Socioeconomic Influences on Women’s Self-Rated Health Status in Japan
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Abstract

Introduction: Epidemiological studies have amply documented the association between socioeconomic status (SES) and health, and have highlighted a gender gap in self-rated health status. However, few studies have investigated the health status of women in Japan. Therefore, using nationally representative data, we aimed to examine the association between SES and self-rated health in women in Japan.

Methods: We used data from the Comprehensive Survey of the Living Condition of People conducted by the Ministry of Health, Labour and Welfare in 2010. From the original database, we drew a sample aged from 20 to 59 years old (n=264,68) and measured variables related to household, income/savings, medication, and self-rated health. Data were analyzed using a multivariate logistic regression model.

Results: The highest prevalence of self-rated poor health was found in both unemployed women and men (15.7% and 23.2%, respectively). The regression model indicated that unemployed women aged over 40 years (and especially aged between 40 and 44 years) were more likely to report poor health (adjusted odds ratio (95% confidence interval): 2.48 (1.28-4.82), p<0.01) and having never married (1.82 (1.36-2.42), p<0.001).

Conclusion: The findings indicate that unemployed women are more likely to report poor health than employed women and that age over 40 and marital status could predict self-rated poor health. We recommend promoting community-based and workplace-based preventive health services. In younger women, it is recommended that work opportunities are promoted along with an appropriate social welfare regimen to improve health among women in Japan.

Keywords: Women; Health inequality; Self-rated health; Socioeconomic status; Economically inactive; Gender gap; Japan

Introduction

Health inequalities related to socioeconomic status (SES), occupation, income, and educational attainment have been well documented recently in both Western countries and Japan [1-3]. Epidemiological studies have identified SES and health inequalities in mortality, morbidity of physical and mental illness [4-8], self-rated health [9,10], and health risk behaviors [11,12], and consistently show that people with higher SES have lower morbidity and mortality from various diseases and health problems compared with those of lower SES [4-12]. Work has beneficial long-term effects and the majority of people in healthy and safe work live longer than those out of work [13]. There is evidence that unemployment is associated with poor health [14-18] and that its impact on health is mediated by poverty, financial anxiety, stigma, and social isolation [14].

The Commission on Social Determinants of Health (CSDH) of the World Health Organization (WHO) defined the conceptual framework for social determinants of health (SDH). The framework distinguishes ‘structural determinants’ that include social and political mechanisms generating the socioeconomic position and ‘intermediate determinants’ that include material circumstances (e.g., living and working conditions, food availability), lifestyle and biological factors, psychosocial factors, and the healthcare system. It also shows the capacity of the health sector to influence not only the health outcomes in different people, but also differences in exposures and vulnerability [19].

Kondo et al. found a higher risk of poor health in unemployed people than in managerial workers and a marginal increase in the odds ratios (ORs) of poor health among younger people during the Japanese economic crisis [20]. Women in precarious employment living in single-parent households tend to suffer from poorer health [21]. There is global evidence of SES inequalities between women and men [22] and of a gender gap in self-rated health status [23,24]. However, few studies have investigated the health status of Japanese women. Therefore, we aimed to examine the association between SES and self-rated health of women in Japan using a nationally representative survey.

Methods

Data

This cross-sectional study used data from the Comprehensive Survey of the Living Conditions of People (CSLC) conducted by the Ministry of Health, Labour and Welfare (MHLW) in Japan in 2010. The regular survey, including a household and income/savings questionnaire, is conducted every year. A larger survey including a health and long-term care questionnaire is conducted every 3 years.

The CSLC is designed to reflect a representative cross-sectional sample using multi-stage stratified cluster sampling. In the 2010 CSLC, 5,510 enumeration districts (ED) of the census were randomly selected for household and health questionnaires, and 2,000 area units under the 5,510 EDs were randomly selected for income and saving questionnaires. The target survey population was 289,363 households (about 750,000 household members) for the household questionnaire and an individual-based health questionnaire. From these, 27,225 households were targeted for the household-based income and savings

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questionnaire. All households and household members, excluding individuals who were institutionalized, were approached to complete the questionnaires. The valid household response rate was 79.6% for the household and individual-based health questionnaire and 72.6% for the household-based income and savings questionnaire [25].

Subjects aged 20-59 years with a valid response for three questionnaires (household, health, and income and savings) were the study targets for the current analyses (n=26,468). We created an original ID for each participant from each ID of the ED and household, individual year, month of birth, and sex, and used this to link each participant’s data. Subjects with the same birth date and sex from the same household (i.e., twins) could not be recognized individually, and were excluded from the analysis.

**Measurements**

Self-rated poor health was the outcome measure. Self-rated health is a widely used measure and is strongly associated with wellbeing [26], mortality [27], and morbidity [28]. In the CSLC, self-rated health is assessed using a single question, ‘What is your current health condition?’ An answer is selected from five categories: excellent, very good, good, fair, and poor. The variable was dichotomized, with ‘poor’ and ‘fair’ responses labeled as ‘poor health’ in this study.

The independent variables were employment status, marital status, annual household income, and educational attainment. Employment status was categorized as: 1) in regular employment; 2) graduate school; 3) self-employed; 4) contracted worker; 5) other employment; or 6) unemployed (this category included participants who were economically inactive, i.e. not actively seeking work). Marital status was categorized as: 1) married; 2) never married; 3) bereaved; or 4) divorced. Annual income before tax, including benefits and inheritances, was recorded. Annual household income was equalized by dividing by the square root of household size to account for differences in household size [28].

The study population was grouped into income quintiles. Educational attainment was categorized as: 1) university; 2) graduate school; 3) high school; and 4) junior high school or less. Age was divided into 5-year intervals. Analyses were adjusted for the covariate of consultation at a healthcare facility.

### Statistical analysis

We first examined the prevalence of poor health according to the independent variables and covariates. Spearman’s correlation coefficients and crude ORs with 95% confidence intervals (CIs) were calculated using simple logistic regression to estimate the bivariate association among independent and outcome variables. Adjusted ORs (AORs) with 95% CIs for self-rated poor health were calculated using the forced entry method in a multivariate logistic regression by gender. The effects of the predictive variables on the outcome were explored for unemployed women. All statistical tests were two-sided, and p<0.05 was considered significant. IBM SPSS version 22.0 (IBM Corp., Armonk, NY, USA) was used for the analysis.

### Results

Table 1 shows that participants aged 35-39 years comprised the largest group (15.8%; 16.0% for women, 15.8% for men), followed by participants aged 55-59 years (15.1%; 14.4% for women, 15.8% for men).
men). Of the total, 68.8% were married and about one quarter had never married. About 37% of women and men lived with a partner and one child or more. Women were more likely to be single parents (living only with children) than men. More women than men were unemployed (29.4% and 7.0%, respectively). Regarding educational attainment, 69.6% of the study population had attended high school. However, there was a difference in the numbers of women and men who had attended high school and university. Of the sample, 29.8% had consulted a healthcare facility (31.9% for women and 27.5% for men) during the survey period.

Table 1 also shows the prevalence of self-rated poor health stratified by gender. More women than men reported poor health (12.3% and 10.7%, respectively). The prevalence increased with age for both women and men; women aged 50-54 years reported poor health the most.

### Table 1: Characteristics of the subjects stratified by gender and prevalence of self-rated poor health.

| Variables                      | Women     | Men       | Adjusted OR | 95%CI  | p-value | Adjusted OR | 95%CI  | p-value |
|-------------------------------|-----------|-----------|-------------|--------|---------|-------------|--------|---------|
| **Age**                       |           |           |             |        |         |             |        |         |
| 20-24                         |           |           | 1.11        | 0.80   | 1.53    | 0.540       | 1.38   | 0.93    | 2.04   | 0.112 |
| 25-29                         |           |           | 1.11        | 0.81   | 1.53    | 0.515       | 1.76   | 1.21    | 2.57   | <0.01 |
| 30-34                         |           |           | 1.29        | 0.94   | 1.76    | 0.109       | 1.52   | 1.05    | 2.21   | <0.05 |
| 35-39                         |           |           | 1.47        | 1.08   | 2.01    | <0.05       | 1.62   | 1.11    | 2.36   | <0.05 |
| 40-44                         |           |           | 1.56        | 1.13   | 2.13    | <0.01       | 2.00   | 1.38    | 2.90   | <0.001|
| 50-54                         |           |           | 1.36        | 0.99   | 1.87    | 0.057       | 1.94   | 1.33    | 2.82   | <0.01 |
| 55-59                         |           |           | 1.08        | 0.79   | 1.49    | 0.616       | 1.72   | 1.18    | 2.50   | <0.01 |
| **Marital Status**            |           |           |             |        |         |             |        |         |
| Married                       |           |           | 1.13        | 0.96   | 1.33    | 0.135       | 1.07   | 0.91    | 1.25   | 0.398 |
| Never married                 |           |           | 0.70        | 0.45   | 1.09    | 0.111       | 1.15   | 0.53    | 2.48   | 0.730 |
| Bereaved                      |           |           | 1.21        | 0.97   | 1.50    | 0.095       | 0.87   | 0.62    | 1.22   | 0.428 |
| Divorced                      |           |           |             |        |         |             |        |         |
| **Employment status**         |           |           |             |        |         |             |        |         |
| Employed                      |           |           |             |        |         |             |        |         |
| Regular employed              |           |           |             |        |         |             |        |         |
| Executive manager             |           |           | 1.12        | 0.79   | 1.61    | 0.524       | 1.10   | 0.88    | 1.38   | 0.411 |
| Self employed                 |           |           | 0.98        | 0.79   | 1.23    | 0.892       | 0.96   | 0.79    | 1.16   | 0.667 |
| Contract                      |           |           | 0.97        | 0.80   | 1.18    | 0.749       | 1.27   | 0.92    | 1.74   | 0.149 |
| Others                        |           |           | 0.95        | 0.65   | 1.38    | 0.775       | 1.04   | 0.61    | 1.79   | 0.882 |
| Unemployed (including housewives/husbands) | 1.44 | 1.27 | 1.64 | <0.001 | 2.22 | 1.82 | 2.73 | <0.001 |
| **Annual household income**   |           |           |             |        |         |             |        |         |
| Quintile 5                    |           |           | 0.99        | 0.83   | 1.18    | 0.898       | 1.02   | 0.84    | 1.24   | 0.822 |
| Quintile 4                    |           |           | 1.05        | 0.87   | 1.26    | 0.607       | 1.35   | 1.11    | 1.64   | <0.01 |
| Quintile 3                    |           |           | 1.16        | 0.97   | 1.39    | 0.105       | 1.22   | 1.00    | 1.49   | <0.01 |
| Quintile 1                    |           |           | 1.43        | 1.19   | 1.71    | <0.001      | 1.51   | 1.24    | 1.85   | <0.001|
| **Education attainment**      |           |           |             |        |         |             |        |         |
| University                    |           |           |             |        |         |             |        |         |
| Graduate school               |           |           | 1.37        | 0.76   | 2.47    | 0.288       | 1.17   | 0.82    | 1.67   | 0.400 |
| High school                   |           |           | 1.07        | 0.90   | 1.26    | 0.447       | 1.12   | 0.97    | 1.29   | 0.112 |
| Primary/Junior High School    |           |           | 1.44        | 1.10   | 1.89    | <0.01       | 1.29   | 1.02    | 1.63   | <0.05 |

*Adapted by consulting a health care facility

Table 2: Multivariate logistic regression results for self-rated health by gender.
who had never married reported significantly more poor health (AOR decreased sharply in older age groups (Figure 1). Unemployed women unemployed men was greatest in those aged 45-49 years and then decreased gradually. The prevalence of self-rated poor health among females.

Table 2 shows AORs for the reporting of poor health in relation to SES variables. We decided to exclude household structure because it was highly correlated with marital status and showed no statistical significance in the simple logistic regression analysis. Unemployed women and men were significantly more likely to report poor health. However, men showed higher AORs (95% CIs) (2.31 (1.90-2.80), p<0.001) than women (1.44 (1.27-1.64), p<0.001). There was an association between self-rated poor health and income among women. The unemployed group in this study included economically inactive unemployed people, women experience poorer health status than men. Several studies have shown that, among unemployed people, women experience poorer health status than men [15,29,30].

Table 3 shows the result of multivariate logistic regression analysis. The prevalence of self-rated poor health by employment status varied from 10.5% to 15.7% for women and 9.5% to 23.2% for men. The highest prevalence for both women and men was in unemployed participants (15.7% and 23.2%, respectively).

Table 3 shows the result of multivariate logistic regression according to employment status among women. Unemployed women over 40 years were significantly more likely to report poor health (AOR (95% CI): 2.48 (1.28-4.82), p<0.01 for 40-44 years; 2.45 (1.24-4.83), p<0.05 for 45-49 years; and 2.09 (1.07-4.10), p<0.05 for 50-54 years). The prevalence was greatest in those aged between 45 and 49 years and decreased gradually. The prevalence of self-rated poor health among unemployed men was greatest in those aged 45-49 years and then decreased sharply in older age groups (Figure 1). Unemployed women who had never married reported significantly more poor health (AOR (95% CI): 1.82 (1.36-2.42), p<0.001). Lower annual household income was associated with poor health in unemployed women (AOR (95% CI): 1.67 (1.19-2.36), p<0.01) than those earning the lowest income (¥1,963,000 or less) and 1.60 (1.14-2.23), p<0.01 for those earning the second lowest income (from ¥1,963,100 to ¥2,886,800). In contrast, among employed women, final educational attainment of primary or junior high school solely predicted a higher risk of self-rated poor health (AOR (95% CI): 1.67 (1.19-2.36), p<0.01).

Discussion

Using nationally representative survey data, this study examined the association between SES and self-rated health in 2010 in a Japanese population. We found that women were more likely to report poor health than men. However, the findings indicate that, for both men and women, unemployed participants (including those who were not actively looking for work) were more likely to report poor health than those who were employed. This result is consistent with findings from previous studies conducted in Western countries [16-18]. In the current study, unemployment conferred a smaller risk for poor self-rated health in women compared with men. Several studies have shown that, among unemployed people, women experience poorer health status than men [15,29,30].

Our findings may reflect the complex nature of the study population. The unemployed group in this study included economically inactive people. Economic inactivity refers to people who are not looking for a job and is different from unemployment [31]. The unemployment rate in 2010 in Japan was 4.8% for women and 5.3% for men. However, the rate of unemployment in this study was 29.2% for women and 7.5% for men. This large difference for women may indicate that more women than
**Figure 1:** Rate of self-rated poor health among women and men by employment status.

**Figure 2:** Comparison of female Labour force participation and perceived poor health among seven countries in 2010.

* Perceived poor health rate in Australia and USA was from 2011 and 2012, respectively and were deviated from OECD definition.

Data of Labour force participation rate is from ILO ILOSTAT database (http://www.ilo.org/global/statistics-and-databases/lang--en/index.htm).

Data from OECD library website (http://www.oecd-ilibrary.org/statistics).

* * *
men are economically inactive. Women in Japan may be economically inactive because of their traditional role in caring for the home and family, a pattern reflected in some European countries [32]. A study by Dubikaytis et al. revealed differences in self-ratings of poor health in housewives in Russia (St Petersburg), Estonia, and Finland. Ratings of poor health for housewives in Finland and Estonia were greater than those for employed women. In contrast, housewives in Russia were less likely to rate their health as poor compared with employed women [9]. Honjo et al. found that self-rated mental health among Japanese female workers was greater than that among housewives and have suggested that this may be related to the various conflicts and benefits associated with the multiple social roles for women in Japanese culture [33].

Our results also indicate that unemployed women over 40 years old had a greater risk of self-rated poor health compared with employed women. This prevalence increased at age 40 but subsequently slightly decreased. Unemployment was associated with poor health of women over 40 years old; in contrast, unemployment was associated with poor health in men aged 45-49 years old. Possible explanations are the differences between women and men in social expectations for working, and the reasons for being unemployed. Another possibility is that employment conditions differ for males and females across generations [34,35].

Annual household income may be a predictor of self-rated health in unemployed women. This result is consistent with a previous study showing no association between household income level and self-rated mental health in housewives [33]; however, as income level can vary across geographical areas, the economic characteristics of subjects in this study may not be homogenous. In the current study, marital status was associated with self-rated health among unemployed, but not employed, women. Unemployed women without a partner may experience social isolation, which can lead to poor self-rated health [36].

According to a comparison of female labor force participation by the International Labour Organization and perceived poor health by the Organization for Economic Co-operation and Development among seven selected countries in 2010, there was a trend for rates of perceived poor health to decrease as female labor force participation rates increased (Figure 2) [37,38]. Perceived poor health (self-rated health) in women may be influenced by both labor conditions and cultural influences on female social roles [36].

To improve women’s health, we recommend robust promotion of both community-based and workplace-based health strategies as an approach to influence the intermediate determinants in the framework of WHO’s CSDH. For example, in Japan, health check-ups and consultations for those over 40 years old are provided by a public health insurer for employed people and their dependants, including housewives. However, the health check-up rate of dependants is only about 30% [39]. It is necessary to promote use of the system of health check-ups and consultations for dependents as a health service for unemployed women, especially housewives over 40 years of age. For unemployed women not covered by a workplace-based health check-up and consultation for a household member, the municipality should be responsible for expanding access to healthcare to improve the health status of these individuals.

However, the aforementioned strategy could still miss younger unemployed women. For the younger generation, we strongly recommend the promotion of work opportunities with an appropriate social welfare regimen as an approach to the structural determinants of SDH, along with an enhancement of preventive health services.

Strength of this study was our use of a large, nationally representative sample to examine the association between employment status and self-rated health, which improves the generalizability of the results. However, there are also some limitations. First, the cross-sectional design limits the inference of causality between employment status and poor health. Second, the unemployed group in this study included both unemployed people and economically inactive people because of limited use of disaggregated data in the CSLC managed by the MHLW. Third, the outcome variable was self-rated health and data on objective health conditions were not collected. However, self-rated health is considered a strong predictor of objective health outcomes, such as mortality or morbidity [26-28].

To improve women’s health, more research is required on the association between women’s health status and employment status, including unemployed people willing to work, those looking after home and family, and those with long-term illness, considering the influence of female labor participation and cultural factors on female social roles.

Conclusions

We examined the association between SES and self-rated health in employed and unemployed women (including those who were not actively seeking work). This cross-sectional study using a nationally representative Japanese survey demonstrated that unemployed women were more likely to report poor health than employed women. Among unemployed women, age (over 40) and marital status (never married) predicted self-rated poor health. We recommend promoting community-based and workplace-based preventive health services. In younger women, it is recommended that work opportunities are promoted along with an appropriate social welfare regimen to improve health among women in Japan. More research is needed on the association between SES and women’s health that takes into account female labor participation and cultural influences on female social roles.

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