

1 **Title:** Non-Consensual Sex among Japanese Women in the COVID-19 Pandemic: A Large-
2 Scale Nationwide Survey-Based Study

3
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NOTE: This preprint reports new research that has not been certified by peer review and should not be used to guide clinical practice.

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27

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49

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51 sexual education

52

53 **ABSTRACT**

54 **Background:** Non-consensual sex including rape and sexual assault has been a global concern
55 and may have been influenced by the COVID-19 pandemic, however the information on this
56 topic is limited. Therefore, our objective was to survey the incidence rate of non-consensual
57 sex among Japanese women aged 15-79 years between April to September 2020, following the
58 COVID-19 pandemic in Japan.

59

60 **Materials and Methods:** We utilized the data obtained from a nationwide, cross-sectional
61 internet survey conducted in Japan between August and September 2020. Sampling weights
62 were applied to calculate national estimates, and multivariable logistic regression was
63 performed to identify factors associated with non-consensual sex. Data was extracted from a
64 cross-sectional, web-based, self-administered survey of approximately 2.2 million individuals
65 from the general public, including in men and women.

66

67 **Results:** Excluding men and responses with inconsistencies, the final analysis included 12,809
68 women participants, with 138 (1.1%) reporting experiencing non-consensual sex within a five-
69 month period. Being aged 15–29 years and having a worsened mental or economic status were
70 associated with experiencing non-consensual sex.

71

72 **Conclusions:** Early intervention to prevent individuals from becoming victims of sexual harm
73 should be extended to economically vulnerable and young women, especially during times of
74 societal upheaval such as the COVID-19 pandemic. Additionally, Japan should prioritize the
75 implementation of comprehensive education on the concept of sexual consent.

76

78 **INTRODUCTION**

79 Non-consensual sex refers to engaging in sexual behavior without obtaining consent to touch,
80 observe, or perform sexual acts involving private body parts that exceed the boundaries of
81 another person’s body or mind (1,2). Non-consensual sex can take many forms, including rape,
82 transactional sex, cross-generational sex, unwanted touch, and molestation. In the European
83 Union, between 45% to 55% of women have experienced sexual harassment since the age of
84 15 (3). Previous research has identified common factors associated with victims, including ages
85 between 10 and 30 years, mental vulnerability, and financial hardship (4). Women with these
86 characteristics are at a higher risk of experiencing non-consensual sex compared to those
87 without these traits (4). Furthermore, women with these characteristics often find it challenging
88 to disclose incidents of non-consensual sex to others, making it difficult to address these issues
89 (5).

90

91 Of note, non-consensual sex is reported to increase due to disruptions in social conditions, such
92 as natural disasters and worsened economic conditions. For instance, incidents of non-
93 consensual sex against women dramatically increased during times of economic and
94 psychological turmoil, such as the 2005 Hurricane Katrina in the United States and the 2011
95 Great East Japan Earthquake (6–8). Therefore, it is crucial to investigate the prevalence of non-

96 consensual sex after the COVID-19 pandemic.

97

98 At the onset of the COVID-19 pandemic, it was reported that 243 million girls and women
99 aged 15-49 years had been subjected to non-consensual sex worldwide (9). This was attributed
100 to the increase in the mandatory stay-at-home measure due to lockdowns, and resulting in
101 reduced access to social support from teachers, friends and caregivers (10). Awareness of the
102 status of non-consensual sex during the COVID-19 pandemic has grown in many countries
103 (11,12). However, the frequency and characteristics of non-consensual sex remain to be
104 elucidated, not only after but also before the COVID-19 pandemic in Japan to date, partly due
105 to traditional social norms that discourage open discussions about sexual issues (13).

106

107 The purpose of our study was to report the incidence of non-consensual during the early stages
108 of the COVID-19 pandemic in Japan. Additionally, we explored potential risk factors such as
109 mental health conditions, economic changes, and concerns about the lockdown, and anxiety
110 about the disease.

111

112 **METHODS**

113 **Context**

114 This cross-sectional study was conducted among a sample of approximately 2.2 million

115 individuals from the general public who participated in a web-based self-reported questionnaire
116 survey for the Japan COVID-19 and Society Internet Survey (JACSIS) project (14). The survey
117 was administered by the well-established internet research agency, Rakuten Insight, Inc., which
118 has been utilized in prior research studies (14,15). Data were collected from April 2020 to
119 September 30, 2020. The prefectures where the selected individuals lived represented all
120 prefectures in Japan, as indicated in previous studies (16).

121

122 **Patient and public involvement**

123 No patients were involved in this study.

124

125 **Participants**

126 The survey invitation was extended to 28,000 individuals out of 2.2 million registered with the
127 survey agency, Rakuten Insight, Inc. Using a computer algorithm, study participants were
128 selected through random sampling.

129

130 **Analysis Subjects**

131 Respondents who self-identified as women in the questionnaire were included in our analysis.

132 Among all the survey respondents totaling 28,000, the number of valid women participants for

133 analysis was 12,809.

134

135 **Outcome Variable: Experience of Non-Consensual Sex**

136 The focus of this study was to examine instances of non-consensual sex occurring between

137 from April 2020 to 30 September 2020. Participants were not questioned about specific

138 details but were instead asked to respond with a simple “yes” or “no” to indicate whether they

139 had experienced such incidents.

140

141 **Exposure Variables**

142 **Sociodemographic characteristics**

143 As independent variables, demographics were included, encompassing gender, age groups

144 (15–19, 20–29, 30–39, 40–49, 50–59, 60–69, 70–79 years), marital status (unmarried, married

145 and widowed/separated), having children (none or more than one), educational attainment

146 (high school educated, college educated or higher), employment status (any type of

147 employment, unemployed), household income level, which was calculated as dividing the

148 household income by the square root of household size (categorized by the tertials of

149 household equivalent income (low, <JPY2.5 million/US\$25 000/£16 667; intermediate,

150 JPY2.5–JPY4.3 million/US\$25 000–US\$43 000/£16 667–£28 667; high, >JPY4.3

151 million/<US\$43 000/<£28 667; unknown/declined to answer)), and smoking status (not
152 smoker or current smoker).(14)

153

154 **Living Area Classification**

155 Regarding living regions, all 47 prefectures were divided into the following three areas based
156 on the date of the Declaration of the State of Emergency (DSE area) (17,18). “Designated as
157 DSE on April 7, 2020”, “Designated as DSE on April 16, 2020”, and “Others”, “Specific
158 alert designated on April 7, 2020” included Tokyo, Kanagawa, Chiba, Saitama, Osaka,
159 Hyogo, and Fukuoka. “Specific alert designated on April 16, 2020” included Hokkaido,
160 Ibaraki, Ishikawa, Gifu, Aichi, and Kyoto. “Others” comprised the remaining 34 prefectures.
161 These categorization were determined by the Japanese Government using three indicators:
162 the cumulative number of infected people, epidemiological trend, medical capacity and
163 surveillance system (17). During the target period, people living in the relevant prefectures
164 were advised to avoid unnecessarily outings, limit the use of entertainment facilities, and
165 adhere to restrictions on economic activities (19).

166

167 **Fear of COVID-19 Scale**

168 The Japanese version Fear of COVID-19 Scale (FCV-19S) was used to assess participants’

169 fear of the COVID-19 infection (20). This instrument comprises seven items rated on a 5-
170 point scale (1 = “strongly disagree”; 5 = “strongly agree”). Consequently, the total score
171 ranged from 7 to 35, with a higher score indicating a greater fear of COVID-19. Satisfactory
172 internal consistency and validation of the scale were confirmed in the original seven-item
173 scale ($\alpha = .82$) (21).

174

175 **Personal Health and Economic Statuses**

176 Based on previous research, an examination was conducted to determine whether health and
177 economic statuses were associated with non-consensual sex (4). The health-related questions
178 included the following: Self-rated health (good or other than good), “Any change in mental
179 state in the last month compared to before January 2020 ?” (Worse, No change, Getting
180 better, I do not know)”, Suicidal thoughts (Happened since before COVID-19 pandemic,
181 First experienced during the COVID-19 pandemic or Never), Desire not to talk to anyone
182 due to worries (Yes or No), Feeling isolated (Yes or No), Any cancellation of a family
183 gathering due to the COVID-19 pandemic (Yes or No), Non-payment of salary (Happened
184 since before COVID-19 pandemic, First happened during the COVID-19 pandemic, Never),
185 and Lack of money to buy necessities of life (Happened since before COVID-19 pandemic,
186 First Happened during the COVID-19 pandemic or Never).

187

188 **Statistical Procedure**

189 To achieve the purpose of identifying the incidence of non-consensual sexual activity and its
190 associated factors during the COVID-19 outbreak, two types of analysis methods were
191 employed.

192

193 First, to determine the incidence rate, we divided the sample into two groups: those who
194 responded “Yes” to the question of “Any non-consensual sex” and who did not. The number
195 and percentage of individuals in these two categories, along with the χ -square test, were
196 calculated for each independent variable. The number, percentage, and p-value of each item
197 are described in Table 1.

198

199 Second, a multivariate logistic regression analysis was conducted to identify potential
200 predictive factors in the occurrence of non-consensual sex. This analysis encompassed all the
201 aforementioned exposure variables, and odds ratios with 95% confidence intervals (CIs) were
202 estimated (Table 2). As a sub-analysis, the incidence of suicidal ideation by age was also
203 calculated.

204

205 It should be noted that because the characteristics of the participants in this Internet survey may
206 differ from the general population (i.e., individuals with low digital skills might be excluded),
207 a weighted analysis was performed to minimize differences in demographics, economic status,
208 and health-related characteristics. This approach aimed to approximate national estimates from
209 a nationally representative survey.

210

211 Statistical significance was defined as $p < 0.05$. The data were analyzed using STATA V.16.1
212 (Stata Corp, College Station, Texas, USA).

213

214 **Ethics**

215 This study adhered to ethical standards in accordance with the 1975 Declaration of Helsinki,
216 as revised in 2013. Prior to participating in the online survey, all participants provided informed
217 consent through a web-based consent form. The Research Ethics Committee of the Osaka
218 International Cancer Institute reviewed and approved the study (No. 20084).

219

220 **Results**

221 The total number of respondents, including both men and women, was 28,000. Out of these,
222 2,518 participants who provided invalid responses (e.g., the same number is used for all survey
223 items; incomplete responses) and 12,673 men were excluded. Consequently, the final analysis
224 sample consisted of 12,809 women, whose ages ranged from 15 and 79 years old.

225

226 Table 1 shows the characteristics of the weighted proportion of non-consensual sex among all
227 participants. The overall weighted incidence rate for non-consensual sex during the five-month
228 period (April to September 2020) was 1.1 %. The incidence rate of non-consensual sex was
229 higher among individuals aged 15-19 years (1.1%) and 20-29 years (2.4%), which exceeded
230 the rates in other age groups. Women with jobs (1.5%) had a higher incidence rate than those
231 without jobs (0.7%).

232

233 Table 1: Demographics and Descriptive Statistics of Weighted Women Participants during the
234 Five-Month from April to September 2020

Variable	Non-Consensual Sex April-Sept 2020	
	Total (n=12,809)	
	Yes N (%)	No N (%)
Total	138 (1.1)	12,671 (98.9)
Age		
15-19	8.0 (1.1)	707 (98.9)
20-29	37 (2.4)	1543 (97.7)
30-39	38 (2.0)	1845 (98.0)
40-49	25 (1.0)	2395 (98.9)
50-59	15 (0.7)	2097 (99.3)
60-69	15 (0.7)	2127 (99.3)
70-79	1.0 (0.1)	1956 (99.9)
Marital status		
Married	88 (1.1)	7929 (98.9)
Never married	29 (0.9)	3276 (99.1)
Widowed or separated	20 (1.4)	1467 (98.7)

Having children		
No children	56 (0.9)	6006 (99.1)
At least one or more	99 (1.5)	6648 (98.5)
Educational attainment		
High school or lower	54 (1.0)	4261 (99.0)
College/university or graduate school	83 (1.2)	7136 (98.9)
Employment status		
Unemployed	43 (0.7)	6259 (99.3)
In employment	95 (1.5)	6412 (98.5)
Smoking status		
Not smoker	117 (1.0)	11404(99.0)
Current smoker	20 (1.6)	1268 (98.4)
Household Income (million JPY)		
Low	53 (1.7)	3144 (98.3)
Moderate	43 (1.3)	3226 (98.7)
High	26 (1.0)	2669 (99.0)
Unknown	14 (0.4)	3632 (99.6)
Region		
Other	86 (1.3)	6628 (98.7)
DSE (April 16-)	16 (0.8)	2117 (99.2)
DSE (April 7-)	31 (0.9)	3568 (99.1)
Fear of COVID-19 [†]		
7–15	41 (1.2)	3402 (98.8)
16–20	26 (0.6)	4173 (99.4)
21–25	34 (1.0)	3405 (99.0)
26–35	37 (2.1)	1691 (97.9)
Self-rated health		
Other than good	94 (1.3)	7349 (98.7)
Good	44 (0.8)	5322 (99.2)
Mental state change in the last month compared to before January 2020		
Worse	59 (2.2)	2662 (97.8)
None	56 (0.6)	8998 (99.4)
Better	19 (3.3)	547 (96.7)
Unknown	4 (0.7)	500 (99.3)
Suicidal thoughts		
Yes, since before COVID-19	43 (4.0)	1039 (95.1)
First happened	20 (3.5)	539 (96.5)
Never	75 (0.7)	11093(99.3)
Desire not to talk to anyone due to worries		
Yes	76 (4.0)	2487 (97.0)
No	62 (0.6)	10184 (99.4)
Feeling isolated		
Yes	74 (3.7)	1925 (96.3)
No	64 (0.6)	10747 (99.4)
Cancellation of a family gathering due to the pandemic		
Yes	10 (0.6)	1730 (99.4)
No	127 (1.2)	10940(98.9)
Non-payment of salary		
Yes, since before COVID-19	15 (10.3)	133 (89.7)
First experience	8 (10.4)	67 (89.6)
Never	115 (0.9)	12471 (99.1)
Lack of money to buy necessities		
Yes, since before COVID-19	35 (4.8)	692 (95.2)
First experience	22 (6.1)	340 (94.0)
Never	81 (0.7)	11639 (99.3)

235

236 [†] Classification of the Fear of COVID-19 scale scores refers to previous studies (22).

237 All estimates account for survey weights.

238

239 There was no significant difference in the incidence rate of non-consensual sex among those

240 living in areas designated as DSE (0.9 % on April 7, 2020, 0.8 % on April 16, 2020, 1.3%

241 others). A higher FCV-19S (2.1%, [26-35]) was associated with a higher incidence rate

242 compared to other scores (1.2% [score from 7 to 15], 0.6% [score from 16 to 20], 1.0% [score
243 from 21 to 25]).

244

245 The incidence rate of participants who reported feeling “worse” (2.2%) or “getting better”
246 (4.4%) before the COVID-19 pandemic was higher than those who “No change” (0.6%) and
247 “I do not know” (0.7%). Participants who had suicidal thoughts (4.0% since before COVID-
248 19, 3.5% first happened) had a higher incidence rate than those who had never experienced
249 them (0.7%). Participants who reported feeling isolated (3.7%) had a higher incidence rate than
250 those who had never felt isolated (0.6%). Additionally, participants who had experienced non-
251 payment of salary (10.3% since before COVID-19, 10.4% first experience) had a higher
252 incidence rate than those who had never experienced it (0.9%). Similarly, participants who had
253 experienced a lack of money to buy necessities (4.8% since before COVID-19, 6.1% first
254 experience) had a higher incidence rate than those who had never experienced it (0.7%).

255

256 Table 2 shows the factors associated with non-consensual sex among participants. Participants
257 aged 15 to 19 years and those aged 20 to 29 years had higher odds of experiencing non-
258 consensual sex compared to participants in other aging groups. (Aged 15- 19 years old: OR
259 4.74, 95%CI 1.37 – 16.4, Aged 20-29 years old: OR 3.20, 95%CI 1.09 – 9.38). Employed
260 women participants were associated with higher odds of experiencing non-consensual sex than

261 unemployed participants (OR 1.68, 95% CI 1.36-2.07).

262

263 Table 2: Factors Associated with Non-Consensual Sex Among Weighted Participants During
264 the-Five-Month from April to September 2020

	Weighted sample	Weighted incidence	Crude Odds (95% CI)	Adjusted rate % (95% CI)	Adjusted odds ratio (95% CI)	P-value
Total	12,809	138 (1.1)				
Age						
15- 19	715	8.0 (1.1)	2.26(1.29, 3.94)	3.4 (1.3, 5.5)	4.74(1.37, 16.4)	0.014
20-29	1,580	37.1(2.4)	1.74(1.07, 2.81)	2.4 (1.3, 3.4)	3.2 (1.09, 9.38)	0.034
30-39	1,883	37.7 (2.0)	1.37(0.84, 2.23)	1.5 (0.9, 2.1)	1.88 (0.63, 5.55)	0.256
40-49	2,420	24.5 (1.0)	Reference	0.8 (0.3, 1.3)	Reference	-
50-59	2,112	14.5 (0.7)	0.43(0.22, 0.83)	0.8 (0.5, 1.0)	0.90 (0.37, 2.19)	0.822
60-69	2,142	14.8 (0.7)	0.49(0.26, 0.92)	1.1 (0.6, 1.7)	1.35 (0.45, 4.06)	0.585
70-79	1,957	1.0 (0.1)	0.23(0.10, 0.55)	0.05 (0.0, 0.1)	0.05 (0.02, 0.19)	<0.001
Marital status						
Married	8,017	88.3 (1.2)	Reference	1.6 (1.2, 2.0)	Reference	
Never married	3,304	29.0 (0.8)	1.35(0.96, 1.90)	0.5 (0.1, 0.8)	0.26 (0.10, 0.70)	0.007
Widowed or separated	1,487	20.3 (1.2)	0.83(0.48, 1.43)	1.5 (0.8, 2.1)	0.92 (0.69, 1.24)	0.599
Having children						
No children	6,302	42.8 (0.7)	Reference	0.8 (0.7, 0.9)	Reference	
One or more	6,507	94.9 (1.4)	1.60(1.15, 2.22)	1.2 (1.1, 1.4)	1.58 (1.23, 2.02)	<0.001
Educational Attainment						
College/university or graduate school	7,219	83.3 (1.0)	Reference	0.9 (0.8, 0.9)	Reference	
High school or less	5,590	54.4 (1.3)	0.76(0.53, 1.08)	1.3 (1.2, 1.3)	0.66 (0.57, 0.75)	<0.001
Employment Status						
Unemployed	6,237	43.2 (0.7)	Reference	0.8 (0.7, 0.9)	Reference	
Employed	6,572	94.5 (1.5)	1.701(1.23, 2.37)	1.3 (1.2, 1.4)	1.68 (1.36, 2.07)	<0.001
Smoking status						
Not smoker	11,521	117.4 (1.0)	Reference	1.1 (1.0,1.2)	Reference	
Current smoker	1,288	20.3 (1.6)	1.63 (1.05, 2.53)	1.0 (0.3,1.6)	0.89 (0.39, 2.04)	0.779
Household Income (million JPY)						
Low	3,579	57.2 (1.5)	Reference	1.4 (0.9, 1.8)	Reference	
Moderate	3,271	49.3 (1.6)	1.28(0.68, 1.56)	1.4 (1.4, 1.5)	1.06 (0.77, 1.46)	0.715
High	2,313	16.6 (0.6)	1.01(0.66, 1.53)	0.8 (0.3, 1.3)	0.57 (0.21, 1.56)	0.275
Unknown	3,647	14.5 (0.5)	0.467(0.28, 0.79)	0.4 (0.2, 0.7)	0.29 (0.11, 0.75)	0.011
Region						
Other	6,715	86.4 (2.0)	Reference	1.1 (1.0, 1.1)	Reference	
DES (April 13-)	2,133	16.3 (0.8)	1.12(0.70, 1.78)	1.1 (1.1, 1.2)	1.07 (0.99, 1.15)	0.100
DES (April 7-)	3,599	31.2 (0.5)	1.03(0.72, 1.48)	1.0 (1.0, 1.1)	0.94 (0.68, 1.24)	0.261
Fear of COVID-19						
7-15	3,443	40.9 (1.2)	Reference	1.4 (1.1, 1.7)	Reference	
16-20	4,199	25.9 (0.6)	0.781(0.50, 1.21)	0.7 (0.4, 1.0)	0.45 (0.23, 0.88)	0.019
21-25	3,439	34.3 (0.9)	0.832(0.53, 1.30)	0.9 (0.9, 1.0)	0.62 (0.47, 0.81)	0.001
26-35	1,728	36.5 (2.3)	2.00(1.28, 3.11)	1.4 (1.3, 1.5)	1.01 (0.84, 1.21)	0.927
Self-rated health						
Good	5,366	43.8 (0.7)	Reference	0.9 (0.8, 1.1)	Reference	
Other than good	7,443	93.9 (1.5)	1.39(1.01, 1.91)	1.2 (1.1, 1.2)	1.25 (0.98, 1.48)	0.069
Mental state change in the last month compared to before January 2020						
Worse	9,054	56.0 (0.6)	Reference	0.9 (0.7, 1.2)	Reference	
None	2,686	59.3 (2.2)	3.14(2.19, 4.49)	1.1 (0.8, 1.5)	1.25 (0.67, 2.33)	0.480
Better	566	18.8 (3.0)	6.53(4.15, 10.30)	1.8 (1.4, 2.3)	2.11 (1.39, 3.18)	< 0.001
Unknown	504	3.5 (0.8)	1.55(0.622, 3.88)	0.8 (0.7, 0.8)	0.80 (0.53, 1.20)	0.286
Suicidal thoughts						
Yes, since before COVID-19	11,169	75.2 (0.7)	Reference	0.9 (0.8, 1.0)	Reference	
First happened	1,082	42.8 (3.9)	5.85(4.06, 8.43)	1.6 (1.4, 1.8)	1.85 (1.50, 2.27)	<0.001
Never	558	19.7 (4.3)	7.66(4.85, 12.01)	1.1 (0.7, 1.5)	1.25 (0.79, 1.97)	0.337
Desire not to talk to anyone due to worries						
Yes	10,246	61.5 (0.6)	Reference	0.8 (0.7, 0.9)	Reference	
No	2,563	76.2 (3.2)	7.27 (5.24, 10.08)	1.5 (1.3, 1.7)	1.98 (1.56, 2.51)	<0.001
Feeling isolated						
Yes	10,811	64.1 (0.6)	Reference	0.8 (0.3, 1.2)	Reference	

No Cancellation of a family gathering due to the pandemic	1,988	73.6 (3.4)	8.35 (6.02, 11.60)	1.8 (0.6, 2.9)	2.52 (0.70, 9.04)	0.156
Yes	1,741	83.3 (1.0)	Reference	0.5 (0.1, 0.9)	Reference	
No	11,068	54.4 (1.3)	1.035(0.64, 1.68)	1.2 (1.1, 1.3)	2.58 (1.07, 6.25)	0.035
Non-payment of salary						
Yes, since before COVID-19	12,586	7.8 (7.3)	Reference	1.0 (0.9, 1.0)	Reference	
First experience	148	114.6 (0.9)	12.15(7.02, 21.01)	3.9 (2.9, 4.9)	4.88 (3.42, 6.97)	<0.001
Never	75	15.3 (10.4)	15.13(8.40, 27.28)	1.9 (1.1, 2.8)	2.17 (1.36, 3.48)	0.001
Lack of money to buy necessities						
Yes, since before COVID-19	11,720	80.5 (0.7)	Reference	0.8 (0.7, 0.9)	Reference	
First experience	727	34.9 (5.7)	6.97(4.68, 10.38)	2.2 (1.9, 2.6)	2.94 (2.27, 3.81)	<0.001
Never	362	22.2 (6.1)	7.62(4.74, 12.25)	1.9 (1.1, 2.8)	2.50 (1.76, 3.55)	<0.001

265

266 Participants who did not receive salaries or compensations were more likely to experience non-
 267 consensual sex than those who did: (experienced since before COVID-19) OR 4.88, 95% CI
 268 3.42-6.97; (first experience during COVID-19) OR 2.17, 95% CI 1.36-3.48. Similarly,
 269 participants who could not afford to buy life necessities were more likely to experiencing non-
 270 consensual sex than the others (OR 2.5, 95% CI 1.76-3.55).

271

272 Lastly, participants who had suicidal thoughts were more likely to experience non-consensual
 273 sex than those who did not: (since before COVID-19: OR 1.85, 95% CI 1.50-2.27). Participants
 274 with reported feeling isolated were more likely to experience non-consensual sex than those
 275 who did not (OR 1.98, 95% CI 1.56-2.51). The result of the sub-analysis showed suicidal
 276 ideation was present in 20% of all women aged between 15 and 19 years.

277

278 Figure 1: Forest plot illustrating incidence rate of non-consensual sex for each factor
 279 (reference) among the participants.

280

281

[Insert Figure 1]

282

283 Note: Significant positive factors associated with non-consensual sex included the age group
284 “Aged 15–29 years old”, as well as worsened mental or economic status were associated with
285 an increased likelihood of experiencing non-consensual sex.

286

287 **Discussion**

288 This study assessed the incidence of non-consensual sex in Japan during COVID-19 and

289 explored associated factors while applying weighing to mitigate biases related to online

290 participation. The overall rate of participants reporting non-consensual sex was 1.2% over a

291 five-month period from April to September 2020. Factors associated with experiencing non-

292 consensual sex among participants included ages between 15 and 29, employment status,

293 deteriorating mental health condition, suicidal thoughts, a desire not to talk to anyone, feeling

294 isolated, and challenging economic circumstances.

295

296 In Japan, research related to sexual matters is limited. We believe this limitation stems from

297 the fact that sexual topics are often considered taboo with Japanese education institutions, and

298 sexual education in Japan lags behind that in Western countries (22–24). Additionally, the

299 understanding of obtaining sexual consent, which is essential in all sexual activities, lags

300 behind compared to countries that are known to be advanced in sex education in some of

301 Europe countries (13,22,25). For instance, the Netherlands had sex education compulsory from

302 elementary school, and Denmark was one of the European countries that criminalized non-
303 consensual sexual acts in 2020 at the time of our survey. Despite the efforts in Europe,
304 conducting such a comprehensive study on a large scale was of significant importance as it
305 ventured into uncharted territory in Japan.

306

307 Globally, concern arose about an increase in sexual violence against women around April 2020,
308 during the early stages of the COVID-19 outbreak. However, specific incidence data were
309 limited (12,26). While some countries reported an uptick in sexual violence cases (e.g., South
310 Africa, Bangladesh (12,27)), others reported a significant decrease after implementing
311 lockdown measures, as seen in Australia and Canada (28,29). In Japan, the available data
312 included two key pieces of information from the police office: the reported prevalence of sexual
313 violence among women, which stood at 6.9% (30), and a notable increase in the number of
314 sexual assault victims seeking consultations, approximately 1.2 times higher in 2020 compared
315 to 2019 (31,32). However, the incidence rate had not been thoroughly investigated during the
316 COVID-19 pandemic, resulting in a scarcity of information regarding the incidence of sexual
317 violence against women (33). It is important to note that our study did not have access to a
318 comparative dataset from a different time point to evaluate percentage change in the incidence
319 of sexual violence. Nevertheless, we were able to fundamental data concerning non-consensual

320 sex for the first time in Japan.

321

322 Approximately 80% of the women who reported experiencing non-consensual sex fell within
323 the age range of 15 and 49 years old. Notably, the incidence of reported non-consensual sex
324 dramatically decreased among women aged 50 to 79 years. There was a significant increase in
325 the risk of non-consensual sex within the age group 15 to 29 years. This pattern is consistent
326 with reports from the United States and Japan, where individuals in their late teens to early
327 thirties are identified as the age group at the highest risk of experiencing rape (30,34).

328

329 It is crucial to recognize that young women who have been victims of sexual assault are also
330 more likely to experience lifetime suicide attempts and post-traumatic stress symptom.
331 Specifically, research indicates that teenage sexual trauma is strongly correlate with suicide
332 attempts (35–38). Additionally, our sub-analysis results revealed that suicidal ideation was
333 present in 20% of all women aged between 15 and 19 years. Based on the aforementioned
334 findings and considerations, we firmly believe that measures to protect the younger generation
335 are imperative (39). As mentioned previously, Japan falls behind comprehensive sexual
336 education for the younger generation. We contend that it is necessary to incorporate detailed
337 explanations and the factors and circumstances that lead to unwanted sexual experiences

338 involving the non-consensual sex into Japanese school curriculum.

339

340 Concretely, employed participants were more likely to be in contact with others than those who
341 are unemployed. This time, we have not specifically investigated the locations where non-
342 consensual sex has occurred. Therefore, it can be said that employed women may become
343 victims of non-consensual sex, potentially by someone within their workplace or close social
344 circle. Indeed, reports from both Japan and the United States have indicated that non-
345 consensual sex is most frequently perpetrated by individuals known to the victims (30,40).
346 Employed people have an extra circle of known individuals from their workplace compared to
347 unemployed people.

348

349 Intriguingly, women who did not receive a salary and lacked the financial means to purchase
350 necessities were at an elevated risk of experiencing non-consensual sex. While this appears to
351 be the opposite of the above finding suggesting that being employed could be associated with
352 a higher odds of experiencing non-consensual sex, this aligns with previous studies showing a
353 connection between deteriorating economic conditions and an increased incidence of sexual
354 assault that have established a connection between deteriorating economic conditions and an
355 increased incidence of sexual assault (41,42), which is consistent with our findings. There are

356 two possible explanations for this association: First, worsening personal economic
357 circumstances may lead women to engage in occupations with a higher risk of non-consensual
358 sex, such as working in the sex industry. Second, women in precarious financial situation often
359 experience psychological pressure to secure and maintain employment (42). Under such
360 pressure, they may become psychologically vulnerable to sexual coercion from their employers
361 in exchange for job security (42). Future research should explore people in these circumstances
362 in depth to better under-explored areas in Japan.

363

364 While 66% of the participants lived in areas under DSE, our study did not find a significant
365 association between non-consensual sex and living in the DSE area. However, we did identify
366 a significant correlation between experiencing a moderate level of fear related to the COVID-
367 19 pandemic (scoring 16-25 points) and instances of non-consensual sex. This suggests that
368 participants who stayed at home more frequently might have become more vulnerable to non-
369 consensual sexual experiences by their partner. In fact, non-consensual sex was more
370 frequently reported as being perpetrated by partner during the COVID-19 pandemic, and there
371 was an observed increase in the number of domestic problems during this period (31).

372

373 Based on the considerations outlined above, there is a heightened risk of non-consensual sexual

374 activity occurred during the COVID-19 pandemic, particularly among young, impoverished
375 women. Consequently, it is of utmost importance to identify and provide economic and
376 psychosocial support to these vulnerable individuals during times of social disruption.
377 Furthermore, a notable deficiency in the current landscape of Japan is the absence of
378 comprehensive education regarding the concept of sexual consent. Specifically, there is an
379 urgent need for thorough instruction emphasizing the importance of men obtaining consent
380 from women before engaging in any sexual activities (43). This education should be
381 disseminated at both the local and national levels, as it may necessitate a societal shift in
382 awareness at all levels.

383

384 In a noteworthy development, on June 16, 2023, Japan amended the legal term “Forced Sexual
385 Intercourse Crime” to “Non-consensual Sexual Intercourse Crime”, explicitly stipulating that
386 any sexual activity without consent is now considered a criminal offense (44). We anticipate
387 that this alteration will provide a means of support to victims who have endured their suffering
388 in silence and were unable to report their experiences.

389

390 **Limitations**

391 This study has several limitations. First, as it is a web-based survey, participants in an internet-

392 based study may not be representative of the general population. To address this potential bias,
393 we performed statistical adjustments. However, it is important to note that this method may not
394 fully account for the differences between participants in an internet survey and those in a
395 nationwide representative survey, which poses challenges to the generalizability of our findings.
396 To mitigate this limitation, harmonizing our data with a major national and representative
397 cross-sectional study would enable us to pool data and potentially adjust for the factor of
398 “being a respondent in an internet survey”, as has been done in other JACSIS studies (45).

399

400 The second limitation is related to the cross-sectional nature of survey. This design does not
401 allow us to establish causal relationships between the presence or absence of non-consensual
402 sex and factors such as economic status or suicidal ideation (46).

403

404 The third limitation concerns the definition of “Non-consensual sex”. We did not explicitly
405 seek a specific definition of non-consensual sexual activity, which may vary by generations
406 or community cultures (e.g., workplace community, religious community). Sex education in
407 Japan is known to be under-developed, therefore respondents may not necessarily share a
408 relatively standardized understanding of this concept. We did inquire about employment status,
409 but we did not specifically ask about non-consensual sexual activity in the workplace. However,

410 we observed a significant correlation between being employed and experiencing non-
411 consensual sexual activity. Also, we did not inquire the place of experienced non-consensual
412 sex such as workplace. We observed a significant correlation between being employed and
413 experiencing non-consensual sexual activity. However, it was not possible to ascertain whether
414 non-consensual sex had occurred in the workplace.

415

416 The Forth, as mentioned in the section on “Analysis Subjects”, our questionnaire only asked
417 whether respondents self-identified as male or female. Therefore, among those who self-
418 identified as female, there is a possibility that transgender women or individuals who identify
419 as bigender may also be included. This follows the convention in Japan, where many national
420 surveys still only inquire about male or female gender identities.

421

422 **Conclusion**

423 Early intervention to prevent individuals from becoming victims of sexual harm should be
424 extended to economically vulnerable and young women, especially during times of societal
425 upheaval such as the COVID-19 pandemic. Additionally, Japan should prioritize the
426 implementation of comprehensive education on the concept of sexual consent.

427

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Figure 1. Forest plot of the incidence rate of non-consensual sex of each factor (reference) among the participants.

