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SHORT COMMUNICATION

Postdoctoral struggles in the Global South: insights from India

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Abstract

The global postdoctoral community faces many challenges including low pay, irregular benefits, little job security amid cost-of-living hikes, challenges to mental health, and power imbalances. Conclusions from the 2020 and 2023 global postdoctoral surveys by *Nature* highlighting these struggles are highly skewed towards respondents from the Global North, underrepresenting the Global South. Here, we address the postdoctoral struggles of scholars in the Global South who are more vulnerable due to low-income economy and patriarchal society that discriminates against women. We argue that neglecting postdoctoral researchers in basic science fields, women and scholars from local and regional universities will affect global academic and research outputs. We recommend sustainable, long-term solutions such as "Postdoc Representative Body" ensuring just and wider postdoctoral benefits at country level to secure postdoctoral benefits in the Global South.

Keywords Postdoc · Global South · Basic science · Regional universities · Women postdocs · Patriarchal society

Reports from recent global surveys (Malcom and Parikh 2023; Woolston 2020; Nordling 2023) address the ongoing slow-motion crisis among postdocs affecting the future of academia. However, the inferences rely mostly on respondents from the Global North and from applied science fields. In the Global South, persistent low pay, insufficient benefits, and the lack of job security due to low-income national economies and patriarchal society are detrimental to the early career researchers, especially women. We fear that future measures to improve the situation for postdocs based on such surveys will insufficiently address the Global South and basic science fields, thus globally affecting academic and research outputs.

The current challenges before this indispensable workforce of postdocs globally are many, including low pay, irregular benefits, little job security amid cost-of-living hikes, challenges to mental health, and power imbalances that can derail their scientific career (Woolston 2020; Nordling 2023). The situation is worse for postdocs in the Global South, especially for women pursuing basic science fields, and postdocs in local universities which have local or regional reach and are poorly funded relative to central research institutes and universities with national reach. The postdoctoral tenure is a significant transition phase for a fresh doctorate to propose and carry out independent research projects. During this phase, a researcher also forms collaborations and gains new skills to direct the course of their future research. The recent global survey concerning problems faced by the postdoc community (Woolston 2020) is dominated by respondents in the Global North (83%), and higher-income countries, for example, China (37%) from Asia, South Africa (65%) from Africa, Brazil (67%) from South America, the USA (89%) from North and Central America, and the UK (38%) from Europe, thus subordinating the Global South. Furthermore, over half of the respondents belong to applied science (Biomedical & Clinical Science, 52%), leaving the basic science fields underrepresented (Ecology and Evolution, 8%; Chemistry, 8%; Physics, 6%; Planetary Science & Maths, 2%) (Woolston 2020). Thus, the problems faced by postdocs in the Global South and from basic science fields are concealed, and their struggles are not voiced (Khadakkar and Bang 2024 unpublished article).

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Fewer employment opportunities compared with Global North

One of the major concerns before the postdoctoral community in the Global South is competition for employment, owing to the increasing disparity between the number of doctorates and available academic positions (Van der Weijden et al. 2016). The recruitment committees for faculty positions tend to prefer applicants with a postdoctoral experience owing to their comparatively better academic records than fresh PhD graduates. Some reports from the Global North describe PIs struggling to find postdocs to hire (Langin 2022), whereas in the Global South, a fresh PhD struggles to secure a postdoc position because funding opportunities are scarce. For example, India ranks fourth globally in number of PhD graduates with 24,000 doctoral graduates produced per year (Arakkal 2018). However, a major share of this skilled workforce is underemployed. As of 2023, over 11,000 faculty positions are vacant in higher educational institutes in India, and these vacancies have remained stagnant over time due to bureaucracy and politics (Agrawal 2023; Khadakkar 2024). Considering postdoc fellowships, for the year 2022–2023, only 236 projects were ongoing under National Post Doctoral Fellowship (NPDF) funded by Science and Engineering Research Board (SERB), which is one of the few significant postdoctoral fellowships available in India (SERB-PRISM 2023). There are comparably more postdoctoral opportunities in the Global North because faculty hire postdocs funded by grants, and there are more independent postdoctoral fellowships. In addition to insufficient PDF opportunities, the current fellowships in India have very long timeline from the start of application to the announcement of results. For example, the postdoc fellowships run by the University Grants Commission (UGC) India, "Dr. S. Radhakrishnan Post Doctoral Fellowship" is yet to declare results even a year after the submission deadline (University Grants Commission 2023). Such timelines foster costly gaps in employment and attrition from the pool of researchers.

Insufficient postdoctoral opportunities in basic science fields

One of the reasons for the lack of postdoctoral opportunities in the economically disadvantaged Global South is the neglect of researchers relative to wealthier countries in the Global North (Maas et al. 2021). This situation is especially stark for postdocs working in basic science as funding for basic science in academic institutions is low (Khadakkar and Bang 2024 unpublished article), and prospects for postdoc level jobs in basic science outside academia are meagre. Where funding for academic research is low, universities and research institutes fail to provide encouraging research environments due to shortage of funds, motivation, guidance, and role models. This is especially true in rural settings which are common in the Global South, such as in India where the large network of local universities share hardly 20% of the top ranked 50 universities in the country (NIRF 2023). Postdocs cannot contribute to their fullest to academia under job insecurity and financial instability, and postdoctoral positions in such settings are often trivialized by academia.

Disparity in postdoctoral benefits as compared with faculty level jobs

According to the global survey (Woolston 2020), 78% of the respondents in the low-income Africa and South America earn less than US$30,000/year compared with Global North with US$50,000/year and above. Additionally, the income and benefits offered to postdoctoral researchers as compared with the faculty level jobs in the Global South are low in comparison with the Global North. The average annual postdoc salary in the Global South, such as India (8000$), is less than half the average salary of an Assistant Professor (20,000$), whereas in the Global North, the salaries are much closer. For example, in the USA, a PDF may make 52,000$ annually, while an Assistant Professor makes 64,000$ (Indian Institute of Science 2023; Univstats 2023). The Global South countries such as India, Sri Lanka, Thailand, Chile, and Mexico offer few postdoc benefits (house rent allowance, maternal leave, and sick leave) compared with the postdoc benefits in the Global North such as paid vacations (84%), paid sick leave (79%), health insurance (67%), retirement plans (62%), parental leave (53%), and subsidized childcare (14%) (Woolston 2020). Furthermore, the postdoctoral fellowship positions in the Global South are vulnerable to any financial, global, and national calamity. For example, a recent such financial calamity in Sri Lanka has put the postdoctoral fellowship by their National Science Foundation on hold for infinite period (National Science Foundation 2023), while the UGC postdoctoral fellowship in India was on hold during the entire COVID-19 pandemic (SERB-PRISM 2023).

Underrepresentation of women in postdoc positions in the Global South

The global survey gives an impression of equal representation of men and women in STEM (Woolston 2020). However, it is well-known that women are underrepresented in STEM especially in the Global South (University Grants

Commission 2023). For instance, in India, women represent only 13% of scientists and science faculty in higher education and research institutions (Krishnamurthy 2023), whereas women candidates represent just 34% of the postdoctoral fellowships awarded by the Department for Science and Technology, Government of India for the year 2022–2023 (SERB-PRISM 2023). This share further varies according to the field, ranging from 17% for Earth and Atmospheric Science, 23% for Physics and Mathematics, 36% for Engineering Science, and 42% for Life sciences and Chemical Sciences, respectively (SERB-PRISM 2023). One of the important causes of underrepresentation of women in academia is work-life balance and the patriarchal society that discriminates against women. By the age one completes the doctorate, women candidates carry social and family expectations to get married and have a stable job and income source to start a family. The pressure is greater in the Global South as family traditions to keep women at home and because affordable childcare outside the family is rare.

Mental health challenges

The results that the recent global survey on postdocs (Malcom and Parikh 2023; Woolston 2020; Nordling 2023) depict is alarming for science and society. While a majority of the current postdocs (96%) are employed full time in academia, many of them (69%) are unsure about their future job prospects owing to competition for funding (64%) and the lack of jobs (45%). Though most postdocs are in the age range of 26 to 40 years, only 13% of them opted to become a parent during their postdoc tenure (Woolston 2020). Owing to increased pressure, almost 51% have considered leaving science because of depression and mental health related to their work (Woolston 2020). Additionally, postdocs in their 30 s are unhappy, more negative about job prospects with higher mental-health challenges than postdocs under 30. We fear that these struggles are more intense in the Global South.

We believe that national and global academic and research goals will not be reached if we continue to ignore the issues concerning this indispensable workforce globally. Postdocs are crucial for the overall functioning of academia, and due to globalization and environmental change, we are globally dependent on increasing research in the Global South. To improve the situation in the Global South in long term, we must change how academia and society look at the postdoc positions. Academia must have increased employment opportunities and increased fellowships with a combination of national and international funds and timely faculty recruitment. Sustainable solutions such as "Postdoc Representative Body" like the "National Postdoctoral Association" in the Global North are needed at national levels to secure postdoc benefits in the Global South. We recommend increased postdoctoral fellowships, ensuring just and wider postdoctoral benefits similar to the Global North, decreased disparity between postdoc and faculty benefits, reserved positions for women, and encouraging collaborations with geographic and gender diversity. While considering the solutions to this ongoing crisis, it is important for the global academic community to highlight and address the issues concerning postdocs in the Global South, in basic science fields and for women candidates and for researchers in local universities.

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Data availability The data that support the findings of this study are openly available in [figshare] at http://go.nature.com/3tmckuq.

Declarations

Competing interests The authors declare no competing interests.

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