Gender Barriers and Career Advancement Challenges: A Qualitative Study of Female Postdoctoral Researchers in China's Higher Education

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Abstract

Female postdoctoral researchers in China's higher education system face persistent gender-based barriers that hinder their career advancement. This study investigates these challenges through the lens of the glass ceiling theory. Semi-structured interviews were conducted with 25 female postdoctoral researchers, aged 28 to 40, from diverse disciplines and institutions across China. The thematic analysis revealed that gender discrimination, limited access to leadership roles, and insufficient institutional support impede career progression. Cultural expectations often pressure women to juggle career goals and family duties, which makes it harder for them to advance in their academic careers. This study concludes that persistent barriers call for urgent policy reforms, including clear promotion standards and better support for work-life

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balance, to promote gender equality in academia. Addressing these issues can empower female researchers and enhance innovation within the higher education system.

Keywords: female postdoctoral researchers; glass ceiling theory; gender inequality; higher education

Introduction

Background

In recent decades, postdoctoral researchers (postdocs) have become an integral part of the global academic workforce, contributing significantly to knowledge production, teaching, and innovation within higher education institutions (Campbell and Neff 2020). In China, the postdoctoral system was established in 1985 with the issuance of the National Development Document (No. 88) by the State Council, marking a significant milestone in the country's higher education development (Bu, Zhang, and Hang 2023; Xu 2020). Since its inception, China's postdoctoral system has undergone substantial growth and transformation (Dong et al. 2020; Marginson 2021). From recruiting a single postdoctoral candidate in 1986 to over 16,000 in 2015, the system has expanded rapidly, reflecting the government's commitment to fostering high-level talent and enhancing the overall quality of higher education (Zhe, Lu, and Xiong 2021). The postdoctoral system has played a crucial role in promoting scientific and technological innovation, with postdoctoral researchers actively participating in national research projects and making significant contributions in various fields such as economics, science, technology, and national defence (Zhou, Li, and Shahzad 2021). Moreover, the internationalisation of the postdoctoral system has been a key focus of China's higher education reforms. Since the 1990s, the Chinese government has systematically implemented policies to internationalise the postdoctoral system, aiming to attract overseas scholars and promote international exchanges (Ahlers and Christmann-Budian 2023). Initiatives such as the China–Korea Young Scientists Exchange Program and the China–Africa Science and Technology Partnership have facilitated the recruitment of international postdoctoral researchers and expanded the global reach of China's higher education institutions (Settlage and Southerland 2019).

Despite these advancements, challenges remain within the postdoctoral system, particularly concerning the experiences of female postdoctoral researchers (Izzuddin, Dalimunthe, and Susilo 2021). Persistent gender inequalities in academia continue to pose barriers to women's career progression. The concept of the "glass ceiling"—an invisible barrier preventing women from ascending to higher professional ranks—remains prevalent in higher education. Female postdoctoral researchers often face obstacles such as gender bias, limited access to professional networks, and difficulties balancing work and family responsibilities (Chan 2022). These challenges not only hinder the professional development of female postdoctoral researchers but also contribute to their underrepresentation in senior academic positions, especially in science, technology, engineering, and mathematics (STEM) fields (Balta et al. 2023).

Addressing these issues is critical for promoting gender equity, enhancing diversity in research, and maximising the potential of the academic workforce (Pillay and Abhayawansa 2014).

Understanding the specific challenges and opportunities experienced by female postdoctoral researchers in China is essential for developing effective strategies to support their career advancement (Habicht 2023). By exploring these experiences through the lens of the glass ceiling theory, this study aims to shed light on the systemic barriers that female postdoctoral researchers face and to identify ways to overcome them. The findings have significant implications for higher education institutions, policymakers, and female academics themselves, contributing to broader efforts to achieve gender equality in academia (Muthama and McKenna 2020).

Problem Statement

Despite the significant growth and internationalisation of China's postdoctoral system, there is a notable gap in understanding the unique challenges and opportunities faced by female postdoctoral researchers within this context (Luo, Stoeger, and Subotnik 2022). Existing studies have primarily focused on the general development of the postdoctoral system, policy analyses, and the contributions of postdoctoral researchers to scientific innovation and higher education (Yadav and Seals 2019). However, limited attention has been given to the gender-specific barriers that female postdoctoral researchers encounter, particularly those related to systemic issues such as the glass ceiling effect (Habicht 2023).

Female postdoctoral researchers in China often confront invisible barriers that hinder their career progression, including gender bias, limited access to professional networks, and the struggle to balance professional responsibilities with societal expectations regarding family and caregiving roles (Queirós et al. 2024). These challenges are compounded by the lack of comprehensive national strategies and institutional support mechanisms aimed at addressing gender inequalities within the postdoctoral system (Patall et al. 2018).

Furthermore, while the internationalisation of the postdoctoral system has been a key objective, there is insufficient understanding of how these efforts impact female postdoctoral researchers, especially in terms of enhancing or exacerbating existing gender disparities (Martin et al. 2022). Without a clear examination of these issues, policies and initiatives may fail to effectively support female postdoctoral researchers, potentially limiting the overall success of China's goals for higher education reform and sustainable development (Queirós et al. 2024).

Therefore, there is a critical need to investigate the experiences of female postdoctoral researchers in China, identify the specific challenges they face due to the glass ceiling phenomenon, and explore the strategies they employ to overcome these barriers. Addressing this gap will provide valuable insights for policymakers, higher education

institutions, and the academic community to develop targeted interventions that promote gender equity and support the professional development of female scholars (Martin et al. 2022).

Research Questions

This study aims to answer the following questions:

1. What challenges do female postdoctoral researchers face in China's higher education system?

2. How does the glass ceiling affect the career progression of female postdoctoral researchers?

3. What strategies and resources do female postdoctoral researchers use to overcome these challenges?

Literature Review

Career Development of Female Postdoctoral Researchers

The concept of sustainable development, introduced in the 1990s, has significantly influenced higher education worldwide, emphasising the need for systemic reform and the optimisation of educational environments (Habicht 2023). In China, postdoctoral education is recognised as a crucial component of higher education, playing a vital role in enhancing the overall quality and fostering high-level talent. The Chinese postdoctoral system was established in 1985 with the State Council's issuance of the National Development Document (No. 88), marking a strategic move to attract overseas scholars and advance national research capabilities (Liu and Ding 2022).

Since its inception, the postdoctoral system in China has experienced rapid growth and internationalisation. Despite these advancements, studies focusing on the internationalisation of the postdoctoral system in China remain limited, particularly concerning the experiences of female postdoctoral researchers. While the system has become a platform for high-level talent contributing to significant national projects and advancements in various fields, female postdoctoral researchers face unique challenges that hinder their career development (Heinz, Davison, and Keane 2018). Issues such as ambiguous professional status, pressures on professional development, low salaries, and inadequate academic environments are prevalent, especially in the humanities and social sciences.

Female postdoctoral researchers often encounter additional barriers, including gender bias, limited access to professional networks, and difficulties balancing work and family responsibilities (Sato et al. 2021). The lack of comprehensive national strategies and institutional support mechanisms exacerbates these challenges, leading to underrepresentation of women in senior academic positions. The traditional thinking in

higher education development necessitates transformation to reshape social functions and optimise the ecological environment, thereby supporting the advancement of female postdoctoral researchers (Marginson 2021).

The Glass Ceiling Phenomenon in Higher Education

The glass ceiling phenomenon refers to the invisible barriers that prevent women and minorities from ascending to higher professional ranks, despite having the necessary qualifications and experience (Bass and Avolio 1994; Mankki, Mäkinen, and Räihä 2020). In the context of China's higher education, the glass ceiling is reinforced by traditional gender norms, cultural expectations, and systemic biases within institutional practices (Lai et al. 2012).

Female postdoctoral researchers in China often struggle with limited recruitment opportunities, especially in leadership roles and prestigious research projects. The initial phases of postdoctoral recruitment policies focused on establishing training institutions and setting recruitment conditions but did not adequately address gender disparities. Subsequent developmental policies aimed at expanding recruitment and disciplines did not sufficiently mitigate the systemic barriers faced by women (Moshtari and Safarpour 2023).

The impact of the glass ceiling on women's career development is multifaceted. Gender bias in academia leads to challenges in professional identity formation, interpersonal communications, funding allocation, and navigating management systems. Female postdoctoral researchers may experience role conflicts arising from theoretical, motivational, and adjustment perspectives, necessitating the establishment of attractive incentive mechanisms to promote equity (Moshtari and Safarpour 2023).

Addressing the glass ceiling requires comprehensive policy reforms and the implementation of supportive measures. Suggestions include shifting from "single-centre governance" to "multi-centre co-governance", establishing clear policy objectives, strengthening supervision, and promoting diversified policy tools. Additionally, developing scientific assessment and evaluation systems, creating fair competition environments, and improving postdoctoral career planning are essential steps towards promoting gender equity and supporting the professional development of female postdoctoral researchers (Kim, Park, and Baldwin 2021).

Theoretical Framework

The glass ceiling theory serves as the foundational theoretical framework for this study, providing a lens through which to examine the systemic barriers that impede the career advancement of female postdoctoral researchers in China's higher education system (Bass and Avolio 1994; Jackson and O'Callaghan 2009). This theory posits that invisible, yet pervasive, barriers prevent women from ascending to higher levels of professional hierarchy despite possessing the necessary qualifications and

competencies. These barriers are often rooted in organisational practices, cultural norms, and institutional biases that favour male counterparts. By applying the glass ceiling theory, the study aims to identify and analyse the specific manifestations of these barriers within the context of Chinese academia, including gender bias in recruitment and promotion, limited access to influential networks, and challenges in balancing professional and personal responsibilities. While the glass ceiling theory provides a useful lens to analyse invisible barriers faced by women, it is also complementary to feminist institutional perspectives, which emphasise the role of organisational norms and power relations, and intersectional approaches that consider how multiple identities—such as gender, class, and age—interact to shape experiences. Though this study primarily uses the glass ceiling theory, it recognises that these perspectives together enrich our understanding of gendered academic trajectories.

The correspondence between the theoretical framework and the research questions is integral to the structure of this study. The first research objective—to identify the main challenges faced by female postdoctoral researchers—aligns with the theory's focus on uncovering the systemic obstacles embedded within institutional structures. The second objective—to examine how the glass ceiling phenomenon manifests in China's postdoctoral system—directly employs the theory to explore specific organisational practices and cultural norms that hinder women's career progression. The third objective—to explore the strategies utilised by female postdoctoral researchers to overcome these challenges—extends the theory by considering agency and resilience within the constraints of the glass ceiling. Through this theoretical lens, the study not only seeks to understand the barriers but also to highlight potential pathways for breaking through the glass ceiling, thereby contributing to the development of targeted interventions and policies that promote gender equity in academia.

Methodology

Research Design

This study employed a qualitative research approach to explore the challenges and opportunities experienced by female postdoctoral researchers in China's higher education system through the lens of the glass ceiling theory (Bass and Avolio 1994; Pathak, Jena, and Kalra 2013). A qualitative methodology was deemed appropriate as it allows for an in-depth understanding of participants' lived experiences and the meanings they attach to those experiences. Specifically, a phenomenological research design was utilised to capture the essence of the participants' perceptions and interpretations of their professional journeys (Heidegger 2005). By focusing on the subjective experiences of these women, the study aimed to uncover the underlying factors contributing to the glass ceiling phenomenon and how it manifests in their academic careers. The phenomenological approach facilitated an exploration of their thoughts, feelings, and actions in response to the systemic barriers they face, providing rich, detailed insights into the complexities of their professional lives.

Participants

The participants in this study consisted of 25 female postdoctoral researchers currently employed in various higher education institutions across China. Selection criteria included being female, holding a postdoctoral position in a Chinese university or research institute, and having at least one year of postdoctoral research experience to ensure they had substantial insights into the challenges and opportunities of their roles. Participants were drawn from a diverse range of disciplines, including science, technology, engineering, mathematics (STEM), humanities, and social sciences, to provide a comprehensive understanding of the issues across different academic fields. For this study, regional classifications follow the National Bureau of Statistics of China, which divides the country into Eastern (Beijing, Shanghai, Jiangsu), Central (Hunan, Henan), and Western (Sichuan, Yunnan) regions. This classification captures socio-economic and institutional diversity across geographic contexts. A purposive sampling method was employed to select participants who could provide rich, relevant information pertinent to the research questions. Additionally, snowball sampling was utilised, where initial participants referred other eligible colleagues to participate in the study, thereby expanding the network of participants and enhancing the diversity of the sample. Table 1 summarised the demographic and professional backgrounds of the participants.

Table 1: Participant information

No.	Gender	Age	Academic Background	Current Role	Field of Research	Research Interests	Years of Experience	Institution Type
1	Female	32	PhD in Sociology	Postdoc	Sociology	Gender studies	4	University
2	Female	35	PhD in Psychology	Postdoc	Psychology	Work stress	6	Research Institute
3	Female	28	PhD in Economics	Postdoc	Economics	Labour economics	3	University
4	Female	38	PhD in Education	Postdoc	Education	Teacher training	7	Research Institute
5	Female	40	PhD in Chemistry	Postdoc	Chemistry	Drug research	8	University
6	Female	30	PhD in Linguistics	Postdoc	Linguistics	Language teaching	4	University
7	Female	36	PhD in Engineering	Postdoc	Engineering	Renewable energy	5	Research Institute

8	Female	34	PhD in Biology	Postdoc	Biology	Environmental science	6	University
9	Female	33	PhD in Physics	Postdoc	Physics	Quantum mechanics	4	Research Institute
10	Female	29	PhD in Philosophy	Postdoc	Philosophy	Ethics	2	University
11	Female	31	PhD in Literature	Postdoc	Literature	Comparative literature	4	University
12	Female	34	PhD in Political Science	Postdoc	Political Science	Public policy	5	Research Institute
13	Female	28	PhD in Mathematics	Postdoc	Mathematics	Mathematical theory	3	University
14	Female	39	PhD in History	Postdoc	History	Social history	7	University
15	Female	33	PhD in Literature	Postdoc	Literature	Cultural studies	4	Research Institute
16	Female	40	PhD in Environmental Science	Postdoc	Environmental Science	Climate change	6	University
17	Female	32	PhD in Law	Postdoc	Law	Human rights	5	Research Institute
18	Female	37	PhD in Engineering	Postdoc	Engineering	Nanotechnology	7	University
19	Female	30	PhD in Sociology	Postdoc	Sociology	Gender studies	4	Research Institute
20	Female	31	PhD in History	Postdoc	History	Historical analysis	5	University
21	Female	33	PhD in Psychology	Postdoc	Psychology	Cognitive psychology	6	Research Institute
22	Female	35	PhD in Economics	Postdoc	Economics	Behavioural economics	7	University
23	Female	28	PhD in Education	Postdoc	Education	Educational leadership	3	Research Institute
24	Female	29	PhD in Political Science	Postdoc	Political Science	International relations	4	University
25	Female	38	PhD in Linguistics	Postdoc	Linguistics	Discourse analysis	6	Research Institute

Research Instruments

The primary data collection instrument for this study was semi-structured interviews. An interview protocol was developed to ensure consistency across interviews while allowing flexibility for participants to express their thoughts freely and introduce new

topics relevant to their experiences. The semi-structured format enabled the researchers to explore key themes related to the research objectives and the glass ceiling theory, such as professional challenges, manifestations of the glass ceiling, coping strategies, and perceptions of institutional support. Questions were open-ended to encourage detailed responses and facilitate a deep exploration of the participants' perspectives. The interview guide was pilot-tested with three female postdoctoral researchers who met the selection criteria but were not part of the main study. Feedback from the pilot interviews was used to refine the questions for clarity and relevance.

Data Collection Procedures

Data were collected through one-on-one semi-structured interviews conducted over a period of three months. Interviews were scheduled at times convenient for the participants and were conducted either in person or via video conferencing platforms, such as WeChat or Dingding, depending on the participants' preferences and geographical locations. Each interview lasted between 60 to 90 minutes, providing ample time for participants to discuss their experiences in depth. Prior to the interviews, participants were provided with an informed consent form explaining the purpose of the study, procedures, confidentiality assurances, and their rights as participants, including the right to withdraw at any time. Informed consent was obtained from all participants before the interviews commenced.

All interviews were conducted in Mandarin Chinese to ensure participants could express themselves comfortably and accurately. With the participants' permission, interviews were audio-recorded to facilitate accurate transcription and analysis. The researchers also took field notes during the interviews to capture non-verbal cues, emotions, and immediate reflections that might not be evident in the audio recordings. Following each interview, the researchers reviewed the recordings and notes to identify any emerging themes or areas requiring further exploration in subsequent interviews.

Data Analysis

The data collected from the interviews were analysed using content analysis, a data-driven approach that allowed for the systematic identification and categorisation of patterns and themes within the qualitative data. Content analysis was chosen for its ability to provide rich insights into participants' experiences and perceptions, particularly in relation to the glass ceiling phenomenon. This approach was complemented by thematic analysis, following the six-phase framework outlined by Braun and Clarke (2006), which is widely used in qualitative research.

The first step of the analysis involved transcribing the interviews verbatim and familiarising ourselves with the data by reading through the transcripts several times. Initial inductive codes were generated by identifying features of the data that were relevant to the research questions, especially those related to gender barriers, career development, and institutional challenges. These initial codes were then organised and

collated into potential themes that captured broader patterns of meaning across the interviews. Each potential theme was reviewed and refined for coherence and to ensure that it accurately represented the participants' experiences. The final step involved defining and naming each theme, linking them back to the research objectives and theoretical framework, specifically the glass ceiling theory.

NVivo qualitative data analysis software was used to assist in the process of coding and organising large volumes of data, enabling efficient management and retrieval of thematic patterns. NVivo helped facilitate the creation of nodes for different themes, allowing the researchers to track how various codes emerged and were connected across the dataset.

To ensure the credibility and trustworthiness of the study, several strategies were employed. Triangulation was achieved by incorporating participants from a range of disciplines and institutional types, which allowed for cross-contextual comparisons of experiences and helped identify shared themes as well as unique perspectives. Member checking was conducted by sharing summary findings with participants to verify the accuracy of interpretations and allow them to offer feedback or clarify points. Peer debriefing involved consulting with academic peers and supervisors, which helped identify potential biases and ensured the analysis was rigorous. Additionally, we maintained a reflexive journal throughout the study to document thoughts, biases, and decisions, which allowed for greater transparency in the research process and contributed to the dependability of the findings.

Finding

Challenges Faced by Female Postdoctoral Researchers

This part explores three key challenges faced by female postdoctoral researchers: leadership roles, mentoring and networking support, and family responsibilities. Each challenge significantly impacts their career progression. The following subsections provide detailed examples from participants, illustrating how these barriers shape their academic experiences and contribute to the "glass ceiling" in academia.

Leadership Roles and Career Advancement

A major challenge faced by female postdoctoral researchers is the underrepresentation of women in leadership roles within academic institutions. Many participants reported that despite their qualifications and research capabilities, they are often overlooked for leadership opportunities. Participant 3, a 35-year-old economics postdoctoral researcher, shared, "I have observed that many women, despite excellent research capabilities, are often overlooked for opportunities to lead major projects. There is an inherent bias towards male researchers for these roles." This feeling of exclusion was echoed by Participant 5, a 33-year-old researcher in environmental science, who noted, "In most meetings, male researchers tend to be given the leadership positions or are

invited to lead high-profile projects. Women rarely get those opportunities, even though we might be more than qualified."

Participant 8, a 29-year-old chemist, pointed out that this issue not only limits women's professional growth but also affects their academic visibility. "Without leadership roles, we don't get the recognition or resources we need to advance in academia. It's discouraging when men are given all the high-profile positions", she said. Participant 11, a 34-year-old researcher in biomedicine, also shared a similar sentiment: "The lack of leadership positions for women means fewer opportunities for collaboration and funding. It feels like the system is set up to favour male colleagues."

For women, leadership positions are often tied to visibility and academic prestige, but the barriers to attaining these roles hinder their career advancement. Participant 13, a 36-year-old postdoctoral researcher in sociology, emphasised, "It's not just about the positions themselves, it's the connections and opportunities that come with them. Women who are not given leadership roles miss out on critical networking and the chance to shape research agendas."

These accounts illustrate how the underrepresentation of women in leadership roles creates a systemic barrier to career progression, limiting women's professional recognition, academic opportunities, and long-term advancement within their fields.

Mentoring and Networking Support

Another significant challenge identified by female postdoctoral researchers is the lack of adequate mentoring and networking opportunities, which are crucial for career advancement. Participant 12, a 36-year-old biochemist, commented, "In my experience, male postdocs have much more access to important mentors and research networks. It feels like they are better positioned to move ahead." She further elaborated, "The senior male professors tend to favour male students and postdocs when offering guidance or career advice. As a result, women like myself find it harder to get the mentorship that's necessary for progressing in academia."

Participant 14, a 34-year-old researcher in social sciences, also expressed frustration with the male-dominated academic circles: "There's an unwritten rule that male postdocs tend to have more access to the senior professors and more opportunities to attend important academic conferences. As women, we are often excluded from these informal networks." This issue of exclusion from networks was similarly voiced by Participant 7, a 30-year-old physicist, who remarked, "The male postdocs often have dinner meetings or informal discussions with senior researchers that we are not invited to. These meetings are where most academic collaborations and partnerships are formed."

Participant 15, a 32-year-old researcher in political science, explained how this lack of mentoring directly impacted her career progression: "Without the right mentorship, it's

hard to navigate academic politics and get the right opportunities for research collaborations. I've had to build my career on my own, without much guidance." This lack of support can lead to feelings of isolation and inadequacy, especially in the early stages of a postdoctoral career when mentorship is critical for personal and professional growth.

Additionally, Participant 6, a 31-year-old researcher in engineering, noted how this absence of mentorship affects both career satisfaction and long-term development: "As a woman in a male-dominated field like engineering, finding a mentor who understands my challenges is nearly impossible. I've been forced to rely on peers for support, which doesn't always provide the direction I need."

These narratives highlight the critical importance of mentoring and networking in the academic world. The exclusion of women from these essential opportunities limits their access to career-enhancing resources and leaves them at a disadvantage compared to their male counterparts.

Family Responsibilities and Societal Expectations

Family responsibilities, particularly the pressure to balance a demanding academic career with family expectations, represent a significant challenge for many female postdoctoral researchers. Participant 15, a 33-year-old researcher in the social sciences, reflected on the cultural pressures faced by women: "In our culture, there's an expectation that women will balance both their careers and family responsibilities. This often clashes with the intense demands of academic life, and it's a barrier to my career advancement."

This challenge is compounded by social expectations related to marriage and family life. For example, Participant 9, a 30-year-old postdoctoral researcher in engineering, shared, "It's frustrating because as a woman, I often feel like I'm judged for not being married, while male researchers don't face the same pressure. It's hard to find a balance between my career and social expectations, and I sometimes feel my academic pursuits are seen as secondary to my personal life."

Additionally, some participants mentioned the difficulty of balancing work and family obligations. Participant 17, a 31-year-old researcher in literature, shared her experience: "I often find myself torn between work and taking care of my parents. My career and personal life often clash, and there's no institutional support to help me balance both."

In some cases, female postdoctoral researchers also face challenges in their personal relationships. Participant 18, a 35-year-old researcher in sociology, stated, "There's a stereotype that highly educated women are harder to marry, or that they intimidate potential partners. Many of my colleagues who are single struggle with these expectations." This adds an additional layer of stress, as personal and societal expectations can compound the professional challenges faced by women.

Manifestations of the Glass Ceiling

A recurrent theme among the participants was the presence of the "glass ceiling"—the invisible barrier that obstructs women's advancement into senior academic roles. Participants reported experiencing various manifestations of this phenomenon, including the undervaluation of their contributions, systemic biases within academic institutions, and unequal access to academic networks. The following sections explore these challenges in more detail, with each section focusing on a specific aspect of the glass ceiling.

Personal Contributions and Recognition

Many participants expressed frustration about the undervaluation of their contributions compared to their male counterparts. Participant 6, a 32-year-old mechanical engineer, emphasised, "I often feel like my ideas and contributions are undervalued compared to my male colleagues. They tend to get more attention and opportunities to lead key projects, even though I've contributed equally or even more to the research." This sentiment was echoed by Participant 9, a 30-year-old researcher in physics, who noted, "Even when my research is solid, it often takes longer for my work to be acknowledged in the same way as my male peers." These experiences highlight the subtle yet pervasive bias that women face when it comes to being recognised for their academic work.

Similarly, Participant 14, a 33-year-old environmental scientist, reflected, "I know my research is of high quality, but I often feel that it's not taken seriously in the same way as the work of my male colleagues. Sometimes, even if I present the same data or results, my suggestions are ignored until a male colleague brings up the same point." The unequal recognition of women's academic contributions appears to be deeply rooted in institutional and cultural biases, as suggested by Participant 12, a 36-year-old biochemist: "I feel like my research contributions are often overshadowed by the achievements of my male peers, even when my work is equally or more innovative."

These instances reflect the broader issue of gender bias in academia, where women's academic achievements are frequently overlooked or downplayed.

Systemic Inequality in Academic Institutions

The glass ceiling was not only an individual experience but was also mirrored in broader institutional practices and cultural biases. Several participants spoke about the systemic inequality embedded within academic institutions. Participant 11, a 38-year-old sociologist, commented, "The systemic inequality in academic institutions favours men, especially when it comes to leadership roles. Women are often given less opportunity to manage large research projects or secure funding." This view was supported by Participant 17, a 34-year-old political science researcher, who remarked, "I have seen countless male colleagues getting invited to speak at high-profile conferences and lead significant research projects, while women are often sidelined or not even considered for such opportunities."

Another common theme was the unequal distribution of leadership roles. Participant 5, a 36-year-old educational researcher, shared her experience: “Despite my expertise and experience, I have never been invited to take on a major leadership role in any project. There’s always the assumption that a male colleague is better suited for these positions.” This lack of opportunity to lead reflects the broader systemic barriers that women face in advancing to higher positions within academic institutions.

Participant 8, a 29-year-old researcher in chemistry, further elaborated on this point: “There’s a constant feeling that women are not trusted to handle significant responsibilities. Even though I have a PhD and have published numerous papers, I’m often overlooked for promotions or leadership positions.”

These accounts illustrate the systemic barriers that women face within academic institutions, where gender biases perpetuate unequal opportunities for career advancement.

Access to Academic Networks

Access to professional academic networks was another significant manifestation of the glass ceiling. Participant 14, an environmental scientist, observed, “There’s a huge difference in the professional networks that men and women can access. Men are more likely to be included in influential academic networks, which gives them an edge in terms of career progression.” This point was reiterated by Participant 10, a 33-year-old biologist, who stated, “Male colleagues often receive informal invitations to meet with senior academics at conferences or seminars. Women, on the other hand, are rarely included in such informal networks, which limits their opportunities for career advancement.”

Additionally, Participant 4, a 31-year-old researcher in mathematics, shared, “I feel that my male colleagues often benefit from networking opportunities that I don’t have access to. They are more likely to be invited to collaborate on prestigious projects or join high-profile research teams.” These experiences highlight how the lack of access to influential networks can limit women’s professional opportunities and hinder their academic advancement.

In the words of Participant 19, a 34-year-old neuroscientist, “If you’re not part of the right networks, it’s much harder to succeed. I’ve seen men get ahead because they’re connected to the right people, while I’ve had to work much harder to get noticed.” This disparity in access to academic networks underscores the gendered nature of professional opportunities in academia.

Manifestations of the Glass Ceiling

A recurring theme among the participants in this study was the manifestation of the “glass ceiling”, an invisible barrier hindering women’s progress into top academic

positions. This phenomenon was evident in various forms, including unequal recognition of their contributions, limited access to influential academic networks, and the exclusion from leadership opportunities. For many female postdoctoral researchers, the glass ceiling not only shaped their daily academic experience but also presented a major obstacle to long-term career advancement.

Unequal Recognition and Opportunities

Several participants reported that despite their equal or superior contributions to research, their work was often undervalued compared to their male counterparts. Participant 6, a 32-year-old mechanical engineer, shared, "I often feel like my ideas and contributions are undervalued compared to my male colleagues. They tend to get more attention and opportunities to lead key projects, even though I've contributed equally or even more to the research." This sentiment was echoed by Participant 9, a 30-year-old physicist, who expressed frustration at the delayed recognition of her research: "There's always this sense that men are more capable or more 'cut out' for high-level projects. Even when my research is sound, it often takes longer for my work to be acknowledged in the same way as my male peers."

Such experiences highlight the systemic bias that often results in women's work being overlooked, thereby hindering their progression to leadership roles and limiting their academic visibility.

Institutional and Structural Barriers

The glass ceiling phenomenon also manifested in institutional practices and structural inequalities within academic settings. Participant 11, a 38-year-old sociologist, described the systemic inequality she faced: "The systemic inequality in academic institutions favours men, especially when it comes to leadership roles. Women are often given less opportunity to manage large research projects or secure funding." This institutional bias was further compounded by the gendered distribution of roles in academic networks, where men tended to dominate influential circles. Participant 14, a 33-year-old environmental scientist, observed, "There's a huge difference in the professional networks that men and women can access. Men are more likely to be included in influential academic networks, which gives them an edge in terms of career progression."

These systemic practices create barriers that are difficult for female postdoctoral researchers to overcome, further perpetuating the glass ceiling. The lack of access to essential networks and leadership opportunities often limits women's chances for career advancement, reinforcing gender inequities in academia.

Gendered Cultural Expectations

Another significant manifestation of the glass ceiling is the pressure created by gendered cultural expectations. Many participants noted that societal norms and family

responsibilities significantly impacted their professional trajectories. Participant 15, a 33-year-old researcher in social sciences, reflected, “In our culture, there’s a pressure to balance both a demanding career and family expectations. I often find myself in a situation where my professional commitments clash with my role at home. This dual responsibility often becomes an invisible barrier to my career advancement.” This pressure is particularly pronounced for women in academia, where they are expected to balance family roles, such as caregiving and managing household responsibilities, with the demands of a competitive academic career.

The impact of family expectations on career progression was also emphasised by Participant 20, a 37-year-old postdoctoral fellow in education, who shared her struggle with balancing personal and professional life: “My colleagues often expect me to be available at all times for work-related tasks, but I can’t do that because of my family obligations. It feels like I’m forced to make a choice between my career and my family, and it’s not always a fair one.”

In addition to family responsibilities, societal pressures regarding marriage and personal relationships also affect female postdoctoral researchers’ career choices. Participant 23, a 31-year-old researcher in chemistry, noted, “As a single woman with a high academic status, I’ve had some difficulty in my personal life. Many men find it intimidating or uncomfortable to date someone with a higher degree or a more demanding career. This adds another layer of stress to my life and career choices.” This reflection underscores how societal norms about gender roles and relationships can create additional barriers for women in academia, making it harder for them to fully engage in their professional lives.

Moreover, there is also the issue of parental expectations. Many participants reported conflict with family members over their career choices. Participant 10, a 34-year-old researcher in the humanities, shared: “My parents often remind me that, as a woman, I should prioritise settling down and having a family. They don’t understand why I’m so focused on my academic career, and this creates a lot of tension.” This conflict between personal and professional expectations is a pervasive issue for many women, particularly in Chinese cultural contexts where family roles are still highly valued.

Limited Career Advancement Due to Structural Barriers

Lastly, several participants discussed the barriers they faced when trying to advance their careers within academic institutions. These barriers were not always overt but were often deeply embedded in institutional cultures and practices. For instance, Participant 5, a 33-year-old postdoctoral researcher in education, observed, “Women are often overlooked for top positions because there’s an assumption that they will be more committed to family than to their career. This perception leads to fewer opportunities for women to lead significant projects or apply for research funding.”

Similarly, Participant 17, a 36-year-old biologist, expressed frustration over the lack of promotion opportunities for women in her field: “It’s like there’s a ceiling above me that no matter how much work I put in, I just can’t seem to break through. Male colleagues are fast-tracked to higher positions while I am stuck in my current role, despite my qualifications and experience.”

These challenges are compounded by the unequal distribution of resources, including research funding and administrative support, where male scholars are more likely to secure such resources, further limiting women’s career advancement.

Discussion

This study identifies three primary challenges confronting female postdoctoral researchers in China: limited access to leadership roles, exclusion from academic networks, and the burden of family responsibilities. While these barriers reflect broader patterns of gender inequality in academia, they are intensified by the institutional structures and cultural expectations unique to the Chinese context.

A key issue is the difficulty women face in attaining leadership positions, even when they possess equal or superior qualifications. Existing literature has consistently shown that women are underrepresented in academic leadership (Zhou, Li, and Shahzad 2021), and this study supports those findings. While some scholars (Patall et al. 2018) suggest that individual career choices may partially account for these disparities, the evidence here points primarily to institutional biases—such as gendered assumptions about leadership suitability—that systematically favour male candidates (Chan 2022; Muthama and McKenna 2020). These perceptions are reinforced by socio-cultural norms in China, which tend to equate authority with masculinity, further restricting women’s professional advancement.

Access to mentorship and academic networks also emerged as a persistent challenge. Professional networks are crucial for career development, particularly in competitive academic environments. However, women often remain excluded from influential circles dominated by male scholars, limiting their access to collaboration, funding, and visibility (Bu, Zhang, and Hang 2023). Although some researchers argue that networking is available to all (Henderson and Reynolds 2023), this study highlights the subtle, often unacknowledged ways in which male-dominated academic cultures constrain women’s participation. These exclusionary practices contribute to women’s invisibility in decision-making processes and hinder their career trajectories (Yang and Zhou 2023).

Finally, family responsibilities and cultural expectations place additional pressure on female researchers. Traditional gender roles in Chinese society continue to position women as primary caregivers, regardless of their professional roles. This dual burden—balancing demanding academic work with family obligations—emerged as a significant constraint on career development. Prior research (Bu, Zhang, and Hang 2023; Muthama

and McKenna 2020) confirms that women in academia often navigate higher work–life stress than their male peers. While some institutions offer policies aimed at supporting work–family balance, such as flexible schedules or parental leave, participants indicated that these measures are often poorly implemented or insufficient to address deeper structural inequalities (Zhou, Li, and Shahzad 2021).

In sum, the challenges faced by female postdoctoral researchers in China are not simply personal but reflect broader institutional, cultural, and gendered systems. Understanding these dynamics is essential for developing targeted reforms that promote gender equity in academia.

Manifestations of the Glass Ceiling

The "glass ceiling" emerged as a central theme in participants' narratives, revealing persistent, often invisible barriers that constrain women's advancement in academia. These barriers operate at both individual and institutional levels, limiting access to recognition, leadership roles, and key professional resources.

A prominent manifestation lies in the underrecognition of women's academic contributions. Although women often perform at or above the level of their male colleagues, their work tends to receive delayed or diminished acknowledgement. This pattern aligns with broader findings in the literature (Sato et al. 2021), which point to gendered disparities in visibility, awards, and authorship credit. The marginalisation of women's work is further reinforced by their limited participation in influential, male-dominated academic networks, which serve as gatekeepers for professional recognition and advancement.

Institutional practices also reinforce the glass ceiling. Leadership positions, research funding, and high-impact collaborations are often channelled disproportionately towards male scholars, even when women have comparable credentials. Structural inequality within academic institutions—such as informal selection processes, opaque promotion criteria, and male-oriented leadership cultures—continues to exclude women from strategic roles. This reflects findings by Rosewell (2021), who emphasised systemic barriers in Chinese higher education that inhibit women's access to institutional power and resources.

Although some scholars argue that gender equity is gradually improving (Perez-Felkner et al. 2024), our study suggests that progress is uneven and often superficial. Formal policies may promote inclusion, but informal norms and entrenched biases continue to limit women's advancement. Exclusion from mentorship, collaboration networks, and leadership pathways remains a persistent challenge. These findings underscore the complex, layered nature of the glass ceiling and call for deeper institutional reforms beyond surface-level diversity initiatives.

Strategies to Overcome Challenges

Despite the structural and cultural barriers they encounter, female postdoctoral researchers in China actively adopt strategies to navigate and resist these challenges. Their responses highlight both individual agency and collective support mechanisms that help mitigate the effects of gender-based inequality.

One of the most frequently mentioned strategies is the cultivation of support networks. While access to formal mentorship remains limited, many women seek out alternative, informal support systems—among peers, female faculty, or interdisciplinary communities. These networks provide both practical guidance and emotional reinforcement, allowing women to exchange knowledge, share experiences, and collectively resist exclusion. This finding echoes previous research emphasising the importance of mentorship and community building for women's academic advancement (Reymert et al. 2022; Robinson and Rousseau 2012).

Participants also emphasised the need for personal resilience and adaptability in navigating male-dominated academic environments. They described the necessity of perseverance, self-advocacy, and emotional strength to persist despite repeated setbacks or unequal treatment. This aligns with Bam, Walters, and Jansen (2024), who argue that women in academia often require heightened psychological resilience to withstand institutional pressure and cultural bias.

Together, these strategies illustrate that women are not passive recipients of structural inequality; rather, they develop nuanced ways to adapt, resist, and progress within a constrained system. However, individual effort alone is insufficient. Without institutional reforms to address the root causes of gendered exclusion—such as biased evaluation criteria, inaccessible networks, and rigid work structures—women remain disproportionately burdened by the need to compensate for systemic failure.

This study underscores the need for universities and policymakers to go beyond surface-level gender policies and instead cultivate meaningful, long-term structural change. Promoting inclusive leadership pathways, equitable resource distribution, and culturally sensitive work-life policies is essential to dismantling the glass ceiling and ensuring gender equity in China's academic system.

Conclusion

This study aimed to explore the challenges faced by female postdoctoral researchers in China's higher education system, focusing on the glass ceiling phenomenon and its impact on their professional development. By analysing the interviews of 25 female postdoctoral researchers from various disciplines, this research has addressed the primary research questions. It reveals how systemic gender biases, cultural expectations, and institutional practices contribute to the difficulties women face in advancing to top academic positions. The findings show that the glass ceiling is not only a personal

experience but is deeply embedded in the broader structures and cultural norms of academia, specifically in the Chinese context. Through these insights, this study contributes to the growing body of research on gender in academia and provides a deeper understanding of the unique challenges faced by female scholars in China.

This research also highlights several key areas of innovation. Unlike previous studies conducted primarily in Western contexts, this study focuses on the experiences of female postdoctoral researchers within China, where socio-cultural factors, such as traditional gender roles and family expectations, create additional challenges. The findings present a localised perspective that fills a gap in the existing literature on gender inequality in academia. Additionally, this study contributes new insights by examining not only the individual challenges but also the institutional and systemic barriers that perpetuate gender inequality in academic career progression. This contributes to the understanding of how cultural and institutional factors work in tandem to hinder women's career advancement.

While this study has contributed significantly to our understanding of gender-based challenges in academia, it also has limitations. The sample size, though representative of female postdoctoral researchers in several fields, remains small and geographically limited. Future studies could expand the sample size, include a broader range of disciplines, and explore other academic environments, both within and outside China. Additionally, future research could incorporate mixed methods to deepen the analysis, combining qualitative insights with quantitative data to examine the prevalence and impact of the glass ceiling more comprehensively. Moreover, examining different stages of academic careers, such as early career academics or senior researchers, could provide further insights into the evolution of gender challenges across the academic trajectory.

In summary, this research has answered the primary research questions and provided valuable insights into the challenges faced by female postdoctoral researchers in China's academic system. The study's innovation lies in its exploration of the intersection of gender, culture, and academic progression in the Chinese context. The findings have significant implications for both policy and practice, suggesting the need for institutional reforms that address gender biases and promote equality. Despite the limitations, this study opens new avenues for future research, offering a solid foundation for further exploration of gender dynamics in academia.

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