Sexism Against Women in Science and Medicine

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Abstract. Since ancient times, people in various countries of the world have had different views on the nature of women and men. Discrimination against women exists in many different fields, such as medicine, science, and engineering. Even in theology, philosophy, and scientific beliefs, women are considered weaker and men are more mature and rational. In recent years, in China, whether it is the severe employment situation in the post-epidemic era or the liberalization of the two-child and three-child policies, the problem of discrimination against women in the workplace has aggravated, making it a topic of widespread concern in society. In the following paper, analyzes the previous data and investigates the situation, and I will analyze the current situation and causes of sexism in China through the awareness of this issue. Despite the rapid development of society, discrimination against women is still inevitable, and the number of women working as scientists and doctors is still relatively low.

Keywords: Gender discrimination, Women in the Chinese society, Science and medicine sectors.

1. Introduction

1.1. Background

For centuries, people have always had different ideas about the nature of females and males. This difference is often portrayed by people using stereoscopic shots. In theological thought, as well as philosophical, literary and even scientific beliefs women have weaker minds and are more emotionally dependent. Males, on the other hand, are considered mature, determined, and generally more sensible than women. In the past, women were less successful in fields that emphasized rationality because of a lack of leadership and representation. Especially those women who choose to pursue careers in (S)science, (T)technology, (E)engineering, and(M) mathematics. At a time when people's minds were still heavily imprisoned, people always simply think that this is the essential difference between men and women, and women are not good at fields that require stronger logical thinking. This is undoubtedly a stereotype of women and a real sexism. Most of these old ideas have become obsolete over the past fifty years, especially in the arts and humanities, as more and more women scholars have entered academia. What is even more gratifying is that the number of women in the STEM field is also increasing. Nowadays, 57 % of women's earnings come from a bachelor's degree, and 50 % of that comes from STEM fields. The U.S. workforce has achieved gender parity in STEM so far, as evidenced by female representation in every field, even at the top. Since the number of women earning Ph.D has increased every year and outnumbers men in the life sciences. Still, women are advancing more slowly than men in academic rankings, and only about one-third of women are funded at the National Institutes of Health in the United States. Likewise, just under one in five women are employed in science-related careers in the UK. In reality, a diverse workforce and academia can provide financial and intellectual benefits. So women are essential in any field. Gender diversity is necessary to satisfy complex STEM environments.

1.2. Related research

Ellen A. Stone presented some recent developments and scientific research on gender stereotypes and discrimination among teenagers and children. In the research, gender discrimination is described from five aspects: (a.)Discipline in schools is discriminatory against boys' behavior in school; (b.)There are some stereotypes that girls are not good at research, developing new products, calculating data and doing some engineering work; (c.)Stereotypes of girls in certain sports;

(d.)Sexual harassment and teasing by peers; (e.)Stereotypes about the nature of gender, including the perception of girls as sex objects, and the belief that boys have more sexual desires than girls [1]. Women outnumber men in the field of primates, and at the annual meeting of the American Society of Mammalologists, the participation of women has increased dramatically. After 1979, people began to be able to demonstrate through posters. According to statistics, the proportion of women choosing posters as a way of presentation is higher than the percentage of all other ways of presentation. However, the prestige of posters is usually low, and women's abilities will be underestimated because of this. Symposiums are also a type of scientific conference and are considered more prestigious. It would be an equal opportunity for science if there were female representation in any field [2]. Many years ago, more and more women have chosen to pursue careers in education. Despite overall changes in representation and fair pay for women, disparities persist in some areas. For instance, in science, technology, engineering and mathematics (STEM). Part one presented the latest data on pay and representation gaps. In part two, the main evidence explaining these differences is presented. In part three, interventions related to personal behavior change and practice are presented [3].

Similarly, there are still related issues of discrimination against women who are doctors or pharmacists. Medical research is main used to enable relevant knowledge to be better used in clinical practice and to guarantee people's lives with a higher quality. Sexism still exists in most scientific research, and people still prefer to use men as research subjects. The males who were experimented with dominated the clinical trials, which had a disproportionately negative effect on the females. Human diseases generally require biological research and clinical trials for both sexes and should not be more biased toward males [4].

Although the number of women in science is increasing over time, it remains relatively small. Many companies in the United States also have equity and diversity programs and regulations in place. While most people consider their own rules to be fair in education and science, a wealth of research data shows that bias against women in science and medicine persists. Sexual harassment is also a big hurdle [5]. Gender is an important factor in doctors' clinical treatment, and doctors' awareness of gender is conducive to the health and life safety of patients. Unfortunately, gender is sometimes overlooked in the medical field, which is believed to have a preference for studying male biological characteristics. This is because a considerable amount of disease-related knowledge is devoted to studying males. It not only requires schools to impart correct concepts and viewpoints, but also requires the help of the government to implement them to combine psychological problems with practical problems in clinical treatment [6]. In the study of gender, gender and social gender are two different concepts. Usually, gender is used to indicate the different biological characteristics between men and women, while social gender is used to indicate the cognitive differences between men and women due to social and cultural factors. According to the rules of the "gender order", the concept of "human being" usually refers to men, and the female group is forced to belong to men. Men are thus considered more valuable than women, creating a whole host of inequalities [7]. Over the past few decades. Science and technology are developing rapidly. The rapid development of science and technology does not mean that there is no gender discrimination in society. It is precisely because of the highly developed technology that it is in stark contrast to the under-participated female group. For example, only one of the 16 deans in the National Institutes of Health (NIH) is a woman [8].

In relevant research in clinical medicine, some treatment programs make an unreasonable distinction between men who are sick and women who go to the hospital. In most cases, the reported discrimination hurts women, but there are also reports that men are discriminated against, such as men suffering from depression who do not receive timely treatment [9]. Bias against women in academia is real, and it not only has a detrimental effect on women themselves but also reduces the quality of scientific research. This is most evident in the underrepresentation of women in academic fields and the low availability of women in higher positions [10].

2. The current situation in China

2.1. The current situation and causes of gender discrimination in China

In recent years, whether it is the severe employment situation in the post-epidemic era or the liberalization of the two-child and three-child policies, the problem of discrimination against women in the workplace has been aggravated, making it a topic of general concern in society and an important influence on the construction of a harmonious society in our country.

2.1.1 The differences in interviews between men and women under the same conditions

Data analysis shows that when all resumes are identical except for gender and height, the average number of interview notifications received by female job seekers with a bachelor's degree is 39% lower than that of men; The gap in the average number of interview calls received was 53%.

2.1.2 Compare how male and female job applicants are treated differently at corporations.

According to various studies, nearly half of female job applicants are asked whether they are married or have given birth to children. In addition, less than 30% of women were not hired by job hunting places because of their gender issues, and even about 5%-10% of women encountered people who were rude to them during work, and some Women have had their wages cut by their bosses because they had to take time off to have children. However, men in the workplace rarely receive unfair treatment due to their gender advantages. The "2022 College Student Employ Ability Survey Report" shows that male undergraduates or graduate students who have just graduated are about 15% more likely to be hired by companies than girls, and sometimes even women are only half as likely to be recruited by companies as men.

2.1.3 Discrimination against women in science and technology highlights

Relevant research data show that in China, less than 6% of women can become academicians in scientific research or engineering manufacturing. Even in 1978, the number of women working in these fields was nearly 10 % higher than it is now. There are no female members in the expert group of the national "863" plan; among the chief scientists selected for the "973" plan, women accounted for only 4.6%, among the "Cheung Kong Scholars", women accounted for 3.9%. Women accounted for 5.0%.

With the gradual increase of positions and titles related to science and technology, the number of women in these fields has shown a rapid decline compared with the original trend, and most of the women working in these fields are ordinary employees, and few are executives [11]. Statistics show that in the field of mathematics, only 15% of tenured positions are held by women. In computer science and engineering, the proportion of female positions is only 18% and 14%.

2.2. Specific manifestations of sexism in science and medicine

2.2.1 Gender Discrimination in the Hiring Process and Employment Contracts

For a long time, many different types of businesses are publicly stating on advertisement and websites that they only accept male applicants and that women have to look elsewhere. With the introduction of a series of laws and regulations enabling women to have equal rights with men, the national government has accelerated the process of equality between men and women. Nevertheless, the phenomenon of covert gender discrimination in some companies still exists. Even if some companies need women, they will still comprehensively evaluate women's age, family, marriage, childbearing and other issues. Some regulations and behaviors that are unfair to women or even damage women's personal rights have not been restrained and sanctioned by relevant laws[12]. When some companies sign recruitment agreements with schools, they even require the implementation of "bundling", that is, to recruit a girl, a boy must be tied.

2.2.2 Gender Discrimination in Job Development and Career Advancement

This paper examines the current retirement age in my country, as shown in Figure 1. The law stipulates that women can no longer continue to work when they reach the age of 55, and male employees have to retire five years later than women. As more and more women have received different levels of education, many of them will go on to graduate school after graduation, and the number of women who choose to continue to study for a Ph.D. is also increasing year by year. The number of years they have to work will be shorter than before. However, the national law stipulates that women cannot continue to work when they reach the corresponding age, and men have more years to develop their own careers. Age discrimination limits women's career development space. Some research data show that the average monthly income of men in 2020 is 9,848 yuan, and the corresponding income of women is 8,173 yuan, which is 17% higher for men than women.

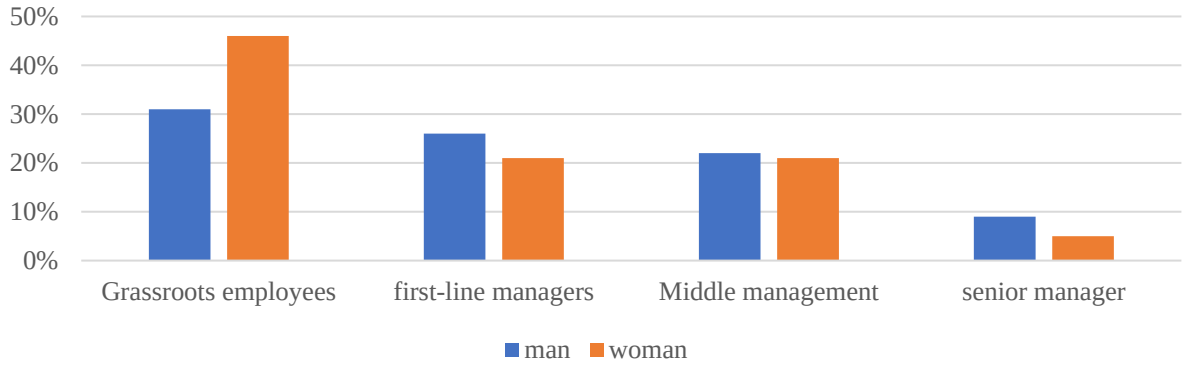


Fig. 1 The proportion of male and female professionals at various job levels

Among the personnel engaged in management positions in various units, most of the women are engaged in basic work, which is more intensive but relatively simple; while most of the men have the right to manage the daily affairs of the company and the employees of different departments in the company. More men want jobs that pay well and don't leave them with nothing to do while at work. The ratio of male to female is still obviously unbalanced, and the problem of gender discrimination still exists.

2.2.3 Comparing different industries, there are cases where men's salaries are higher than women's.

From an industry perspective, it can be seen from the 15 secondary industries with the largest salary gap between men and women in 2019. In some industries that invent and manufacture products, more companies want to hire men. And after they have been in this job for a few years, there will be more opportunities to be promoted, as shown in Table 1.

Table 1. The salary distribution of urban employment population in China in 12

Salary quantile	Female	Male	Male salary advantages
25th percentile salary	4465	5406	21.1%
50th percentile salary	5579	7004	25.5%
75th percentile salary	7697	10053	30.6%
90th percentile salary	10585	13371	26.3%
Average Salary	7017	9104	29.7%
2021 D-measure		0.199	
2020 D-measure		0.203	

2.3. Reasons

2.3.1 The biological characteristics of women and men are objectively different in science and medicine

Objectively speaking, compared with men physiologically, there is a congenital disparity in physique and strength between women and men. In addition, in the traditional Chinese concept, it is believed that women must get married and raise and take care of children. This also means that women's work will be restricted and affected by many factors, while men are considered to need long-term and stable jobs because at home, affairs are usually managed by women, which also causes companies to spend more money hiring male labor. Some studies have shown that 2,000 college students from 12 departments and 15 majors of Xinxiang Medical College were randomly selected as the research objects. The survey results show that male and female graduates have different opinions on the degree of optimism about their future employment direction. That case is because of the differences in personality and physiology between the two, the samples selected in this study, or the relevant stage and social factors of China's historical situation.

Table 2. Comparison of optimism between male and female students towards employment prospects[n(%)]

Optimism level	schoolboy	schoolgirl	X^2	P
easily	64 (8.4)	49 (4.5)	12.543	0.002
It takes some effort	299 (29.9)	360 (32.8)		
High pressure	473 (61.7)	689 (62.8)		

2.3.2 The Influence of Gender Concepts in Traditional Chinese Culture

Gender differences refer to the shaping of social roles and social division of labor between the two sexes by social culture. Compared with biological factors, cultural environment plays a dominant role in shaping the social roles of both sexes. Cultural context, more than biological factors, is inextricably linked to how men and women play different roles in society. Compared with the reasons for the different physiological characteristics of the sexes, cultural factors play a decisive role in the shaping and development of psychological characteristics such as personality. Culture and cognition are deeper and fundamental factors that produce gender discrimination. In Chinese traditional culture, men are endowed with higher social status and more rights. Although with the changes of the times and continuous progress, the gender concept in Chinese society is also changing, but there are still some gender prejudices and discrimination that cannot be ignored. Tracing back to the root, these prejudices and discrimination are closely related to the inheritance of national culture and the restrictions of the environment. In ancient China, the etiquette system, marriage system, family concept, degree and way of education, etc., all have the phenomenon of "male superiority to female". There are different expectations and requirements for men and women. In traditional Chinese culture, women are mainly positioned in the family, responsible for housework, childcare, and care, and often play the family role of "good wife and mother" [13]. The influence of ideas and concepts brought by culture is also far-reaching, and the profession is reflected in the research fields of science and medicine. The entry qualifications of the medical industry are relatively strict, and at the same time, the difficulty of learning, the length of the schooling period, and the high degree requirements are affected by multiple factors, which make women reach the childbearing period of girls after they have achieved employment. Secondly, in addition to high technical requirements, medical and health work requires High requirements for physical strength and experience are also the concerns of medical and health units recruiting female students [14].

In the field of science, men have some physical and psychological advantages. For example, men have advantages in vision and spatial perception. Men are usually more rational and calm, and they are not easy to make mistakes under pressure. This trait can help them be more effective in the research process.

2.3.3 The contradiction between the enterprise's profit maximization goal and the insufficient investment of female human capital

Due to the fact that the market economy can survive only by obtaining greater benefits, companies hope to sell more products manufactured by the company, attract more customers, and reduce production and manufacturing costs by properly handling the relationship between the company itself and external competitors, the company gets more money than it invested. After the introduction of the two-child and three-child policy, it has brought great challenges to women's employment. During the period when women are giving birth and breastfeeding, enterprises and hospitals need to bear the responsibility of paying normal wages to women who are on leave, and cannot reduce women's income due to the costs caused by the temporary lack of labor. It shows that because of the two-child policy, 75% of companies have increased concerns about recruiting female employees; 77% of respondents believe that women are unlikely to have good career opportunities after leaving the workplace for two or three years. Studies have shown that 67% of respondents believe that after the "universal two-child" policy, gender discrimination against female job applicants will increase, and a small number of respondents said that this possibility is unlikely.

Table 3. The attitude of female job seekers towards the policy of "comprehensive two-child" liberalization

	The impact of "comprehensive second child" on women's job hopping	Degree of discrimination against women in employment before and after policy implementation
Serious impact	61.0%	67.0%
General impact	17.0%	24.0%
No effect	14.0%	9.0%

2.3.4 The impact of Chinese thinking on women from ancient times to the present.

This paper examines the cognitive impact of traditional Chinese ideas on women which is shown in Fig. 2. Due to deep-rooted traditional concepts, women often shift their focus to the family after reaching childbearing age, and the time spent on work and taking care of the family cannot be well allocated [15]. Such prejudice makes women lose some opportunities to be promoted, which is not conducive to career planning and development. Another reason for the large proportion is that the law requires women to leave their jobs at the age of 55, which to some extent leads to women's disadvantage. Women are more likely to spend their time caring for their families, while most men do the opposite.

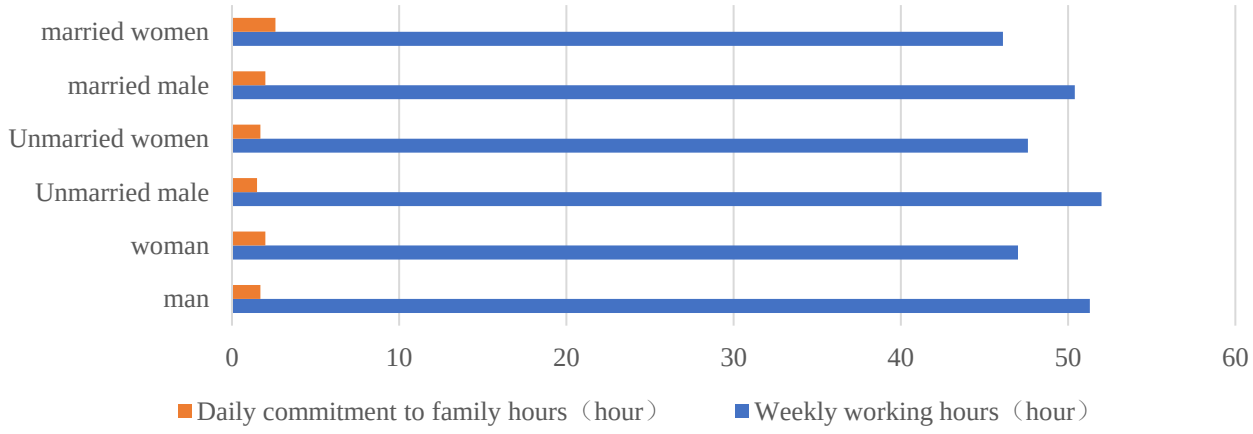


Fig. 2 Comparison of working hours and family involvement between men and women.

2.3.5 The country has not promulgated clear laws to guarantee the legal rights of women in the workplace.

Because some relevant laws simply state that there is no gender discrimination in employment, but because these regulations only remain at the level of literal expressions, they do not ensure that every company and everyone can abide by the laws. According to the requirements, there are no fines or other penalties for companies and individuals who do not comply with the law [16].

3. Solutions

3.1. The government should go further than existing laws.

When correcting companies' gender discrimination in hiring employees, the local government should strictly implement the provisions in the law, and play a role in monitoring and encouraging major companies. Gender discrimination does not only exist in the adult world. The concept of gender equality should be established in children from an early age. Men should be educated through lectures and other methods not to engage in gender discrimination. Women should also be told to seek legal assistance when they are discriminated against. There is a law protecting women's rights that reads: unless otherwise stipulated by the state, employers shall not limit men or stipulate that men are preferred, investigate the marriage and childbearing status and wishes of female job applicants, and restrict marriage and childbearing as employment conditions. Enumerates the specific circumstances and responsible units of gender discrimination in employment. It is such detailed regulations that can ensure the rigidity of the law. Likewise, local governments can establish relevant and reasonable regulations to help women allocate their time reasonably, allowing them to balance their time at work and at home more easily and scientifically. General family labor has invisibly increased the burden on women who have two children, and vigorously promoting the marketization of housework and the development of labor-intensive tertiary industries can relieve women from this general family labor to a certain extent.

3.2. Companies should establish awareness of gender equality and assume their responsibilities as citizens.

First of all, both companies and individuals should abide by relevant laws, not discriminate against women in the process of recruiting employees, and not deprive women of their right to find their favorite jobs for objective reasons. Secondly, the leaders of the company should consciously assume corporate responsibilities, not only not to discriminate against others, but also to provide assistance to those people, to advocate true employment equality between men and women, so that every company has a good working atmosphere and a culture worthy of publicity. The human resources management department should provide relevant social welfare measures for female engineers to ensure that the wages of female employees are not reduced while minimizing the overall losses of the company.

3.3. When looking for a job, understand the nature of the job and avoid making wrong choices.

Enterprises that are recruiting employees should establish a reasonable number of jobs according to the current social situation, and create as many job opportunities as possible for job seekers. Job seekers themselves, especially women, should spend more time and energy on receiving education and related training, actively accept induction training before formal work, and do not escape when they realize that they may have been discriminated against. They should seek help from relevant departments and ask for compensation.

4. Conclusion

This article studies the current situation and causes of gender discrimination in China. The analysis was done from many different angles, for example, under the same conditions, the number of interview invitations received by women is much lower than that of men. Likewise, some companies often ask women whether they are married or have given birth during the interview process. Women are not hired if they are unmarried or barren. Although some laws in China clearly state that men and women have equal rights in employment, it is difficult to achieve complete equality in reality. This paper describes the relevant solutions from three aspects: the government, enterprises and individuals. First of all, the government should issue corresponding laws and policies and strictly supervise major enterprises to abide by the law. Secondly, enterprises should not be biased against women in interviews and daily work. Women should enjoy the same benefits as men and have the same opportunities for promotion. Finally, every woman is an independent individual, and women should protect their legitimate rights and interests through legal means when they feel that they are being treated unfairly.

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