



## Short Communication

## Associations between deterioration of self-rated health and occupational form among community-dwelling Japanese individuals

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## ABSTRACT

**Objectives:** In occupational therapy, occupations refer to everyday activities that people perform as individuals, in families, and with communities to live a meaningful life. Thus far, there has been no large-scale survey conducted using quantitative data to study deterioration of self-rated health from an occupational perspective. This large-scale study therefore aimed to clarify the associations between deterioration of self-rated health and occupational form, performance, and satisfaction using quantitative data.

**Study design:** One-year prospective cohort study.

**Methods:** Subjects included 438 community-dwelling individuals (175 males and 263 females; mean age, 66.3 ± 10.5 years) who participated in the study during 2017–2018. We administered to patients a questionnaire on self-rated health and occupational form (number, frequency, and duration), occupational performance, and occupational satisfaction. A multi-level Poisson regression analysis was performed, wherein deterioration of self-rated health was the dependent variable and occupational form, performance, and satisfaction were the independent variables. In Model 1, the independent variables were adjusted for each other; in Model 2, sex, living alone, and alcohol consumption were added to Model 1; and in Model 3, disease was added to Model 2.

**Results:** The frequency of occupation monthly/yearly was associated with deterioration of self-rated health compared to that daily/weekly among those aged <65 years. Adjusted prevalence ratios (95% confidence interval) for models 1, 2, and 3 were 2.95 (1.07–8.18), 3.19 (1.13–8.99), and 3.81 (1.29–11.20), respectively.

**Conclusions:** This study revealed factors for the deterioration of self-rated health from an occupational perspective that was directly related to daily life. Increasing the occupation frequency may be more important than increasing the number and duration of occupation to prevent deterioration of self-rated health.

## 1. Introduction

Occupation contributes to the health and well-being of individuals. People form their present selves through the accumulation of past occupation [1]. In occupational therapy, occupations refer to everyday activities that people perform as individuals, in families, and with communities to occupy time and live a meaningful life. Occupations include things people need to, want to, and are expected to do [2]. Occupational therapists in the rehabilitation profession use occupation

as a means of therapeutic intervention [3].

Occupation has form, meaning, and function, and people feel a sense of identity by engaging in occupations, which is a basic human need [4]. It is also an important aspect of occupation to subjectively perceive the occupational performance (whether it is performed well or satisfied) [5]. For the effects of occupation on health and well-being, it is necessary to consider the occupational form and performance at the same time.

To understand health, not only medical information but also self-

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**Table 1**

Associations between self-rated health and the characteristics of occupational form, occupational performance, and occupational satisfaction.

	PR	<65 years 95%CI	p value	PR	<65 years < 75 95%CI	p value	PR	>75 years 95%CI	p value
<b>Model 1</b>									
Number of occupation									
one or two	reference			reference					
Three	1.12	(0.25–5.01)	0.88	1.51	(0.44–5.34)	0.52			
Frequency of occupation									
daily/weekly basis	reference			reference			Reference		
monthly/yearly basis	2.95	(1.07–8.18)	0.04	0.54	(0.19–1.55)	0.25	3.33	(0.85–13.1)	0.08
Duration of continuous									
less than one year				reference					
at least one year				1.18	(0.25–5.66)	0.83			
Occupational performance score	1.23	(0.82–1.88)	0.31	1.24	(0.83–1.86)	0.3	0.13	(0.83–4.52)	0.13
Occupational satisfaction score	0.99	(0.65–1.51)	0.97	0.8	(0.55–1.18)	0.26	1.25	(0.55–2.84)	0.59
<b>Model 2</b>									
Number of occupation									
one or two	reference			reference					
Three	0.9	(0.18–4.47)	0.89	1.61	(0.45–5.67)	0.46			
Frequency of occupation									
daily/weekly basis	reference			reference			reference		
monthly/yearly basis	3.19	(1.13–8.99)	0.03	0.57	(0.20–1.63)	0.29	3.63	(0.83–15.8)	0.08
Duration of continuous									
less than one year				reference			reference		
at least one year				1.18	(0.25–5.64)	0.84			
Occupational performance score	1.27	(0.84–1.92)	0.26	1.16	(0.78–1.72)	0.47	2.55	(0.09–7.21)	0.08
Occupational satisfaction score	1.01	(0.65–1.55)	0.98	0.85	(0.58–1.23)	0.39	1.35	(0.55–3.34)	0.51
<b>Model 3</b>									
Number of occupation									
one or two	reference			reference					
Three	0.58	(0.06–5.43)	0.63	1.48	(0.40–5.41)	0.56			
Frequency of occupation									
daily/weekly basis	reference			reference			reference		
monthly/yearly basis	3.81	(1.29–11.20)	0.02	0.47	(0.15–1.43)	0.18	4.56	(0.85–24.4)	0.08
Duration of continuous									
less than one year				reference					
at least one year				1.28	(0.26–6.36)	0.76			
Occupational performance score	1.35	(0.84–2.19)	0.22	1.12	(0.73–1.70)	0.61	2.40	(0.76–7.56)	0.13
Occupational satisfaction score	0.89	(0.54–1.48)	0.66	0.85	(0.57–1.26)	0.42	1.50	(0.57–3.99)	0.41

PR: prevalence ratio CI: Confidence interval Model 1: Independent variables were mutually adjusted. Model 2: In addition to Model 1, age, sex, status of living alone, and present status of drinking were adjusted. Model 3: In addition to Model 2, status of disease were adjusted. The lack of prevalence ratio is due to zero of the binary values in the independent variables.

rated health is a major factor. People with higher self-rated health have a longer life expectancy, even after adjusting for disease, and self-rated health can be used to predict mortality risk [6]. Self-rated health is reported to be associated with depression and decline in physical functioning [7]. A cross-sectional study reported that high self-rated health was associated with high occupational performance scores [8].

Thus far, there is no large-scale survey using quantitative data to analyze the deterioration of self-rated health from an occupational perspective.

This study was conducted to longitudinally investigate associations between deterioration of self-rated health and the characteristics of occupational form and performance among community-dwelling Japanese individuals. If the occupational factors that influence self-rated health are clarified, then it may be possible to propose health policies based on the individual's life activities in the future.

## 2. Methods

### 2.1. Study design

This one-year prospective cohort study included 439 participants who participated in 2018, among 675 who participated in the Wakayama Health Promotion Study [8] in 2017. All the participants were living independently in the community in Japan.

The subjects analyzed were those who had a good self-rated health in 2017, which then deteriorated in 2018. We asked the respondents to answer the question “How is your current health status?” on a four-point Likert scale, where the four options were “very healthy,” “healthy,” “not

too healthy,” and “not healthy” on questionnaires relating to self-rated health. Questionnaires on occupational form include (1) meaningful occupation's names, (2) most important occupation's name, (3) occupational performance (from 10 points of “I think I can do it very well” to 1 point of “I think I can't do it at all” as a subjective experience), (4) occupational satisfaction (from 10 points of “very satisfied” to 1 point of “not satisfied at all” as subjective experience), (5) frequency of occupation (daily, weekly, monthly, yearly), (6) area of occupation (Self-care, productivity, leisure), and (7) duration of occupation (less than 1 year, more than 1 year to less than 5 years, more than 5 years). Occupational performance and satisfaction were created with reference to the Canadian occupational performance measure [5]. The basic attributes were age, sex, hypertension, type 2 diabetes, dyslipidemia, heart disease, cerebrovascular disease, living alone, and alcohol intake. All questionnaires were self-administered.

### 2.2. Statistical analysis

Those whose self-rated health remained “very healthy” and “healthy” were defined as the self-rated health maintenance group, and those whose self-rated health shifted from “very healthy” and “healthy” to “not too healthy” and “not healthy” were defined as the self-rated health deterioration group, which was the dependent variable. Occupational form, performance, and satisfaction scores excluding the occupation's name were used as independent variables, and the prevalence ratio (PR) was calculated using multi-level Poisson regression analysis. The analysis was categorized by age group: <65 years, >65 years to <75, and >75 years. The independent variables were checked for

multicollinearity using variables with correlation coefficients of 0.8 or higher. As for the independent variables, the number of occupations was binarized by 3 and 1 or 2, occupational performance and satisfaction scores ranged from 1 to 10 points, and the frequency of occupation was binarized by daily or weekly and monthly or yearly. The duration of occupation was binarized to less than one year and more than one year.

The analysis models were model 1, wherein the occupational form, occupational performance, and satisfaction scores were mutually adjusted. Model 2 included basic attributes (sex, living alone, alcohol intake) added to model 1, and model 3 wherein disease was added to model 2. SPSS, Ver. 26 (IBM, Tokyo, Japan) was used to perform all statistical analyses, and the level of significance was set at 0.05.

### 3. Results

In total, 438 subjects (175 males and 263 females; mean age,  $66.3 \pm 10.5$  years) were included in the analysis. There were 46 subjects (10.5%) in the self-rated health deterioration group.

At age <65 years (40–64 years), the frequency of occupation on a monthly or yearly basis than daily or weekly basis was associated with deterioration of self-rated health. The adjusted PRs (95% confidence interval) for models 1, 2, and 3 were 2.95 (1.07–8.18), 3.19 (1.13–8.99), and 3.81 (1.29–11.20), respectively (Table 1). There was no association between the occupational form and deterioration of self-rated health at age >65 to < 75. There was a trend of association between frequency of occupation and deterioration of self-rated health in more than 75, with a PR of 3.33 (0.85–13.1).

### 4. Discussion

The present study is the first to identify the factors for the deterioration of self-rated health from an occupational perspective. A significant factor was found at age <65 years, and infrequent occupation affected the deterioration of self-rated health even after adjusting for basic attributes.

Good self-rated health is one of the conditions for successful aging [9]. The reason for the deterioration of self-rated health is known to be related to daily life, such as depression and decline in physical functioning [3]. Occupations include daily activities people need to, want to and are expected to do” and is highly individualized [2]. The effect on self-rated health may not be the type of activity, but the meaningful occupation of the individual.

The frequency of occupation is a more important factor in preventing deterioration of self-rated health than the number and duration of occupation. Continuing to occupation with high frequency may also be related to successful aging.

This study has some limitations. The study failed to consider economic factors related to self-rated health. In addition, the cohort period was short. In the future, we plan to extend the cohort period and clarify the cause of the improvement and deterioration of self-rated health from

an occupational perspective.

### 5. Conclusion

Occupation is a basic human need, and less frequent occupation is associated with deterioration of self-rated health under 65 years of age. To prevent deterioration of self-rated health, it is necessary to increase the occupation frequency instead of increasing the number and duration of occupation.

### Ethical approval

This study was approved by the Wakayama Medical University ethics committee (approval number: 92). We obtained written informed consent from all the participants in this study.

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### Declaration of competing interest

None declared.

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