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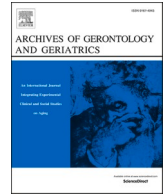
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## Role of psychosocial factors in starting and leaving public assistance programs by older Japanese population: Longitudinal Japan Gerontological Evaluation Study

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### ABSTRACT

**Background:** Public assistance programs guarantee a minimum living standard, promoting independence for impoverished citizens. Although public assistance eligibility is mainly based on economic factors like poverty, psychosocial factors may be important in initiating and terminating participation. We explored factors governing commencement and termination of public assistance by the older Japanese population between 2013 and 2016. **Methods:** We used panel data from the Japan Gerontological Evaluation Study (JAGES), conducted in 2013 and 2016. Fixed-effects regression was used to examine variables in 2013 that were related to receiving public assistance in 2016. The Tokyo Metropolitan Institute of Gerontology -competence index (TMIG-CI) was used to assess higher-level activities of daily living (ADL, i.e., instrumental ADL, intellectual activity, and social role). The role of individual perceptions of community social cohesion (community trust, mutual help, and attachment), and sociodemographic factors were considered.

**Results:** While 215 people (0.5%) started receiving public assistance between 2013 and 2016, almost 50% stopped participating. People with higher perceived mutual community help were 1.21 times (95% confidence interval [CI]: 1.02–1.46) more likely to commence public assistance three years later. Public assistance recipients who felt community attachment to their resident community, and had social roles were 1.16 (95% CI: 1.06–1.28) and 1.15 (95% CI: 1.01–1.30) times more likely to give up public assistance three years later, respectively, independent of socioeconomic statuses.

**Conclusion:** Psychosocial factors, including maintaining good relationships with community residents, could be important in accessing and terminating public assistance services.

### 1. Introduction

Public assistance, a part of the social welfare system, is a safety net that aims to guarantee a minimum standard of living and promote self-sufficiency for all citizens living in poverty. Public assistance can change the health behavior of the poor, raising their physical and mental health and improving their overall well-being, including their level of happiness (Nishioka et al., 2021; Pak, 2020; Simpson, Albani, Bell, Bamba & Brown, 2021). However, negative health often persists among welfare assistance recipients (Boothroyd & Olufokunbi, 2001; Kiely & Butterworth, 2013). Recently, because of the aging global population, frequent

natural disasters, and infectious disease pandemics, the number of social protection programs has increased worldwide (International Labour, 2021).

In Japan, the number of households receiving public assistance decreased until 1995, after which it increased gradually and is currently approximately two million (Ministry of Health Labour, 2021). The increase in public assistance costs is considered a financial challenge for the government. As such, its optimization is being discussed. All citizens have the right to apply for public assistance in Japan, which is referred to as *Seikatsuhogo* in Japanese. Eligible households receive monthly income benefits in addition to full exemptions from payment for medical

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and long-term care. Currently, 1.66% of the total population in Japan receives public assistance (Ministry of Health Labour, 2021). Eligibility to receive public assistance is assessed by the municipal welfare office based on a rigorous means test to check personal assets, ability to work, financial support from relatives, and use of other welfare services.

Although eligible citizens can theoretically receive public assistance, there are some barriers. The major reasons for people initiating public assistance are loss or reduction of savings (38.8% as of 2018), injuries or diseases (23.4%), and reduction or loss of work income (19.3%) (Ministry of Health Labour, 2021). Although the eligibility criteria for receiving public assistance are explicit, accessibility to applying to the welfare system might be hampered by some psychosocial factors. There are few studies on accessibility to welfare services; however, the concept of health-care access can be used for welfare service access.

Levesque, Harris and Russell (2013) conceptualized the following five dimensions of accessibility to health care: approachability, acceptability, availability and accommodation, affordability, and appropriateness. Although affordability is not relevant because these factors were conceptualized for access to health care, some other elements could be applied to public assistance. In particular, the application-based system in Japan requires applicants to have higher-level activities of daily living (ADL), which includes sufficient intellectual abilities to understand and communicate with local government officials and to have social relationships through which they can obtain support.

To receive public assistance, people have to perceive their need for welfare services and approach the relevant authorities for information on public assistance (approachability). If those in need accept their position and decide to apply for public assistance (acceptability), the applicants must reach the welfare office (availability and accommodation), and are accepted if the application is deemed appropriate (appropriateness).

In addition, these processes require some personal abilities. For instance, some people might not know if they are eligible to apply, and how or where to apply. The process might be particularly difficult for older individuals. Thus, applicants to public assistance programs must have four of the following five corollary dimensions of abilities: to perceive, seek, reach, and engage (Levesque et al., 2013). The fifth dimension, i.e., the ability to pay, is irrelevant.

Access to and the ability to use such social resources are also necessary to obtain public assistance. In some cases, in addition to official local authorities such as social workers at welfare offices or hospitals, informal support systems such as friends and neighbors also help with this process, which is related to social cohesion. Self-sufficiency requires the discovery of new sources of income, in addition to access to resources providing sufficient psychosocial assets. Although the government has reported that the main reasons for terminating public assistance are death (41.5% as of 2018), increase in income (17.7%), and disappearance (6.2%) (Ministry of Health Labour, 2021), these data do not reflect the psychosocial characteristics of the recipients. For example, people with higher-level ADL might live healthier and longer lives, and have a greater chance of increasing their income than those with lower-level ADL.

Furthermore, people who experience social cohesion in the community might have the opportunity to learn a self-sufficient lifestyle with lower risk of disappearance. However, to the best of our knowledge, no studies have examined the psychosocial determinants of public assistance initiation and termination among older people. Therefore, this study fills this gap by examining the social determinants of starting and terminating public assistance among older Japanese people.

## 2. Methods

### 2.1. Study population

We used panel data from a nationwide community-based cohort

study, the Japan Gerontological Evaluation Study (JAGES), conducted in 2013 and 2016. The JAGES recruited community-dwelling older people aged  $\geq 65$  years to investigate the social determinants of healthy aging. We included participants who answered questions in both 2013 and 2016. The analytic sample comprised 347 recipients and 36,226 non-recipients of public assistance. The JAGES was approved by the Ethics Committee on Human Subjects at the National Center for Geriatrics and Gerontology (No. 992), at Chiba University, Faculty of Medicine (No. 2493), at the University of Tokyo, Faculty of Medicine (No. 10555), and at Kyoto University, Graduate School and Faculty of Medicine (No. R3153). Written informed consent was assumed with voluntary return of the questionnaire. The ethics committees approved the use of assumed consent upon return of the questionnaire.

### 2.2. Public assistance status

Participants were asked about receiving public assistance in the JAGES in both 2013 and 2016. The response options were “not receiving public assistance,” “receiving public assistance,” and “applying for public assistance.” The response “applying for public assistance” constituted 0.03% of the total responses and, was therefore excluded from the analyses.

### 2.3. Explanatory variables

Higher-level ADL was assessed using the Tokyo Metropolitan Institute of Gerontology Index of Competence (TMIG-IC) (Koyano, Shibata, Nakazato, Haga & Suyama, 1991). This index evaluates the three elements of instrumental ADL, intellectual activities, and social role based on 13 items. These items were: (1) using public transportation, (2) shopping for daily necessities, (3) boiling water, (4) paying bills, (5) handling banking deposits, (6) filling out pension forms, (7) reading newspapers, (8) reading books or magazines, (9) interest in health programs, (10) visiting friends' homes, (11) being called on for advice, (12) visiting sick friends, and (13) initiating conversations with young people. Instrumental ADL, intellectual activities, and social role were measured using items 1–5, 6–9, and 10–13, respectively, and ability in each element was recorded. For the analyses, we utilized standardized scores of the items for each element.

Individuals' perception of community social cohesion was measured based on their responses to the following three questions: (1) “Do you think that people living in your community can be trusted in general?” (trust in the community), (2) “Do you think people living in your community try to help others in most situations?” (mutual help in the community), and (3) “How attached are you to the community in which you live?” (attachment to the community). We used standardized responses for each social cohesion score. Higher scores indicated higher social capital.

### 2.4. Covariates

We adjusted the data for age (continuous), sex (male vs. female), education ( $\leq 9$  years vs.  $> 9$  years), number of household members (continuous), household income (including subsidies based on public assistance and pension, continuous; divided by 100,000 Japanese yen), and comorbidities (continuous). Comorbidity was measured based on the number of diseases that the respondent had been diagnosed with, out of the following 17: depression; hypertension; stroke (e.g., brain hemorrhage); heart disease; diabetes; hyperlipidemia; respiratory disease (e.g., pneumonia and bronchitis); gastrointestinal, liver or gallbladder disease; kidney or prostate gland disease; musculoskeletal disease (e.g., osteoporosis and arthrosis); traumatic injury (e.g., fall and fracture); cancer; blood or immune system disease; dementia (e.g., Alzheimer's disease); Parkinson's disease; eye disease; and ear disease.

## 2.5. Statistical analysis

Logistic regression is the most widely-used modeling approach to examine the associations between exposures and binary outcomes. However, when events are common, odds ratios always overestimate risk ratios. Therefore, Poisson regression analysis with robust error variance is widely used to estimate risk ratios for common binary outcomes (Chen, Qian, Shi & Franklin, 2018; Lee, Tan & Chia, 2009; Zou, 2004). Hence, we conducted fixed-effects Poisson regression analysis with robust error variance and logistic regression analysis to predict the characteristics of terminating and commencing public assistance, respectively, adjusting for age, sex, education, household number, household income, and comorbidities (Model 1). We additionally included indicators of individual-level social capital (Model 2) and higher-level ADL (Model 3). A fully adjusted model included all the variables together (Model 4). As we included the three indicators of individuals' perception of community social cohesion simultaneously, we checked variance inflation factors (VIF) for multicollinearity. The VIF was 1.79 at the most, and all the scores were less than 10, suggesting multicollinearity was less likely to be problematic. To adjust the geographical variation, we coded each municipality as a fixed-effect dummy variable. The fixed-effect variable allows us to control for unobserved municipal heterogeneity such as geographical, cultural, historical, and social conditions at the time of data collection (Mummolo & Peterson, 2018).

## 3. Results

The analytic sample consisted of 436 recipients and 42,853 non-recipients of public assistance in 2013, wherein 225 (51.6%) of the recipients continued to receive public assistance in 2016, and 211 (48.4%) discontinued. In addition, 215 of the 42,853 non-recipients (0.50%) started receiving public assistance in 2016. Table 1 shows the demographic characteristics of the study population. Continuous recipients tended to be male, had fewer household members, lower household income, and more negative perceptions of social cohesion than non-recipients did. In 2013 and 2016, a higher proportion of non-recipients tended to have a higher level of education than the recipients.

Table 2 shows the results of the fixed-effects logistic regression analysis to predict starting public assistance. Among the non-recipients of public assistance, those with a higher perception of the availability of mutual help in the community were more likely to start receiving public assistance three years later than those with a lower perception (odds ratio [OR] = 1.21; 95% CI: 1.08–1.50). In addition, those with higher intellectual activity (OR = 0.74; 95% CI: 0.64–0.84), higher education (OR = 0.69; 95% CI, 0.52–0.93), and higher income (OR = 0.98; 95% CI: 0.98–0.99) were less likely to start public assistance than those with difficulties in intellectual activity, lower education and lower income.

Table 3 presents the results of the fixed-effects Poisson regression analysis with a robust error variance to predict the termination of public assistance. Among the recipients of public assistance in 2013, those who felt an attachment to the community where they live and those with higher social roles were 1.16 (95% CI: 1.06–1.28) and 1.15 (95% CI: 1.01–1.30) times more likely to terminate public assistance (Model 4) than those who felt no attachment and those with lower social roles. Furthermore, those with more household members (risk ratio [RR] = 1.16; 95% CI: 1.12, 1.21) and a higher household income (RR = 1.01; 95% CI: 1.01–1.01) were more likely to terminate public assistance than those with fewer household members and lower household income.

## 4. Discussion

This study aimed to explore the characteristic behaviors associated with starting and terminating participation in public assistance programs. We found that a higher perception of mutual help in the community was a predictor of starting public assistance, independent of

Table 1

Demographic characteristics of the analytic sample of recipients and non-recipients of public assistance in 2013 and 2016.

	Non-recipients in 2013&2016 (n = 42,638)	Non-recipients in 2013 but recipients in 2016 (n = 215)	Recipients in 2013&2016 (n = 225)	Recipients in 2013 but non-recipients in 2016 (n = 211)
Age (mean) (SD=5.42)	72.61 (SD=5.42)	73.67 (SD=5.60)	72.61 (SD=5.23)	73.03 (SD=6.16)
Gender				
Male	49.05	50.70	53.33	48.82
Female	50.95	49.30	46.67	51.18
Education				
≤9years	35.89	51.63	51.56	46.45
>9 years	64.11	48.37	48.44	53.55
Household number (mean) (SD=1.48)	2.75 (SD=1.48)	2.65 (SD=1.51)	1.37 (SD=0.71)	3.03 (SD=1.63)
Household income (mean; JPY100000) (SD=27.62)	30.70 (SD=27.62)	29.22 (SD=24.41)	12.17 (SD=11.91)	34.64 (SD=28.51)
Comorbidity (mean) (SD=1.22)	1.51 (SD=1.22)	1.67 (SD=1.22)	1.96 (SD=1.63)	1.50 (SD=1.24)
Trust in the community (mean) (SD=0.69)	3.80 (SD=0.69)	3.73 (SD=0.74)	3.28 (SD=0.81)	3.76 (SD=0.75)
Mutual help in the community (mean) (SD=0.77)	3.50 (SD=0.77)	3.53 (SD=0.82)	3.00 (SD=0.94)	3.47 (SD=0.78)
Attachment to the community (mean) (SD=0.78)	4.02 (SD=0.78)	3.96 (SD=0.82)	3.27 (SD=1.09)	4.01 (SD=0.84)
Instrumental ADL (mean) (SD=0.61)	4.79 (SD=0.61)	4.72 (SD=0.78)	4.82 (SD=0.65)	4.70 (SD=0.83)
Intellectual activity (mean) (SD=0.66)	3.67 (SD=0.66)	3.37 (SD=0.94)	3.12 (SD=0.98)	3.46 (SD=0.94)
Social role (mean) (SD=0.96)	3.33 (SD=0.96)	3.13 (SD=1.11)	2.59 (SD=1.23)	3.34 (SD=0.97)

individual income, education, and intellectual activity, while higher attachment to the community and higher social role were predictors of leaving public assistance.

Demographic analysis showed the characteristics of the four groups (non-recipients, recipients in 2013 but non-recipients in 2016, non-recipients in 2013 but recipients in 2016, and continuous recipients; Table 1). The results showed that continuous recipients of public assistance, who showed trends that were different from those of other groups, tended to have lower social cohesion, difficulties in intellectual activity, and lower social roles, but did not have lower instrumental ADL. This finding is in line with results reported in the US that the characteristics of people who cycle on and off welfare rolls were more similar to those of people who discontinue welfare programs long-term than of those who remain Miller (2002).

We found that a higher perception of mutual help in the community was related to starting the public assistance program. The public assistance program is based on the idea of mutual support, which could promote a sense of belonging in the community (Jablonski, 2021). Perceiving the presence of mutual support in the community allows individuals to seek help, making it easier for them to accept public assistance, which promotes accessibility to the program. A government report stated that approximately one-fourth of recipients of public assistance commenced the program because of injuries or diseases (Ministry of Health Labour, 2021). During visits to clinics or hospitals or hospitalization, some social workers in public institutions or hospitals recognize the urgent needs of patients for public assistance and support them in applying for public assistance. Applying the concept of the

**Table 2**  
Predictors of starting public assistance among the non-recipients in 2013.

	Model 1		Model 2		Model 3		Model 4	
	OR	95%CI	OR	95%CI	OR	95%CI	OR	95%CI
Age	1.02	(0.99–1.04)	1.02	(0.99–1.05)	1.02	(0.99–1.04)	1.02	(0.99–1.04)
Sex (ref. male)	0.85	(0.65–1.12)	0.85	(0.65–1.11)	0.88	(0.66–1.16)	0.87	(0.66–1.15)
Education >9years (ref. ≤9years)	<b>0.62</b>	(0.47–0.83)	<b>0.63</b>	(0.48–0.83)	<b>0.69</b>	(0.52–0.93)	<b>0.69</b>	(0.52–0.93)
Household number	1.05	(0.95–1.16)	1.06	(0.96–1.17)	1.05	(0.95–1.16)	1.05	(0.95–1.16)
Household income	<b>0.98</b>	(0.97–0.99)	<b>0.98</b>	(0.97–0.99)	<b>0.98</b>	(0.98–0.99)	<b>0.98</b>	(0.98–0.99)
Comorbidity	1.08	(0.97–1.20)	1.07	(0.97–1.19)	1.06	(0.98–1.18)	1.07	(0.96–1.18)
Trust in the community			0.91	(0.75–1.09)			0.92	(0.77–1.11)
Mutual help in the community			1.19	(0.99–1.43)			<b>1.21</b>	(1.01–1.46)
Attachment to the community			0.92	(0.78–1.08)			0.94	(0.80–1.11)
Instrumental ADL					1.11	(0.93–1.33)	1.11	(0.93–1.33)
Intellectual activity					<b>0.74</b>	(0.64–0.85)	<b>0.74</b>	(0.64–0.84)
Social role					0.93	(0.81–1.08)	0.93	(0.80–1.08)

OR: Odds Ratios.

N = 42,853.

**Table 3**  
Predictors of leaving public assistance among the recipients in 2013.

	Model 1		Model 2		Model 3		Model 4	
	RR	95%CI	RR	95%CI	RR	95%CI	RR	95%CI
Age	0.99	(0.98–1.02)	0.99	(0.98–1.01)	0.99	(0.98–1.01)	0.99	(0.98–1.01)
Sex (ref. male)	0.99	(0.83–1.19)	1.02	(0.86–1.22)	1.02	(0.85–1.21)	1.03	(0.86–1.22)
Education >9years (ref. ≤9years)	1.07	(0.89–1.28)	1.09	(0.91–1.31)	1.04	(0.87–1.25)	1.07	(0.90–1.29)
Household number	<b>1.20</b>	(1.15–1.25)	<b>1.18</b>	(1.13–1.23)	<b>1.18</b>	(1.13–1.23)	<b>1.16</b>	(1.12–1.21)
Household income	<b>1.01</b>	(1.01–1.01)	<b>1.01</b>	(1.01–1.01)	<b>1.01</b>	(1.01–1.01)	<b>1.01</b>	(1.01–1.01)
Comorbidity	0.94	(0.87–1.00)	0.95	(0.88–1.02)	0.95	(0.89–1.02)	0.96	(0.90–1.04)
Trust in the community			1.06	(0.95–1.20)			1.07	(0.95–1.20)
Mutual help in the community			1.04	(0.93–1.14)			1.02	(0.92–1.13)
Attachment to the community			<b>1.19</b>	(1.08–1.30)			<b>1.16</b>	(1.06–1.28)
Instrumental ADL					0.89	(0.79–1.02)	0.92	(0.81–1.04)
Intellectual activity					1.06	(0.96–1.17)	1.04	(0.93–1.15)
Social role					<b>1.19</b>	(1.05–1.36)	<b>1.15</b>	(1.01–1.30)

RR: Risk Ratios.

N = 436.

ability to access health care to welfare services, suggested by [Levesque et al. \(2013\)](#), demonstrates that it supports the ability to perceive, seek, reach, and engage. Thus, the perceptions of mutual help in the community might play an important role in recipients seeking help.

In addition, we also found that termination participation in public assistance programs could be predicted by higher attachment to the community of residence and higher social role. To achieve self-sufficiency from public assistance programs, individuals must be guaranteed to receive continuous access to resources for living and financial abilities. Our findings suggest that living in an attached community and having the ability to engage in social communication might contribute to self-sufficiency, which is in line with findings from Norway reporting that receiving welfare assistance was associated with lower social capital and loneliness as well as persistent problems, immigrant status, and lower work motivation ([Heggebø, Dahl & van der Wel, 2020](#)). Furthermore, people who are more socially connected tend to be mentally ([Schwartz & Litwin, 2019](#)) and physically healthier ([Berkman, Glass, Brissette & Seeman, 2000](#)). This contributes to further enhancing the understanding of our finding because those with more social connections might have more chances to work.

This study shows some innovative findings related to the investigation of behaviors related to participation in public assistance, but there are some limitations. First, no information on the reasons for starting and leaving public assistance programs was recorded in the survey and, therefore, we could not determine their relationship to the selected social determinants. Second, we cannot ignore the selection bias that those leaving public assistance with higher intellectual activities might be more likely to participate in the survey in 2016. Third, some information related to the means test, such as financial support from relatives or personal assets, was not included in the survey; therefore, we could not

consider them in the study. Fourth, we could not consider the timing of receiving public assistance because the survey of JAGES is conducted every three years, and the questionnaire asks whether they receive public assistance or not at the time of survey, in which this study is not sensitive to censoring. Finally, the three-year difference between when the predictors were measured and when the outcomes were measured was large, indicating that this study might have underestimated the effects of some predictors or possibly have miscaptured some characteristics.

In conclusion, psychosocial factors such as maintaining good relationships with the residents in the community can be important in both accessing and terminating public assistance services.

#### Author statement

SK, DN, KU, and NK conceptualized and designed the study. SK analyzed the data and prepared the manuscript. DN and KU reviewed the manuscript. NK finalized the manuscript. All authors read and approved the final manuscript.

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### Declaration of Competing Interest

The authors declare no competing interests associated with this manuscript.

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