



# Changes in social relationships by the initiation and termination of public assistance in the older Japanese population: A JAGES panel study

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## ABSTRACT

Public assistance recipients in Japan are financially empowered by social welfare but are also exposed to social stigma. Therefore, when their status of receiving public assistance changes, the conditions of their social life likely change. We examined whether the social relationships of older adults receiving public welfare are influenced by either starting or terminating their use of public assistance. This study used the Japan Gerontological Evaluation Study panel data from 2013 to 2016. To measure social relationships, we used four indicators: the frequency of meeting with friends, the number of friends whom the participants had met with in the past month, their frequency of participating in sports clubs, and their frequency of participating in hobby clubs. In the analyses, changes in social relationships between 2013 and 2016 were used as the study outcomes. Linear regression analyses were conducted to examine if their social relationships changed before and after starting or terminating public assistance while adjusting for confounders. We found that people who stopped receiving public assistance experienced an increase in their frequency of meeting with friends (coefficient: 0.56; 95% CI: 0.06, 1.07), the number of friends (coefficient: 0.60; 95% CI: 0.20, 0.99), participation in sports clubs (coefficient: 0.91; 95% CI: 0.46, 1.39), and participation in hobby clubs (coefficient: 0.70; 95% CI: 0.26, 1.13) compared to those who continued to receive public assistance. Contrarily, the measured social relationships did not change after the participants started receiving public assistance. Our main findings were that terminating one's reception of public assistance increases informal socializing and social participation while starting public assistance does not interrupt pre-existing relationships. These findings contribute to the literature by adding that social relationships are not negatively influenced by either terminating or starting public assistance. Targeted promotions of social connections would effectively maintain the health statuses of low-income older adults.

## 1. Introduction

The public assistance program in Japan—*Seikatsu-hogo* in Japanese—provides financial support to people with relatively low income. To evaluate the recipient's eligibility for public assistance, a rigorous means test for each potential household is conducted by the local municipal welfare office to assess their assets (i.e., whether they are living below the poverty line), their ability to work, the financial support they receive from relatives, and their use of any other welfare services.

In September 2020, more than half of the households in Japan consisted of older people, and 1.63% of the Japanese population received public assistance (Ministry of Health Labor, 2021). Under this program, eligible households receive monthly income benefits to meet the minimum standard of living and are fully exempted from having to pay for medical and nursing care. Thus, this program provides people with a safety net that allows them to maintain a basic living standard and protects their quality of life.

However, public assistance recipients are often exposed to social

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stigma, thereby becoming socially isolated (Fukawa, 2007; Takahashi, 2017; Kurita, 2017a). For example, both internalized stigma among public assistance recipients and external stigma directed from others have been reported (i.e., welfare stigma) (Kiely and Butterworth, 2013). Internal stigma results from recipients' negative feelings about living without work, because the financial support received comes from the nation's taxes (Takahashi, 2017). An international scoping review found that food bank users feel as if they are being fed, in addition to experiencing a socio-psychological impact related to receiving free food (Middleton et al., 2018). Furthermore, participation in the Supplemental Nutrition Assistance Program (known as "SNAP", which is the food-purchasing assistance program in the U.S.) was correlated with a negative self-attitude, including a lowered self-esteem (Pak and Kim, 2020). Internal stigma can also play a role in determining health-seeking behavior; for instance, an empirical study reported that survey respondents significantly under-reported mental illnesses compared to other health conditions (Bharadwaj et al., 2017).

External stigma is another factor that affects social welfare recipients and results from the prejudice around receiving public assistance (Kurita, 2017b). For example, people who earn a relatively low income and who use SNAP often feel judged and devalued within their society (Gaines-Turner et al., 2019). Furthermore, the failure of the service provider to correctly appraise the participation of the people with low income because of social stigma would lead to their exclusion from welfare services (Hupkau and Maniquet, 2018). Thus, people with low income often experience a societal stigma (Loopstra, 2018). This stigma partially results from the negative impression regarding welfare fraud (i.e., ineligible people receiving welfare benefits), which co-exists with the non-take-up (i.e., eligible poor people being reluctant to claim welfare benefits) in equilibrium (Kurita et al., 2020), even though the prevalence of welfare fraud and incomplete take-up could arise from the different types of stigma (Itaya and Kurita, 2020).

However, there are some examples in which stigma has contributed to social discipline in the Japanese context, especially during the current pandemic. For example, social stigma prevented people from going out and thus the spread of COVID-19 (Kurita and Managi, 2020; Katafuchi et al., 2020). In addition, it has been reported that public exposure effectively stops the decline in social welfare caused by the tax avoidance by firms (Hamamura and Kurita, 2021). Although these studies reported that stigma could discipline people in Japan, it is worth noting that extreme stigmatization can lead to discrimination, prejudice, and violence (Kurita and Managi, 2020).

Further, both income inequality and minority status impair the possibility of social participation and hence contribute to social exclusion (Heinz et al., 2020). Community deprivation levels can influence individual health behaviors (Jang et al., 2021). At the individual level, available economic resources impact the affordability of various material goods, which further influences people's social participation (Sow et al., 2018). An empirical study found that there is a positive relationship between higher income and social participation (Feng et al., 2020). Thus, poverty limits social participation and contributes to social exclusion (Heinz et al., 2020; Morgan et al., 2007). In addition, one qualitative study demonstrated that, as a coping mechanism against the experience of stigma, some people withdraw from their social networks (Peterie et al., 2019). Hence, because public assistance recipients often avoid social participation due to the experience of stigma related to low income and reliance on welfare, when their status of receiving public assistance changes, their social conditions, including their relationships, will likely change.

Enhancing one's social relationships is a key factor in maintaining their health over time (World Health Organization, 2002). Several reviews have reported the impact of social participation on the health statuses of older adults (Galenkamp and Deeg, 2016; Douglas et al., 2017). For example, it has been reported that there is a strong relationship between material/social deprivation and changes in physical and mental health (Myck et al., 2020), and people who are more socially

connected tend to be mentally (Schwartz and Litwin, 2019) and physically healthier (Berkman et al., 2000). In addition, it has been reported that people who participate in more social activities tend to live longer (Berkman, 1995) and have a better overall quality of life (Levasseur et al., 2007). Conversely, it has been reported that decreased social participation is associated with future disabilities among older adults (Makizako et al., 2015).

Thus, several previous studies have revealed the important role of social relationships in healthy aging. People with low income have a right to receive public assistance in developing strong social relationships without being exposed to stigma. Social relationships among older recipients of public assistance might be impacted by their public assistance reciprocity status. However, to the best of our knowledge, no studies have examined whether a person's social relationships change during the initiation or termination of public assistance. This study aims to fill this gap by examining whether Japanese older adults' social relationships are impacted when they start or terminate public assistance.

## 2. Methods

### 2.1. Study population

We utilized the panel data of the Japan Gerontological Evaluation Study (JAGES) from 2013 to 2016. The JAGES is a nationwide, community-based cohort study investigating the social determinants of healthy aging among community-dwelling residents aged 65 years and older. We restricted the participants to those who had successfully answered all the study questions from 2013 to 2016 ( $N = 26,479$ ). The analytic samples then included 224 individuals who reported being recipients and 26,255 individuals who reported being non-recipients of public assistance in 2013. We utilized the data of 224 individuals receiving public assistance to analyze the characteristics of the *termination* of public assistance, while the data of 26,255 non-receiving public assistance individuals were used to examine the characteristics of the *initiation* of public assistance.

The protocol of the JAGES was approved by the Ethics Committees on human subjects at Nihon Fukushi University (No. 13–14), Chiba University (No. 2493), and the National Center for Geriatrics and Gerontology (No. 992).

### 2.2. Public assistance status

Data on people's reception of social welfare was collected by asking whether they had received any public assistance when they had responded to the questionnaire in both 2013 and 2016. Answers to the item "Applying for public assistance" were excluded from the study analyses (0.04% of the responses).

### 2.3. Outcomes

Social relationships, including informal socializing and social participation, were used to measure the structural dimension of participants' social capital (Hikichi et al., 2017a). Informal socializing was assessed using two indicators: their frequency of meeting with friends (ranging from 1—"rarely"—to 6—"almost every day") and the number of friends whom the respondent had met with in the past month (ranging from 1—"none"—to 5—"10 or more"). Social participation was then evaluated using two other indicators: their frequency of participation in sports and hobby clubs per week (ranging from 1—"rarely"—to 6—"almost every day"). There is no valid constructed scale to capture social relationships; therefore, we used these indicators separately. These same indicators have also been used in various extant studies (Hikichi et al., 2017a, 2017b). For each outcome, changes in participants' scores between 2013 and 2016 were used. Positive scores indicated an increase in their social relationships, while decreased scores indicated the opposite.

## 2.4. Covariates

We controlled the demographic characteristics of age (continuous), sex (male vs. female), and educational status (9 years or less vs. more than 9 years). We also adjusted for both the baseline information of household numbers and changes in the number of household members (continuous); their household income, including subsidies based on public assistance and pensions (continuous; divided by 100,000 Japanese yen); and any comorbidities (continuous). Comorbidities were assessed by counting the number of the following 17 diagnosed diseases for each participant (range: 0–17): depression; hypertension; stroke (e.g., brain hemorrhage); heart disease; diabetes; hyperlipidemia; respiratory diseases (e.g., pneumonia, bronchitis); gastrointestinal, liver, or gallbladder disease; kidney or prostate gland disease; musculoskeletal diseases (e.g., osteoporosis, arthritis); traumatic injury (e.g., fall, fracture); cancer; blood or immune system disease; dementia (e.g., Alzheimer's disease); Parkinson's disease; any eye disease; and any ear disease.

## 2.5. Statistical analyses

Descriptive analyses were performed to outline the characteristics of the analyzed samples. Then, we examined the likelihood of each outcome for those leaving public assistance in 2016 compared to persistent recipients, as well as for those starting public assistance in 2016 compared to continuous non-recipients. We conducted linear regression analyses for each outcome (i.e., frequency of meeting with friends [Model 1], the number of friends whom the respondent had met with in the past month [Model 2], and their frequency of participation in sports [Model 3] and hobby clubs per week [Model 4]) while adjusting participants' age, sex, educational status, their number of household members at baseline, changes in their number of household members, their household income at baseline, changes in their household income, comorbidities at baseline, changes in any of their comorbidities, and their social relationships at baseline. For the baseline social relationships, the score received for each indicator of social relationships was used in each model (i.e., their frequency of meeting friends for Model 1, their number of friends for Model 2, their participation in sports clubs for Model 3, and their participation in hobby clubs for Model 4). For the sensitivity analyses, we excluded all the baseline information from the above models. In addition, we repeated the analyses, excluding income variables from the models since income would not be a confounder in some cases. To adjust the geographical variation, we coded each municipality as a dummy variable and included it in the models. This allowed us to control for unobserved municipal heterogeneity, such as geographical, cultural, historical, and social conditions at the time of data collection. The coefficients and 95% confidence intervals (CI) were then presented for each model. All of the study analyses were performed using Stata/MP16 (StataCorp. Stata Statisti, 2019).

## 3. Results

The characteristics of the analyzed samples are presented in Table 1. These samples included 224 recipients of public assistance and 26,255 non-recipients in 2013. Among the 224 recipients in 2013, 118 (53%) still received public assistance in 2016. Of 26,255 non-recipients at baseline, 111 (0.4%) had started to receive public assistance by 2016.

Those who had begun to receive public assistance by 2016 tended to have a lower educational status and greater reductions in household members between 2013 and 2016, compared to the non-recipients during this period. Additionally, non-recipients did not, in 2013 or 2016, experience a decrease in their household income or any increase in comorbidity, while they had higher scores for their social relationships at the baseline than those who began to receive public assistance at the end of the study period.

Those who stopped receiving public assistance tended to be female

**Table 1**

Demographic characteristics of analytic samples for recipients and non-recipients of public assistance in 2013 and 2016.

	Non-recipients in 2013&2016 (n = 26,144)	Non-recipients in 2013 but recipients in 2016 (n = 111)	Recipients in 2013&2016 (n = 106)	Recipients in 2013 but non-recipients in 2016 (n = 118)
Age (mean)	72.08 (SD = 5.27)	73.39 (SD = 5.27)	71.60 (SD = 4.79)	72.02 (SD = 5.77)
Gender				
Male	52.94	54.95	61.32	57.63
Female	47.06	45.05	38.68	42.37
Education				
≤9years	30.55	44.14	42.45	38.14
>9 years	69.45	55.86	57.55	61.86
Number of household members at baseline (mean)	2.73 (SD = 1.44)	2.45 (SD = 1.35)	1.49 (SD = 0.76)	2.91 (SD = 1.46)
Change in the number of household members (mean)	-0.08 (SD = 0.82)	-0.18 (SD = 0.98)	-0.04 (SD = 0.24)	-0.05 (SD = 1.18)
Household income at baseline (JPY100000) (mean)	41.99 (SD = 27.84)	31.98 (SD = 25.18)	12.92 (SD = 12.97)	39.30 (SD = 30.31)
Change in household income (JPY100000) (mean)	-1.92 (SD = 20.88)	-0.77 (SD = 21.68)	-0.57 (SD = 5.50)	-3.26 (SD = 26.32)
Comorbidity at baseline (mean)	1.51 (SD = 1.23)	1.53 (SD = 1.13)	1.92 (SD = 1.65)	1.49 (SD = 1.07)
Change in comorbidity (mean)	0.11 (SD = 1.05)	0.02 (SD = 1.12)	0.02 (SD = 1.18)	0.08 (SD = 0.96)
Frequency of meeting friends at baseline (Range: 1–6)	3.73 (SD = 1.54)	3.59 (SD = 1.60)	2.92 (SD = 1.62)	3.99 (SD = 1.65)
Change in frequency of meeting friends	0.01 (SD = 1.41)	0.05 (SD = 1.50)	-0.12 (SD = 1.32)	-0.29 (SD = 1.73)
Number of friends at baseline (Range: 1–5)	3.66 (SD = 1.33)	3.31 (SD = 1.41)	2.57 (SD = 1.29)	3.56 (SD = 1.36)
Change in number of friends	-0.06 (SD = 1.26)	0.01 (SD = 1.40)	-0.23 (SD = 1.16)	0.22 (SD = 1.32)
Participation in sports clubs at baseline (Range: 1–6)	2.10 (SD = 1.66)	1.85 (SD = 1.48)	1.18 (SD = 0.63)	1.89 (SD = 1.61)
Change in participation in sports clubs	0.14 (SD = 1.29)	0.20 (SD = 1.23)	0.09 (SD = 0.97)	0.30 (SD = 1.69)
Participation in hobby clubs at baseline (Range: 1–6)	2.17 (SD = 1.50)	1.92 (SD = 1.54)	1.53 (SD = 1.18)	2.03 (SD = 1.53)
Change in participation in hobby clubs	0.17 (SD = 1.45)	0.07 (SD = 1.43)	-0.08 (SD = 0.94)	0.19 (SD = 1.61)

and have a higher educational status. These participants also experienced a decrease in their household income and an increase in comorbidities between 2013 and 2016, compared to those who continued to receive public assistance. In addition, those who stopped receiving public assistance had higher scores for their social relationships at baseline, experiencing an increase in their frequency of meeting with friends, in their number of friends, and in their frequency of participation in sports and hobbies clubs, compared to those who continued to receive public assistance over this period. Regarding the baseline characteristics of participants' social relationships, the recipients in both 2013 and 2016 reported the lowest scores for all the variable indicators, followed by those who started to receive public welfare in 2016. Conversely, there was not much difference found between non-recipients and those who stopped receiving public assistance in 2016 in this regard.

Table 2 shows the coefficients and 95% CI for the relationships between each indicator of social relationships and the participants' terminations of their reception of public assistance. Those who stopped receiving public assistance were more likely to have experienced an increase in their frequency of meeting with friends (coefficient: 0.56; 95% CI: 0.06, 1.07), the number of friends (coefficient: 0.60; 95% CI: 0.20, 0.99), their participation in sports clubs (coefficient: 0.91; 95% CI: 0.46, 1.39), and participation in hobby clubs (coefficient: 0.70; 95% CI: 0.26, 1.13), compared to those who continued to receive public assistance.

Table 3 presents the results of the analyses of the relationships between each indicator of social relationships and the participants who started receiving public assistance. Starting to receive public assistance was not found to be associated with any changes in participants' social relationships. This indicates that if people start receiving public assistance, their existing social relationships do not change.

In the sensitivity analyses, we found that those who stopped receiving public assistance were more likely to participate in sports clubs afterward, compared to those who continued to receive public assistance (coefficient: 0.51; 95% CI: 0.06, 0.95) (Model 3) (Supplementary Table 1). However, terminating one's reception of public assistance was not related to changes in any of the other social relationships indicators. Regarding the characteristics of those who started receiving public assistance during the study period, the results were in line with our main assumptions: public assistance initiation was not associated with changes in people's existing social relationships (Supplementary Table 2). Furthermore, the results of the analyses that were conducted excluding income variables from the models were robust and showed the same results as our main findings.

#### 4. Discussion

This study examined whether Japanese older adults' social relationships change when they start or stop receiving public assistance. We found that those who stopped receiving public assistance experienced an increase in the number of friends and in the frequency of meeting with friends and participating in sports and hobby clubs. Conversely, the social relationships of non-recipients in 2013, who started to receive public assistance by 2016, did not significantly change.

It is noteworthy that, because the baseline characteristics of the participants' income and social relationships were similar among all of the groups (except for those who were recipients in both 2013 and 2016), it is possible that those who received public assistance in either 2013 or 2016 had temporarily low income, suggesting that they normally earned a stable and sufficient income. However, the recipients who received public assistance in 2013 and 2016 likely suffered from severe poverty across the entire study period. This finding is in line with a previous study reporting that the characteristics of people who participated in the welfare system were different from those who cycle on and off welfare rolls and those who discontinued welfare programs in the long term (Miller, 2002). Thus, considering the safety net role of public assistance, whether the welfare office decides to stop providing it to a particular recipient needs an especially cautious decision-making process.

According to the national statistics of Japan (Statistics, 2018), the major reason for terminating one's reception of public assistance among older adults was death (65%), which is followed by "other" reasons (17%). Other reasons are an experience of increase in income (10%) (either by working, increased social benefits, or through support received from family members), starting to live with either fellow workers or other family members (2%), or being admitted to a nursing home (4%). A low percentage of the study participants disappeared while receiving public assistance. Based on these facts, there are several possible explanations for the observed increase in the social relationships among those who stopped receiving public assistance. First, terminating one's reception of public assistance likely results from an increase in income. Hence, their improved financial abilities would mean that they could afford to participate more frequently in their social networks. As stated before, poverty would prevent people from social participation and lead to social exclusion (Heinz et al., 2020). In addition, the relationships between income and social participation and between income inequality and social exclusion have been also previously reported in the relevant literature (Heinz et al., 2020; Feng et al., 2020). Sow et al. found that improvements to people's financial status increase their access to material goods, influencing their degree of social participation (Sow et al., 2018). Thus, an increase in income would

**Table 2**  
The relationships between terminating to receive public assistance in 2016 and change in social relationship among recipients of public assistance in 2013 (N = 224).

	Model 1		Model 2		Model 3		Model 4	
	Frequency of meeting friends		Number of friends		Participation in sports clubs		Participation in hobby clubs	
	Coef.	95%CI	Coef.	95%CI	Coef.	95%CI	Coef.	95%CI
<b>Non-receiving public assistance in 2016</b>	<b>0.56</b>	(0.06, 1.07)	<b>0.60</b>	(0.20, 0.99)	<b>0.91</b>	(0.46, 1.39)	<b>0.70</b>	(0.26, 1.13)
Age	-0.04	(-0.08, 0.01)	-0.02	(-0.05, 0.01)	-0.01	(-0.05, 0.02)	-0.01	(-0.03, 0.03)
Sex (ref. male)	0.34	(-0.06, 0.73)	0.49	(0.18, 0.80)	0.39	(0.02, 0.76)	-0.19	(-0.54, 0.15)
Education >9years (ref. ≤9years)	0.04	(-0.36, 0.45)	0.42	(0.11, 0.66)	0.34	(-0.03, 0.71)	0.23	(-0.12, 0.58)
Baseline number of household members	-0.05	(-0.24, 0.14)	0.06	(-0.09, 0.21)	0.09	(-0.09, 0.27)	-0.07	(-0.24, 0.10)
Change in the number of household members	0.08	(-0.16, 0.32)	-0.01	(-0.19, 0.17)	0.20	(-0.02, 0.41)	0.11	(-0.09, 0.32)
Baseline household income	-0.01	(-0.02, 0.01)	-0.01	(-0.02, 0.01)	-0.01	(-0.02, -0.01)	-0.01	(-0.01, 0.01)
Change in household income	0.01	(-0.01, 0.02)	0.01	(0.01, 0.02)	-0.01	(-0.02, 0.01)	-0.01	(-0.01, 0.01)
Baseline comorbidity	-0.06	(-0.21, 0.10)	-0.12	(-0.24, -0.01)	-0.08	(-0.23, 0.06)	-0.03	(-0.16, 0.11)
Change in comorbidity	-0.17	(-0.37, 0.03)	-0.13	(-0.28, 0.03)	-0.07	(-0.25, 0.11)	-0.03	(-0.29, 0.06)
Baseline social relationship	-0.47	(-0.59, -0.35)	-0.48	(-0.59, -0.36)	-0.46	(-0.61, -0.31)	-0.42	(-0.55, -0.30)

Each model was adjusted for age, sex, education, number of household members at baseline, change in the number of household members, household income at baseline, change in household income, comorbidity at baseline, change in comorbidity, and social relationship at baseline.

**Table 3**

The relationships between starting to receive public assistance in 2016 and change in social relationship among recipients of public assistance in 2013 (N = 26,255).

	Model 1		Model 2		Model 3		Model 4	
	Frequency of meeting friends		Number of friends		Participation in sports clubs		Participation in hobby clubs	
	Coef.	95%CI	Coef.	95%CI	Coef.	95%CI	Coef.	95%CI
<b>Receiving public assistance in 2016</b>	0.04	(-0.20, 0.27)	-0.04	(-0.24, 0.17)	0.02	(-0.20, 0.25)	-0.15	(-0.40, 0.09)
Age	<b>-0.01</b>	(-0.02, -0.01)	-0.01	(-0.02, -0.01)	<b>-0.01</b>	(-0.01, -0.01)	<b>-0.01</b>	(-0.01, -0.01)
Sex (ref. male)	<b>0.20</b>	(0.17, 0.23)	<b>0.15</b>	(0.12, 0.18)	<b>0.09</b>	(0.06, 0.12)	<b>0.16</b>	(0.13, 0.20)
Education >9years (ref. ≤9years)	<b>0.07</b>	(0.04, 0.11)	<b>0.12</b>	(0.09, 0.15)	<b>0.07</b>	(0.03, 0.10)	<b>0.14</b>	(0.10, 0.18)
Baseline number of household members	<b>-0.03</b>	(-0.05, -0.02)	<b>-0.03</b>	(-0.04, -0.02)	<b>-0.03</b>	(-0.04, -0.02)	<b>-0.03</b>	(-0.05, -0.02)
Change in the number of household members	<b>-0.03</b>	(-0.05, -0.01)	-0.01	(-0.02, 0.01)	<b>-0.02</b>	(-0.04, -0.01)	-0.02	(-0.04, 0.01)
Baseline household income	<b>0.01</b>	(0.01, 0.01)	<b>0.01</b>	(0.01, 0.01)	<b>0.01</b>	(0.01, 0.01)	<b>0.01</b>	(0.01, 0.01)
Change in household income	<b>0.01</b>	(0.01, 0.01)	<b>0.01</b>	(0.01, 0.01)	<b>0.01</b>	(0.01, 0.01)	<b>0.01</b>	(0.01, 0.01)
Baseline comorbidity	<b>-0.04</b>	(-0.05, -0.03)	<b>-0.02</b>	(-0.03, -0.01)	<b>-0.02</b>	(-0.03, -0.01)	<b>-0.03</b>	(-0.05, -0.02)
Change in comorbidity	<b>-0.03</b>	(-0.04, -0.01)	<b>-0.02</b>	(-0.03, -0.01)	<b>-0.02</b>	(-0.03, -0.01)	<b>-0.04</b>	(-0.06, -0.02)
Baseline social relationship	<b>-0.43</b>	(-0.44, -0.42)	<b>-0.47</b>	(-0.48, -0.46)	<b>-0.26</b>	(-0.27, -0.25)	<b>-0.39</b>	(-0.40, -0.38)

Each model was adjusted for age, sex, education, number of household members at baseline, change in the number of household members, household income at baseline, change in household income, comorbidity at baseline, change in comorbidity, and social relationship at baseline.

As for baseline social relationship, a baseline score of each indicator of social relationship was used in each model (c.f., frequency of meeting friends for Model 1, number of friends for Model 2, participation in sports clubs for Model 3, and participation in hobby clubs for Model 4).

contribute to preventing social exclusion and promoting social participation.

Second, if the participant's reason for terminating public assistance is to start working, they would likely become more socially active, as they would be more exposed to social opportunities. For instance, the influence of their co-workers might improve levels of motivation arising merely from the process of working. This lifestyle change positively influences people's motivation to form and maintain social relationships. Working status is an important reason to maintain their health (Minami et al., 2015), which can also boost social relationships. In addition, starting a new job is related to an increased financial status; therefore, the synergistic effect between working and gaining increased income accelerates these factors' positive influences on a person's social relationships.

Third, while electing to receive public assistance because of an illness is a significant reason, a subsequent reason for why people may terminate their reception of public assistance could be their eventual recovery. If this is the reason for terminating public assistance, people are more likely to become physically able to participate in more social activities as their health improves. It is supported by previous studies on older people that showed a strong relationship between social participation and health (Galenkamp and Deeg, 2016; Douglas et al., 2017; Myck et al., 2020; Schwartz and Litwin, 2019; Berkman et al., 2000). Recovery from an illness can also be associated with people deciding to start a new job, leading to an increase in their income. Thus, this pathway likely results in multidimensional benefits among those who stop receiving public assistance after recovering from an illness.

Finally, although public assistance recipients benefit from this program as they are protected by welfare services, once they move on and become free from this status, they are free from the associated welfare stigma and likely to become more socially active. A previous study reported that minority status weakens the possibility for social participation and leads to social exclusion (Heinz et al., 2020). Hence, losing the public assistance status might indirectly promote social participation. In this regard, our study found that recipients in both 2013 and 2016 had the lowest number of social relationships in 2013. In addition, previous studies have reported various adverse effects of receiving public support, where people using welfare resources are more likely to be provided with low-quality healthcare (Martinez-Hume et al., 2017) and suffer from clinical depression due to the stigma around receiving welfare (Pak, 2020). Besides, people with lower incomes are more hesitant to access healthcare services, which is another significant social activity, because of the resulting stigmatizing experiences within the healthcare system (Allen et al., 2014). Thus, receiving public assistance is likely related to an increment in people's hesitation to engage in any form of

social participation. One empirical study found that unemployed people would attempt to remove themselves from their given society by withdrawing from their social networks, which plays a vital role in reducing their ability to cope with the perceived stigma (Peterie et al., 2019). Although receiving public assistance does not inherently prevent recipients from enjoying social activities or entertainment resources, they might not be able to afford to engage with these resources (e.g., sports and hobbies clubs). Terminating public assistance use might rid them of both the associated internal and external stigma, leading to an increase in the frequency of participation in social clubs.

However, we also found that receiving public assistance does not sever one's relationship with society. If there is a degree of stigma attached to receiving public assistance, people who need to receive welfare will likely experience changes in their social relationships. For instance, having a sense of internal stigma can cause people to be hesitant to participate in sports or hobby clubs, while the associated external stigma likely influences their friendships and reduces their number of friends or the frequency of meeting with friends. In addition, the degree of social participation and informal socializing may decrease due to the loss of social connections or motivation, particularly if the reason for starting public assistance was a loss of a job or an illness, meaning that they are no longer healthy enough to participate. However, we found no significant changes in the participants' original social relationships over the study period, indicating that changes in people's use of public assistance do not influence their original social relationships.

Our findings indicate that social relationships are not negatively influenced when a person stops or starts receiving public assistance. However, it is likely that once people terminate their use of public assistance, they become more active in their social networks. Social participation is crucial to people's health and quality of life, especially among older adults (Galenkamp and Deeg, 2016; Douglas et al., 2017; Myck et al., 2020; Schwartz and Litwin, 2019; Berkman et al., 2000; Berkman, 1995; Levasseur et al., 2007); therefore, it is beneficial to make people aware of and offer them various available social activities when they terminate their use of public assistance. It would have a health-promoting influence, especially on older adults. Therefore, it is important to encourage people who terminate their use of public assistance to participate in more social activities, with support from the local community, as well as to promote social activities for people starting to receive public assistance with support from their local municipal welfare office.

There are some limitations to this study. First, there were many cases of missing data. For example, 50.5% of the participants in 2013 and 28.79% in 2016 did not answer the item asking if they had received

public assistance. Therefore, a selection bias might have occurred. Given that public health recipients with internalized stigma and/or those with lower levels of social participation might not have participated in the survey, this selection bias might undermine our findings. Second, although we used four indicators to measure people's social relationships, this variable's definition in the current literature varies greatly (Douglas et al., 2017). Therefore, some aspects of social relationships may not have been captured in this study. We suggest that future research uses more indicators of social relationships due to this variable's broad definitions. Third, the data were collected using a self-reporting approach. Therefore, recall and self-reporting biases were unavoidable in this study. Finally, this study only included the data of older Japanese adults. Therefore, we suggest that future studies look at the social welfare impact on other age groups and social relationships in different geographical contexts.

## 5. Conclusion

This study revealed that when people terminate their use of public assistance, it increases their social relationships without interrupting/impacting their pre-existing relationships. These findings contributed to the literature by adding that social relationships are not negatively influenced by a person either stopping or starting to receive public assistance. Additionally, targeted promotions of social activities (e.g., announcing available community activities when the recipients terminate their use of public assistance) would likely be effective in maintaining the health statuses and quality of life among low-income older adults in Japan.

## Credit author statement

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

As for baseline social relationship, a baseline score of each indicator of social relationship was used in each model (c.f., frequency of meeting friends for Model 1, number of friends for Model 2, participation in sports clubs for Model 3, and participation in hobby clubs for Model 4).

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.socscimed.2021.114661>.

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