


BMJ Open Physical and verbal abuse amid COVID-19: a nationwide cross-sectional survey in Japan

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ABSTRACT

Objectives The detrimental impacts of abuse on victims' well-being are well documented globally, including Japan. The ongoing COVID-19 pandemic may increase the incidence of abuse in the community, creating an additional burden amid the crisis. However, the incidence of abuse in Japan during COVID-19 remains to be evaluated. Accordingly, our study aimed to assess the incidence of physical and verbal abuse among the general population in Japan and to identify the associated factors of abuse during COVID-19.

Design and setting We used the data obtained from a nationwide, cross-sectional internet survey conducted in Japan between August and September 2020. Sampling weights were used to calculate national estimates, and multivariable logistic regression was performed to identify the associated factors for physical and verbal abuse.

Results Out of the total 25 482 participants, 965 (3.8 %) reported experiencing physical abuse and 1941 (7.6%) verbal abuse from April 2020 to September 2020. The incidence of physical and verbal abuse was higher among female participants. Participants who lived in areas where the 'state of emergency' was enforced were more likely to suffer from physical abuse. Similarly, vulnerable participants such as those below age 18, with low income, bad family relationships, and disabled people were more likely to experience both physical and verbal abuse. Participants suffering from COVID-19-related symptoms, who had poor health status and widows/divorcees were more likely to be verbally abused. Furthermore, those who did not follow preventive behaviours such as wearing masks in public places, abusing drugs and drinking alcohol in high amounts were also more likely to experience abuse.

Conclusion The impact of abuse was found disproportionately greater in more vulnerable groups of the population. Pandemic has reinforced the existing social inequalities, which need to be addressed timely to prevent precarious repercussions.

INTRODUCTION

Abuse is a serious public health problem that fundamentally violates human rights. Globally, one in three women and one in five men have been subjected to different forms of violence.^{1 2} In the USA alone, 20 people per

Strengths and limitations of this study

- This is the nationwide cross-sectional study exploring the incidence of abuse amid COVID-19.
- An inverse probability weighting approach was employed to adjust the difference on the internet and the nationally representative sample.
- Multivariable logistic regression was used to adjust for possible confounders and to evaluate the association.
- A cross-sectional design was used which limited our ability to establish causality.
- Due to the self-reported nature of the survey data, there could be a chance of under-reporting and over-reporting.

minute are physically abused by their partner, equating to more than 10 million women and men in a year.^{3 4} Although the incidence of abuse is highly prevalent among women, it is not limited to particular gender only. All people, regardless of their races, cultures or sexual orientations are exposed to abuse and have to deal with it in their lifetime.⁵ Exposure to any kind of abuse is stressful whether it be physical abuse (infliction of physical pain by hitting, punching, strangling, restraining, pushing or slapping), verbal abuse (demonstrating mental anguish by shouting and yelling), sexual abuse (threats of unwanted sexual contact or forced sex) or emotional abuse.⁶

With the advent of COVID-19, the incidence of abuse has become more apparent than ever before.⁷ Travel restrictions and stay-at-home orders adopted to curb the spread of the virus have a profound impact on society leading to social, financial and psychological repercussions.⁸ Stay-at-home orders have exacerbated the vulnerabilities of individuals whose lives are already afflicted by domestic violence.⁹ Furthermore, business closures have significantly increased

the unemployment rate and economic strain; all this has negatively impacted the mental health of the general population.^{10 11} Financial hardships, increased threats to physical health coupled with their daily responsibilities have made people more violent and aggressive.¹² While hotlines have been receiving complaints of domestic violence,^{13 14} multiple instances of abuse were also seen outside the closed room among general people. Some instances include abusing health workers for spreading COVID-19,¹⁵ abusing people for not wearing masks,^{16 17} for not being able to pay room rents,¹⁸ etc.

The consequences of such abuse are deleterious and can result in long-term damage to victims' physical and mental well-being.^{19 20} While physical abuse has direct effects on the physical body, verbal abuse affects victims' thoughts and emotions. The immediate effects of physical abuse include bruises, cuts, fractures, loss of teeth/hair, miscarriage, etc.²¹ Verbal abuse does not manifest visible effects immediately; however, it directly affects the victims' self-esteem. Prolonged exposure to abuse can lead to various mental health problems, including depression, anxiety and post-traumatic stress disorder (PTSD).^{22 23} Victims are 1.7–4.6 times more likely to develop an anxiety disorder, PTSD or eating disorder.^{24 25} Similarly, the effects on physical health include the higher age-adjusted mortality rates and various chronic health problems such as asthma, epilepsy, migraines, hypertension, etc.^{26–28} Under current stressful living conditions, the additional burden of abuse could take a heavy toll on people.

In Japan, spousal, elderly and child abuse have been noted from time to time. In 2019, more than 80 000 cases of domestic violence consultations were reported.²⁹ Similarly, the prevalence of elder abuse was found to be 12.3%, with 2.6% experiencing physical abuse and 11.6% experiencing verbal abuse.³⁰ Furthermore, as mentioned above, COVID-19 has created a situation of widespread uncertainty and panic which might stimulate abuse in the community. Apparently, as mentioned on various news portals, multiple cases of abuse were reported among the general population in Japan.^{31 32} However, detailed study on this issue among the general population has not been done yet. Taken together, our study aimed to (1) identify the incidence of physical and verbal abuse among the general population of Japan amid COVID-19 and (2) investigate factors associated with such abuses.

METHODS

Settings and participants

We used the data from Japan COVID-19 and Society Internet Survey study' (JACSIS) collected by a large internet research agency Rakuten Insight, which had approximately 2.3 million registered qualified panellists. JACSIS study was designed to recruit a 'nationally representative sample' to calculate national estimates. Therefore, a large sample size of 28 000 was determined in advance according to the population distribution of Japan

in 2019 and a response rate of 12.5% (28000/224389). Regarding the sampling method, out of 2.2 million registered panellists, 224 389 panellists were invited using stratified random sampling by sex, age and prefectures. The random selection was done using computer algorithms and then email invitations were sent to selected participants. The survey was terminated once the target number of respondents was reached for each category. Questionnaires were distributed from 25 August 2020, and were completed on 30 September 2020, after reaching a total target sample size of 28 000 participants from all 47 prefectures. The questionnaire used in this study was adopted from a previously validated questionnaire developed by Koga *et al.*^{33 34} Questionnaire was administered in the Japanese language and a link to the questionnaire is available on the JACSIS website.³⁵

Patient and public involvement

There were no patients involved in this study

Outcome variable and assessment

Physical and verbal abuse

Participants were asked whether they encountered any form of physical or verbal abuse from April 2020 (from emergency declaration due to COVID-19) to the data collection period. They were asked whether they were physically assaulted by anyone such as being punched, kicked, thrown, or locked in the room. Similarly, they were asked if they were verbally abused or ignored for a long time or encountered any self-esteem damaging behaviours from others. Responses were measured in the binary outcome, 'Yes' and 'No' each.

Exposure variables and assessment

Sociodemographic characteristics

The demographics included age (categorised as: below 18, 18–40, 40–60 and above 60), gender, education levels (junior high school, high school, college, university and others), marital status (with a spouse, unmarried, widow/widower, divorced), job sector (public servant, agriculture, working in the industry, business, medical care, education and other services), work from home since March or April (yes, no), and relationship with a spouse (better, constant, worse, do not know, not applicable). The crowding index was calculated by dividing the total number of residents in a household by the total number of rooms in the house (excluding the kitchen and bathroom). It was categorised into less than 1, 1–2, more than 2 during analysis.³⁶ Similarly for annual household income, quartile was calculated and used for categorisation (less than 3, 3–4 million, 4–7 million, higher than 7 million, and did not want to disclose).

Personal health status

Participants were asked about their perceived health status, presence of walking impairment/disability, and presence of any COVID-19-related symptoms. Perceived health status was asked in the five-item Likert scale from 'good' to 'not good'. It was later recategorised into three

categories (good, usual, and poor) for the analysis. Similarly, symptoms associated with COVID-19 were asked such as high fever, fatigue, sore throat, cough, nausea, smell disorder, etc, which were considered to have high sensitivity and specificity.³⁷ Responses were measured as binary options 'Yes' (presence of any symptoms) and 'No' (absence of any symptoms).

Prefecture-wise COVID-19 infection and emergency declaration

The number of COVID-19 cases by prefecture was calculated from 15 January 2020 to 30 September 2020. They were divided by the population per prefecture based on the estimate on 1 October 2019. During analyses, the number of COVID-19 cases/prefecture was divided into three categories using quartile (lowest, medium and highest).

For the emergency declaration variable, three categories were created; category 1 included prefectures where the state of emergency was enforced, category 2 included the prefecture with specific alerts and category 3 included the remaining prefecture.

Personal behaviours

Personal behaviours were also included such as substance abuse, alcohol intake and use of face masks in the public areas. The alcohol intake was measured in three categories—'increased', 'same/as usual' and 'decrease'. These categories were used to compare the change in the drinking habit before and after the COVID-19 pandemic. For substance abuse, participants were asked about the use of different kinds of harmful drugs (without any prescription from physicians). Responses were measured in 'no', 'before but not now' and 'yes'. Similarly, participants were asked about their practice of using face masks while out in public. Responses were measured in three categories: 'always', 'sometimes' and 'never/rarely'.

Data analysis

Out of 28 000 responses collected, 25 482 were included in the analysis after removing discrepancies and unnatural responses. Three criteria were used to detect such discrepancies: (1) those who selected 'yes' to all asked diseases listed; (2) those who ticked wrong response to the verification question 'Please choose the second from the bottom' and (3) those who selected all options for drug use behaviours, who were then removed from the analysis.

First, we compared the sociodemographic characteristics and all other exposure variables among participants experiencing physical abuse and those who did not. The same procedure was applied for verbal abuse as well. As participants who participated in the internet-based survey might differ from the general population, we used an inverse probability weighting approach throughout the analyses to adjust the difference of response between the current internet survey and the nationally representative survey. Propensity scores were calculated by logistic regression analysis using sex, age and socioeconomic

factors to adjust for differences between a current and population-based sample from the Comprehensive Survey of Living Conditions of People on Health and Welfare 2016. Detailed methods (eg, participation rate and data management) are presented in the previous study.³⁸

Second, we performed simple and multivariable logistic regression to identify the factors associated with physical and verbal abuse. For each outcome, we constructed two regression models to control for potential confounders. We considered all variables using the backward stepwise variable selection method ($p > 0.05$). Variables having categories with a small number of participants were regrouped as appropriate. Weighted multivariable logistic regression models, with SEs clustered at the prefecture level, were used to account for the potential correlation of respondents within the same prefecture. A separate analysis was conducted for both physical and verbal abuse.

RESULTS

Table 1 shows the characteristics of participants experiencing physical and verbal abuse. Analyses were weighted to adjust the difference between participants in this internet survey and national representative samples.

Of the total, 965 (3.8%) participants experienced physical abuse and 1941 (7.6%) encountered verbal abuse. Both the incidence of physical and verbal abuse was highest among the female participants and participants in the age group 18–40 years. Among participants experiencing physical abuse, 209 (21.7%) mentioned having 'poor' health status, 356 (36.9%) were working from home and 91 (9.5%) had the worst relationship with their spouse. Similarly, 339 (35.2%) of participants had increased their alcohol intake, 222 (23.0%) were abusing drugs, and 491 (50.9%) experienced symptoms related to COVID-19. Among participants experiencing verbal abuse, 1143 (58.9%) were working from home, 607 (31.3%) had an annual household income of less than 3 million, 710 (36.6%) had a 'poor' health status, 583 (30.1%) increased their alcohol intake, and 394 (20.3%) had the worst relationship with their spouse.

Table 2 demonstrates the result of multivariable logistic regression analysis of the associated factors for physical and verbal abuse. Participants aged 40 and above were less likely to experience physical (Adjusted OR (AOR)=0.05; 95% CI 0.02 to 0.16) and verbal abuse (AOR 0.35; 95% CI 0.16 to 0.79) compared with participants below age 18. Unmarried, widows/widowers and divorcées were more likely to experience verbal abuse compared with married ones. Moreover, participants with an annual household income of 4–7 million were less likely to experience physical abuse (AOR 0.53, 95% CI 0.28 to 0.99) compared with participants with a household income of less than 3 million. Participants living in areas where the restriction was imposed due to COVID-19 were more likely to experience physical abuse

Table 1 Characteristics of participants experiencing physical and verbal abuse (N=25 482)

Variables	Total N	Physical abuse		Verbal abuse	
		Yes N (%)	No N (%)	Yes N (%)	No N (%)
		965 (3.8)	24 517 (96.2)	1941 (7.6)	23 541 (92.4)
Age					
Below 18	651	71 (7.4)	579 (2.4)	72 (3.7)	579 (2.5)
18–40	7541	691 (71.7)	6850 (27.9)	950 (49)	6591 (28.0)
40–60	9150	142 (14.7)	9008 (36.7)	558 (28.8)	8592 (36.5)
Above 60	8140	60 (6.2)	8080 (33.0)	360 (18.6)	7780 (33.0)
Sex					
Female	12 673	708 (73.3)	11 965 (48.8)	1078 (55.5)	11 595 (49.3)
Male	12 809	257 (26.7)	12 552 (51.2)	863 (44.5)	11 946 (50.7)
Education level					
Junior high school	1732	74 (7.6)	1658 (6.8)	108 (5.6)	1624 (6.9)
High school	9640	256 (26.5)	9385 (38.3)	454 (23.4)	9186 (39.0)
College	4928	101 (10.5)	4827 (19.7)	329 (17.0)	4599 (19.5)
University and others	9182	535 (55.4)	8647 (35.3)	1050 (54.1)	8132 (34.5)
Marital status					
With spouse	16 100	257 (26.6)	15 844 (64.6)	895 (46.1)	15 205 (64.6)
Unmarried	6046	192 (19.8)	5854 (23.9)	452 (23.3)	5594 (23.8)
Widow/widower	1949	504 (52.2)	1446 (5.9)	521 (26.8)	1428 (6.1)
Divorced	1387	13 (1.4)	1373 (5.6)	73 (3.8)	1314 (5.6)
Annual household income					
Less than 3 million	4712	255 (26.4)	4457 (18.2)	607 (31.3)	4104 (17.4)
3–4 million	2948	159 (16.4)	2789 (11.4)	272 (14.0)	2675 (11.4)
4–7 million	6512	110 (11.4)	6402 (26.1)	407 (21.0)	6105 (25.9)
Higher than 7 million	5716	354 (36.7)	5362 (21.9)	422 (21.7)	5294 (22.5)
Prefer not to disclose	5595	88 (9.1)	5508 (22.5)	233 (12.0)	5363 (22.8)
Crowding index					
Less than or equal to 1	18 728	557 (57.7)	18 172 (74.1)	1171 (60.4)	17 557 (74.6)
1–2	6228	274 (28.4)	5954 (24.3)	616 (31.7)	5612 (23.8)
More than 2	526	135 (13.9)	391 (1.6)	154 (7.9)	373 (1.6)
Prefecture by level of COVID-19 infection					
High	3541	428 (44.3)	3113 (12.7)	148 (7.6)	3393 (14.4)
Moderate	8885	266 (27.6)	8619 (35.2)	880 (45.3)	8005 (34.0)
Low	13 056	271 (28.1)	12 785 (52.1)	913 (47.1)	12 143 (51.6)
Areas under restriction due to COVID-19					
Restricted areas/emergency declaration	7251	601 (62.3)	6650 (27.1)	671 (34.6)	6580 (28)
Specific alert only	3790	59 (6.1)	3731 (15.2)	158 (8.1)	3632 (15.4)
No restriction	14 441	305 (31.6)	14 137 (57.7)	1112 (57.3)	13 329 (56.6)
Perceived health status					
Good	10 249	332 (34.4)	9917 (40.5)	710 (36.6)	9539 (40.5)
Usual	11 787	424 (44.0)	11 363 (46.3)	521 (26.9)	11 266 (47.9)
Poor	3446	209 (21.7)	3237 (13.2)	710 (36.6)	2736 (11.6)
Work from home					
No	12 653	609 (63.1)	12 044 (49.1)	798 (41.1)	11 855 (50.4)

Continued

Table 1 Continued

Variables	Total N	Physical abuse		Verbal abuse	
		Yes N (%)	No N (%)	Yes N (%)	No N (%)
		965 (3.8)	24 517 (96.2)	1941 (7.6)	23 541 (92.4)
Yes	12 829	356 (36.9)	12 473 (50.9)	1143 (58.9)	11 686 (49.6)
Employment sector					
Public servant	992	146 (15.1)	847 (3.5)	42 (2.1)	951 (4.0)
Agriculture	222	11 (1.2)	210 (0.9)	20 (1.0)	202 (0.9)
Industry	5212	214 (22.2)	4998 (20.4)	387 (20.0)	4824 (20.5)
Business	2773	54 (5.6)	2719 (11.1)	163 (8.4)	2610 (11.1)
Food and beverage	502	10 (1.0)	492 (2.0)	55 (2.8)	446 (1.9)
Medical	1189	54 (5.6)	1135 (4.6)	67 (3.4)	1122 (4.8)
Welfare	690	19 (1.9)	671 (2.7)	45 (2.3)	645 (2.7)
Education	937	10 (1.0)	927 (3.8)	163 (8.4)	774 (3.3)
Other (not classified elsewhere)	3245	298 (30.9)	2946 (12.0)	339 (17.5)	2906 (12.3)
Not working	9722	149 (15.5)	9573 (39.0)	660 (34.0)	9062 (38.5)
Relationship with spouse					
Better	935	26 (2.7)	909 (3.7)	303 (15.6)	632 (2.7)
Constant	13 656	379 (39.3)	13 277 (54.2)	659 (34.0)	12 996 (55.2)
Worse	1221	91 (9.5)	1129 (4.6)	394 (20.3)	827 (3.5)
Don't know	553	10 (1.1)	542 (2.2)	14 (0.7)	539 (2.3)
Not applicable	9119	459 (47.5)	8660 (35.3)	571 (29.4)	8548 (36.3)
Wearing face mask while out in public					
Always	21 244	327 (33.9)	20 917 (85.3)	1578 (81.3)	19 666 (83.5)
Sometime	2774	327 (33.9)	2448 (10.0)	300 (15.5)	2474 (10.5)
Never/rarely	1464	312 (32.3)	1152 (4.7)	63 (3.2)	1401 (6.0)
Walking impairment/disability					
No	21 939	367 (38.0)	21 572 (88.0)	1062 (54.7)	20 877 (88.7)
Yes	3543	598 (62.0)	2945 (12.0)	879 (45.3)	2664 (11.3)
Practice of substance abuse					
Never	18 382	254 (26.4)	18 128 (73.9)	775 (39.9)	17 607 (74.8)
Before but not now	4719	488 (50.6)	4230 (17.3)	883 (45.5)	3836 (16.3)
Yes	2381	222 (23.0)	2159 (8.8)	283 (14.6)	2098 (8.9)
Alcohol intake after COVID-19					
Increased	2416	339 (35.2)	2077 (8.5)	583 (30.1)	1833 (7.8)
Have not changed/same	19 092	545 (56.5)	18 547 (75.6)	925 (47.7)	18 167 (77.2)
Decreased	3974	80 (8.3)	3894 (15.9)	433 (22.3)	3541 (15.0)
Presence of COVID-19-related symptoms					
No	21 258	474 (49.1)	20 784 (84.8)	1192 (61.4)	20 066 (85.2)
Yes	4224	491 (50.9)	3733 (15.2)	749 (38.6)	3475 (14.8)

(AOR 2.61, 95% CI 1.05 to 6.50) compared with those living in areas without restriction. Similarly, participants living in crowded households were more likely to experience physical abuse (AOR 2.62, 95% CI 1.00 to 6.83). Participants who were not wearing masks regularly in public places were more likely to experience both

physical (AOR 5.46, 95% CI 3.84 to 7.76) and verbal abuse (AOR 3.38, 95% CI 1.83 to 6.23). Participants with increase alcohol intake and who have been abusing drugs were also more likely to experience both physical and verbal abuse. Participants with poor health status (AOR 1.99, 95% CI 1.36 to 2.93) and who had symptoms

Table 2 Factors associated with the physical and verbal abuse (N=25 482)

Variables	Physical abuse		Verbal abuse	
	AOR (95% CI)	P value	AOR (95% CI)	P value
Age				
Below 18	Ref		Ref	
18–40	0.1 (0.03 to 0.33)	<0.001	0.38 (0.17 to 0.89)	0.025
40–60	0.05 (0.02 to 0.16)	<0.001	0.35 (0.16 to 0.79)	0.011
Above 60	0.02 (0.00 to 0.08)	<0.001	0.2 (0.07 to 0.57)	0.003
Marital status				
With spouse	Ref		Ref	
Unmarried	0.73 (0.35 to 1.48)	0.379	3.9 (1.89 to 8.08)	<0.001
Widow/widower	2.54 (0.78 to 8.29)	0.121	3.79 (1.32 to 10.85)	0.013
Divorced	0.42 (0.17 to 1.02)	0.056	2.73 (1.32 to 5.66)	0.007
Annual household income				
Less than 3 million	Ref		Ref	
3–4 million	1.15 (0.37 to 3.63)	0.807	0.77 (0.53 to 1.11)	0.166
4–7 million	0.53 (0.28 to 0.99)	0.048	0.77 (0.43 to 1.37)	0.373
Higher than 7 million	0.56 (0.19 to 1.64)	0.287	0.65 (0.31 to 1.36)	0.252
Prefer not to disclose	0.44 (0.23 to 0.83)	0.012	0.53 (0.35 to 0.79)	0.002
Crowding index				
Less than or equal to 1	Ref		Ref	
1–2	0.93 (0.64 to 1.37)	0.729	1 (0.79 to 1.27)	0.999
More than 2	2.62 (1.00 to 6.83)	0.049	1.44 (0.82 to 2.53)	0.201
Areas under restriction due to COVID-19				
Restricted areas/emergency declaration	2.61 (1.05 to 6.50)	0.039	1.37 (0.93 to 2.02)	0.108
Specific alert only	1.54 (0.59 to 4.00)	0.379	0.8 (0.57 to 1.12)	0.189
No restriction	Ref		Ref	
Perceived health status				
Good	Ref		Ref	
Usual	0.94 (0.60 to 3.66)	0.393	0.79 (0.57 to 1.10)	0.156
Poor	0.94 (0.32 to 4.79)	0.751	1.99 (1.36 to 2.93)	<0.001
Relationship with spouse				
Better	Ref		Ref	
Constant	3.04 (0.60 to 15.46)	0.18	0.42 (0.27 to 0.66)	<0.001
Worse	6.33 (1.18 to 33.99)	0.031	2.09 (1.16 to 3.75)	0.013
Don't know	2.53 (0.39 to 16.33)	0.329	0.24 (0.11 to 0.48)	<0.001
Not applicable	2.68 (0.62 to 11.51)	0.186	0.14 (0.06 to 0.32)	<0.001
Wearing face mask while out in public				
Always	Ref		Ref	
Sometime	4.32 (2.65 to 7.03)	<0.001	0.97 (0.66 to 1.43)	0.871
Never/rarely	5.46 (3.84 to 7.76)	<0.001	3.38 (1.83 to 6.23)	0.001
Walking impairment				
No	Ref		Ref	
Yes	2.33 (1.45 to 3.74)	<0.001	2.25 (1.48 to 3.43)	<0.001
Practice of substance abuse				
Never	Ref		Ref	
Before but not now	1.49 (1.05 to 2.10)	0.025	2.29 (1.29 to 4.05)	0.004

Continued

Table 2 Continued

Variables	Physical abuse		Verbal abuse	
	AOR (95% CI)	P value	AOR (95% CI)	P value
Yes	4.24 (2.43 to 7.41)	<0.001	2.27 (1.43 to 3.59)	<0.001
Alcohol intake after COVID-19				
Increased	Ref		Ref	
Have not changed/same	0.31 (0.18 to 0.53)	<0.001	0.49 (0.38 to 0.63)	<0.001
Decreased	0.32 (0.15 to 0.64)	0.001	0.8 (0.53 to 1.22)	0.302
Presence of COVID-19-related symptoms				
No	Ref		Ref	
Yes	1.32 (0.57 to 3.05)	0.512	1.56 (1.21 to 2.03)	<0.001

For each outcome, we constructed a weighted multivariable logistic regression model with SEs clustered at the prefecture level. The above model was adjusted for sex, education, employment sector, COVID-19 infection rate and work from home. AOR, adjusted OR.

associated with COVID-19 (AOR 1.56, 95% CI 1.21 to 2.03) were more likely to experience verbal abuse.

DISCUSSION

The incidence of physical and verbal abuse among the general population in Japan amid COVID-19 was found to be 3.8% and 7.6%, respectively. Both physical and verbal abuse was higher among female participants. Participants living in the areas where the 'state of emergency' was imposed and those with low household income were more likely to experience physical abuse. Similarly, participants with poor health status and those having symptoms associated with COVID-19 were more likely to experience verbal abuse. Younger participants and participants with strained relationships were more likely to experience both physical and verbal abuse. Similarly, participants who had been abusing drugs, increasing their alcohol intake, not wearing a mask in public places were also more likely to experience both kinds of abuse.

The incidence of physical and verbal abuse can be considered high taking into account the limited time of 6 months. However, due to the lack of data on the prevalence of abuse among similar populations over similar time periods, it is difficult to exactly quantify the changes in the incidence of the abuse. Nevertheless, previous studies have also highlighted the increased incidence of child abuse, elderly abuse and gender-based violence during crises such as earthquakes, economic recession, etc in Japan.^{39 40}

The percentage of women experiencing physical and verbal abuse was higher in our study. Previous studies have also underscored the higher incidence of abuse faced by female participants globally.^{41 42} A longitudinal study conducted among 161 countries found that approximately one in three women have been subjected to different forms of intimate partner/non-partner or both abuse.⁴³ Women were found to experience higher rates of repeated abuse than males; and in most cases, males

are found to be the perpetrator of the abuse.⁴⁴ Moreover, crises and times of unrest have been linked to an increased rate of abuse among female participants.⁴⁵ However, from our study findings, we cannot claim women were more likely to experience abuse than men as sex was not associated in the multivariable analysis. Our study measured the incidence of abuse faced by people in the community (not only domestic abuse), unlike other studies which are focused on domestic abuse and gender-based violence. In addition, it has been found that both women and men are equally likely to initiate abuse and violence although men tend to become more aggressive and opt for physical abuse.⁴⁶ Evidently, in our study percentage of males experiencing verbal abuse was only slightly lower than female participants with 44.5%. However, the incidence of physical abuse was distinctively higher among females with 73.3%.

Globally, there was increasing concern about the heightened risk of abuse and violence during the lockdown period. In line with that concern, our study found out that people residing in areas where the 'state of emergency' was enforced were more likely to experience physical abuse. Moreover, as expected, participants who did not have a good relationship with their spouses were more likely to experience abuse in our study. Restrictions and stay-at-home orders forced the individual to spend time with their spouse and family members, which turned out to be a catastrophic milieu for individuals whose relationships were already strained. Numerous studies have highlighted the incidence of domestic violence amid COVID-19. For example, in China, the incidence of domestic violence tripled compared with the previous year;⁴⁷ similarly, a 36% increase in complaints of domestic abuse were reported in France;⁴⁸ in the UK, there was a 25% increase in calls related to domestic violence.⁴⁹ Furthermore, many countries reported an increase in homicide as a result of domestic violence.⁴⁹ It seems plausible that strained relationships are more likely to



cause conflict especially in times of crisis; however, when comparing participants by marital status, our study findings highlighted that widows/widowers and divorcees were more likely to experience verbal abuse compared with married ones. These findings align with the previous study where the incidence of violence was higher among single women who were separated or widows compared with married ones.⁵⁰ The condition of widows/widowers and divorcees, particularly women remains deplorable in society and often victimised because they are considered weak with low social support.⁵⁰

Moreover, economic repercussions due to COVID-19 were undeniable; the sudden and possibly long-term increase in unemployment has precipitated or exacerbated potential stressors.⁹ In our study, participants who had low household incomes were more likely to experience abuse. Findings align with the previous study where children born in families with low socioeconomic status were 14 times more likely to experience maltreatment than those in higher quartiles.⁵¹ Furthermore, if a victim has adequate resources, they are more likely to escape from their abusers. Particularly during COVID-19, instances of abuse were noted for not being able to pay room rent and tuition fees,¹¹ which need to be addressed diligently.

Vulnerable participants such as those who had a poor health status, who were suffering from COVID-19-related symptoms, and physically impaired (disabled) people were more likely to experience verbal abuse in our study. Previous studies have also shown that disabled people are more likely to experience different forms of abuse in their normal daily life.⁵² During a stressful pandemic, abuse could further exacerbate the situation of physically challenged individuals, posing a threat to their mental and physical health. It is, therefore, crucial to pay special attention to those individuals.

Apart from the socioeconomic factors, the practice of good personal behaviours is also equally important to prevent violence and abuse in society. In our study, participants who were not using masks regularly were more likely to experience verbal abuse. This was also evident from the information presented in various news portals where people were abused for not using masks in public places.^{16 17 32} Similarly, participants who had been abusing drugs and who were using alcohol higher amounts than normal were more likely to experience verbal abuse. This finding can be interpreted in different ways. Due to the cross-sectional nature of the study design, findings might have been driven by reverse causality. For instance, people who are exposed to abuse may later develop a habit of taking drugs and alcohol. Conversely, participants who reported being abused might have actually perpetrated violence under the influence of the substance due to a loss of self-control. Nonetheless, the finding of our study is not sufficient to claim this notion.

The findings of our study should be interpreted in light of the following limitations. First, data were collected from an internet survey which might have limited the

responses of a certain group of population. However, as described in the method section, this was adjusted to approximate the national representative sample. Second, due to the cross-sectional design of our study, some findings might have been driven by reverse causality. Lastly, since it was a self-reported survey, there might have been under or over-reporting of the incidence. However, information about confidentiality was explicitly mentioned to the participants. Despite these limitations, this is the first nationwide cross-sectional study conducted to explore the incidence of abuse among the general population amid COVID-19 during the restriction period. The findings of this study could be highly valuable for designing effective interventions to mitigate this problem amid crises.

CONCLUSION

The incidence of verbal abuse was comparatively higher than physical abuse among the general population in Japan amid COVID-19. Physical abuse was positively associated with the state of the emergency declaration during COVID-19. Furthermore, vulnerable people such as those with low household income, who had bad family relationships, widows and divorcees were more likely to experience abuse. The findings of this study have reinforced important truths of existing inequalities among the general population which tend to be magnified during crises. Crises like COVID-19 do not inflict equivalent hardships to all people, rather exacerbate or spark diverse forms of abuse to vulnerable groups of the population. Moreover, restrictions that force abusive couples/family members to stay together would further contribute to violence and abuse in society. Therefore, it is highly imperative to look at the problem from a holistic approach to prevent the occurrence of other problems while trying to solve one.

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Contributors DB conceptualised the study, analysed the data, wrote and revised the manuscript. DB is responsible for the overall content as the guarantor. TT contributed to the conceptualisation, project administration, funding acquisition, review and revision of the manuscript. AO, TS, YK, SS, SH and TM contributed during the conceptualisation, review and revision of the manuscript. All authors read and approved the final manuscript for publication.

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Data availability statement Data are available on reasonable request. All data relevant to the study are included in the article or uploaded as online supplemental information. The data that support the findings of this study are available on reasonable request. The data of this study are not available in a public repository because they contain personally identifiable or potentially sensitive participant information. Based on the regulations for ethical guidelines in Japan, the Research Ethics Committee of the Osaka International Cancer Institute has imposed restrictions on the dissemination of the data collected in this study. If any person wishes to verify our data, they are most welcome to contact the corresponding author.

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