Exploring Indian Views on the underrepresentation of female teenagers in STEM

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INTRODUCTION

Under-representation of women in STEM in India is a serious issue
Women are only 5%-20% of tenured faculty at Indian universities (Bhatacharya, 2020).
In 2009, only 3.2% of 744 Indian National Science Academy Fellowships were women.
The United Nations stated that only 14% of employed researchers in STEM fields in India were women (Sindhwani, 2020).

Women constitute half of India’s population, very important problem to solve: it is integral that they help contribute to science such that India can develop itself further both in terms of academic research and in terms of science and engineering.

While there are some reports that have focused on Indian women, they haven’t focused specifically on Indian female teenagers. Many have also cited different reasons for the underrepresentation but haven’t explored if some reasons are more significant than others within the context of India.

Methodology

Main method: Online survey, mixed method approach using both qualitative and quantitative data.
Respondents were asked to rate the importance of contributing factors on a scale of 1-7:
Biological, Motivational, family-level, school-level, and societal-level factors, which have been identified from a report (Choi et al., 2017).
Furthermore, respondents’ perceptions of young Indian women’s participation in STEM were also rated. The respondents’ age group, location and gender were recorded to explore differences between ratings of factors that could potentially affect their perceptions.

Null Hypothesis: There would be no significant differences between the mean ratings of the factors that determine the lack of representation of Indian female teenagers in STEM fields.
Differences between demographics were tested as well Overall, 60 respondents: 34/60 under 22; 43/60 in Tier 1; 39/60 women

RESULTS

A statistically significant difference between all the means was found
Poverty was rated the most important factor, followed by Parent’s Traditional Values
Female Attributes and female Teenagers avoiding a male-dominated field were rejected as factors to explain the underrepresentation of female teenagers in STEM.

Differences between groups:
No difference by age or geography
Difference amongst men and women on a few variables

<table>
<thead>
<tr>
<th>Factor</th>
<th>Mean</th>
<th>Standard Error</th>
<th>Median</th>
<th>Standard Deviation</th>
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<tr>
<td>Overall</td>
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<td>0.17</td>
<td>5</td>
<td>1.32</td>
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<tr>
<td>Underrepresentation</td>
<td>4.48</td>
<td>0.17</td>
<td>5</td>
<td>1.32</td>
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<tr>
<td>Avoid Male Field</td>
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<td>0.19</td>
<td>2</td>
<td>1.50</td>
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<td>Feminine Attributes</td>
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<td>0.19</td>
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<td>1.45</td>
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<td>0.25</td>
<td>3</td>
<td>1.92</td>
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<tr>
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<td>3.5</td>
<td>1.78</td>
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</tbody>
</table>

REFERENCES


Government action through personal and community actions to bridge the gap in STEM participation by women.
Teaching and mentoring students can have a significant impact on closing the gender gap.

DISCUSSION

Secondary research support the findings:
While 10.5% of India’s expenditure is devoted to education, there are vast inequalities between rich states and poor states. Rich Kerala spends $685 on education per student per year, while poor Bihar only spends about $100 on the same (Hunter, 2017).
Poorer states such as Uttar Pradesh, Madhya Pradesh and Bihar also have wider gender gaps than richer states (Nair, 2010).
While India has made improvements, many students still do not go to school, and Oxfam, a charity, estimates that 78% of students not going to school are female (Hunter, 2017).
Many poor families have themselves not received a good education, and are therefore less interested in sending their children as they may not quite understand the value of it (Roy, 2018).
With low-income families, money for education is low so typically the males are the ones having good education and jobs while females are told to stay home and do domestic work such as cooking, cleaning, and taking care of children.

CONCLUSIONS

My reflections on what we can do: It is important to supplement Government action through personal and community actions to bridge the gap in STEM participation by women.
Teaching and mentoring students can have a significant impact on closing the gender gap.

REFERENCES

http://dx.doi.org/10.20431/2454-8677.0301001