Supplementary. Details of secondary outcomes.

Psychological distress (K6)

Psychological distress will be evaluated using the Japanese version of the K6 [1, 2]. The K6 is a widely-used self-rating scale assessing nonspecific distress during the past 30 days. Each item of the K6 is scored on a Likert scale ranging from *never* (0) to *all of the time* (4). The total score of the K6 ranges from 0 to 24, with higher scores indicating more severe psychological distress. A score of 13 or more and between 5 to 12 on the K6 will be considered severe and moderate psychological distress, respectively [3]. The reliability and validity of the Japanese version of the K6 has been found to be satisfactory [1, 4].

Parental burnout

Parental burnout will be assessed by the Parental Burnout Assessment (PBA) [5]. PBA is a 23-item with four dimensions: exhaustion in one's parental role (6 items), contrast with previous parental self (6 items), feelings of being fed up with one's parental role (5 items) and emotional distancing from one's children (3 items). Items are rated on 7-point Likert scales: *never* (0) to *every day* (6). Japanese version of PBA (PBA-J) has showed high reliability and validity [6].

Work engagement

The short form of the Utrecht Work Engagement Scale, 9-items (UWES-9) will be used to assess work engagement [7]. The UWES-9 consists of three subscales (vigor, dedication and absorption) which contain three items each. The UWES-9 is a self-report 7-point rating scale (0 = *never*; 6 = *every day*). The mean scores of the three UWES subscales and the total score are computed by adding the scores and dividing the sum by the number of items in each subscale. Hence, the UWES's three subscale scores and a total score range from 0 to 6. The Japanese version of UWES-9 has showed acceptable reliability and validity [8].

Job performance

Work performance will be evaluated using one item of the WHO Health and Work Performance Questionnaire (HPQ) in Japanese [9, 10]. The HPQ is a self-report measure designed to estimate the workplace costs of health problems. In this study, participants will be asked to rate their overall work performance during the past 4 weeks. Items are scored on an 11-point scale ranging from 0 (worst possible performance) to10(best possible performance). A high score indicates a high degree of work performance. The reliability and validity of Japanese version of HPQ have been tested [10].

Sick leave days

Participants will be asked to report their number of sick leave days during the past 3 months.

Intention to leave

The intention to leave is simply by asking one original item "Are you thinking of quitting your job?". The item is scored on a scale from 0 (*none*) to 4 (*always*). Higher scores indicate greater intention to leave. Reliability and validity of the Japanese version have not yet been determined.

Job and life satisfaction (evaluative well-being)

Job and life satisfaction will be assessed by each one item of the Brief Job Stress Questionnaire (BJSQ) [11-13]. The job and life satisfaction score are estimated on a 4-point Likert-type scale by asking "I am satisfied with my job (family life)".

Positive feelings (hedonic well-being)

Positive adjectives were measured by 10 items (e.g., enthusiastic, strong, inspired, proud, active, interested, excited, alert, determined, attentive) from *The Positive and Negative Affect Schedule (PANAS)* [14], which is a widely used mood measurement and regarded as one of the indicators of hedonic well-being. In addition, positive affect was each measured by six items (i.e., cheerful, in good spirits, extremely happy, calm and peaceful, satisfied, full of life), because such low arousal positive feeling has been reported to have stronger link with health among Japanese people, other than high arousal feelings, measured by PANAS [15]. Other than them, two items (i.e., close to others and confident) were added in terms of cultural affinity. These 18 items were used in the previous large population-based cohort study in Japan [16]. This study used the past 30 days as the time frame. All items were rated on a 5-point Likert-type scale, ranging from 1 "*None of the time*" to 5 "*All of the time*". Scales were constructed by calculating the mean across each set of items. Higher scores indicate greater positive feeling. Positive feeling scales in this questionnaire is well validated elsewhere [15].

Perceived social support from the partner

Perceived social support from the partner was measured in an original visual analogue scale (range: 0 - 100) by asking two questions: "How much emotional support does your partner (e.g. your spouse) provide for you? Please answer on a scale of 0 to 100." and "How much housework and childcare does your partner (e.g. your spouse) provide?". This scale will be shown only for participants who answer they are married.

Social support

Social support was assessed using the Japanese short (7-item) version of the self-rating Multidimensional Scale of Perceived Social Support (MSPSS) [17, 18]. It assesses perceived support

from each of three sources: family (2 items), friends (3 items) and a significant other (2 items). The scale uses a 7-point Likert scale, ranging from *very strongly disagree* (1) to *very strongly agree* (7), with higher scores suggesting greater levels of perceived social support. The mean score of 7 items is used as a total score. Japanese short version of MSPSS has been shown acceptable reliability and validity [19].

Global fear and worry about COVID-19

Global fear and worry about COVID-19 was assessed by a single item [20]: "Do you feel anxiety about COVID-19?" Responses were rated along a 6-point Likert-type scale ranging from 1 "*Not at all*" to 6 "*Feel strongly*."

Euthymia

Euthymia, which is newly stated concept by Fava in 2016, is a transdiagnostic construct for representing a psychological flexibility, a unifying outlook on life, and resistance to stress (i.e., resilience and tolerance to anxiety and frustration) [21, 22]. The Euthymia scale (ES) is a 10-item measurement with two answer options dichotomously as False (0) or True (1), resulting in a total ranging from 0 to 10, with higher scores indicating a better euthymic state. The Japanese version of ES shows high reliability (Cronbach's alpha; 0.832).

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