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Attempted suicide and associated risk factors among youth in urban Japan

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Abstract *Background* Suicide is a major social and health issue in Japan. We assessed prevalence of attempted suicide and explored individual, interpersonal, behavioral, and psychological risk factors associated with attempted suicide in a general community sample of youth in a metropolitan Japanese city. *Method* Survey of 2,095 participants age between 15 and 24 who were recruited using street-intercept techniques. *Results* Overall, 6% of males and 11% of females reported a prior suicide attempt. For males, attempted suicide was independently associated with experience of school bullying, being homosexual or bisexual, history of drug use, experience of unwanted sex, history of a diagnosed sexually transmitted infection, and low self-esteem. For females, attempted suicide was independently associated with being younger (ages 15–19 compared to 20–24), experience of school bullying, history of drug use, and history of smoking. *Conclusion* Prevention intervention programs for youth in Japan are necessary to achieve national aims to reduce attempted suicides and suicide mortality.

Key words Japan – suicide – mental health – youth

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Introduction

Japan has experienced an alarming suicide epidemic for over a decade [17]. Globally, Japan is ranked ninth highest in reported deaths by suicide [21], and second highest in annual suicides among OECD countries. Suicide incidence has been estimated at 24 per 100,000, and there have been over 30,000 suicide mortalities annually since 1998 [7]. Age-adjusted mortality due to suicide in Japan is twice as high among males and 3 times as high among females than in the United States [22]. Prevention of suicide has consequently been declared a national public health priority, with a goal of reducing suicide incidence by 10% each year until 2010 [21].

Youth in Japan are among the most vulnerable groups for attempted suicide and suicide mortality, which accounts for the second highest number of deaths among 15–24 year olds [7]. This falls in line with international trends. Recent literature reviews depict adolescents and young adults as vulnerable to suicidal ideation, attempts, and mortality [4, 25]. One international review reported 30% of adolescents had ever considered suicide and 10% had ever attempted suicide, with both indicators higher among females than males [10]. Suicidal mortality is higher among young males than females; young males tend to use more irreversible methods [3]. Some frequently reported risk factors for suicide among youth include mental health problems [24],

drug use [8, 29], and stressful or traumatic life events [6] including experience of sexual abuse and violence. Based on a comprehensive analysis of the literature on adolescent suicidality, researchers have offered a heuristic model describing determinants of youth suicidal behavior including affective, developmental, interpersonal, and environmental levels of analysis, which operate over time to exacerbate risk [4]. This model articulates how adolescent suicidality can arise from multiple parallel sources, and suggests that the processes by which they operate to determine adolescent suicidality might be context and culture dependent.

Factors associated with attempted suicide among youth have not been studied extensively in Japan, though a review of existing research points to a number of potential risk factors. A study of youth undergoing drug treatment found that illicit drug use at early ages is associated significantly with suicide attempts [23]. Another study of youth in Japan who had been placed in a juvenile detention center found that deliberate self-harm was associated with a history of school bullying and prior sexual abuse [18]. Sexual orientation can also contribute to suicidal thoughts or behaviors, as shown in a recent study of homosexual and bisexual men in Japan that found 15% had attempted suicide [14]. However, there is little information about factors associated with attempted suicide from general community populations of youth, for example individuals not enrolled in drug treatment or juvenile detention programs. One relevant study, based on a large school sample of Japanese youth, identified a pattern of related adverse health outcomes including cigarette smoking, drug use, and sexual behavior [30], and for females, cigarette smoking was independently associated with suicidal ideation [31].

The aim of this research was to assess prevalence of attempted suicide in a community sample of urban Japanese youth and explore risk factors related to attempted suicide. Following from previous multi-level models of determinants of suicide risk, this study aimed to explore four general factors identified in previous Japanese youth samples as potential contributors to attempted suicide: (1) individual characteristics (e.g., age, sexual orientation), (2) interpersonal factors (e.g., school bullying, family closeness), (3) risk behaviors (e.g., sexual activity, drug use, alcohol use, smoking), and (4) psychological factors (e.g., self-esteem). The study was not designed to test any specific theory or hypothesis on attempted suicide. Although exploratory by design, this research aimed to offer the first known study of prevalence and correlates of attempted suicide in this population, and to contribute additional information toward building conceptual models and evidence-informed preventative measures against the suicide crisis in Japan.

Method

Participants and recruitment

Participant recruitment took place in Osaka, which is Japan's second largest urban city beyond metropolitan Tokyo, and the largest city in western Japan. Street-intercept methods were used to recruit a large sample of Japanese urban youth. Although not as robust as other methods in yielding generalizable samples, street-intercept methods are frequently used in studies dealing with sensitive and stigmatized topics including drug use, sexual behavior, and mental health, and can be more cost-effective at yielding higher response rates in comparison with random-digit telephone surveys while achieving high degrees of community representation [27].

Formative environmental assessments were conducted to identify community places where large numbers of youth congregate. Four street sites in the America-mura district, a hub of cultural and commercial activity for youth, were selected as recruitment areas. A team of interviewers was present at the four street recruitment sites between 5 and 9 pm during August and September 2001. Interviewers were trained on identifying and approaching potential participants, screening techniques, informed consent procedures, and survey administration. Participant inclusion criteria included being between 15 and 24 years of age, lifetime history of sexual behavior, residing in the Kinki region of western Japan (which encompasses Kyoto, Osaka, Hyogo, Nara, Shiga, and Wakayama prefectures), and spending time in the America-mura district at least once per month. Individuals who met inclusion criteria and agreed to be in the study provided verbal consent, and were given a self-administered survey. Participants were directed to a discrete nearby area to complete the surveys, which were checked for completion by the interviewer and placed into sealed envelopes. Participants received pre-paid gift cards valued at 1,000 yen (about 8 US dollars) and a pamphlet with written information about health topics included in the survey.

In total, 4,650 youth were approached and invited to participate in the study, of whom 893 immediately declined and 95 had already completed the survey. Of 3,662 individuals screened, 1,295 did not meet eligibility criteria and 138 eligible individuals declined to participate, most frequently due to time constraints. Of 2,229 participants who took the survey, data from 134 were discarded due to high levels of missing data. The valid number of cases analyzed was 2,095, including 1,035 males and 1,060 females.

Measures

The questionnaire was written entirely in Japanese. Participants reported individual demographic characteristics including age, gender, and sexual orientation. Participants described whether they ever had attempted suicide in their life. Participants described whether they had ever experienced school bullying and whether they currently lived with their family. They described whether they had ever used drugs, smoked cigarettes, or used alcohol and, if so, whether they had rarely, occasionally, or regularly smoked cigarettes or used alcohol. They also responded to items about specific sexual risk factors, including whether they had ever engaged in forced or unwanted sex, ever been diagnosed with a sexually transmitted infection, and ever received money in exchange for sex. Participants completed a measure of self-esteem [32], which was an adapted version of the Rosenberg self-esteem scale [26] validated previously with Japanese samples.

Data analysis

Chi-square tests were conducted to examine associations between having ever attempted suicide with individual demographic characteristics (age, sexual orientation), interpersonal factors (school bullying, living with parents), health risk behaviors (sexual activities, drug use, smoking), and psychological well-being (self-esteem;

Table 1 Associations between sample characteristics and history of attempted suicide

	Overall		Males (N = 1,035)			Females (N = 1,060)		
			Ever attempted suicide			Ever attempted suicide		
	(%)	n	(%)	n	P	(%)	n	P
Overall		2,095	5.6	58		11.4	121	
Age group, years								
15–19	54.4	1,140	6.5	31	0.28	13.6	90	<0.01
20–24	45.5	954	4.8	27		7.8	31	
Sexual orientation								
Heterosexual	96.3	2,017	4.7	46	<0.01	11.2	115	0.13
Homosexual/bisexual/other	3.7	78	24.5	12		20.7	6	
Living with family								
No	38.0	796	6.5	30	0.34	11.2	37	0.92
Yes	62.0	1,299	4.9	28		11.5	84	
Experienced school bullying								
No	69.2	1,449	2.9	22	<0.01	8.2	56	<0.01
Yes	30.8	646	13.5	36		17.2	65	
Ever used drugs								
No	81.7	1,711	3.7	29	<0.01	9.3	86	<0.01
Yes	18.3	384	11.8	29		25.2	35	
Smoking in lifetime								
Never	17.3	362	3.1	4	0.51	3.0	7	<0.01
Rarely use	34.4	720	5.4	19		8.9	33	
Occasional use	3.3	70	9.1	2		18.8	9	
Regular use	45.0	943	6.2	33		17.7	72	
Drinking in lifetime								
Never	2.1	45	8.7	2	0.23	4.5	1	<0.01
Rarely use	34.5	722	5.1	17		6.7	26	
Occasional use	34.6	724	3.9	12		11.6	48	
Regular use	28.8	604	7.3	27		19.7	46	
Unwanted sex in lifetime								
No	72.8	1,525	4.3	35	<0.01	9.1	64	<0.01
Yes	27.2	570	10.7	23		16.1	57	
Diagnostic STI in lifetime								
No	92.9	1,946	4.8	47	<0.01	11.1	108	0.29
Yes	7.1	149	17.7	11		14.9	13	
Ever received money for sex								
No	95.4	1,998	5.2	51	0.02	10.8	109	<0.01
Yes	4.6	97	14.3	7		25.0	12	
Self-esteem								
Low	49.7	1,041	6.9	38	0.06	10.2	50	<0.01
High	50.3	1,054	4.1	20		12.5	71	

P values are associated with χ^2 tests

with dichotomous categories 'high' and 'low' created based on the sample median). Males and females were analyzed separately due to robust gender differences. Logistic regression analysis was used to evaluate the independent correlates of attempted suicide, separately, for males and females. Co-factors were entered into the model based upon univariate logistic regression associations that were significant at $P < 0.20$ [15]. Data were analyzed using SPSS (Version 13.0).

Result

Sample characteristics

Table 1 shows descriptive characteristics of the sample. The average age was 19.7 years (SD = 2.0) for males and 18.9 years (SD = 2.3) for females. Participants were primarily heterosexual (96%), and more than half (62%) currently lived with their family. Overall, 31% reported having a history of being bullied at school and 18% reported having ever used drugs. Forty-five percent of the sample reported regularly smoking cigarettes, and 29% reported regularly drinking alcohol. Over one-quarter (27%) reported ever experiencing unwanted sex, 7% had ever been diagnosed with a sexually transmitted infection, and 5% had ever received money in exchange for sex.

Prevalence and correlates of attempted suicide

Nine percent of the sample had ever attempted suicide; this was more common among females (11%) than males (6%). Associations between sample characteristics and history of attempted suicide were assessed using chi-square tests and are presented in Table 1. For males, attempted suicide was associated with identifying as homosexual/bisexual and questioning their sexual orientation, having ever experienced school bullying, having a history of drug use, having ever experienced unwanted sex, having ever

Table 2 Multivariate correlates of attempted suicide

	Ever attempted suicide											
	Males						Females					
	Unadj. OR	95% CI	*P*	Adj. OR	95% CI	*P*	Unadj. OR	95% CI	*P*	Adj. OR	95% CI	*P*
Age group												
15–19	1.00		0.25				1.00		<0.01	1.00		<0.01
20–24	0.73	0.43–1.25					0.54	0.35–0.83		0.47	0.30–0.74	
Sexual orientation												
Heterosexual	1.00		<0.01	1.00		<0.01	1.00		0.12	1.00		0.86
Homosexual/Bisexual/Other	6.63	3.24–13.55		5.98	2.65–13.48		2.08	0.83–5.21		1.10	0.39–3.09	
Experienced school bullying												
No	1.00		<0.01	1.00		<0.01	1.00		<0.01	1.00		<0.01
Yes	5.29	3.05–9.16		5.33	2.98–9.56		2.31	1.58–3.39		2.19	1.46–3.29	
Ever used drugs												
No	1.00		<0.01	1.00		<0.01	1.00		<0.01	1.00		<0.01
Yes	3.52	2.06–6.02		3.12	1.70–5.73		3.27	2.10–5.09		2.47	1.52–4.02	
Smoking in lifetime												
Never/rarely	1.00		0.30				1.00		<0.01	1.00		<0.01
Occasionally/Regularly	1.79	0.60–5.35					3.17	1.38–7.28		2.22	1.33–3.69	
Drinking in lifetime												
Never/rarely	1.00		0.46				1.00		0.20	1.00		0.38
Occasionally/Regularly	0.57	0.12–2.61					1.50	0.20–11.63		1.29	0.73–2.26	
Unwanted sex in lifetime												
No	1.00		<0.01	1.00		0.03	1.00		<0.01	1.00		0.40
Yes	2.69	1.55–4.65		2.03	1.12–3.84		1.92	1.31–2.81		1.20	0.78–1.83	
Diagnostic STI in lifetime												
No	1.00		<0.01	1.00		0.02	1.00		0.28			
Yes	4.25	2.08–8.18		2.94	1.23–7.02		1.41	0.76–2.62				
Ever received money for sex												
No	1.00		0.01	1.00		0.49	1.00		<0.01	1.00		0.20
Yes	3.06	1.31–7.14		0.67	0.21–2.12		2.76	1.40–5.47		1.64	0.77–3.49	
Self-esteem (median 33)												
Low	1.00		0.06	1.00		<0.01	1.00		0.25	1.00		0.59
High	0.58	0.33–1.01		0.53	0.29–0.97		1.25	0.85–1.84		1.12	0.75–1.67	

been diagnosed with a sexually transmitted infection, and having ever received money for sex. For females, attempted suicide was associated with being between the ages of 15 and 19, having ever experienced school bullying, history of drug use, frequency of cigarette smoking and alcohol use, history of unwanted sex and receiving money for sex, and self esteem.

Multivariate models to assess co-factors of attempted suicide

Variables were selected for inclusion in the multivariate model if they showed a moderate association (defined here as $P < 0.20$) with attempted suicide based upon univariate odds ratios (Table 2). For males, co-factors independently associated with attempted suicide included identifying as homosexual/bisexual and questioning their sexual orientation (odds ratio [OR] 5.98, 95% confidence interval [CI] 2.65–13.48), having ever experienced school bullying (OR 5.33, 95% CI 2.98–9.56), having ever used drugs (OR 3.12, 95% CI 1.7–5.73), having ever experienced unwanted sex (OR 2.03, 95% CI 1.12–3.84), having ever been diagnosed with a sexually transmitted infection (OR 2.94, 95% CI 1.23–7.02), and self esteem (OR 0.53, 95% CI 0.29–0.97). For females, co-factors independently associated with attempted suicide included being between the ages of 20 and 24 (OR 0.47, 95% CI 0.30–0.74), having ever experienced school bullying (OR 2.19, 95% CI 1.46–3.29), having ever used drugs (OR 2.47, 95% CI 1.52–4.02), and smoking occasionally or regularly (OR 2.22, 95% CI 1.33–3.69).

Discussion

These findings offer a closer look at behavioral and contextual risk factors for suicide among youth in Japan. Nine percent of the sample reported attempting suicide, with more females than males reporting a history of suicide attempts. Significant independent co-factors of attempted suicide were identified. For males these co-factors included being homosexual or bisexual, being bullied at school, history of drug use, experiencing unwanted sex, experiencing a sexually transmitted infection, and low self-esteem. For females these co-factors included being ages 15–19 years, being bullied at school, history of drug use, and smoking behavior. The findings support prior models on multiple determinants of adolescent suicidality [4], and raise awareness about a constel-

lation of variables that operate at unique levels of analysis for youth in Japan, including stigmatized personal conditions (male homosexuality), negative interpersonal factors (being bullied), health risk behaviors (drug use, smoking), and psychological vulnerability (low self-esteem). Interestingly, living with family, which has been previously shown to be a protective factor [4], was not associated with attempted suicide for either males or females. Experience of school bullying and history of drug use were each associated with attempted suicide for both males and females, suggesting these as potential priority areas for informing preventive interventions to reduce suicide risk.

Research conducted across a range of geographic locations has shown that adolescents and young adults worldwide experience alarming levels of mental health problems including risks for depression and suicidal thoughts and behaviors [9, 24, 25]. Previous suicide prevention programs targeting adolescents and youth have identified the need for general education about suicide, mental health screening and treatment services, including school- and community-based services to recognize individuals at risk, peer support programs, crisis centers and anonymous hotlines, and interventions following suicide attempts [5, 11, 19]. In order to maximize the effectiveness of programs, consideration of Japanese cultural factors and local epidemiology should be taken into account.

Findings reported here suggest that, in the urban Japanese context, school-based programs might be particularly useful for providing general mental health information and services to youth, including initiatives to mitigate school bullying behaviors and support programs for those who have been targets of bullying and harassment. Information about the risks associated with drug use, alongside education about harms associated with other health risk behaviors such as smoking and drinking, are also potential strategies for reducing risk for attempted suicide. Observed gender differences suggest that specific suicide prevention programs might pay special attention to younger females and homosexual males. Improvements to general sexual health education, for example teaching strategies for refusing unwanted sex, might also contribute to reductions in risk for attempted suicide in this context.

Although not measured in this study, prior research has revealed that stigma and shame about mental health problems in Japan can challenge attempts to provide education, prevention, and treatment services [13, 20]. Youth might feel particularly uncomfortable discussing or confronting these issues [12, 16]. Implementation of programs to reduce youth's vulnerability to suicide should proceed with sensitivity to cultural norms and developmental processes. Because school has been shown to be a site for bullying among at-risk Japanese youth, intervention programs should also take place in community contexts, outside of schools, where bullied students might feel more comfortable speaking out about their experiences.

Three major limitations to the study warrant attention. First, although street intercept sampling techniques were used to maximize recruitment efforts and achieve a sample that reflected the target demographic group, the findings here might not be generalizable to all youth in urban Japan such as individuals who do not regularly frequent public community settings. Indeed, youth who tend to isolate themselves at home might show unique risk patterns [2, 28]. Consequently the findings might underestimate attempted suicide due to exclusion of adolescents who infrequently visit social venues and who are more socially isolated. Other rigorous sampling methods to improve generalizability of outcomes can be considered for future research, such as probability based school surveys. Second, because of cultural stigmas toward psychological health and related health problems, participants' responses might have been prone to bias, including underreporting of key variables that might be stigmatized, such as attempted suicide and low self-esteem, and over-reporting behaviors that might be considered normative or socially desirable for their age group, such as drug and alcohol use. Third, because of the cross-sectional design, inferences about directional associations between attempted suicide and other variables cannot be made. Because of the exploratory nature of the research, the survey was not constructed to explicitly test a theoretical model of determinants for attempted suicide for Japanese youth. Based on analysis here, further hypothesis-driven research can clarify the processes and directional linkages between attempted suicide with individual, interpersonal, behavioral, and psychological co-factors, which can then inform development of theory-based intervention programs for suicide prevention among Japanese youth.

Despite these noted limitations, the findings here provide unique insights into the mental health vulnerabilities among youth in Japan. Much prior research aiming to understand the suicide epidemic in Japan has focused on macro variables such as economic determinants at the national level [1]. In this study, we observed that mundane issues which youth might experience in their day-to-day lives—such as being bullied, or drinking alcohol, or sexual activity—can contribute to risk for attempted suicide and other mental health problems. More theoretical constructions of specific mechanisms and pathways toward risk for attempted suicide are warranted in order to build intervention strategies that can be delivered to individuals, perhaps in school or community contexts. The current findings offer important glimpses into the social epidemiology of suicide for youth in Japan, and substantial further efforts are needed to build a stronger evidence base for preventive interventions and policies.

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References

1. Aihara H, Iki M (2003) An ecological study of the relations between the recent high suicide rates and economic and demographic factors in Japan. J Epidemiol 13:56–61
2. Bearman PS, Moody J (2004) Suicide and friendships among American adolescents. Am J Public Health 94:89–95
3. Brent DA, Baugher M, Bridge J, Chen T, Chiappetta L (1999) Age- and sex-related risk factors for adolescent suicide. J Am Acad Child Adolesc Psychiatry 38:1497–1505
4. Bridge JA, Goldstein TR, Brent DA (2006) Adolescent suicide and suicidal behavior. J Child Psychol Psychiatry 47:372–394
5. Centers for Disease Control, Prevention (1992) Youth suicide prevention programs: a resource guide. Atlanta, CDC
6. Cooper J, Appleby L, Amos T (2002) Life events preceding suicide by young people. Soc Psychiatry Psychiatr Epidemiol 37:271–275
7. Desapriya EB, Iwase N (2003) New trends in suicide in Japan. Inj Prev 9:284
8. Esposito-Smythers C, Spirito A (2004) Adolescent substance use and suicidal behavior: a review with implications for treatment research. Alcohol Clin Exp Res 28:S77–S88
9. Evans E, Hawton K, Rodham K (2004) Factors associated with suicidal phenomena in adolescents: a systematic review of population-based studies. Clin Psychol Rev 24:957–979
10. Evans E, Hawton K, Rodham K, Deeks J (2005) The prevalence of suicidal phenomena in adolescents: a systematic review of population-based studies. Suicide Life Threat Behav 35:239–250
11. Fristad MA, Shaver AE (2001) Psychosocial interventions for suicidal children and adolescents. Depress Anxiety 14:192–197
12. Gould MS, Velting D, Kleinman M, Lucas C, Thomas JG, Chung M (2004) Teenagers' attitudes about coping strategies and help-seeking behavior for suicidality. J Am Acad Child Adolesc Psychiatry 43:1124–1133
13. Griffiths KM, Nakane Y, Christensen H, Yoshioka K, Jorm AF, Nakane H (2006) Stigma in response to mental disorders: a comparison of Australia and Japan. BMC Psychiatry 6:21
14. Hidaka Y, Operario D (2006) Attempted suicide, psychological health and exposure to harassment among Japanese homosexual, bisexual or other men questioning their sexual orientation recruited via the Internet. J Epidemiol Community Health 60:962–967
15. Hosmer DW, Lemeshow S (1989) Applied logistic regression. Wiley, New York
16. Kirkcaldy BD, Siefen GR, Urkin J, Merrick J (2006) Risk factors for suicidal behavior in adolescents. Minerva Pediatr 58:443–450
17. Lamar J (2000) Suicides in Japan reach a record high. BMJ 321:528
18. Matsumoto T, Yamaguchi A, Chiba Y, Asami T, Iseki E, Hirayasu Y (2004) Patterns of self-cutting: a preliminary study of differences in clinical implications between wrist and arm-cutting using a Japanese juvenile detention center sample. Psychiatry Clin Neurosci 58:377–382
19. Merry S, McDowell H, Hetrick S, Bir J, Muller N (2004) Psychological and/or educational interventions for the prevention of depression in children and adolescents. Cochrane Database Syst Rev 1:CD003380
20. Nakane Y, Jorme AF, Yoshioka K, Christensen H, Nakane H, Griffiths KJ (2005) Public beliefs about causes and risk factors for mental disorders: a comparison of Japan and Australia. BMC Psychiatry 5:33
21. Nakao M, Takeuchi T (2006) The suicide epidemic in Japan and strategies of depression screening for its prevention. Bull World Health Organ 84:492–493
22. Ojima T, Nakamura Y, Detels R (2004) Comparative study about methods of suicide between Japan and the United States. J Epidemiol 14:187–192
23. Okasaka Y, Morita N, Nakatani Y (2006) Study on suicide attempts among drug addicts—prevalence of suicide attempts and investigation of risk factors (Article in Japanese). Nihon Arukoru Yakubutsu Igakkai Zasshi 41:39–58
24. Pelkonen M, Marttunen M (2003) Child and adolescent suicide: epidemiology, risk factors, and approaches to prevention. Paediatr Drugs 5:243–265
25. Portzky G, Audenaert K, Heeringen K (2005) Suicide among adolescents. Soc Psychiatry Psychiatr Epidemiol 40:922–930
26. Rosenberg M (1965) Society and the adolescent self-image. Princeton University Press, Princeton
27. Rotheram-Borus MJ, Mann T, Newman PA, Grusky O, Frerichs RR, Wight RG, Kuklinsky M (2001) A street intercept survey to assess HIV-testing attitudes and behaviors. AIDS Educ Prev 13:229–238
28. Rutter PA, Behrendt AE (2004) Adolescence and suicide risk: four psychosocial factors. Adolescence 39:295–302
29. Sher L, Zalsman G (2005) Alcohol and adolescent suicide. Int J Adolesc Med Health 17:197–203
30. Takakura M, Nagayama T, Sakihara S, Willcox C (2001) Patterns of health-risk behavior among Japanese high school students. J School Health 71:23–29
31. Takakura M, Ueji M, Sakihara S (2001) Covariation of cigarette smoking and other health-risk behaviors among Japanese high school students: a preliminary study. J Epidemiol, 11:224–228
32. Yamamoto M, Matui Y, Yamanari Y (1982) [ninchi sareta jiko no syosokumen]. Jpn J Educ Psychol 30:64–68