team details, role at work, perceived challenges for advancement of career, gender-related values brought into the team and the measures for improvement of gender disparity. Lead authorship data were collected from two Indian oncology journals.

**Results** Of the 324 respondents, 198 (61.1%) were women. Majority of the respondents were medical oncologists (46.3%), <45 years old (69.4%) and working in universities and corporate hospitals (71.6%). One hundred eighty-nine (58.3%) respondents worked in teams with male majority, 50 (15.4%) in women-majority teams, while 85 (26.2%) worked in teams with gender equality. Of the 324 respondents, 218 (67.3%) had men managers, while 106 (32.7%) had women managers. Men led 160 (84.7%) male-majority teams; 45 (52.9%) gender-equal teams; and 13 (26%) female-majority teams ( $p<0.00001$ ). Age >45 years was found to be associated with a leadership role (43% vs 25%,  $p=0.0012$ ). The most significant barrier perceived for advancement of career for women was finding a work-life balance. Most respondents suggested provision of flexible training programmes to improve the disparity. Of the 558 journal publications inspected, 145 (26%) articles had a female first or corresponding author.

**Conclusions** The study brought out the current figures regarding gender climate in oncology practice and academia across India. We identified lead thrust areas and schemes to improve the gender bias. There needs to be action at international, national and personal levels to bring about an efficient gender-neutral workforce.

## INTRODUCTION

Cancer is one of the lead causes of morbidity and mortality worldwide and in India.<sup>1</sup> By 2040, 1.3 million people are predicted to die of cancer in India, and lack of trained professionals may be one of the major reasons.<sup>1-4</sup> Hence, optimal use of all the existing human

## Key questions

### What is already known about this subject?

- There is a gender gap in the oncology sector.
- Women oncology professionals face a multitude of challenges in the workplace.
- Though they contribute uniquely to their work teams, they are often marginalised and do not occupy leadership roles.

### What does this study add?

- This study looks at the existing gender climate in the Indian oncology sector with a real-world representation of obstacles for women in oncology, with an added male perspective.
- There are fewer women-majority teams and women-led teams in India.
- We also identified a gender gap in lead author publications in oncology journals in India.

### How might this impact on clinical practice?

- By means of this survey, we identified the critical lacunae in the existing workplace structure of oncology departments of India; the respondents suggested solutions for closing the gap.
- Lead thrust areas recognised will help the Indian Society of Medical and Paediatric Oncology and the Immuno-Oncology Society of India with international organisations to take the necessary actions to address the challenges.
- Measures like flexible training programmes, leadership and soft skills training, mentorship programmes and online professional career development tools will help to achieve gender neutrality.

resources by promoting gender equality in oncology departments is imperative.

There is evidence that women are marginalised in leadership positions all across the society, including the health quarter.<sup>5</sup> Even in high-income countries, less than one-third of senior and middle management positions are filled by women, including in those in oncology.<sup>6,7</sup>

In India, with a sex ratio of only 940 women per 1000 men and a 16.3% gender gap in literacy rates, there are additional cultural obstacles and gender taboos faced by women



professionals.<sup>8 9</sup> Looking at leadership positions in oncology in India, only one of the four major oncology societies in India has a woman president, while in two, the general secretaries are women. The proportions of women in the executive committees are also small; 2/19 (10.5%), 2/18 (11.1%), 1/14 (11.1%) and 4/17 (23.5%) in the Indian Society of Medical and Paediatric Oncology (ISMPO), the Indian Cooperative Oncology Network, the Indian Society of Oncology and the Immuno-oncology Society of India (I-OSI), respectively. All the past presidents of ISO were men.<sup>10-13</sup> The ISMPO has 432 members, of whom 361 (83.5%) are men.

This gap becomes more prominent with the advancement of careers.<sup>14 15</sup> The proportion of women who join medical schools has increased from 20% 1961 to 51% in 2015; however, this fraction decreases progressively for postgraduation and higher studies.<sup>15 16</sup> There are only 27951 postgraduation seats and 3838 superspecialty training seats available for the 77428 medical graduate seats. This implies that <5% are able to attain specialty training.<sup>17-19</sup> Of these limited seats, women occupancy is only one-third.<sup>14</sup> In India, cultural factors dictate that it is usually the woman who is responsible for taking care of her family, including children and aged members, leading to a break in career advancement. Women face a multitude of challenges in the advancement of their professional career. These include maternity, gender stereotyping, pay gap and sociocultural prohibitions, leading to a 'leaky pipeline' and curtailing professional opportunities. Thus, there are fewer women role models and mentors to support and encourage the junior faculty.

We conducted a survey modelled along the lines of the Women for Oncology (W4O) European Society of Medical Oncology (ESMO) 2016 workplace survey across oncology professionals in India.<sup>7</sup> The study aimed to examine the explicit as well as implicit gender biases and gender-based challenges faced by Indian women in the oncology field, which is an unmet need. This survey also serves to recognise the critical lacunae and possible solutions in this field, which may influence policy decisions of national societies.

Lead author publications are used in most institutes as criteria for research accomplishments for promotion applications. Hence, we also explored the status of lead women authors in oncology journals in India as surrogate marker for evaluation of the gender gap in the academic field.

## MATERIALS AND METHODS

We report the results of a survey entitled 'Exploratory Study on the Challenges of Female Oncologists in India', which was conducted by circulating the hard copy at conferences and the link by email and social media across the oncology community in India. The survey questionnaire was based on the ESMO 2016 W4O survey.<sup>7</sup> The original survey consisted of five sections that addressed (1) demographics and professional environment, (2)

gender impact on career development, (3) challenges for career progression and inappropriate behaviour experienced in the workplace, (4) barriers for gender parity and (5) the gender gap. In our survey (online supplementary 1), the questions sought information regarding age, specialty, setting of work, working team details, role at work (leadership/managerial/coordinating; multiple options were allowed), the perceived three important barriers for career advancement, the unique gender-related qualities brought into the team by women and the measures thought to be useful for improvement of gender disparity. We did not address inappropriate behaviour or the gender impact in our survey quantitatively. However, we sought personal interviews of a few of the participants randomly to bring out certain additional issues, adding depth to the survey. Participation was voluntary and identity disclosure was optional. Responses were invited from both male and women oncology professionals of all ages working in different settings.

The responses were documented in Microsoft Excel v.2016 sheets. Results were analysed overall and based on the gender of the respondents. Descriptive statistics were used to summarise the data. Categorical variables were summarised as number with proportions. The statistical associations were analysed with Pearson's  $\chi^2$  tests. All tests were two-sided, and a p value of <0.05 was considered statistically significant. Statistical software package SPSS V.25.0 was used for all analyses.

We also traced the proportion of Indian women lead (first or corresponding) authors in two leading oncology journals of India with wide readership: *Indian Journal of Cancer* and *Indian Journal of Medical and Paediatric Oncology*. We examined 17 consecutive issues of the journals published between January 2017 and December 2018. The number of articles with women as first and corresponding authors was enumerated to the best of our knowledge. For analysis, we included all types of articles across the subspecialties of oncology which were published in the two journals. These details were entered in an Microsoft Excel v.2016 worksheet and the percentages were computed.

## RESULTS

### Survey results

#### Description of the population of respondents

Three hundred and twenty-four oncology professionals participated in the survey, of whom 126 (38.9%) were men.

The survey demographics and major responses are summarised in [table 1](#).

#### Working team details

To gain further insight into the existing gender climate, we assessed the team composition, gender of the team leader and the role of the individual oncology professional in the team.

**Table 1** Summary of the survey demographics and findings

Characteristic	Women respondents (n=198)	Male respondents (n=126)	Overall (n=324)	p-value
<b>Age≤45 years</b>	142 (71.7)	83 (65.9)	225 (69.4)	<0.0001
<b>Setting of work</b>				
University hospitals	80 (40.4)	47 (37.4)	127 (39.2)	0.35
Private nursing homes	10 (5.1)	13 (10.3)	23 (7.1)	
Others	43 (21.7)	26 (20.6)	69 (21.3)	
Corporate hospitals	65 (32.8)	40 (31.7)	105 (32.4)	
<b>Primary profession</b>				
Medical oncologists	89 (45)	61 (48.4)	150 (46.3)	0.0009
Onco-surgeons	20 (10.1)	29 (23)	49 (15.1)	
Radiation oncologists	26 (13.1)	8 (6.3)	34 (10.5)	
Trainee/resident	29 (14.6)	16 (12.7)	45 (13.9)	
Researchers	28 (14.2)	5 (4)	33 (10.2)	
Others*	6 (3)	7 (5.6)	13 (4)	
<b>Team composition</b>				
Majority of men	107 (54)	31 (24.6)	138 (42.6)	<0.0001
Equal number of men and women	54 (27.3)	82 (65.1)	136 (42)	
Majority of women	37 (18.7)	13 (10.3)	50 (15.4)	
<b>Woman team manager</b>	81 (40.9)	25 (19.8)	106 (32.7)	<0.001

Data are presented as n (%).

\*Others include allied oncology specialties like oncoradiology or oncopathology professionals.

One hundred eighty-nine (58.3%) of the respondents worked in teams with male majority, 50 (15.4%) in women majority teams and 85 (26.2%) in gender-equal teams. Of the 324 respondents, 218 (67.3%) had men managers, while only 106 (32.7%) had women managers. Men not only led 160 (84.7%) male-majority teams but also 45 (52.9%) teams with gender equality and 13 (26%) teams with women majority ( $p<0.00001$ ).

Overall, 230 (70.9%) participants perceived themselves as having no leadership or managerial role, of whom 141 (61.3%) were women ( $p=0.91$ ). Eighty-two respondents (25.3%) felt they had only a coordinating function in the team, of which 52 (63.4%) were women. Ninety-four (29%) of the professionals felt they played a leadership role, with some of them playing a combination of all the leadership, managerial and coordinating roles as the situation called for. The role played in a team showed association with the proportion of women in the team ( $p=0.002$ ) and the gender of the manager in the team ( $p<0.0001$ ). There was no significant association between the gender of the respondent and the leadership role ( $p=0.125$ ).

There was a significant association between the age of the respondent and the leadership role in the team; older oncologists were more likely to be team leaders than oncologists aged  $\leq 45$  years (42.5% vs 24.5%,  $p=0.0012$ ).

#### Gender-specific concerns

The most important perceived barriers to professional advancement for women oncologists were finding a balance between work and family (57% of women and 65%

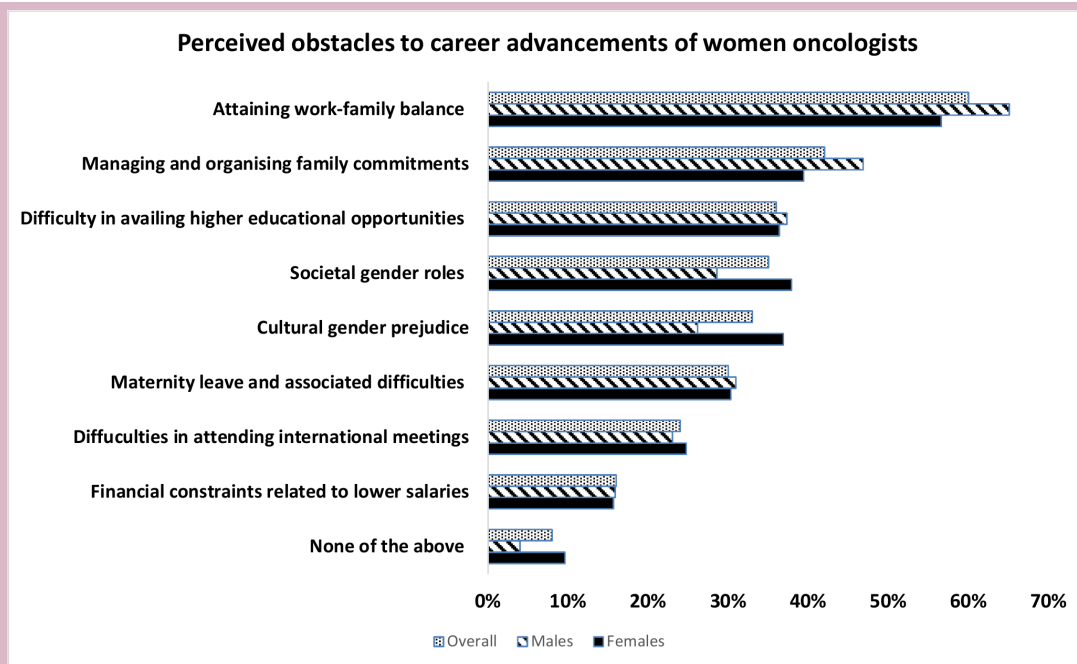
of male respondents) and managing/organising family commitments (39% of women and 47% of male respondents). The other hurdles were related to gender roles and societal gender perceptions, financial constraints related to lower salaries, difficulties in attending international meetings or research fellowships and coming back to work after maternity leave (figure 1).

Only nine (8%) respondents (four women and five men) felt women could not uniquely contribute gender specific skills to the oncology team; others felt that women could add to the team distinctively, bringing a holistic view of the disease, high professionalism, smoother communication, practical organisational skills and effective management of the working team to the professional field (figure 2).

The suggestions for improvements as suggested by the respondents are summarised in figure 3. Most of the respondents (72% of women and 58% of men) felt that flexible educational courses may help in the enhancement of women's careers. The other measures recommended were mentorship programmes, online professional career development tools, network of women oncologists, family-friendly facilities at conferences, dedicated seats for women in national and international committees, soft-skills training and bonus for returning to workplace.

#### Women authorship details

We collected the authorship details of 558 publications. Each issue of the journal had a median of 30 publications (range 18–81), with a median of 19 original articles in

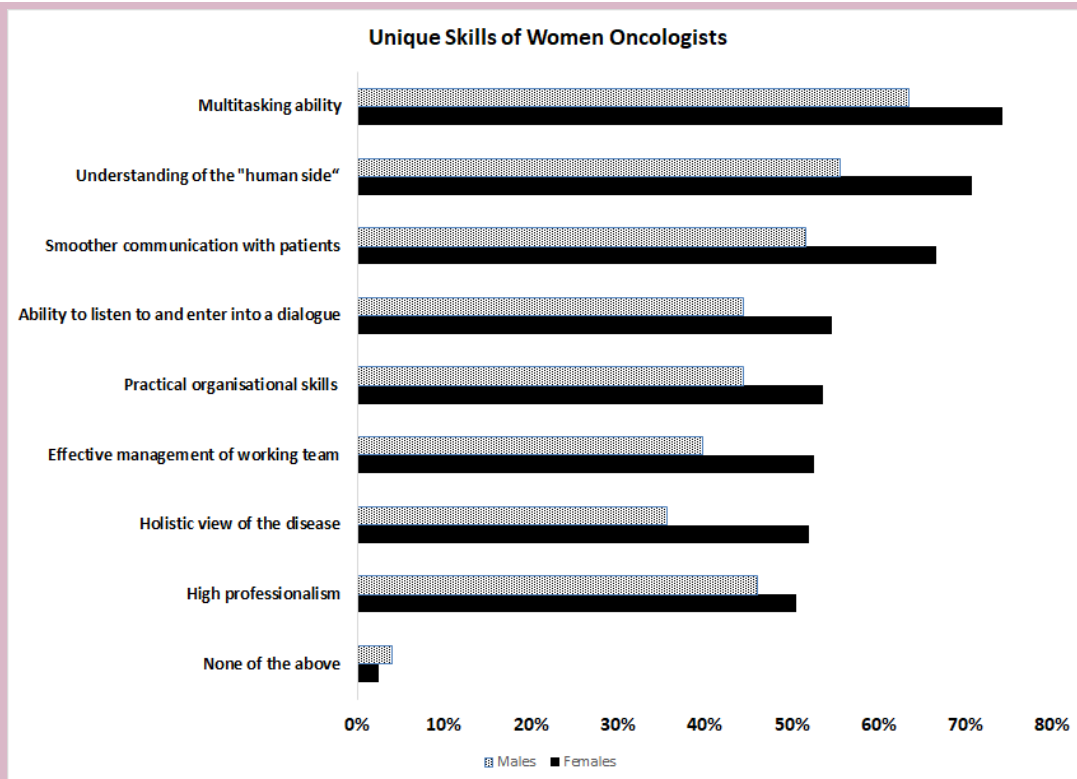


**Figure 1** Perceived barriers to the career advancement of women oncologists overall (N=324) and by respondents' gender (198 women and 126 men).

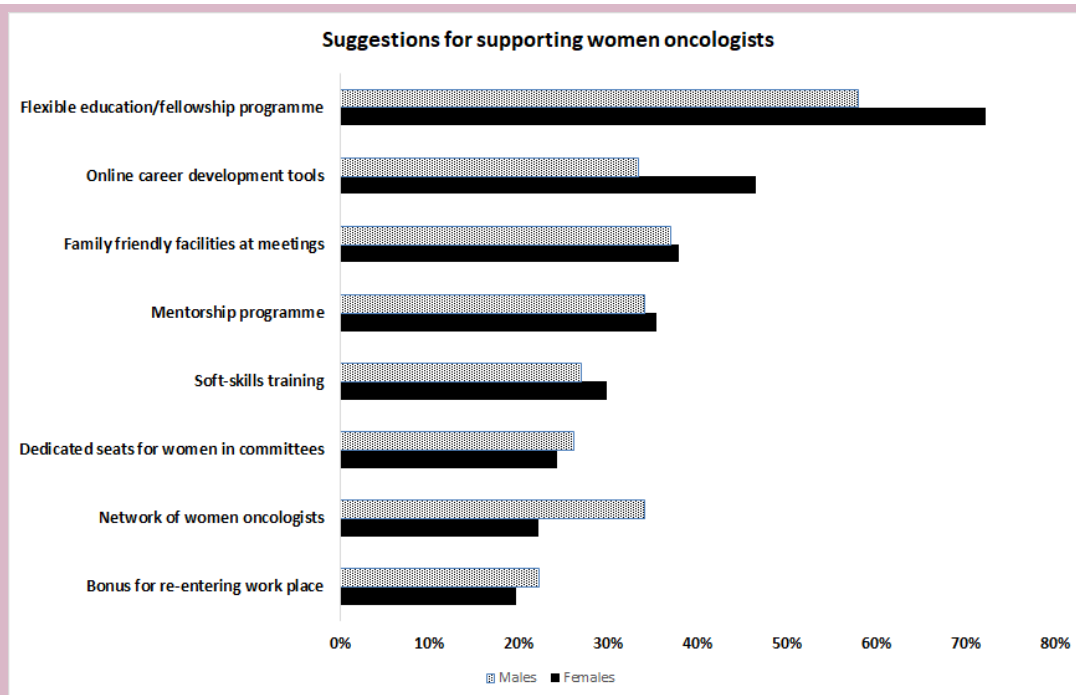
each. Of these, 145 articles (26%) had women as the first or corresponding author. Women authored a median of eight publications (range 3–15) in each issue.

Further classifying by the type of articles, of the 360 original articles perused, only 94 (26%) had female authorship (first or corresponding author), while 266

(74%) had male lead authors. Ninety-four (64.8%) of the women-authored publications were original articles; the rest included other types of publications, including case reports and commentaries. Among the other types of articles (n=198), only 51 (26%) were authored by women.



**Figure 2** Specific skills brought to the team by women oncologists.



**Figure 3** Respondent suggestions for the career upliftment of women oncologists.

Most (133, 91.7%) of the articles were based on clinical data.

### DISCUSSION

There is evidence in academic medicine that women not only earn less money than men but also reach the top positions less often despite having equal training and capabilities as their male counterparts.<sup>20 21</sup>

We report the results of a national survey conducted across the oncology professionals of India. In the survey, the predominant population consisted of relatively young (69.4% ≤45 years of age) women (61%) and medical oncologists (46.3%) from university/corporate hospitals (71.6%). In a survey conducted internationally, they observed similar findings as ours; leaders were more frequently men and older oncology professionals (≥45 years).<sup>7</sup> Medical oncology in India is a young specialty compared with other medical specialties leading to younger respondents. There are fewer medical oncology training centres (48) than many other specialties like cardiology (228).<sup>18</sup> Owing to this shortage of formally trained medical oncologists, there are also a number of trained physicians and radiotherapy graduates who practise medical oncology in India.

This survey revealed only 15.4% women majority teams and merely 32.7% respondents had a woman manager. Similar trends regarding oncology team leaders were found in two other surveys, although with different respondent populations<sup>7 22</sup> (table 2). However, our study found relatively less women majority teams, which could be attributed to relatively higher proportions of male

respondents and varied work settings, compared with the international ESMO survey.<sup>7</sup>

Researchers have found gross under-representation of women board members, society presidents and invited speakers also.<sup>23</sup>

In the current study as well as in ESMO survey, the most important obstacle for women oncologists were reported to be finding a work–family balance (60% and

**Table 2** Comparison of the international European Society of Medical Oncology (ESMO) survey with the current survey.<sup>7</sup>

Characteristic	Our survey	ESMO survey
No of respondents (n)	324	462
Age <45 (%)	69	67
Male respondents (%)	39	22
Respondents from University hospitals (%)	39	40
Medical oncologist respondents (%)	46	69
Women majority teams (%)	15	59
Women led teams (%)	33	35
Most important professional barriers	Work-family balance	Work-life balance
	Family commitments	Societal pressures
	Societal perceptions	Lack of role models

ESMO, European Society of Medical Oncology.



43.6% respectively).<sup>7</sup> Another relatively smaller survey also reported domestic responsibilities (66%) as the most important obstacle.<sup>22</sup> So, across the globe, the perceived barriers for women oncologists appear to be similar. The studies in other sectors of medicine have also confirmed that women doctors are more likely to work part time or not at all, spend more time on domestic activities and attend lesser number of conferences.<sup>24–26</sup> Women oncology professionals of reproductive age are at added risk of fertility issues with exposure to chemotherapy and radiotherapy.<sup>27,28</sup> Although these concerns apply more to nursing professionals, in some centres of India, medical oncologists are also involved with preparation and administration of chemotherapy as a part of their oncology training.

Medical education involves long years of training worldwide; however, there are some variations in the training system among different countries.<sup>29</sup> In India, after completion of MBBS, there is a competitive entrance examination for entry to the postgraduate courses (3 years' duration) and subsequently again to enter the superspecialty training (another 3 years). This becomes a hurdle race with higher chances of withdrawal in between. The system is different elsewhere. Furthermore, in India and other lower-income and middle-income countries, medical oncologists have a relatively higher case load compared with high-income countries, with resultant busier schedules.<sup>2</sup> The patriarchal sociocultural milieu adds to the aforementioned factors, making it extremely difficult for an Indian woman oncologist to climb the career ladder and reach leadership positions without making considerable compromises in her personal life. As the grants/promotions are time-bound, women have to face a 'collision between biological and academic clocks'.<sup>30</sup> However, the social norms and cultural values are changing. More women are actively supported by their family (joint-family system) to pursue their career goals.

In India, even academic faculty positions are associated with overwhelming clinical responsibilities with no specific allotted research time. Hence, academic pursuits come at the cost of compromising family time. For an academic woman oncologist in India, achieving a work–life balance is like walking a tightrope.<sup>9</sup> Academic promotion is appreciably decided by outward prominence governed by invited talks and participation in national and international committees and conferences. Both enterprises require travel, which challenges women oncologists with family commitments. Pregnancy and maternity leave can reduce long-term reprisal even with ostensibly supportive policies. Path toward gender neutrality must anticipate both the distinct events like pregnancy and their connected ramifications. One of the solutions is to provide added support (including compensation) to balance the brunt of not only pregnancy but also of maternity leave on scientific productiveness.

Most respondents believed that women bring gender-unique qualities like multitasking ability, smoother communication skills and ability to understand the

'human side' of the situation to the team. There are inherent differences found in communication skills, patient–doctor relationship, practice styles and patient satisfaction between male and female doctors.<sup>31–33</sup> These qualities are important and should be given high regards.

Our survey also took suggestions for enhancement of careers of women oncologists. These suggestions included flexible education/fellowship programmes, online professional career development tools, skill enhancement programmes and family-friendly facilities at the conference venues. Specific measures like providing child/elderly care, spousal recruitment, special mentoring, networking options and bias-changing interventions have been reported for improvement of gender bias.<sup>34,35</sup> From their side, women should also plan their training and professional responsibilities, take motivated career moves, bring workplace challenges to the notice of their employers and strive to rise above the gender roles. In academic medical centres, committee meetings are often held in odd timings, inconvenient for women with child care responsibilities. A way forward is to have sensitive support systems in institutes and conferences with child-care facilities on-site. Lead societies should provide grants to support bringing children and caregivers to facilitate attending congresses. In order to maximise participation, institutes could offer video-conferencing option for far flung committee meetings and schedule meetings during working hours as far as possible.

In addition to the survey, on personal interview, some participants provided valuable insight into this problem. A few selected narrations from them are 'There is preferential selection of male candidates for the jobs/higher positions/promotions. The employers consider equal or more qualified men as working horses while considering women as liabilities due to their family commitments.' 'Males are considered superior/natural leaders while women homemakers.' This gender stereotyping is ingrained deeper in India. There were dissenters also. One man argued that some women demand extra privileges in addition to equal status. However, a woman argued that women should be supported until a gender-neutral state is achieved.

Only 26% of the overall publications, as well as original articles in two of the leading oncology journals of India, had women lead authors. Other researchers have consistently reported that only around one-third of the lead authors were women across the world and specialties, medical or allied. However, the proportion seems to be improving over the years.<sup>36–42</sup> Researchers have also examined the gender order in publications; even when male and female authors stated to have contributed equally, more male authors were in the first position.<sup>43</sup>

The strength of the current study is that the current large national survey represents the gender climate based on the responses of vast majority of oncology professionals, including men. However, there were certain limitations; we could not look into certain minute details with potential impact like the number and age of

children, workplace discrimination and remuneration patterns. The workplace evaluation was self-reported; however, this is the norm in all other surveys. We allowed multiple responses for the question of perceived role in an oncology team; however, in the real-world setting, one professional plays different roles in various teams at one point of time. In the authorship assessment, we could not compare the female lead authorship between national and international oncology publications. However, chances are there that representation in international high-impact journal might be even more skewed in favour of the male authors as reported in other studies.

## CONCLUSIONS

No medical professional would consciously support gender disparity; however, the prevailing staff structure in departments and the general mindset lead to trifling gender biases that, over time, swell up and become significant. Identifying and quantifying such gender disparity is the first step to finding solutions to this problem. The study brought out the gender climate and the challenges faced by women oncologists across the nation with agreement among women and male respondents on this aspect. Lead thrust areas for improvement of the gender gap were identified. Suggestions for a more balanced workforce team like flexible educational programmes for women and better child care facilities at workplace were put forth. National lead societies like ISMPO and I-OSI, in collaboration with international committees, need to address these gender-based challenges. There is a perceived need to validate ourselves against the acquired gender neutrality rather than contemplated. We must keep harmonising our methods until the desired and acquired goals of gender neutrality are in parallel.

**Correction notice** This paper has been updated since first published to correct the affiliation of author 'Shripad S Banavali'.

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**Data availability statement** Data are available upon reasonable request. Individual participant data of the survey (after deidentification) will be made available beginning 3 months and ending 36 months after publication of the paper with first and the corresponding authors, for achieving the aims of the approved proposal. All proposals to be directed to Dr Jyoti Bajpai at dr\_jyotibajpai@yahoo.co.in.

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