

Original article

# A cohort study on elderly individuals newly certified as requiring long-term care: comparison of rates of care-needs certifications between basic checklist respondents/specific health examinees and non-respondents/non-examinees of 37,000 elderlies in a city

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## Abstract

**Objective:** The rates of care-needs certification were mainly compared between two cohorts: 7,820 specific health checkup examinees/basic checklist respondents and 29,234 non-examinees/non-respondents.

**Subjects and Methods:** Among approximately 37,000 elderly citizens of X City, the number of individuals newly certified as requiring long-term care were observed from the date of the first specific health checkup in 2008 to March 31, 2013. The aggregated totals of these individuals and associated factors were evaluated.

**Results:** 1. Support Required 1, Support Required 2, and Long-term Care Required (level 1) certified individuals accounted for approximately 80% of newly certified individuals aged 65–74 years. Newly certified individuals aged 75 years and over had similar results with 37.2% of them being certified Support Required 1, 19.4% certified Support Required 2, and 22.9% certified Long-term Care Required (level 1). 2. The primary factors for care-needs certification in individuals aged 65–74 years were arthritic disorder in 27.6%, falls and bone fractures in 11.3%, and malignant neoplasm

and cerebrovascular disease, among others. This was similar for individuals aged 75 years or over. 3. Of the 7,820 specific health checkup examinees/basic checklist respondents, 1,280 were newly certified as requiring long-term care (16.4%) compared to 7,878 (26.9%) of the 29,234 non-examinees/non-respondents. Therefore, the latter cohort had a significantly higher rate of individuals who were newly certified as requiring long-term care.

**Conclusion:** Both specific health checkups and basic checklists are effective health policies to protect frailty in community elderlies.

**Key words:** frail elderlies, specific health checkup, basic checklist, non-respondents/non-examinees, long-term care

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## Introduction

The elderly population in Japan is increasing every year, reaching a record of 29,750,000 in 2011, with a population-aging rate of 23.3%; this figure was projected to increase to 33,950,000 by 2015, when the “Dankai” generation entered the 65 and over age group; from then on it was expected to continue to increase, while the total population continued to decrease<sup>1</sup>). Accordingly, the number of individuals certified as requiring long-term care is also increasing every year. There is an increasing number of individuals requiring a minor degree of care (Support Required 1 and 2)<sup>2</sup>). Extension of healthy lifespan by means of care provision is a monumental issue in Japan in preparation for a super-aged society. Therefore, in each region of Japan, basic checklists are distributed

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**Table 1** Basic checklist

1. Do you use public transportation (bus or train) to go out on your own?	Q.1–20 Score more than 9 out of 1–20 items (risk group $\geq$ 10 negative answers)
2. Do you shop for daily necessities?	
3. Do you manage financial matters such as savings or deposits by yourself?	
4. Do you visit the homes of friends?	
5. Do you give advice to friends or family members who confide in you?	Q.6–10 Physical strength (risk group $\geq$ 3 negative answers)
6. Are you able to go upstairs without using handrails or the wall for support?	
7. Are you able to stand up from a sitting position without support?	
8. Are you able to walk continuously for 15 min?	
9. Have you experienced a fall in the past year?	
10. Do you feel anxious about falling when you walk?	Q.11–12 Nutritional status (risk group = 2 negative answers)
11. Has your weight declined by 2–3 kg in the past 6 months?	
12. Height: cm Weight: kg BMI:	Q.13–15 Oral function (risk group $\geq$ 2 negative answers)
13. Have you experienced more difficulty chewing tough foods than you did 6 months ago?	
14. Do you ever experience choking or coughing when drinking tea or soup?	
15. Are you bothered by feelings of thirst or a dry mouth?	Q.16 Houseboundness (risk group = answered negatively in Q.16 Q.17 is a referred question)
16. Do you go out at least once a week?	
17. Do you go out less often than you did last year?	Q.18–20 Cognitive function (risk group $\geq$ 1 negative answers)
18. Do others point out your forgetfulness or tell you “You always ask the same thing.”	
19. When you want to make a call, do you usually search for the telephone number and call on your own?	
20. Do you sometimes not know what the date is?	Q.21–25 Depression risk (risk group $\geq$ 2 negative answers)
21. (In the past 2 weeks) You feel no sense of fulfillment in your life.	
22. (In the past 2 weeks) You cannot enjoy things that you enjoyed before.	
23. (In the past 2 weeks) Things that you could do easily before are now difficult.	
24. (In the past 2 weeks) You do not feel that you are a useful person.	
25. (In the past 2 weeks) You feel exhausted for no apparent reason.	

to the elderly to screen for and detect diseases at an early stage in order to initiate prompt treatment.

Using a cohort study, we aimed to clarify the situation and characteristics of individuals newly certified as requiring long-term care and to investigate whether there is a difference in the rate of care-needs certification between basic checklist respondents/specific health examinees and non-respondents/non-examinees.

## Subjects and Methods

X City, located in the south of Kyoto Prefecture and bordering Kyoto City and Otsu City, has a population of 192,033 and is the second largest in the Kyoto Prefecture.

The subjects were 37,054 elderly citizens of X City, having excluded 180 already-certified elderly citizens from the original population. They included 9,158 elderlies who had received specific health checkups or specific health checkups for the advanced elderly<sup>3)</sup> and had responded to concurrent basic checklists (Table 1)<sup>4)</sup> in 2008, and 27,896 elderlies who had not received them.

The occurrences of care-needs certification events were tracked and observed from the date of checkup in 2008 until March 31, 2013. Subjects who died or moved out of X

City within that time were no longer tracked. Care-needs certification, death, and moving elsewhere were confirmed by notifications and care-needs certification data of insured individuals. The date of certification was set as the filing date of the application for care-needs, if certified as Support Required or above. Explanatory variables were set as basic attributes, specific health checkups, specific health checkups for the advanced elderly, interview items, and items on the basic checklist.

The analysis of this study comprised evaluating the aggregated totals of individuals who had been newly certified as requiring long-term care and evaluating associated factors from the target cohorts that responded to the basic checklist. The rate of care-needs certification of the groups of basic checklist respondents and non-respondents were mainly compared using a chi-square test.

This study was conducted with the approval (E1756) of the ethics committee of Kyoto University Graduate School of Medicine and Faculty of Medicine and Kyoto University Hospital.

**Table 2** Newly certified long-term care individuals

Long-term care level	Newly certified individuals	Newly certified individuals
	aged 65–74 N = 1,389	aged 75 and over N = 7,769
Support required 1	446 (32.1%)	2890 (37.2%)
Support required 2	324 (23.3%)	1507 (19.4%)
Long-term care required 1	296 (21.3%)	1779 (22.9%)
Long-term care required 2	171 (12.3%)	692 (8.9%)
Long-term care required 3	75 (5.4%)	489 (6.3%)
Long-term care required 4	37 (2.7%)	264 (3.4%)
Long-term care required 5	40 (2.9%)	148 (1.9%)

**Table 3** Main causes of long-term care

Main causes	Newly certified individuals	Newly certified individuals
	aged 65–74 N = 501	aged 75 and over N = 2,802
Arthritic disorder	151 (30.1%)	740 (26.4%)
Falls and bone fractures	48 (10.5%)	325 (11.6%)
Dementia	41 (8.1%)	311 (11.1%)
Malignant neoplasm	70 (14.0%)	219 (7.8%)
Cerebrovascular disease	50 (10.0%)	216 (7.7%)
Heart disease	15 (2.9%)	191 (6.8%)
Respiratory disease	10 (2.0%)	115 (4.1%)

Other causes account for 22.4% in individuals aged 65–74 and 74.5% in individuals aged 75 and over.

**Table 4** The rate of newly certified long-term care individuals

Basic checklist/Specific health checkup	Newly certified long-term	Newly certified long-term	P-value
	care (+)	care (–)	
Respondents/Examinees	1280 (17.0%)	6540 (83.0%)	0.000
Non-respondents/Non-examinees	7878 (26.9%)	21356 (73.1%)	

Odds Ratio = 1.08.  $\chi^2$  test.

## Results

### Demographics

The elderly cohort consisted of 37,054 individuals, among whom 39.5% were men and 60.5% were women, with a mean age of  $72.8 \pm 5.5$  years. Individuals aged 65–74 years accounted for 64.2%.

### Care-needs certification

Support Required 1 and 2 and Long-term Care Required (level 1) accounted for approximately 80% of newly certified individuals aged 65–74 years. Newly certified individuals aged 75 years or over had similar results, with 37.2% certified Support Required 1, 19.4% certified Support Required 2, and 22.9% certified Long-term Care Required (level 1) (Table 2).

### Main factors for care-needs certification

The primary factors for care-needs certification for individuals aged 65–74 years were arthritic disorder in 30.1%, falls and bone fractures in 10.5%, and malignant neoplasm and cerebrovascular disease, among others (Table 3). This was similar for individuals aged 75 years or over (Table 3).

### Comparison of care-needs certification rate

Among the 7,820 examinees/respondents, 1,280 (16.4%) were certified as requiring long-term care. Among the 29,234 non-examinees/non-respondents, 7,878 (26.9%) were certified as requiring long-term care. Therefore, the non-examinees/non-respondents had a significantly higher rate of individuals newly certified as requiring long-term care (Table 4).

## Discussion

The study results showed that among individuals newly certified as requiring long-term care, there was a higher rate requiring a minor degree of care. According to the 2010 Comprehensive Survey of Living Conditions<sup>5)</sup>, the factors contributing to care-needs certification, greater than Support Required 1, were cerebrovascular disease (21.5%), dementia (15.3%), senile asthenia (13.7%), arthritic disorder (10.9%), and falls and bone fractures (10.2%). The individuals certified Support Required alone had arthritic disorder (19.4%) as the primary factor, followed by senile asthenia (15.2%), cerebrovascular disease (15.1%), and falls and bone fractures (12.7%)<sup>5)</sup>. Arthritic disorder, senile asthenia, and falls and bone fractures alone accounted for 47.3% of all factors. Accordingly, early detection of individuals requiring support and prompt treatment is considered to be a monumental issue in promoting healthcare provision and extending the healthy lifespan of the population.

The need for care provision for non-examinees and non-respondents was suggested by the result that they had a higher rate of care-needs certification compared to those who underwent specific health checkups and basic checklists. However, the respondents in the cohort who underwent specific health checkups might have been more inclined towards healthier lifestyles and, therefore, were healthier than non-respondents<sup>6)</sup>. A comparison of the situations and characteristics between specific health checkup examinees/basic checklist respondents and non-examinees/non-respondents is necessary to understand their differences, promote care provision, and detect the frail elderly at an early stage<sup>7)</sup>.

Individuals newly certified as requiring long-term care, both between 65–74 years in age and 75 years and over, required a minor degree of care<sup>8)</sup>, their primary factor of care-needs certification being falls and bone fractures<sup>9)</sup>. This indicates that one of the major factors is locomotive syndrome<sup>10)</sup>, particularly in those who are certified as Support Required, and that municipal care provision measures need to be shifted towards health policies that will provide enhanced care to the frail elderly at an early stage. Such a shift will contribute to delaying the worsening of clinical conditions and extending healthy lifespan.

## Conclusion

Among the approximately 9,000 elderly individuals newly certified as requiring long-term care, Support Required 1, Support Required 2, and Long-term Care Required (level

1) certified individuals accounted for approximately 80% of those aged 65–74 years. Newly certified individuals aged 75 years or over had similar results. The primary factors for care-needs certification in individuals aged 65–74 years were arthritic disorder (27.6%), followed by falls and bone fractures (11.3%), malignant neoplasm, cerebrovascular disease, and others. The primary factors among newly certified individuals aged 75 years or over were also similar. The number of individuals newly certified as requiring long-term care was 1,280 (16.4%) out of 7,820 specific health checkup examinees/basic checklist respondents and 7,878 (26.9%) out of 29,234 non-examinees/non-respondents. Therefore, the latter cohort had a significantly higher rate of individuals newly certified as requiring long-term care.

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