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**Original Article**

# Organizational climate with gender equity and burnout among university academics in Japan

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**Abstract: We investigated relationships between the perception of organizational climate with gender equity and psychological health among 94 women and 211 men in a Japanese private university in 2015 using the Copenhagen Burnout Inventory (i.e., personal, work-related and student-related burnout). Perceptions of organizational climate with respect to gender equity were measured with two scales including organizational engagement with a gender equal society in the workplace (consisting of three domains of 'Women utilization', 'Organizational promotion of gender equal society' and 'Consultation service'); and a gender inequality in academia scale that had been previously developed. Multivariable linear models demonstrated significant statistical interactions between gender and perceptions of organizational climate; 'Women utilization' or lack of 'Inequality in academia' alleviated burnout only in women. In consequence of this gender difference, when 'Women utilization' was at a lower level, both personal ($p=.038$) and work-related ($p=.010$) burnout scores were higher in women, and the student-related burnout score was lower in women when they perceived less inequality in academia than in men ($p=.030$). As such, it is suggested organizational fairness for gender equity may be a useful tool to help mitigate psychological burnout among women in academia.**

**Key words:** Burnout, Gender Equality Society, Organizational engagement, Psychological stress, Women scientist

## Introduction

The world's population is ageing and virtually every country in the world is experiencing growth in the number and proportion of older persons in their population. This

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situation is especially acute in Japan, where the population is rapidly aging and the fertility rate decreasing[1]. In order to support the financial infrastructure of Japan, it is necessary for women to contribute to the workforce at an increasing rate. It is critically important therefore, for women to be actively engaged in meaningful work which they are passionate about and which lead to real careers; rather than simply joining the workforce as part of social needs. Gender equality can be seen as a "society in which both men and women, as equal members, have the opportunity to participate in all kinds of social activities at will, equally enjoy political, economic and cultural benefits, and share responsibilities"[2]. Japanese women however, are generally underrepresented in workforce and political participation, and Japan has one of the lowest levels of gender equality in the developed world, coming in 101st out of 142 in the Gender Gap Index in 2015[3].

Gender inequities such as this may have a substantial impact on women's motivation to work. Previous studies, for example, have suggested that a lack of fairness is a major stressor in the workplace[4]. Similarly, Maslach reported that the experience of injustice, or unfairness can adversely impact an employee's psychological health status leading to burnout[5]. Burnout is a negative psychological response to prolonged working stressor. Two previous meta analyses[6, 7] reported that burnout correlates to many work-related performance including withdrawal from work (including low performance, high absenteeism, intention to quit jobs, actual turnover, a sense of ineffectiveness and lack of accomplishment)[7, 8], and adverse psychological health status[9]. Issues relating to workplace and organizational climate are also known to be important in Japan[10].

In this study, we focused on the perceptions of organizational climate with respect to gender equity to investigate whether it can help alleviate psychological stress among female researchers. This may yield new perspectives on the positive antithesis of burnout and offer potential intervention strategies to help keep women in the workforce as they pursue a meaningful career. As such, the purpose of the study was to investigate if perceptions of an organizational climate which promotes gender equity is related to psychological burnout among female academics.

## Methods

*Participants*

This study was approved by the Teikyo University ethics committee (TU-COI 13-208) and utilized data from the annual faculty survey of a private Japanese university, which investigates work-life balance including child-drearing and elderly care among staff. The university has four campuses in the Kanto region and one campus in the Kyusyu region of Japan. In January 2015, a total of 1,111 faculty members were invited to participate in the study and 309 provided informed consent and returned self-administered questionnaires (response rate 27.6%). After excluding two responses with missing values in all questions and two without gender information, a total of 305 usable responses were obtained (94 female and 211 male participants).

## Measures

*Copenhagen burnout inventory*

This well-known inventory examines exhaustion and its attribution on three distinctive facets; that was, personal burnout (general psychological and physical fatigue), work-related burn-out, and client-related burnout ("client" can be replaced by other words, such as "student" in this study)[11]. A total of 19 items were answered using a five-point Likert scale ranging from 'strongly disagree' to 'strongly agree. The three burnout scores were calculated by averaging all relevant items, with one item reversed in order of response, so that higher scores indicate higher degree of burnout.

*Organizational climate for gender equity*

Organizational climate for gender equity was measured by two scales including organizational engagement with gender equal society at workplace and gender inequality in academia that were previously developed[12]. In order to quantify organizational engagement with gender equal society at workplace, we modified ten items derived from our previously published checklist for women-doctor-friendly working conditions in a hospital setting, "gender equality action in an organization"[13]. After further adding one items, we conducted an exploratory factor analysis. Promax rotation identified three factors as follows: 'Women utilization (Cronbach's alpha coefficients .70)', 'Organizational promotion of gender equal society (Cronbach's alpha coefficients .79)', and 'Consultation service (Cronbach's alpha coefficients .87)'. 'Women utilization' includes (1) your workplace actively utilizes women in decision-making positions; (2) the head of your workplace take initiative to promote gender equal society; (3) in your workplace, there is a woman role model who can balance between work and life. 'Organizational promotion of gender equal society' includes (1) your workplace regularly

**Table 1. Gender Differences in Demographic Items among Japanese Academics**

| | $\alpha$ | Female (N=94) | Male (N=211) | $p^*$ |
|---|---|---|---|---|
| Age (Years), Mean (SD) | | 45.0 (9.7) | 50.5 (11.4) | <.001 |
| Marital status, n (%) | | | | <.001 |
| Married | | 60 (65.2) | 169 (84.1) | <.001 |
| Divorced | | 5 (5.4) | 6 (3.0) | .306 |
| Widow/Widower | | 0 (0.0) | 2 (1.0) | .337 |
| Never married | | 27 (29.4) | 24 (11.9) | <.001 |
| Number of children, n (%) | | | | <.001 |
| 0 | | 43 (48.9) | 61 (29.3) | .001 |
| 1 | | 28 (31.8) | 50 (24.0) | .165 |
| 2 | | 14 (15.9) | 76 (36.5) | <.001 |
| ≥3 | | 3 (3.4) | 21 (10.1) | .054 |
| Work hours, Mean (SD) | | 9.0 (2.6) | 9.8 (2.7) | .018 |
| Burnout, Mean (SD) | | | | |
| Personal | .88 | 2.50 (0.9) | 2.18 (0.8) | .002 |
| Work-related | .86 | 1.98 (0.6) | 1.83 (0.6) | .095 |
| Student-related | .78 | 1.85 (0.80) | 1.86 (0.6) | .890 |
| Gender equal society, Mean (SD) | | | | |
| 'Women utilization' | .70 | 3.20 (0.9) | 3.02 (0.8) | .100 |
| 'Organizational promotion for gender equity' | .79 | 2.59 (0.9) | 2.73 (0.9) | .200 |
| 'Consultation service' | .87 | 3.31 (1.1) | 3.21 (0.9) | .429 |
| Gender inequality in academia score Mean (SD) | .91 | 2.98 (0.8) | 2.52 (0.8) | <.001 |

*Based on a chi-square test/Fisher's exact test or t-test

provides a seminar or workshop on gender equal society; (2) your workplace make an effort to improve positive consciousness for gender equal society especially in male workers and organization; and (3) your workplace introduces career education opportunities for researchers. 'Consultation service' indicates your workplace has someone or organizational service to whom or which you can consult on (1) your research; (2) your career; (3) academic harassment; (4) sexual harassment; and (5) mental illness. Of those three factors, the former two loaded on gender-relevant items, and 'Consultation service' loaded on relatively gender neutral items. Three climates perception variables were calculated by averaging relevant items, so that higher scores indicate warm climate.

We measured perceptions of gender inequality in academia based on a nine-item scale in physicians that we had previously developed[12]. In this study, we modified the word and conditions in the scale for academic faculty. Questions were structured as statements to which respondents indicated their level of agreement on a five-point Likert scale ranging from 'strongly disagree' to 'strongly agree.' These items included: "Women faculty members are less likely to: 1) be promoted to a management position; 2) promoted to board member of an academic society; 3) be employed in a salaried position in a famous university; 4) be promoted in academia; 5) obtain an opportunity to study abroad; 6) be welcomed as a member of a department, compared with male counterparts; 7) receive appreciation for work performance from employer, compared with male counterparts; 8) have mentoring opportunities for research; and 9) child rearing is a woman's job. All scores were averaged, with higher scores indicates greater perceived gender inequality (Cronbach's alpha coefficients .91).

*Covariates*

The items investigated in this present study included gender, age, marital status, number of children, and working hours per a weekday as an indicator of work stressors.

*Data analyses*

Gender difference was statistically tested using t-tests for continuous variables and chi-square tests for categorical variables. When the categorical variable had three or more levels and the overall chi-square test revealed a statistically significant difference, a standardized adjusted residual test was conducted. Baseline statistics for each item are presented in Table 1. We estimated non-standardized regression coefficient and the standard error for each variable associated with three dimensional outcomes of the Copenhagen Burnout Inventory during both univariate (Table 2) and multivariate (Table 3) models. In order

**Table 2. Univariate regression model for each domain of the Copenhagen Burnout Inventory**

| | Personal | | Work-related | | Student-related | |
|---|---|---|---|---|---|---|
| | B (SE) | *p* | B (SE) | *p* | B (SE) | *p* |
| Intercept | | | | | | |
| Main effects | | | | | | |
| gender (women) | 0.33 (0.10) | .002 | 0.15 (0.08) | .071 | −0.01 (0.08) | .879 |
| Age | −0.01 (0.00) | .012 | −0.01 (0.00) | .020 | 0.00 (0.00) | .961 |
| Married | −0.08 (0.12) | .530 | −0.11 (0.10) | .237 | −0.01 (0.10) | .920 |
| Number of children | −0.03 (0.05) | .580 | −0.02 (0.04) | .559 | −0.04 (0.04) | .278 |
| Work hours | 0.04 (0.02) | .026 | 0.02 (0.01) | .112 | 0.03 (0.01) | .020 |
| 'Women utilization' | −0.12 (0.06) | .046 | −0.13 (0.05) | .005 | −0.07 (0.05) | .110 |
| 'Organizational promotion' | −0.15 (0.06) | .010 | −0.08 (0.04) | .075 | −0.07 (0.04) | .105 |
| 'Consultation service' | −0.15 (0.05) | .004 | −0.18 (0.04) | <.001 | −0.10 (0.04) | .012 |
| Gender inequality in academia | 0.04 (0.06) | .542 | 0.05 (0.05) | .314 | 0.05 (0.05) | .333 |

**Table 3. Multiple regression model for each domain of the Copenhagen Burnout Inventory**

| | Personal | | Work-related | | Student-related | |
|---|---|---|---|---|---|---|
| | B (SE) | *p* | B (SE) | *p* | B (SE) | *p* |
| Intercept | 2.17 (0.06) | <.001 | 1.85 (0.01) | <.001 | 1.94 (0.07) | <.001 |
| Main effects | | | | | | |
| Gender (female) | 0.39 (0.11) | <.001 | 0.10 (0.09) | .226 | −0.14 (0.09) | .132 |
| Age | – | – | −0.01 (0.00) | .020 | – | – |
| Married | – | – | – | – | – | – |
| Number of children | – | – | – | – | −0.08 (0.04) | .059 |
| Work hours | 0.05 (0.02) | .004 | – | – | – | – |
| 'Women utilization' | 0.03 (0.08) | .678 | 0.03 (0.06) | .619 | – | – |
| 'Organizational promotion' | – | – | – | – | 0.02 (0.06) | .694 |
| 'Consultation service' | −0.11 (0.06) | .054 | −0.14 (0.05) | .005 | −0.12 (0.06) | .033 |
| Gender inequality in academia | – | – | – | – | −0.01 (0.06) | .839 |
| Statistical Interaction | | | | | | |
| Women utilization × sex | −0.26 (0.12) | .037 | −0.25 (0.09) | .010 | | |
| Organizational promotion × sex | | | | | −0.12 (0.10) | .053 |
| Consultation service × sex | | | | | 0.14 (0.09) | .131 |
| Gender inequality × sex | | – | – | – | 0.22 (0.10) | .034 |
| $R^2$ | .099 | | . 099 | | .062 | |

to show intercepts in actual distribution (that is, preventing them from showing values under unreal conditions, such as 0 year age), age, working hours, organizational engagement with gender equal society and gender inequality were centered by subtracting means of each variable from the actual measured values. Our interest was in the effects of perception of gender equality, which were selectively significant in female respondents, therefore we examined interaction terms between gender and these variables in multivariate models.

Stepwise model selection was performed by using SAS glmselect procedure and final model was determined by Akaike's Information Criterion; the process was performed in two steps. The first model forcedly included gender, three domains of organizational engagement with gender equal society, and gender inequality, because of the principal that each component of interaction terms must be included in the same model. In addition, interaction terms and main effect of other covariates were selected by stepwise selection method. After initial screening of the significance of interaction terms, second model forcedly included variables contained in interaction terms if any selected in the first model and was performed an stepwise analysis for other main effects and interaction terms If any interaction term with gender was significant, simple slope tests was performed to investigate under which conditions gender difference occur. All analyses were conducted using SAS software Version 9.4 (Cary, NC), with statistical significance set at $p<0.05$.

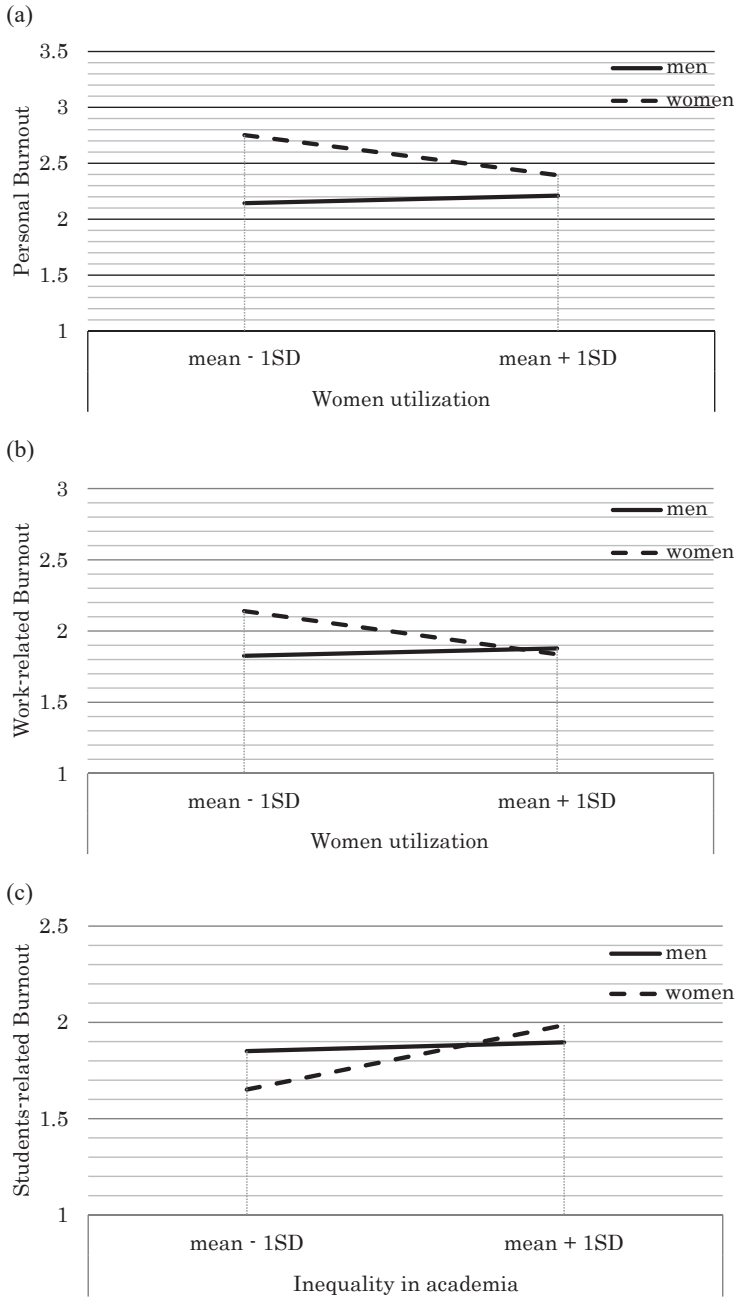


**Fig. 1. Interaction effect between gender and burnout with women utilization (a, b) and gender inequality in academia (c).**

## Results

Table 1 indicates gender difference in the items investigated. The participant's average age was slightly younger in women than in men (mean difference: 5.5 years, $p<.001$). More men than women were likely to be married (84.1% vs. 65.2%) and have at least one child (70.7% vs. 51.1%). Compared to men, working hours was slightly shorter in women (average hour 9.8 vs. 9.0, $p=.018$) and women were more likely to have higher score on personal burnout (average score 2.18 vs. 2.50, $p=.002$) and on gender inequality in academia (average score 2.52 vs. 2.98, $p<.001$).

Table 2 indicates the results of univariate regression model for each domain of Copenhagen Burnout Inventory. For outcome of personal burnout, significant factors positively associated with burnout scores included gender ($p<.001$), work hours ($p=.026$), and negatively associ-

ated were age ($p=.012$), 'Women utilization' ($p=.046$), 'Organizational promotion' ($p=.010$) and 'Consultation service' ($p=.004$). For outcome of work-related burnout, significant factors was age ($p=.020$), 'Women utilization' ($p=.005$) and 'Consultation service' ($p<.001$) and these were negatively associated with work-related burnout scores. For outcome of student-related burnout, significant factors positively associated with burnout scores included work hours ($p=.020$), and negatively associated was 'Consultation service' ($p=.012$).

Table 3 indicates the results of multivariable regression analyses for each of three burnout measures. In the model for personal burnout, compared to men, the burnout score in women were higher with 0.39 points ($p<.001$), which indicates that women have higher burnout when all continuous variables are mean levels. With a unit increase of working hours, burnout scores increased by 0.05 ($p=.004$). In the same model, statistical interaction between Women utilization and gender was significant ($p=.037$). Simple slope tests (Fig. 1-a) demonstrated that the personal burnout score in women decreased in one unit increase of 'Women utilization' ($B=-0.22$, $p=0.038$, data not shown) but such trend was not observed in men ($B=0.03$, $p=.678$, Table 3). In a level of mean-1SD of Women utilization, personal burnout score of women was higher than that of men ($B=0.61$, $p<0.0001$, data not shown) whereas there was no difference in personal burnout score between men and women in a level of mean+1SD of Women utilization ($B=0.18$, $p=0.204$, data not shown).

In the model for work-related burnout, the burnout score decreased by 0.008 points ($p=0.020$) with one unit increase of age, and by 0.141 points with one unit increase of the perceptions of 'Consultation service" ($p=.005$). In the same model, statistical interaction term between Women utilization and gender was significant ($p=.010$). Simple slope tests (Fig. 1-b) demonstrated that the work-related burnout score in women decreased with one unit increase of 'Women utilization' ($B=-0.22$, $p=.009$, data not shown), but such trend was not observed in men ($B=0.031$, $p=.619$, Table 3). In a level of mean−1SD of 'Women utilization', work-related burnout score of women was higher than that of men ($B=0.31$, $p=.010$, data not shown) whereas in a level of mean+1SD of 'Women utilization', there was no difference in work-related burnout score between men and women ($B=-0.11$, $p=.346$, data not shown).

In the model for student-related burnout, with one unit increase of perception of 'Consultation service', student-related burnout decreased by 0.122 ($p=.033$). Statistical interaction was significant between gender inequality and gender ($p=.034$). Simple slope test (Fig. 1-c) demonstrated that the student-related burnout score in women increased with one unit increase of 'Inequality in academia' ($B=.227$, $p=.009$, data not shown) but such trend was not observed in men ($B=-0.012$, $p=.839$, Table 3). In a level of mean−1SD of 'Inequality in academia', student-related burnout score of women was lower than that of men ($B=-0.30$, $p=0.030$, data not shown) whereas there was no gender difference in a level of mean+1SD of 'Inequality in academia' ($B=0.09$, $p=.446$, data not shown).

## Discussion

The present study suggested some very important findings regarding the interaction between gender and perceptions of organizational climate with respect to gender equity and burnout. All three burnout scores were associated with 'Women utilization' or 'Inequality in academia in women' but such a relationship was not observed among male participants in this study. When 'Women utilization' was at its mean level, personal burnout score was higher in women than in men. When 'Women utilization' was low, both personal and work-related burnout score were significantly higher in women whereas there was no gender difference when 'Women utilization' was high. When perceiving less inequality in academia, student-related burnout score was significantly lower in women. In addition, there was a positive association observed between long working hours and personal burnout, and a negative association between age and work-related burnout, and between 'Consultation service' and work-related and student-related burnout.

Our study showed that women in particular may be psychologically vulnerable to organizational climate for gender inequality that may additionally cause adverse outcome in academia, for example, early retirement. Perceived hardship is important, with some studies demonstrating that people who believe they have been treated unfairly at work experience considerable distress[4]. Greenberg[4], for example, explained psychological response that people expect to be treated fairly, and they experience a shock to their systems creating psychological stress when they believe this has not occurred. Gender inequality represents a common unfairness in the workplace and our previous study reported that women who perceived gender inequality were more likely to give up pursuing a career and instead switch to part-time labour from full-time work[12]. Although our previous studies[12, 14] related to gender inequality at work had not specifically investigated participants' psychologi-

cal response to gender inequality, the results of the present study may suggest that in a workplace where women negatively perceive organizational climate with gender equity, women may perceive psychological distress. Furthermore, it should be noted that the present study also suggested that when women perceived organizational climate for gender equality at higher degrees, women might perceive less psychological distress. This finding may be useful to improve the working environment of Japanese academics where women are generally underrepresented[15].

The number of women scientists in Japan has lagged far behind of the majority of OECD countries for some time[16]. If such a small number of women in academia is a result of drop-out caused by psychological exhaustion due to gender inequality, in order to help reduce early retirement therefore, active steps are urgently needed to prevent women from leaving academia and also to increase the overall number of female researchers. In our study, 'Consultation service' had an attenuating effect on work-related burnout and student-related burnout regardless of gender. Scientific evidence of 'Consultation service' has been previously demonstrated elsewhere, including meta-analyses[17, 18]. Halbesleben[18], for example, has suggested that work-related sources of social support can be beneficial in areas where exhaustion is related to work demands.

In our study, psychological burnout among male academics was not shown to be influenced by perceptions of gender equity. Previous studies on the perception of "reverse racism" have shown that growth in minorities' rights are sometimes taken as deprivation of majorities' rights, from the viewpoint of those majority groups[19]. Although campaigns for gender equity therefore, may have a negative impact on men's psychological health, our current study presented that men who perceived gender equity more than average had similar psychological health scores as those who perceived less. At least one previous study[20] has reported that the perception of those who are 'under-benefitted' may have negative effects on their health, whereas those who perceive they are equally-treated are as healthy as those who are perceive to be over-benefitted. More women-friendly systems of work might be perceived as a shift from over-benefit to equal treatment for males, rather than a shift from being equally treatment to under-benefit in today's Japan. Thus, a positive gender equitable society may result in a workplace culture without harming men's psychological health, at the same time improving women's engagement with work. Changes in the assessment systems for university academics, especially those which consider the often unique needs of female researchers; will also need to be implemented[21].

Nevertheless, this situation remains problematic in workplaces with reduced gender equity and with a lower proportion of female staff. A previous large-scale survey of Japanese academics[22], for example, found that a lack of same-sex mentors and senior female role models was a source of isolation and limited career development for early-career female scientists. One solution may include a greater role for academic societies. Currently in Japan, 53 academic societies in the natural sciences have a professional association to support gender equity in academia[23]. These organizations regularly hold meetings for members of each society, but also offer consultation services to women in need. For example, the Japan Society of Medical Education[24] provides a mentor-mentee matching service during their annual meetings. Even though providing a 'Consultation service' may not always be practical, the workplace can be still active in providing women with appropriate information to help build their supportive networks.

It is worth noting some limitations of the current study. Firstly, because our survey was cross-sectional, causal relationships could not be determined. Secondly, the study was undertaken at a single private university and therefore, the generalizability of results may be limited to some extent. Thirdly, because this study was part of a larger gender equity survey at the university, those who responded might be particularly interested in the topic, rather than being a general sample of the overall academic population. Although it is unknown if this interest might lead to response bias, we did compare gender ratios and age distribution of our sample with that of the overall university population and found that the gender ratios and age distribution were comparable: the female ratio and average age of our study were 30.8% and 48.8 years old versus these values of the overall university population, 23.1% and 50.4 years old[25, 26]. Fourthly, psychological status may vary according to events associated with not only work but also in one's personal life, and it was not possible to measure such events in the current investigation due to the preexisting study design. Careful interpretation of our results is therefore required, and a detailed understanding of the underlying sociodemographic characteristics represents an important step in this regard[27].

Despite some potential limitations however, our study reports important findings that are useful not only to encourage women's career development but also for organizations to better prioritize women as part of an overall workforce strategy. The role of organizational climate

and professional societies can have tremendously positive impacts on the psychological health of female academics in Japan and therefore, needs to be maximized in future.

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