

# Elder Abuse and Social Capital in Older Adults: The Japan Gerontological Evaluation Study

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## Keywords

Elder abuse · Prevention · Population-based study · Social capital · Social cohesion

## Abstract

**Background:** Elder abuse is a serious public health issue worldwide, but large-scale epidemiologic studies remain sparse. Although social factors in human relations such as social support and social isolation have been proposed as the factors related to elder abuse, cognitive social capital has not been examined. **Objective:** This study aims to clarify the prevalence of and the factors associated with elder abuse among independent older adults in Japan. **Methods:** The study design is a retrospective observational study. The data were derived from the Japan Gerontological Evaluation Study (JAGES). These self-report data were collected from 26,229 people aged 65 years or older living in 28 municipalities in 2013. The types of elder abuse and factors associated with them were examined using logistic regression analysis. **Results:** The prevalence of elder abuse among the sample was 12.3% (11.1% in males and 13.3 in females). In the entire sample, physical, psychological, and financial abuses were reported to be 1.26, 11.12, and 1.45%, respectively. Factors

associated with increased odds of experiencing abuse were being a woman, living with family members, having poor self-rated health, and having mild or severe depression. By contrast, age  $\geq 85$  years, being widowed, or unmarried, and having a positive view of community trust were associated with a lower risk of experiencing abuse. **Conclusion:** While particular demographic factors and health are associated with a greater risk of elder abuse, our findings that trust within the community lessens the risk indicates the importance of social capital. This should be taken into consideration when developing population-based strategies to prevent elder abuse.

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## Introduction

The World Health Organization defines elder abuse as “a single, or repeated act, or lack of appropriate action, occurring within any relationship where there is an expectation of trust, which causes harm or distress to an older person” [1]. Elder abuse is a serious public health issue in both high- and low-income countries. About 141 million people are estimated to suffer from elder abuse

[2]. In the most recently reported data from Japan, there were 17,078 cases of elder abuse in 1 year [3]. In addition, elder abuse is associated with a number of poor health outcomes such as mental health [4, 5], suicide [6] and other negative events [7]. Therefore, establishing countermeasures for preventing elder abuse must be urgently addressed.

In previous studies, elder abuse has been classified as several types: physical, sexual, financial, and emotional/psychological abuses, and neglect [4, 8, 9]. The issue can be addressed at the level of the individual (each victim and perpetrator), relationship, and community [8]. Risk factors for victims include functional disabilities, poor physical health, and cognitive impairment. Furthermore, perpetrators may have issues, such as mental illness, substance abuse, and financial dependency [10]. Risk factors at the relationship level include victim-perpetrator codependency and marital status. Moreover, geographic location, negative stereotypes of aging, and cultural norms are potential contributing factors [8]. Most previous studies have investigated risk factors, such as demographics and health, in association with particular types of abuse. An increasing number of studies have focused on elder abuse among community-dwelling older people [2, 8]. However, there are few studies using a representative population-based sample. Therefore, there is a need for large-scale epidemiological studies. Furthermore, functional dependency and poor physical health or frailty are strong risk factors for elder abuse [4, 8, 11], and there is limited information regarding abuse among physically independent older adults.

Regarding the strategy to prevent elder abuse, social factors in human relationships, such as social support and social isolation, also known as structural social capital, have been considered [8, 12]. Social capital refers to the norms, networks, and associations that facilitate actions in community and can be classified as structural and cognitive social capitals [13]. Structural social capital reflects the objective nature of social behavior, such as social support. Cognitive social capital reflects a subjective assessment of an individual's social relationships that affect social engagement in the community [14]. For instance, low social support increases the risk of elder abuse [8]. However, there is also a concept of cognitive social capital identified regarding the issues of social cohesion. Social cohesion is a factor associated with health [15, 16] and subjective well-being [17, 18]. Low levels of social cohesion increase the risk of depression [19]. In addition, elder abuse is strongly associated with a lack of well-being [20] and depression [21], raising the question as to whether

social cohesion should be investigated with respect to abuse in this population. Examining the relationship between abuse and social capital, including cognitive social capital, may eventually contribute to strategies that prevent elder abuse, particularly those that go beyond the conventional approach at the individual or relationship level. Such research may provide evidence to support a population-based prevention strategy, lowering the risk in the entire population by supporting healthy social behavior [22]. In Japan, wherein aging is occurring more rapidly than elsewhere in the world [23], such population-based research is urgently needed. Therefore, the aims of the present study are to clarify the distribution of each type of elder abuse among independent older Japanese adults and investigate associations with sociodemographic, health, and social capital factors.

## Materials and Methods

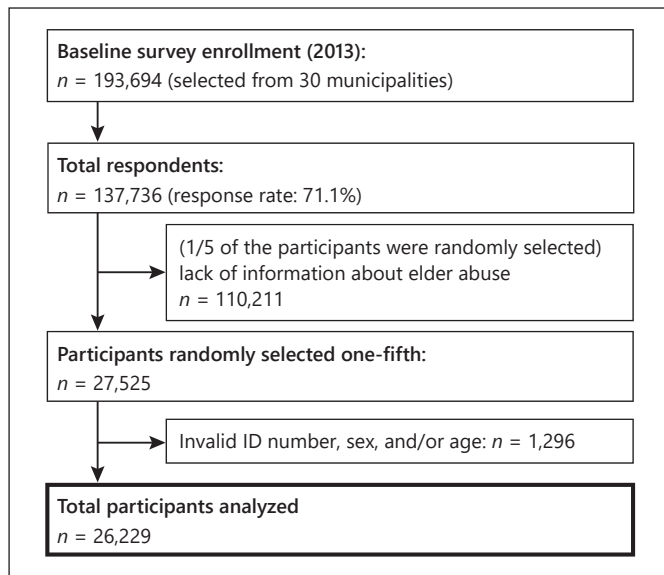
### *Population and Settings*

We used cross-sectional data from the Japan Gerontological Evaluation Study (JAGES), a population-based study of independent older adults aged  $\geq 65$  years who did not have physical or cognitive disabilities [23, 24] and not eligible for receiving public long-term care insurance benefits. In this retrospective observational study, we used JAGES data from 2013, which were collected through a mail survey from 131,245 people living in 30 municipalities across Japan. The municipalities included urban, suburban, and rural communities in 12 prefectures from the northernmost to the southernmost prefectures in Japan. Although the JAGES respondents were not randomly selected, the data covered a wide range and size of community populations. For the present study, we randomly selected one-fifth of the JAGES participants including data from 26,229 individuals (Fig. 1).

### *Measurements*

#### Elder Abuse

Elder abuse was measured using a questionnaire. Questionnaire designs were the collective effort of several researchers (including social epidemiologists and social workers). There is no standard judgment for elder abuse. Therefore, it is also difficult to clarify the criteria for judging what kind of behavior, how many, how often, or how long abandonment is considered elder abuse. It is required to make decisions from multiple angles, such as whether the rights of the older adults are protected, and whether loss of their life, health, or lifestyle is predicted. In this study, questionnaires were designed to identify specific actions that older adults have endured, such as being hit, harm to their self-esteem, and taking of their savings/pension benefits to confirm the presence or absence of elder abuse. Three questions were asked to identify physical abuse, psychological abuse, and financial abuse. For physical abuse, participants were asked "In the past year, did you ever experience physical violence from your family, such as being hit, kicked, having objects thrown at you, or being shut in a room." For psychological abuse, there were asked "In the past year, did you



**Fig. 1.** Flow chart of study participant enrollment.

ever experience an act by your family that harmed your self-esteem, such as verbal abuse, cutting remarks, or being ignored for long periods.” Answers to both questions were on a scale ranging from 1 (never), 2 (once or twice), 3 (occasionally), or 4 (frequently). Those who answered 1 were considered nonabused, while those giving any answer from 2 to 4 were considered abused. For financial abuse, participants were asked “Do any of your family members take or use your savings or pension benefits without your consent?” The answer was either yes or no, with the former categorized as abused and the latter as nonabused. The data were analyzed for 4 categories, namely physical abuse, psychological abuse, financial abuse, and any abuse regardless of type.

#### *Sociodemographics and Health Status*

According to previous studies, we included basic demographic information, including sex, age (65–69, 70–74, 75–79, 80–84, or ≥85 years), education level (≤9 or ≥10 years), equivalent income (low, middle, or high), marital status (married, widowed, separated, unmarried, or other), living arrangement (living alone, with family members, or other facility), and self-reported socioeconomic status (low, low-middle, high-middle, or high) [25–27]. We used 3 questions to measure health status, necessity of daily support, and used self-rated health and depression. Although participants in the JAGES dataset are independent and not eligible for receiving public long-term care, there might be some older adults who need assistance. The questionnaire was designed to distinguish participants who need assistance for daily life. Basic activities of daily living (ADLs) consist of self-care tasks such as bathing, showering, personal hygiene, and grooming, dressing, toilet hygiene, transferring, and self-feeding. Therefore, their needs for nursing care were asked using several concrete ADL examples. For necessity of daily support, participants were asked “Do you regularly receive nursing care or assistance for walking, bathing, and/or using a toilet?” Answers ranged from (1) no need for nursing care or assistance, (2) nursing care or assistance needed but not

receiving it, to (3) needing and receiving nursing care or assistance. Self-rated health was measured by asking “How is your current health status?” Answer choices were (1) excellent, (2) good, (3) fair, and (4) poor. We used the 15-item Geriatric Depression Scale, defining mild depression as >5 points and severe depression as >10 points [28].

#### *Social Capital*

We examined 2 constructs of social capital, structural and cognitive. Structural social capital was measured by assessing social support, i.e., mutual assistance available among people around the participants [29]. The 4 variables we measured were receiving and providing emotional support, and receiving or providing instrumental support. Questions on emotional support were “Do you have someone who listens to your concerns and complaints?” and “Do you listen to someone’s concerns and complaints?” Those on instrumental support were “Do you have someone who looks after you when you are sick and confined to bed for a few days?” and “Do you look after someone when he/she is sick and confined to bed for a few days?” Social cohesion as an indicator of cognitive social capital was measured by 3 questions about the area where participants lived. Community trust was measured by asking “Do you think people living in your area can be trusted in general?” Norms of reciprocity were measured by asking “Do you think people living in your area try to help others in most situations?” Lastly, community attachment was measured by asking “How attached are you to the area where you live?” Responses to each range from 1 to 5: very (1); moderately (2); neutral (3); slightly (4); or not at all (5). Participants answering 1 or 2 were categorized as having social cohesion, those answering 4 or 5 as having no social cohesion, and those answering 3 as neutral.

#### *Statistical Analysis*

We conducted a descriptive analysis and summarized the characteristics of the participants. The numbers and percentages by gender for each variable were reported. Because the number of variables in this analysis contains missing data, we performed multiple imputation. In total, 20 multiple imputed data sets which included all measurement variables using the multivariate normal imputation method under a “missing at random” assumption were created, and the estimated parameters were combined using Rubin’s combination methods. Logistic regression analysis was performed after multiple imputation to investigate associations between demographic, health, and social factors, and each type of elder abuse. Three models of analysis were used. Model 1 included all demographic factors and health status except depression. In model 2, depression was added to the variables in model 1. Model 3 included all the variables in model 2 in addition to social cohesion. Stata 15/IC (StataCorp, College Station, TX, USA) was used for all statistical analysis.

## **Results**

### *Sample Characteristics and Prevalence of Elder Abuse*

The characteristics of 26,229 participants as per sex and statistical significance using the  $\chi^2$  test are shown in Table 1. Physical, psychological, and financial abuse

**Table 1.** Characteristics of the study participants (*n* = 26,229)

	Total ( <i>n</i> = 26,229)	Male ( <i>n</i> = 12,085)	Female ( <i>n</i> = 14,144)
<b>Sociodemographic factors</b>			
Age group, <i>n</i> (%)			
65–69 years	7,276 (27.7)	3,486 (28.8)	3,790 (26.8)
70–74 years	7,794 (29.7)	3,577 (29.6)	4,217 (29.8)
75–79 years	5,874 (22.4)	2,682 (22.2)	3,192 (22.6)
80–84 years	3,605 (13.7)	1,634 (13.5)	1,971 (13.9)
≥85 years	1,680 (6.4)	706 (5.8)	974 (6.9)
Education level, <i>n</i> (%)			
≤9 years	10,858 (41.4)	4,643 (38.4)	6,215 (43.9)
≥10 years	14,789 (56.4)	7,248 (60.0)	7,541 (53.3)
Missing	582 (2.2)	194 (1.6)	388 (2.7)
Equivalent income, <i>n</i> (%)			
Low (≤199)	10,914 (41.6)	5,132 (42.5)	5,782 (40.9)
Mid (200–399)	7,895 (30.1)	4,084 (33.8)	3,811 (26.9)
High (≥400)	2,192 (8.4)	1,132 (9.4)	1,060 (7.5)
Missing	5,228 (19.9)	1,732 (14.4)	3,491 (24.7)
Marital status, <i>n</i> (%)			
Married	18,347 (69.9)	10,218 (84.6)	8,129 (57.5)
Widowed	5,504 (21.0)	936 (7.7)	4,568 (32.3)
Separated	887 (3.4)	322 (2.7)	565 (4.0)
Unmarried	557 (2.1)	249 (2.1)	308 (2.2)
Others	223 (0.9)	122 (1.0)	101 (0.7)
Missing	771 (2.9)	238 (2.0)	473 (3.3)
Living arrangement, <i>n</i> (%)			
Living alone	3,625 (13.8)	1,052 (8.7)	2,573 (18.2)
With family members	20,855 (79.5)	10,292 (85.2)	10,563 (74.7)
Other facilities	405 (1.5)	204 (1.7)	201 (1.4)
Missing	1,344 (5.1)	537 (4.4)	807 (5.7)
<b>Health status</b>			
Necessity of daily support, <i>n</i> (%)			
Unnecessary	24,271 (92.5)	11,268 (93.2)	13,003 (91.9)
Necessary	888 (3.4)	383 (3.2)	505 (3.6)
Missing	1,070 (4.1)	434 (3.6)	636 (4.5)
Self-rated health, <i>n</i> (%)			
Very good	3,082 (11.8)	1,462 (12.1)	1,620 (11.5)
Good	17,602 (67.1)	7,958 (65.9)	9,644 (68.2)
Fair	3,995 (15.2)	1,989 (16.5)	2,006 (14.2)
Bad	668 (2.5)	337 (2.8)	331 (2.3)
Missing	882 (3.4)	339 (2.8)	543 (3.8)
Geriatric Depression Scale, <i>n</i> (%)			
Normal	15,914 (60.7)	7,609 (63.0)	8,305 (58.7)
Mild depression	4,241 (16.2)	2,136 (17.7)	2,105 (14.9)
Severe depression	1,403 (5.3)	713 (5.9)	690 (4.9)
Missing	4,671 (17.8)	1,627 (13.5)	3,044 (21.5)
<b>Social support</b>			
Received emotional support, <i>n</i> (%)			
Yes	24,062 (91.7)	10,701 (88.5)	13,361 (94.5)
No	2,167 (8.3)	1,384 (11.5)	783 (5.5)
Provided emotional support, <i>n</i> (%)			
Yes	23,206 (88.5)	10,492 (86.8)	12,714 (89.9)
No	3,023 (11.5)	1,593 (13.2)	1,430 (10.1)
Received instrumental support, <i>n</i> (%)			
Yes	24,225 (92.4)	11,228 (92.9)	12,997 (91.9)
No	2,004 (7.6)	857 (7.1)	1,147 (8.1)

**Table 1** (continued)

	Total ( <i>n</i> = 26,229)	Male ( <i>n</i> = 12,085)	Female ( <i>n</i> = 14,144)
Provided instrumental support, <i>n</i> (%)			
Yes	19,689 (75.1)	9,238 (76.4)	10,451 (73.9)
No	6,540 (24.9)	2,847 (23.6)	3,693 (26.1)
Social cohesion			
Community trust, <i>n</i> (%)			
Trust	17,592 (67.1)	8,379 (69.3)	9,213 (65.1)
Neither	6,864 (26.2)	2,980 (24.7)	3,884 (27.5)
Do not trust	1,094 (4.2)	469 (3.9)	625 (4.4)
Missing	679 (2.6)	257 (2.1)	422 (3.0)
Norm of reciprocity, <i>n</i> (%)			
Yes	13,244 (50.5)	6,206 (51.4)	7,038 (49.8)
Neither	9,494 (36.2)	4,379 (36.2)	5,115 (36.2)
No	2,493 (9.5)	1,175 (9.7)	1,318 (9.3)
Missing	998 (3.8)	325 (2.7)	673 (4.8)
Community attachment, <i>n</i> (%)			
Yes	20,202 (77.0)	9,422 (78.0)	10,780 (76.2)
Neither	4,024 (15.3)	1,807 (15.0)	2,217 (15.7)
No	1,357 (5.2)	621 (5.1)	736 (5.2)
Missing	646 (2.5)	235 (1.9)	411 (2.9)

occurred in 0.7, 9.6, and 2.1% of male participants, and 1.7, 12.4, and 0.9% of female participants, respectively. Of those who experienced any type of abuse in the preceding year, 1,341 (11.1%) were male, and 1,887 (13.3%) were female. A total 12,085 were male, and more than half were under 74 years old; 56.4% of participants had an education level of 10 years or longer, 41.6% were low in equivalent income, 69.9% were married, and 79.5% were living with family members. A total of 3.4% participants needed daily support, 67.1% of participants had good self-rated health, 16.2% of participants had mild depression, and 5.3% of participants had severe depression. Regarding social support, 91.7% received emotional support, 88.5% provided emotional support, 92.4% received instrumental support, and 75.1% provided instrumental support. Of the participants, 67.1% trust their community, 50.5% had the norm of reciprocity, and 77.0% were attached to their community.

*Association between Sociodemographic Factors and Health Status, Social Factors, and Elder Abuse*

Results of models 1 and 2 from logistic regression analysis are shown in online supplementary Tables 1 and 2 (for all online suppl. material, see [www.karger.com/doi/10.1159/000502544](http://www.karger.com/doi/10.1159/000502544)). Model 3 is shown in Table 2, including the number of people who experienced abuse, OR, and 95% CI for the outcomes and covariates. With models

1 and 2, we investigated the effect of depression, which is a known strong risk factor. Between the results of models 1 and 2, the OR of poor self-rated health reduced from 2.82 (95% CI 2.21–3.59) to 1.47 (1.14–1.89). Between the results of models 2 and 3, the OR of mild depression decreased from 2.19 (2.00–2.40) to 2.10 (1.91–2.31), and the OR of severe depression decreased from 4.06 (3.57–4.63) to 3.66 (3.19–4.19). In model 3, women were 2.77 (2.15–3.56) times, living with family members was 2.70 (1.55–4.71) times, need for daily support was 1.66 (1.05–2.62) times, mild depression was 2.35 (1.77–3.12) times, and severe depression was 5.07 (3.62–7.11) times higher than being physically abused in each reference group. However, those aged 85 years or older were 0.48 (0.24–0.98) times, widowed were 0.44 (0.30–0.64) times, receiving instrumental support was 0.57 (0.39–0.85) times, and having trust in the community was 0.54 (0.33–0.88) times lower to be physically abused than their respective reference groups. Moreover, women were 1.61 (1.24–1.75) times, living with family members was 2.67 (2.18–3.28) times, having poor self-rated health was 1.61 (1.24–2.10) times, mild depression was 2.16 (1.96–2.39) times, and severe depression was 3.79 (3.29–4.36) times higher to be psychologically abused than their respective reference groups. In contrast, those aged 85 years or older were 0.73 (0.60–0.89) times, widowed were 0.65 (0.57–0.74) times, separated were 0.76 (0.59–0.99) times, unmarried were 0.72 (0.53–0.98) times, receiving

**Table 2.** OR with 95% CI for the association between elder abuse and sociodemographic factors, health status, and social factors among older Japanese adults ( $n = 26,229$ )

	Physical abuse			Psychological abuse			Financial abuse			Any types of abuse		
	<i>n</i>	OR	95% CI	<i>n</i>	OR	95% CI	<i>n</i>	OR	95% CI	<i>n</i>	OR	95% CI
<b>Sex</b>												
Male, $n = 12,085$	90	1.00		1,159	1.00		255	1.00		1,341	1.00	
Female, $n = 14,144$	241	2.77	2.15–3.56	1,757	1.61	1.48–1.75	126	0.45	0.35–0.56	1,887	1.47	1.36–1.59
<b>Age group</b>												
65–69 years, $n = 7,276$	88	1.00		918	1.00		97	1.00		997	1.00	
70–74 years, $n = 7,794$	115	1.19	0.89–1.58	919	0.97	0.88–1.07	112	1.05	0.80–1.39	1,003	0.97	0.88–1.06
75–79 years, $n = 5,874$	73	1.01	0.73–1.39	638	0.91	0.82–1.02	103	1.24	0.93–1.65	730	0.95	0.85–1.05
80–84 years, $n = 3,605$	46	1.13	0.77–1.66	308	0.77	0.67–0.89	42	0.80	0.55–1.18	342	0.76	0.66–0.87
≥85 years, $n = 1,680$	9	0.48	0.24–0.98	133	0.73	0.60–0.89	27	1.16	0.73–1.82	156	0.76	0.63–0.91
<b>Education level</b>												
≤9 years, $n = 10,858$	166	1.00		1,187	1.00		179	1.00		1,339	1.00	
≥10 years, $n = 14,789$	152	0.85	0.68–1.07	1,662	1.08	0.99–1.17	189	0.89	0.72–1.10	1,812	1.05	0.97–1.14
<b>Equivalent income</b>												
Low (≤199), $n = 10,914$	158	1.00		1,228	1.00		181	1.00		1,371	1.00	
Mid (200–399), $n = 7,895$	71	0.81	0.61–1.08	883	1.06	0.96–1.16	96	0.75	0.58–0.96	955	1.02	0.93–1.11
High (≥400), $n = 2,192$	20	0.94	0.59–1.50	239	1.12	0.97–1.30	20	0.56	0.35–0.89	253	1.05	0.91–1.21
<b>Marital status</b>												
Married, $n = 18,347$	263	1.00		2,339	1.00		290	1.00		2,559	1.00	
Widowed, $n = 5,504$	36	0.44	0.30–0.64	400	0.65	0.57–0.74	50	0.81	0.56–1.17	451	0.67	0.59–0.76
Separated, $n = 887$	8	0.58	0.27–1.23	70	0.76	0.59–0.99	11	0.83	0.42–1.64	79	0.78	0.61–0.99
Unmarried, $n = 557$	6	0.83	0.36–1.90	31	0.72	0.53–0.98	6	0.81	0.37–1.78	38	0.78	0.59–1.03
<b>Living arrangement</b>												
Living alone, $n = 3,625$	18	1.00		132	1.00		38	1.00		167	1.00	
With family members, $n = 20,855$	277	2.70	1.55–4.71	2,589	2.67	2.18–3.28	314	1.27	0.81–1.98	2,839	2.51	2.08–3.03
Other facilities, $n = 405$	8	2.89	1.54–5.43	46	2.38	1.86–3.05	11	1.20	0.68–2.10	57	2.27	1.80–2.85
<b>Necessity of daily support</b>												
Unnecessary, $n = 24,271$	290	1.00		2,676	1.00		336	1.00		2,946	1.00	
Necessary, $n = 888$	27	1.66	1.05–2.62	131	0.98	0.80–1.21	20	1.16	0.71–1.89	152	1.03	0.85–1.25
<b>Self-rated health</b>												
Very good, $n = 3,082$	20	1.00		211	1.00		40	1.00		244	1.00	
Good, $n = 17,602$	203	1.37	0.87–2.17	1,872	1.36	1.17–1.58	223	0.85	0.60–1.20	2,033	1.29	1.12–1.49
Fair, $n = 3,995$	75	1.38	0.82–2.31	622	1.59	1.34–1.89	85	0.99	0.66–1.50	684	1.54	1.31–1.82
Bad, $n = 668$	17	1.22	0.60–2.48	117	1.61	1.24–2.10	12	0.66	0.33–1.33	122	1.44	1.11–1.85
<b>Geriatric Depression Scale</b>												
Normal, $n = 15,914$	121	1.00		1,339	1.00		171	1.00		1,488	1.00	
Mild depression, $n = 4,241$	77	2.35	1.77–3.12	699	2.16	1.96–2.39	85	1.67	1.29–2.17	761	2.10	1.91–2.31
Severe depression, $n = 1,403$	66	5.07	3.62–7.11	355	3.79	3.29–4.36	52	2.90	2.06–4.07	387	3.66	3.19–4.19
<b>Social support</b>												
Receiving emotional support												
No, $n = 2,167$	27	1.00		247	1.00		46	1.00		277	1.00	
Yes, $n = 24,062$	304	1.14	0.69–1.89	2,669	0.86	0.72–1.03	335	0.92	0.61–1.39	2,951	0.89	0.75–1.06

**Table 2** (continued)

	Physical abuse			Psychological abuse			Financial abuse			Any types of abuse		
	<i>n</i>	OR	95% CI	<i>n</i>	OR	95% CI	<i>n</i>	OR	95% CI	<i>n</i>	OR	95% CI
Provided emotional support												
No, <i>n</i> = 3,023	38	1.00		329	1.00		59	1.00		374	1.00	
Yes, <i>n</i> = 23,206	293	1.13	0.73–1.75	2,587	1.00	0.86–1.17	332	0.91	0.63–1.32	2,854	0.98	0.85–1.13
Receiving instrumental support												
No, <i>n</i> = 2,004	41	1.00		213	1.00		32	1.00		239	1.00	
Yes, <i>n</i> = 24,225	290	0.57	0.39–0.85	2,703	0.83	0.70–0.98	349	1.10	0.71–1.71	2,989	0.85	0.72–1.00
Provided instrumental support												
No, <i>n</i> = 6,540	72	1.00		635	1.00		100	1.00		715	1.00	
Yes, <i>n</i> = 19,689	259	1.18	0.88–1.59	2,281	0.99	0.89–1.10	281	0.96	0.74–1.24	2,513	1.00	0.90–1.11
Social cohesion												
Community trust												
No trust, <i>n</i> = 1,094	36	1.00		188	1.00		21	1.00		205	1.00	
Neither, <i>n</i> = 6,864	109	0.65	0.41–1.03	914	0.84	0.68–1.02	107	0.88	0.52–1.49	995	0.85	0.70–1.03
Trust, <i>n</i> = 17,592	179	0.54	0.33–0.88	1,767	0.74	0.60–0.91	244	0.95	0.55–1.64	1,972	0.77	0.63–0.94
Norm of reciprocity												
No, <i>n</i> = 2,493	53	1.00		375	1.00		43	1.00		411	1.00	
Neither, <i>n</i> = 9,494	122	0.92	0.62–1.36	1,151	0.94	0.81–1.08	144	1.04	0.71–1.53	1,260	0.93	0.81–1.07
Yes, <i>n</i> = 13,244	146	1.13	0.74–1.73	1,315	0.91	0.78–1.06	179	1.03	0.68–1.54	1,466	0.91	0.79–1.06
Community attachment												
No, <i>n</i> = 1,357	38	1.00		222	1.00		23	1.00		245	1.00	
Neither, <i>n</i> = 4,024	69	0.85	0.55–1.33	580	1.00	0.84–1.20	73	1.26	0.77–2.08	28	0.99	0.83–1.18
Yes, <i>n</i> = 20,202	215	0.80	0.52–1.25	2,065	0.94	0.79–1.12	274	1.18	0.72–1.92	2,294	0.93	0.79–1.11

Model 3 includes all variables of models 1 and 2 plus social capital.

instrumental support was 0.83 (0.70–0.98) times, and having trust in the community was 0.74 (0.60–0.91) times lower to be psychologically abused than each reference group. Conversely, women were 0.45 (0.35–0.56) times lower to experience financial abuse. In addition, mild depression was 1.67 (1.29–2.17) times and severe depression 2.90 (2.06–4.07) times higher to be financially abused than their respective reference groups. Lastly, women were 1.47 (1.36–1.59) times, living with family members was 2.51 (2.08–3.03) times, self-rated poor health was 1.44 (1.11–1.85) times, mild depression was 2.10 (1.91–2.31) times, and severe depression was 3.66 (3.19–4.19) times higher to receive any type of abuse. Moreover, those aged 85 years and older were 0.76 (0.63–0.91) times, widowed were 0.67 (0.59–0.76) times, separated were 0.78 (0.61–0.99) times, receiving instrumental support was 0.85 (0.72–1.00) times, and having a good level of community trust was 0.77 (0.63–0.94) times lower to experience any type of abuse.

## Discussion/Conclusion

In this study, we examined the prevalence of self-reported elder abuse among independent older adults in Japan. The results of the present study suggest that participants who were women, aged <75 years, married, needed daily support, and had low level of self-rated health, severe depression, and low level of community trust were more likely to experience elder abuse. To the best of our knowledge, this is the largest epidemiologic study of the prevalence of elder abuse and its association with social cohesion based on a representative population sample. The prevalence of elder abuse among independent older Japanese was 12.3% (11.1% in males and 13.3% in females), similar to the of 15.7% in other countries according to a systematic review [2]. They reported prevalence estimates of 2.6% (1.6–4.4) for physical, 11.6% (8.1–16.3) for psychological, and 6.8% (5.0–9.2) for financial abuses [2]. Our findings of the relative frequencies were similar, with psychological abuse being the most common, followed by financial abuse, and physical abuse was the least common. The rate of psychological abuse in our study was considerably higher than that (4.6%) reported in a study from the US [30].

### *Relationship between Sociodemographic Characteristics and Elder Abuse*

We found that women were more often subjected to physical and psychological abuse than men. Although

women are generally more likely to be abused than men, there may be gender differences depending on the type of abuse [4, 27, 31]. Our finding of a higher prevalence of financial abuse among men was similar to that in a Korean study, although they also noted more emotional abuse among men than women [32]. In Japan, the cultural norm is for women to do the housekeeping. Prior to the introduction of coeducation in home economics in 1973, physical education, technology, and home economics were gender-specific curricula in Japanese school education. Such education might therefore influence the perceptions of gender roles among older adults. In 1979, the United Nations adopted the Convention on the Elimination of all Forms of Discrimination against Women, which was formally approved by the Japanese government [33]. However, the older adults in our study grew up in an era when women were responsible for the housekeeping and therefore management of the family budget. Under such circumstances, older men might have felt short of funds and unable to access their money.

The age range posing a greater risk of abuse has varied in different studies [4, 8]. However, living with family members is strongly associated with physical and psychological abuses because the perpetrators are often family members. This may explain why being widowed or unmarried and living alone reduces the risk of abuse [34]. Intervention may be more difficult for families that have an abusive relationship, but it is still important to be aware of situations wherein an individual is at risk of elder abuse by completely assessing the risk factors. Our findings in regard to sociodemographic factors confirm the results of other studies.

### *Relationship between Health Status and Elder Abuse*

As reported in other studies, we found that participants who experienced elder abuse tended to report poor health [8]. Poor overall health and worsening health in the preceding year are associated with elder abuse [25]. Our participants who needed assistance in daily living were at a higher risk than others, similar to that reported in another study, indicating that functional dependency or poor physical health are risk factors for being abused [8]. In addition, caregivers who are responsible for daily support and frequently in contact with the individuals they care for are susceptible to fatigue and stress [35]. Furthermore, the prevalence of abuse will increase as their physical functions continue to decline and they require greater levels of support [36]. In the present study, our target population included older adults who were not eligible to receive public long-term care insurance bene-



fits. Our findings indicate that abuse affects community-dwelling older adults who still are functioning fairly well.

Moreover, this study demonstrated a positive association between elder abuse and poor self-rated status. Participants whose self-rated health is fair or bad tend to experience elder abuse. According to a previous study, there was a positive correlation between poor self-rated health and elder abuse [30].

Moreover, mild or severe depression was a risk factor for abuse among the participants. A previous study reported that older adults who lacked psychological resources were more likely to report abuse than those with greater psychosocial reserves [20]. Depression is one of the main risk factors of elder abuse [26]. Participants who were abused in the present study were abused by the family members. When abuse occurs within what is normally considered a high-trust relationship, the relationship might be destroyed, and it may lead to fear of future encounters with people who should be trustworthy. This fear adds to the psychological stress in older adults. The association between depression and abuse could be bidirectional. First, it is possible that individuals who are already depressed may be mistreated. In contrast, being abused may also be a cause of depression. In model 2, depression was added, and OR of receiving any type of abuse was 2.19 (95% CI 2.00–2.40) times in mild depressives and 4.06 (3.57–4.63) times higher than those who did not have any depression. However, after we added the variables social capital in model 3, OR of depression slightly decreased to 2.10 (1.91–2.31) in mild depression and 3.66 (3.19–4.19) in severe depression, indicating that social capital is associated with depression. Although further studies are necessary, previous studies have shown that there is an association between social capital and mental health [37, 38].

#### *Relationship between Social Capital and Elder Abuse*

Participants who received a particular type of social support, i.e., instrumental support, were less likely to suffer physical and psychological abuses, similar to the results of a population-based sample adjusted for the need for daily support and another previous study that reported the association between elder mistreatment and social support [30, 39]. Interestingly, we found no significant association between elder abuse and receiving or providing emotional support or providing instrumental support. Social support is a key factor in abuse prevention and recovery; however, further studies focusing on the mechanism of how social support affects elder abuse are needed because multiple pathways have been reported [39].

As with social support, participants who reported positively on community trust were less likely to be physically or psychologically abused than those who did not trust their community. However, the other factors related to cognitive social capital, i.e., norms of reciprocity and community attachment, were not significantly associated with elder abuse in this population. A previous study reported that higher levels of social support were associated with a lower incidence of elder abuse [12]. Individuals with community trust may have greater opportunities to share their problems or sympathize each other, which may emotionally help victims. Because there are differences in community formation and cultures among regions, it is possible that the method of community development to improve trust will be different. However, this study has shown an association between elder abuse and the emotions of trust that people universally have across cultures, and this may increase the evidence to control and reduce elder abuse. An association between elder abuse and social support at the individual level has been explored; however, the relationship with social cohesion, i.e., cognitive social capital has not. Social capital is increasingly being investigated in relationship with health and health behavior [40]. Our cross-sectional study found that social support and social cohesion were associated with a lower incidence of elder abuse.

#### *Strengths and Limitations*

One of the strengths of our study is that it is the first to investigate the relationship between elder abuse and social capital in a population-based representative sample. Understanding not only sociodemographic but also social capital factors related to elder abuse is crucial for establishing population-based prevention of this serious health problem. In addition, it is one of the largest epidemiologic studies to investigate factors specifically associated with different types of abuse. There are, however, several limitations to our research. First, the use of questionnaires to collect data may be subject to recall bias. Another limitation is that we used a self-reported questionnaire which has not been validated; therefore, its validity in accurately measuring elder abuse should be investigated in future studies. The cross-sectional study design does not permit inference of underlying relationships; therefore, further studies, such as longitudinal studies, are necessary. In addition, because this was not a multilevel analysis, further investigations regarding distinguishing factors at individual and community levels are needed. Finally, we excluded subjects

with marked dysfunction in ADL and those on public long-term care insurance benefits; therefore, these data do not include random samples as well as national representative samples. However, some without public benefits might still have had considerable difficulty with ADL and perhaps could not complete this survey. Because it is known that the abuse rate is higher among people with poor ability to manage ADL, the actual incidence of abuse cases is expected to be higher. Further research should take such limitations into consideration. Despite the limitations, however, this study suggests areas that may be an important perspective of possibility for preventing elder abuse.

In conclusion, elder abuse is prevalent among independent older adults in Japan. While confirming the findings of others that certain demographic factors and poor health are associated with an increased risk of abuse, we also found that people who trust others in their community were less likely to be abused. Although further clarification of causation at both individual and community levels is needed, this study suggests that enriching social capital could make an important contribution to a population-based strategy to reduce the incidence of elder abuse.

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## Statement of Ethics

The JAGES protocol was reviewed and approved by the Ethics Committee on Research of Human Subjects at the Nihon Fukushi University (approval No. 10-05) and the Ethics Committee at the Chiba University Faculty of Medicine (approval No. 2493).

## Disclosure Statement

The authors have no conflicts of interest to declare.

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## Author Contributions

C.K.: conceived the design, analyzed the data, performed the literature review, and wrote the first draft of the article. T.T. and K.K.: collected the data. M.H., T.T., N.S., and K.K.: revised the first draft. All authors approved the final version of the manuscript.

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