Factors Associated with Self-rated Health in the Rural Population: Age- and Gender-specific Analysis

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Abstract

Objective: Multiple studies worldwide have supported the predictive validity of self-rated health (SRH) with regard to disability and mortality among elderly people. Although SRH is an important study topic providing clues to enhance a person’s quality of life, there is currently insufficient data on age- and gender-specific differences among factors associated with SRH in Japan, particularly in rural areas. The present study examined the factors associated with SRH of a segment of Japan’s rural population by age- and gender-specific analysis.

Methods: We used data from a cohort study of all users who underwent an annual health checkup at a public clinic in a rural area. The study subjects were 155 male and 169 female users from June 2009 to August 2010 who agreed to participate in this study. We divided the study subjects into 4 categories as follows: men aged less than 65, women aged less than 65, men aged 65 and over, and women aged 65 and over. The subjects who responded positively to the SRH-related questions were defined as the high SRH group, and those who responded negatively were defined as the low SRH group. We then compared the data between the high and the low groups in each category.

Results: In all four categories, there were statistically significant differences in regular hospital or clinic attendance between the high and low SRH groups. In all four categories, there were no significant differences in eating or exercise habits between the two SRH groups.

Conclusion: Because regular hospital or clinic attendance by a subject is indicative of the presence of chronic health problems, it is natural for the subject’s perception of their own health to be negative. However, rural physicians should provide patients with emotional and psychological support to deal with any health-related concerns positively.

Key words: self-rated health, rural area, patient education, depression, elderly, lifestyle

Introduction

Self-rated health (SRH) is a single question designed to elicit a person’s own assessment of his or her overall health status. SRH is a widely used indicator of a person’s perception of his or her own health. Multiple studies worldwide have further supported the predictive validity of SRH with regard to disability and mortality among elderly people. In Japan, Sugisawa et al. published research results revealing that SRH is a reliable indicator of prognosis among elderly people. Ogawa et al. reported that SRH is strongly related to mortality or functional decline among elderly rural residents.

Numerous studies have been conducted to clarify the factors associated with good SRH and thereby gather clues to enhance the quality of life of elderly people. For instance, Arnaudottir et al. revealed that body function, everyday activities, and personal factors were linked with higher SRH among community-dwelling elderly people, using the International Classification of Functioning, Disability and Health model. A qualitative study conducted by Sugisawa in Japan revealed that physical health is a more important factor for positive SRH than mental or social health among elderly people. Ishizaki et al. suggested that aging is independently associated with a higher SRH among elderly people.

A number of studies have also focused on gender differences in relation to SRH and mortality. Sun et al. revealed that there were certain gender differences in factors correlated with good SRH and suggested the necessity of gender-specific support from the view point of SRH for the elderly. Haga et al. indicated that there is a strong relation between SHR and mortality among men, but not among women.
women). Bath, however, reported that low self-rated health is not an independent predictor of mortality among men and women based on data from the Nottingham Longitudinal Study of Activity and Ageing in 2003. There is a great deal of controversy as to whether or not gender differences exist between SRH and mortality.

Although SRH is an important study topic providing clues to enhance a person’s quality of life, there is currently insufficient data on age- and gender-specific differences among factors associated with SRH in Japan, particularly in rural areas. Quality of life is also affected by a person’s sense of spirituality. Additional studies on age- and gender-specific factors associated with SRH in rural Japan are thus needed.

The present study examined the factors associated with SRH of a segment of Japan’s rural population by age- and gender-specific analysis.

### Method

#### Study population

We used data from KAP, a prospective observational cohort study of individuals who underwent an annual health checkup at a public clinic in Asakura City (Kyushu region, Western Japan); this study was launched in 2009 and is set to end in 2016. The present study was a pilot trial, and the study subjects were 155 male and 169 female individuals who agreed to participate in the study between June 2009 and August 2010. Asakura City is located in the northwestern part of Kyushu district (Western Japan), which is a typical rural area. The annual health checkup the users underwent is called a “birthday medical checkup”. Asakura City encourages its residents to go through a yearly medical checkup on or around their date of birth. KAP included a questionnaire survey that inquired about the following items: age, sex, somatometry, family budget conditions, family structure, SRH, regular clinic or hospital attendance, medication for lifestyle-related diseases, eating habits, exercise habits, and Geriatric Depression Scale 5 (GDS5). Regarding family budget, we asked subjects whether they were satisfied with their current family budget. The subjects confirmed whether they felt a) their budget was quite sufficient, b) their budget was barely sufficient, or c) they needed financial assistance. For SRH, subjects had to answer the following yes or no questions:

### Table 1

| Characteristics                        | High SRH (n=49) | Low SRH (n=34) | p value |
|----------------------------------------|----------------|----------------|---------|
| Family budget                          |                |                |         |
| Quite sufficient                       | 9 (18.4)       | 4 (11.8)       | 0.247   |
| Barely sufficient                      | 35 (71.4)      | 24 (70.6)      |         |
| Financial support required             | 5 (10.2)       | 6 (17.6)       |         |
| Reside with children                   |                |                |         |
| Yes                                    | 23 (46.9)      | 14 (41.2)      | 0.699   |
| Have an elderly person requiring care  |                |                |         |
| Yes                                    | 12 (24.5)      | 5 (14.7)       | 0.247   |
| Regularly attend a hospital or a clinic|                |                |         |
| Yes                                    | 16 (32.7)      | 21 (61.8)      | 0.008   |
| Medication for lifestyle-related disease|          |                |         |
| DM                                     | 0 (0.0)        | 3 (8.8)        | 0.683   |
| HL                                     | 5 (10.2)       | 5 (14.7)       | 0.541   |
| HT                                     | 10 (20.4)      | 7 (20.6)       | 0.215   |
| GDS5                                   |                |                |         |
| 0                                      | 16 (32.7)      | 7 (20.6)       | 0.029   |
| 1                                      | 19 (38.8)      | 10 (29.4)      |         |
| 2                                      | 10 (20.4)      | 6 (17.6)       |         |
| 3                                      | 0 (0.0)        | 6 (17.6)       |         |
| 4                                      | 0 (0.0)        | 2 (5.9)        |         |
| 5                                      | 1 (2.0)        | 0 (0.0)        |         |
| BMI                                    |                |                |         |
| ≥25                                    | 7 (14.3)       | 8 (23.5)       | 0.306   |
| Skip breakfast                         |                |                |         |
| Always                                 | 21 (42.9)      | 14 (41.2)      | 0.916   |
| Sometimes                              | 3 (6.1)        | 4 (11.8)       |         |
| Rarely                                 | 25 (51.0)      | 16 (47.1)      |         |
| Eat dinner                             |                |                |         |
| Before 21:00                           | 48 (98.0)      | 32 (94.1)      | 0.363   |
| After 21:00                            | 1 (2.0)        | 2 (5.9)        |         |
| Eat vegetables every day               |                |                |         |
| Yes                                    | 24 (49.0)      | 13 (38.2)      | 0.336   |
| Have good exercise habits              | 15 (30.6)      | 10 (29.4)      | 0.908   |

SRH, Self-rated health; DM, Diabetes Mellitus; HL, Hyperlipidemia; HT, Hypertension; HU, Hyperuricemia; GDS, geriatric depression scale; BMI, body mass index.
question: “Do you think your health condition is good?” As for eating habits, subjects were asked three questions. First, they were asked “do you normally skip breakfast,” with the possible answers being were always, sometimes, and rarely. Second, they were asked “when do you normally eat dinner,” with the possible answers being before 21:00 or after 21:00. Third, they were asked “do you eat vegetables on a daily basis,” a yes or no question. “Good exercise habits” were defined as performing a minimum of two 30-minute sessions of exercise per week.

The Geriatric Depression Scale \(^{13}\) was developed by Yessavage and colleagues thirty years ago and has been translated into numerous languages; it is now widely used worldwide including in Japan. Recently, to shorten the screening process, a new condensed version was developed \(^{14}\), a two-tier test consisting of 5 questions. A score of 0 on the GDS-5 is classified as “not depressed.”

This study was carried out with the consent of the Nagoya University School of Medicine Ethics Committee.

### Data analysis

We excluded 5 men and 2 women whose SRH status data were missing from the present analysis. We divided the study subjects into 4 categories as follows: men aged less than 65, women aged less than 65, men aged 65 and over, and women aged 65 and over. The subjects who responded positively to the SRH-related questions were defined as the high SRH group, and those who responded negatively were defined as the low SRH group. We then compared the data between the high and low groups in each category. We used the t-test for continuous values and the \(\chi^2\) test for discontinuous values. A P-value of less than 0.05 was considered statistically significant. We used IBM SPSS Statistics 20 as the statistics software.

### Results

After excluding five males and two females whose SRH-related data were missing, we analyzed the data of 62 men aged less than 65, 83 women aged less than 65, 88 men aged 65 and over, and 84 women aged 65 and over.

The characteristics and results of the study subjects are shown in Tables 1–4. The data shows that more than half of the subjects had a high SRH in each category (58.1% for

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### Table 2  Characteristics and life-related habits of male subjects aged less than 65 according to self-related health (n=62)

|                      | High SRH (n=36) | Low SRH (n=26) | p value |
|----------------------|----------------|----------------|---------|
|                      | n  | %  | n  | %  |         |
| Family budget        |    |    |    |    |         |
| Quite sufficient     |  7 | 19.4|  4 | 15.4| 0.255   |
| Barely sufficient    | 24 | 66.7| 19 | 73.1|         |
| Financial support    |  3 |  8.3|  3 | 11.5|         |
| Reside with children |    |    |    |    |         |
| Yes                  | 10 | 27.8| 11 | 42.3| 0.134   |
| Have an elderly person requiring care |  7 | 19.4|  8 | 30.8| 0.312   |
| Regularly attend a hospital or a clinic | Yes |  7 | 19.4| 14 | 53.8| 0.006   |
| Medication for lifestyle-related disease | DM |  1 |  2.8|  1 |  3.8| 0.818   |
|                     | HL |  1 |  2.8|  4 | 15.4| 0.113   |
|                     | HT |  8 | 22.2|  8 | 30.8| 0.456   |
|                     | HU |  3 |  8.3|  7 | 26.9|         |
| GDS5                |    |    |    |    |         |
| 0                   |  9 | 25.0|  5 | 19.2| 0.516   |
| 1                   | 14 | 38.9| 12 | 46.2|         |
| 2                   |  9 | 25.0|  5 | 19.2|         |
| 3                   |  2 |  5.6|  2 |  7.7|         |
| 4                   |  0 |  0.0|  1 |  3.8|         |
| 5                   |  0 |  0.0|  0 |  0.0|         |
| BMI                 |    |    |    |    |         |
| ≥25                 | 17 | 47.2| 11 | 42.3| 0.707   |
| Skip breakfast      |    |    |    |    |         |
| Always              | 22 | 61.1| 13 | 50.0| 0.295   |
| Sometimes           |  5 | 13.9|  3 | 11.5|         |
| Rarely              |  9 | 25.0| 10 | 38.5|         |
| Eat dinner          |    |    |    |    |         |
| Before 21:00        | 34 | 94.4| 24 | 92.3| 0.400   |
| After 21:00         |  2 |  5.6|  1 |  3.8|         |
| Eat vegetables every day | Yes | 11 | 30.6|  9 | 34.6| 0.738   |
| Have good exercise habits | Yes |  8 | 22.2|  7 | 26.9| 0.676   |

SRH, Self-rated health; DM, Diabetes Mellitus; HL, Hyperlipidemia; HT, Hypertension; HU, Hyperuricemia; GDS, geriatric depression scale; BMI, body mass index.
men below 65, 59.0% for women below 65, 68.2% for men 65 and over, 65.5% for women 65 and over). Most of the subjects did not need financial support regardless of age or sex. Less than half of the subjects resided with their children regardless of age or sex. One-third of the subjects aged less than 65 had someone they need to look after, as did half of the subjects aged 65 and over. Although most of the subjects generally ate dinner before 21:00 regardless of age or sex, less than half of the subjects ate vegetables or had breakfast on a daily basis. While more than half of the female subjects aged 65 and over had good exercise habits, only one-fourth of younger subjects had good exercise habits.

Among the women aged less than 65, there are statistically significant differences in GDS5 scores between the high and low SRH groups. In all four categories, there were statistically significant differences in regular hospital or a clinic attendance between the high and low SRH groups. In all four categories, there were no significant differences in eating or exercise habits between the two SRH groups.

### Table 3

| Characteristics and life-related habits of female subjects aged 65 and over according to self-related health (n=84) |
|---------------------------------------------------------------|
|                                                               |
| **High SRH (n=55)**                                           |
|                                                               |
| **Low SRH (n=29)**                                           |
|                                                               |
| **p value**                                                  |
|                                                               |
| **Family budget**                                            |
| Quite sufficient                                             | 10 18.2 |
| Barely sufficient                                            | 31 56.4 |
| Financial support required                                   | 8 14.5 |
|                                                               |
| **Reside with children**                                     |
| Yes                                                          | 17 30.9 |
| Barely sufficient                                            | 20 69.0 |
| Financial support required                                   | 6 20.7 |
|                                                               |
| **Have an elderly person requiring care**                    |
| Yes                                                          | 6 10.9 |
| Barely sufficient                                            | 20 69.0 |
| Financial support required                                   | 6 20.7 |
|                                                               |
| **Regularly attend a hospital or a clinic**                  |
| Yes                                                          | 28 50.9 |
| Barely sufficient                                            | 21 74.1 |
| Financial support required                                   | 7 24.1 |
|                                                               |
| **Medication for lifestyle-related disease**                 |
| DM                                                           | 2 3.6 |
| HL                                                           | 4 7.3 |
| HT                                                           | 16 29.1 |
| HU                                                           | 0 0.0 |
|                                                               |
| **GDS5**                                                     |
| 0                                                            | 15 27.3 |
| 1                                                            | 27 49.1 |
| 2                                                            | 4 7.3 |
| 3                                                            | 1 1.8 |
| 4                                                            | 0 0.0 |
| 5                                                            | 0 0.0 |
|                                                               |
| **BMI**                                                      |
| ≥25                                                          | 6 10.9 |
| 10                                                           | 8 27.6 |
|                                                               |
| **Skip breakfast**                                           |
| Always                                                       | 27 49.1 |
| Sometimes                                                    | 2 3.6 |
| Rarely                                                       | 26 47.3 |
|                                                               |
| **Eat dinner**                                               |
| Before 21:00                                                 | 52 94.5 |
| After 21:00                                                  | 2 3.6 |
|                                                               |
| **Eat vegetables every day**                                 |
| Yes                                                          | 20 36.4 |
| Barely sufficient                                            | 8 27.6 |
|                                                               |
| **Have good exercise habits**                                |
| Yes                                                          | 33 60.0 |
| Barely sufficient                                            | 13 44.8 |
| Financial support required                                   | 0.101 |
|                                                               |
| **SRH, Self-rated health; DM, Diabetes Mellitus; HL, Hyperlipidemia; HT, Hypertension; HU, Hyperuricemia; GDS, geriatric depression scale; BMI, body mass index.** |

Our results suggest that a depressive mood shown by GDS5 scores is negatively related to good SRH among the female population aged less than 65 years old. A number of studies have focused on gender differences in the prevalence of psychological symptoms. For example, Voderholzer et al. examined gender differences in insomnia, a frequent symptom of anxiety and depression that is more prevalent among women than men throughout all age groups\(^{15}\). Wong and Fielding suggested that chronic pain, fatigue, and sleep disturbances are comorbidities of psychological distress and that the prevalence of these three chronic conditions was higher in women\(^{16}\). They also suggested that individuals with several of these symptoms reported poorer mental health and self-perceived health. These recent studies, however, do not shed light on the strong link between depressive mood and SRH observed only among the younger female population in our results. We think that additional studies focusing on the relationship between depressive mood and SRH are needed.

Our results indicate that attending a hospital or a clinic...
regularly is strongly related to low SRH in all age or gender categories. Regular hospital or clinic attendance by a subject is indicative of the presence of chronic health problems, and it is therefore quite natural for the subject’s perception of their own health to be negative. A number of studies support our results. Ishizaki et al. reported that factors contributing to good SRH include the absence of a chronic medical condition9). Sugisawa’s qualitative survey revealed that physical health is strongly related to SRH among the elderly8). Kawasaki conducted a study on the relation between lifestyles and SRH of the inhabitants of an outlying island, which revealed that SRH is enhanced if a person does not suffer from any illness and therefore does not see a physician on a regular basis17). Our results confirm the findings of these studies, underscoring the fact that rural physicians should educate patients on healthy habits in order to boost their SRH. This is, physicians should provide patients with emotional and psychological support to deal with any health-related concerns positively as well as detailed explanations of their health condition.

While we may hypothesize that subjects with good SRH were likely to have healthy life habits, our results suggest little relation between the two factors, as highlighted by several recent studies. Igarashi and Iijima suggested that a person’s SRH is not affected by lifestyle factors such as diet or exercise habits but is affected by mental factors such as life satisfaction or general health image18). Ogasawara et al. also examined how personal health condition relates to perception of SRH among middle-aged and older people in “A” Prefecture and reported that the most commonly given observations of well-being were “being able to enjoy a meal” and “having good physical strength for one’s age” 19). There may also be certain differences in general health perception between medical professionals and rural residents. Additional qualitative studies on this topic are needed to deepen our understanding of this issue.

This study was subject to a number of limitations. First, the present pilot study did not include a number of important factors possibly associated with SRH, such as history of smoking, because the initial KAP study did not especially focus on SRH. Second, because this is a pilot study, the number of samples was limited. To confirm our results, we need to conduct larger-scale studies using an improved questionnaire. Lastly, the study was biased because only a

| Table 4 Characteristics and life-related habits of male subjects aged 65 and over according to self-related health (n=88) |
|-----------------------------------------------|
| High SRH (n=60) | Low SRH (n=28) | p value |
| Family budget | | |
| Quite sufficient | 13 | 21.7 | 3 | 10.7 | 0.609 |
| Barely sufficient | 38 | 63.3 | 22 | 78.6 |
| Financial support required | 9 | 15.0 | 3 | 10.7 |
| Reside with children | | | |
| Yes | 12 | 20.0 | 11 | 39.3 | 0.199 |
| Financial support required | | | |
| Have an elderly person requiring care | | | |
| Yes | 7 | 11.7 | 7 | 25.0 | 0.144 |
| Regularly attend a hospital or a clinic | | | |
| Yes | 24 | 40.0 | 20 | 71.4 | 0.008 |
| Medication for lifestyle-related disease | | | |
| DM | 6 | 10.0 | 5 | 17.9 | 0.352 |
| HL | 7 | 11.7 | 3 | 10.7 | 0.897 |
| HT | 24 | 40.0 | 15 | 53.6 | 0.237 |
| GDS5 | | | |
| 0 | 21 | 35.0 | 11 | 39.3 | 0.575 |
| 1 | 28 | 46.7 | 12 | 42.9 |
| 2 | 5 | 8.3 | 2 | 7.1 |
| 3 | 1 | 1.7 | 1 | 3.6 |
| 4 | 0 | 0.0 | 1 | 3.6 |
| 5 | 0 | 0.0 | 0 | 0.0 |
| BMI | | | |
| ≥25 | 10 | 16.7 | 7 | 25.0 | 0.362 |
| Skip breakfast | | | |
| Always | 30 | 50.0 | 12 | 42.9 | 0.442 |
| Sometimes | 2 | 3.3 | 0 | 0.0 |
| Rarely | 28 | 46.7 | 16 | 57.1 |
| Eat dinner | | | |
| Before 21:00 | 57 | 95.0 | 27 | 96.4 | 0.407 |
| After 21:00 | 1 | 1.7 | 1 | 3.6 |
| Eat vegetables every day | | | |
| Yes | 24 | 40.0 | 13 | 46.4 | 0.572 |
| Have good exercise habits | | | |
| Yes | 28 | 46.7 | 11 | 39.3 | 0.522 |

SRH, Self-rated health; DM, Diabetes Mellitus; HL, Hyperlipidemia; HT, Hypertension; HU, Hyperuricemia; GDS, geriatric depression scale; BMI, body mass index.
portion of Asakura City’s population underwent a checkup and was therefore included in the data. Our subjects were all clinic users who underwent a health checkup, and there may be a link between health checkup attendance and user SRH. Our results should thus be generalized with caution.

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