

## Gender Gap in Academic Medicine: Analysis of a Governmental Nationwide Survey on Private Universities and Data of a Single Medical University

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**Purpose:** To identify the gender gap regarding promotion in private medical schools in Japan, and propose improvement measures. **Methods:** The Basic Survey of Schools by the Ministry of Education, Culture, Sports, Science and Technology (2008–2012) and the data from Tokyo Women's Medical University (TWMU) (2009–2013) were analyzed. TWMU is exclusively for women at undergraduate level but open to both genders at postgraduate and faculty levels. Gender differences among medical staff members were analyzed by academic rank, age and speed of promotion. **Results:** According to the nationwide survey, the faculty was male dominant in all departments of private universities and in private medical schools and universities. The proportion of female faculty was greater at TWMU compared to other private medical schools. Promotion was slower in women than in men at TWMU. In the 50s age group, the number of women faculty members decreased, promotion of women slowed down, and gender gap increased. At TWMU, more women faculty members worked in departments where women held the post of department chair or professor. **Conclusion:** Under-representation of women medical doctors is obvious in academic medicine in Japan. Senior women faculty members are expected to be educator, role model, and mentor to junior women doctors. They should be given equal opportunities as men in career development to advance to the leadership position. Providing leadership education and mentorship to women doctors may break the existing “glass ceiling” and improve political empowerment for women, which may mitigate the loss of capable women doctors along the career path.

**Key Words:** gender gap, academic medicine, promotion, glass ceiling, medical school

### Introduction

Japan is a male dominant society, and political empowerment for women is still low compared to other industrial nations. A recent study highlighted the under-representation of women medical doctors in member societies of the Japanese Association of Medical Sciences even in recent years<sup>1)</sup>.

Promotion of women faculty members in medical schools has been traditionally slow compared to men<sup>2)3)</sup>, and the term “glass ceiling” was coined to describe this situation. It is still difficult for a woman to become dean of medical school or depart-

ment chair in surgery in Western countries<sup>4)5)</sup>. Likewise, female department chairs in surgery are still rare in Japan<sup>6)</sup>.

This study was conducted to determine the cause of the glass ceiling that prevents women from advancing to leadership position in Japanese academic medicine and to propose improvement measures. We analyzed a report on nationwide survey of private universities in Japan and the data from a single private medical university, the Tokyo women's Medical University (TWMU).

## Methods

### 1. Analyses of national data

1.1. From the report of a nationwide study, Basic Survey of Schools, conducted by the Ministry of Education, Culture, Sports, Science and Technology (MEXT)<sup>7)</sup>, the gender ratio of all faculty members and the gender ratio by academic rank in all faculties of all private universities in Japan for the period of 2008 to 2012 were analyzed.

1.2. From the same report, the gender ratio of all faculty members and gender ratio by academic rank in private medical schools, faculties of medicine of private universities, and their affiliated university hospitals for the period of 2008 to 2012 were analyzed.

### 2. Analysis of faculty member data at TWUM

We submitted a request to the personnel section of TWUM for disclosure of information and obtained data of sex, age (24–65 years old) and academic ranks of medical doctors with either a Japanese or foreign medical license working at TWUM annually for the 5-year period of 2009 to 2013. Postgraduate students with medical license studying in the Postgraduate School of Medicine were not included.

In TWUM, the academic ranks are department chair, professor, associate professor, lecturer, junior lecturer, assistant professor, senior resident and junior resident.

The following data were analyzed:

2.1. Age structures of men and women faculty members as of April 1, 2013.

2.2. Gender ratios by academic rank for the period of 2009 to 2013.

2.3. Comparison of departments with and those without female professors with respect to academic rank and gender ratio.

Chi-square test was used in statistical analysis. P values less than 0.05 were considered to indicate statistical significance.

## Results

### 1. Analysis of nationwide survey report in Japan (2008–2012)

1.1. Gender ratio of faculty members in all faculties of private universities

In 2012, women occupied 25.2% of all full-time faculty members. By academic rank, women constituted 15.7% of professors, 26.9% of associate professors, 32.4% of lecturers and 32.2% of assistant professors. The proportions of women showed a slow upward trend over time (Fig. 1).

1.2. Gender ratio of faculty members in private medical schools, faculties of medicine of private universities, and affiliated university hospitals

In 2012, women occupied 21.9% of all full-time medical faculty members. By academic rank, women constituted 4.5% of professors, 9.1% of associate professors, 15.1% of lecturers and 28.0% of assistant professors. The proportion of women showed a slow upward trend over time (Fig. 2).

### 2. Analysis of faculty members with a medical license at TWUM

2.1. Age structures of men and women medical doctors as of April 1, 2013

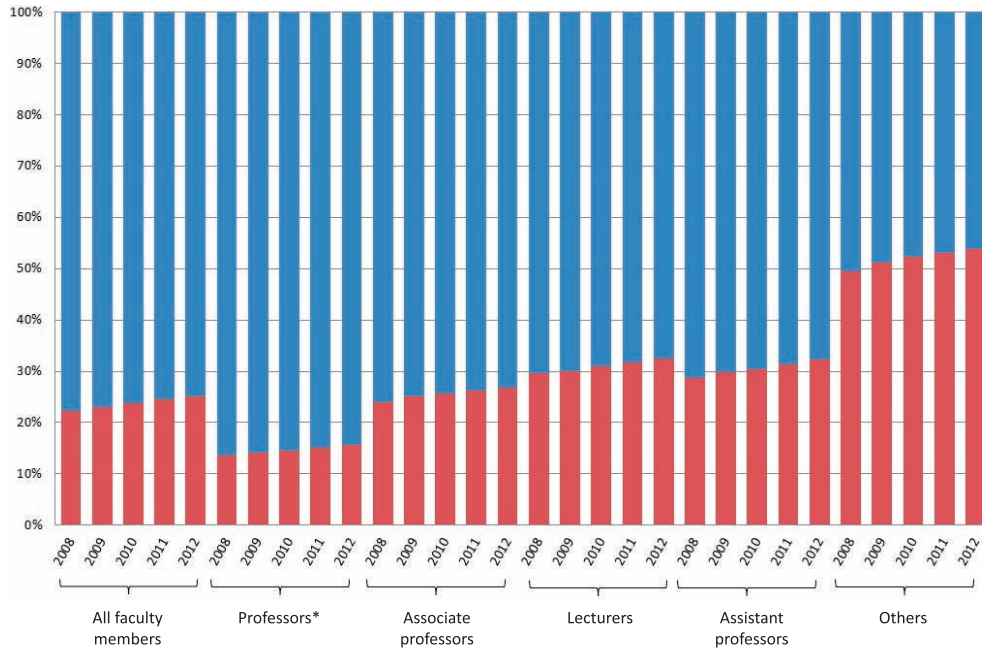
In 2013, there are a total of 1,313 men (54%) and 1,105 women (46%) faculty members, with 34 men and 3 women department chairs (Fig. 3).

When women and men were compared with respect to the youngest age in each academic rank for assistant professor and above, a difference in speed of promotion between men and women was observed (Table 1). There was a difference of 2 years at assistant professor level and 6 years at associate professor level. Although the youngest ages at professor level appear to be similar in men and women doctors, the majority of women professors are in the 52–53 age group or older as shown in Fig. 3. The youngest woman professor who is 46–47 years of age had an exceptional rapid promotion.

2.2. Gender ratios by academic rank for the period of 2009 to 2013

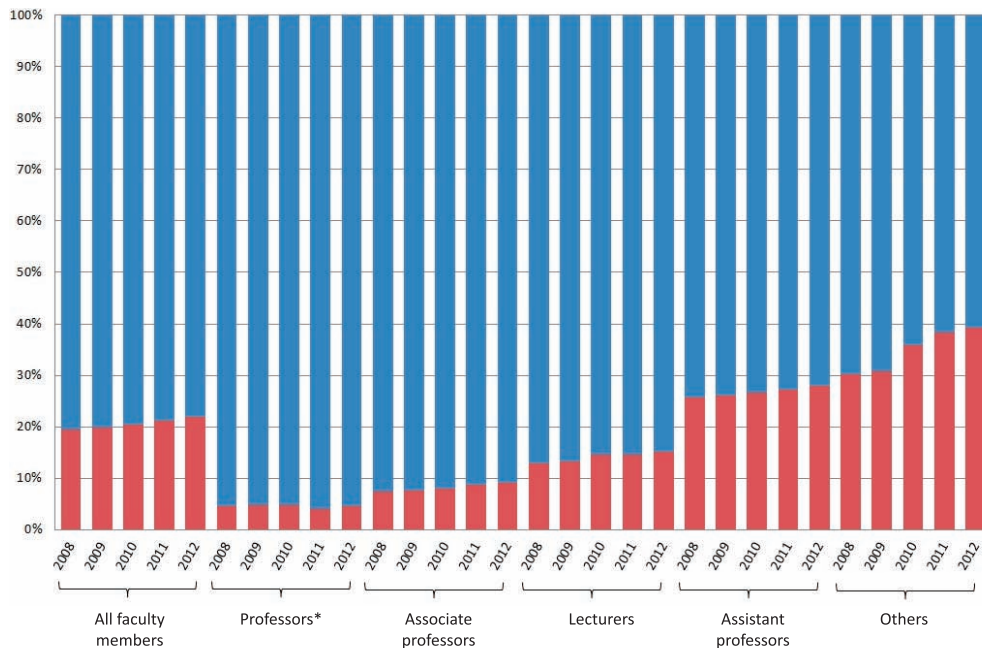
By academic rank, women constituted 10% of department chairs and 19% of professors (Fig. 4). The proportions of women associate professors and assistant professors increased over the past few years, while the proportions of women lectures, junior lecturers and senior residents decreased over recent years.

2.3. Comparison of departments with and those without female professors



**Fig. 1** Gender ratio of faculty members in all private universities in Japan for the period 2008-2012.

This is calculated from the report of a nationwide study, Basic Survey of Schools, conducted by the Ministry of Education, Culture, Sports, Science and Technology (MEXT)<sup>7)</sup>. Number of professors\* include both department chair and professors. Others include assistants and some nursing teaching staff. Blue: men; red: women.



**Fig. 2** Gender ratio of faculty members in private medical schools, schools of medicine in private universities, and affiliated university hospitals in Japan for the period 2008-2012.

This is calculated from the report of a nationwide study, Basic Survey of Schools, conducted by the Ministry of Education, Culture, Sports, Science and Technology (MEXT)<sup>7)</sup>. Number of professors\* include both department chair and professors. Others include assistants and some nursing teaching staff. Blue: men; red: women.

**Table 1** Academic rank and the youngest age in each rank at TWMU in 2013

Academic rank	Age of the youngest faculty member (years)	
	Men	Women
Assistant Professor	36-37	38-39
Associate Professor	40-41	46-47
Professor	44-45	46-47*
Department chair	50-51	60-61

\*Majority of women professors are 52-53 years of age or older.

In departments with at least one woman department chair or woman professor, there were significantly ( $p < 0.0001$ ) more women lecturers [with at least one woman professor (male 9, female 10) vs without woman professor (male 78, female 13)] ( $p = 0.05$ ) and assistant professors [(male 53, female 80) vs (male 296, female 421)].

### Discussion

There are more women professors at TWMU compared to other medical schools in Japan. As is evident from the name, TWMU only accepts women medical students, hence all graduates are women. However, the postgraduate school and residence programs are open to both men and women doctors, and the faculty is a mixture of both genders. TWMU was founded with the purpose of improving the social position of women, and the conviction that medicine was a noble profession suited to women. Given the founder's philosophy and the characteristics of TWMU, one might expect that gender equality within the faculty is well advanced but unfortunately our study shows that there are still gaps to be improved.

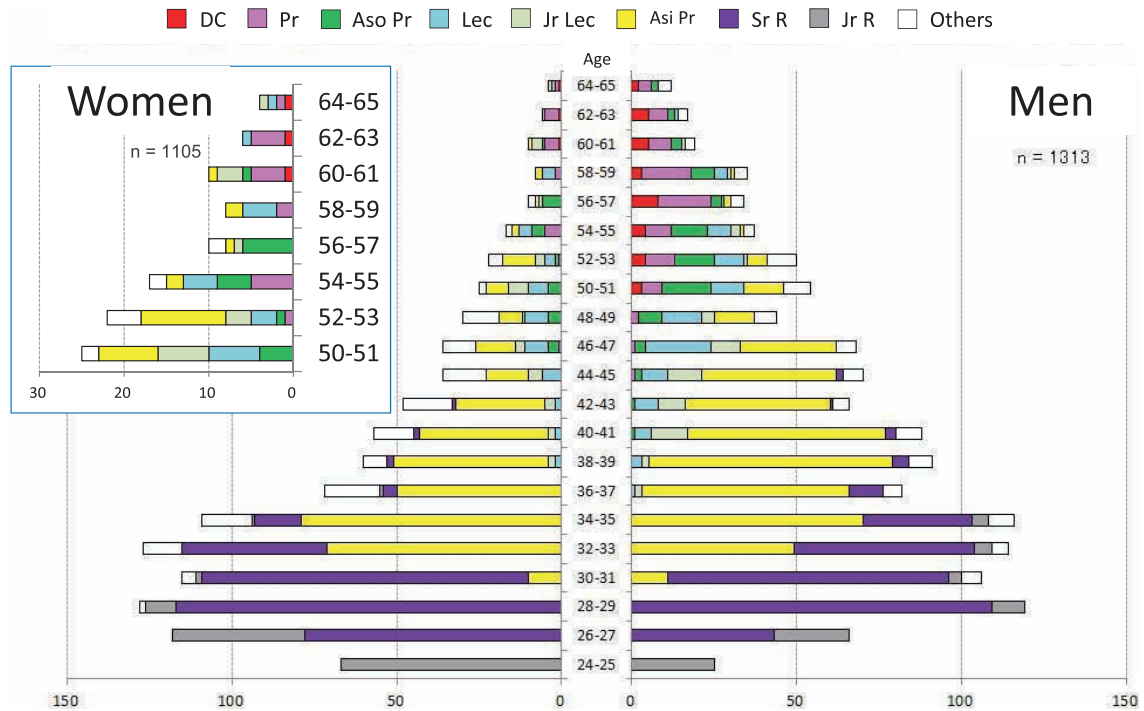
In view of the much lower proportion of women compared to men professors at TWMU, greater efforts are needed to provide career development opportunities for young women faculty members, including continuous education in academic or clinical specialties, leadership education<sup>8)</sup>, mentoring<sup>9)10)</sup>, networking to avoid isolation<sup>11)</sup>, writing research reports and other publications needed for objective evaluation<sup>12)</sup> and grant applications<sup>13)</sup>. However, before such support activities are proposed and planned, it is important to educate men professors

on the need to provide equal opportunities for women faculty members, especially the senior professors who traditionally worked in a largely male dominated environment with very few women colleagues. Additionally, preparation for the future may have to start from medical students who would benefit from research experience and career advice<sup>14)</sup>.

Women leave academia more often than men do in science<sup>15)</sup>, a phenomenon that has come to be known as "leaky pipeline"<sup>16)</sup>. The number of women doctors decreases gradually with age, mainly due to family responsibilities<sup>17)</sup>. Similar decrease was observed in the current study. The proportions of men and women faculty members in each academic rank differed widely in the 50s age group. It is not easy for women doctors to continue practicing medicine and fulfilling family responsibility in the traditional Japanese manner, and even more difficult for them to strive for leadership position in universities.

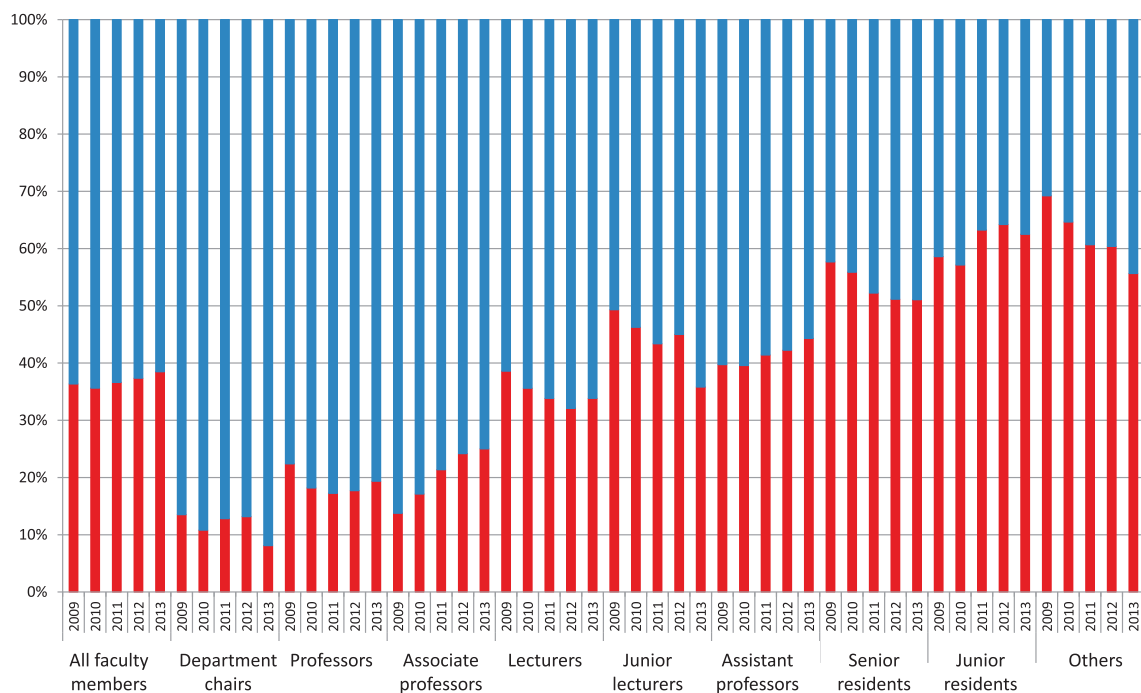
At the Johns Hopkins University School of Medicine, interventions implemented in the 1990's successfully improved the gender-based career obstacles for women without change of university policy<sup>18)</sup>. The attempt at Johns Hopkins University was beneficial for both males and females. The current study identified a larger proportion of women than men assistant professors in their fifties or older at TWMU. The main reason for the disadvantage of women in career advancement in Japan is limited nomination for promotion for women doctors. Currently, nomination by the department chair is mandatory and the only means for any candidate to be considered for promotion. Generally women doctors are less likely to be nominated for promotion than men. A more open, objective, and comprehensive performance evaluation system may be required to assess these experienced faculty members for their contributions to the university and academics, such as the number of publications, number of grants awarded, activities in academic societies and volunteer social activities.

Women residents often desire the presence of a woman faculty member in higher position for sup-



**Fig. 3** Age structures of men and women faculty members with medical license employed by TWMU as of April 1, 2013.

Others include part-time medical doctors but do not include assistant or nursing staff. The inset shows an enlarged view of women in the 50s and 60s. DC indicates department chair; Pr, professor; Aso Pr, associate professor; Lec, lecturer; Jr Lec, junior lecturer; Asi Pr; assistant professor, Sr R; senior resident, Jr R; junior resident.



**Fig. 4** Changes in gender ratio of faculty members at TWMU from 2009 to 2013.

Others include part-time medical doctors but do not include assistant or nursing staff. Blue: men; red: women.

port. Young women doctors have the image that women professors are successful both in career and personal life, and they dream about having the same kind of success. This is one reason for the finding in the present study that more women doctors work in departments with women professors. The women professors are the role model and mentor, and their presence in the same department aspires young women doctors to succeed in their academic career and personal life. Young women doctors also feel more assured that the working environment would be more favorable with greater understanding from the department chair and professors<sup>19)</sup>. In Japan, it is rare for men to take childcare leave<sup>20)</sup> and contribute to household chores<sup>21)</sup>. Women doctors often have to manage both professional activities and domestic tasks. Therefore, they would tend to choose a department with woman professor who can provide profession guidance and personal support.

Women residents often postpone childbearing until after training is completed<sup>22)</sup>. However, increasing maternal age may affect pregnancy outcomes<sup>23)24)</sup>, and this issue among women doctors has been highlighted recently. At the American College of Surgeons Annual Clinical Congress in 2012, there was a session on infertility treatment and late childbearing in women surgeons. Also, if the department has never experienced having a pregnant faculty member, or has no policy on maternity leave<sup>25)</sup>, colleagues will not know how to share the workload in order to cover the responsibilities of the woman doctor on maternity leave. In Japan, the possibility of pregnancy and childbearing among residents has only been considered since the revision of the residency program in 2009. Creating an environment that can accommodate such circumstances is needed.

The limitations of this study included the following. 1. Due to the difference in job ranking, it was not possible to compare all private universities in Japan and TWMU at the same standard. 2. The report on Basic Survey of Schools by MEXT was compiled by faculty, and the data for “faculty of medicine” included not only the school of medicine

but also the school of nursing. 3. On the other hand, the data of TWMU did not include teaching staff working at the university hospital, who is affiliated exclusively to the graduate school. 4. From fiscal year 2007, due to the revision of the School Education Act, the old designation of “assistant” became “assistant professor”. 5. “University hospital” included university hospitals that were not affiliated to a school of medicine or medical university. 6. At TWMU, there is an academic rank “junior lecturer” between lecturer and assistant professor. Its salary is the same as assistant professor, and officially it is equivalent to assistant professor.

### Conclusion

The phenomena of “glass ceiling” and “leaky pipeline” are obvious in academic medicine in Japan. One of the factors that impedes women doctors’ promotion is the lack of a fair performance evaluation system. Women doctors who are successful in professional and personal life can provide effective education on leadership, mentorship and role model to young women doctors, and help them design their career path.

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# 医学界における性差：文部科学省による私立大学の全国調査と一私立医科大学のデータ分析

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目的：日本の私立医科大学の昇任に関し性差を特定し、改善策を提案する。

方法：文部科学省の学校基本調査(2008-2012)を分析し、また東京女子医科大学(TWMU)(2009-2013)のデータを分析した。分析内容は大学教職員のランク、年齢、および昇任速度の性差である。

結果：全国調査では、私立大学の部、私立医科大学と医学部の教職員は男性優性であったが、TWMUの女性教職員の割合は、他の私立医学部・医科大学に比べて多かった。TWMUでは女性の昇任は男性より遅かった。50歳代の年齢層では、女性教職員の数は減少し、女性の昇任は減速し、性差は増加した。TWMUでは、女性が主任教授か教授の地位に就いている科に、より多くの女性教職員が働いていた。

結語：日本の医学界で女性医師は明らかに under-representation であった。年長の女性教職員は若い女性医師の教育者、手本、そして、師であることを期待される。女性医師はリーダーシップの地位に達するために、キャリアデベロプメントにおいて男性医師と同じように均等な機会を与えられなければならない。女性医師がリーダーシップ教育とメンターシップを受けると、既存の「ガラスの天井」を壊し、女性のために政治的な empowerment を改善し、有能な女性医師の減少をキャリアパスに沿って緩和するかもしれない。