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Letters to the Editor

For publication: Tiagabine in the discontinuation of long-term benzodiazepine use

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TOLERANCE, DEPENDENCE AND withdrawal symptoms are well-known complications of long-term benzodiazepine (BDZ) use, raising thorny problems in any attempt at their discontinuation. Among the scarce available pharmacological interventions, gradual rather than abrupt discontinuation of BDZ and use of the antiepileptic drug (AED) carbamazepine are the only successfully tested ones for their efficacy.[1] Thus, newer innovatory treatments are clearly desirable. The recent marketing of newer AED, especially of the Selective GABA-Reuptake-Inhibitors, such as tiagabine (TGB) might offer new therapeutic options to this end. However, to the best of our knowledge, no such studies or reports are as yet available. In the following, we report precisely on such a case.

This is the case of a 68-year-old female patient with a 15-year history of generalized anxiety disorder (GAD) and BDZ-dependence according to Diagnostic and Statistical Manual of Mental Disorders (text revision) criteria without any other psychiatric comorbidity, or medication. For the last five years, she was clearly abusing the BDZ bromazepam at a dosage of 75 mg/day, moreover with a notable tolerance to this drug, as attested by her high levels of anxiety despite its high dosage. This fact along with her resolution to address her BDZ-dependence motivated her hospitalization at our Department. On admission, the patient scored 39 on the Hamilton Anxiety Rating Scale (HARS). Her extensive medical and laboratory workup yielded no pathological findings. After obtaining the patient's written informed consent, we incrementally substituted TGB up to 15 mg/day for bromazepam within one week, each day replacing 10 mg of the latter with 2 mg of the former. Dizziness, headache and sedation were the only transient side-effects of TGB, subsiding within 10 days. On discharge, four weeks later, the patient's scores on the HARS had dropped to 22, a reduction rate by almost 44%.

With respect to its mechanism of action, we should note that TGB enhances GABAergic neurotransmission through its blockade of the GABA transporter I (GAT I). Besides its indication in epilepsy, TGB has been found safe and efficacious in various anxiety disorders including GAD, panic disorder, agoraphobia and post-traumatic stress disorder.[2] Moreover, in another recent study TGB has been found efficacious as monotherapy for major depressive disorder with anxiety.[3] However, we should mention the possible temporal delay of TGB – one week – to bring about its anxiolytic effects.[4] Although anecdotic and thus warranting replication in large and well-controlled studies, the findings of our case report suggest that TGB might be a promising new pharmacological agent in the treatment of BDZ dependence.

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Follow-up study of suicide attempters who were given crisis intervention during hospital stay: Pilot study

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FOR 10 CONSECUTIVE years the suicide rate in Japan has stayed at around 25 per 100 000, which is the highest among the developed countries.[1] Only a few follow-up studies, however, regarding suicide attempters are reported,[2,3] and both nationwide and community-based data are lacking in Japan.

The aim of the present study was to determine the prognosis of suicide attempters who were given crisis intervention during hospital stays, follows: (i) immediate psychiatric and psychosocial evaluation; (ii) psycho-education regarding the suicide behavior and psychiatric disease; and (iii) introduction of psychiatric treatment and social resource.

We targeted 144 patients who were admitted to the emergency department between 1 April 2005 and 31 March 2006 due to suicide attempts. Telephone interview was attempted twice, and the following questions were asked: (i) confirmation of survival; or (ii) cause of death. At the first interview (299 ± 100 days after discharge from the emergency department), 115 of 144 patients or their family responded to the interview. The suicide attempt rate was 4.3%, and the suicide rate was 2.6%. At the second interview (638 ± 97 days after

discharge), 83 patients or their family responded to the interview. The suicide attempt rate was 10.8%, and the suicide rate was 4.8%, and 61 of 144 patients (42.4%) were not traced. The reasons for lack of contact were as follows: 43 patients moved or changed their personal telephone numbers, and 18 patients refused to participate in this interview.

Suicide rate at the first interview was relatively low compared to other previous studies carried out in Finland and Sweden,[4,5] but whether this is due to the effect of crisis intervention is not clear because we could not trace 42.4% of the patients initially targeted. Therefore the main limitation in the present study is due to lack of information on the prognosis of the status of untraced patients.

The National Suicide Prevention Measure Outline was set in 2007. The need for investigation and research on suicide attempters is clearly noted in the outline. The emergency department is where medically serious suicide attempters are carried in, and suicide attempters account for 9% of all patients on annual average (2008).[6] The present study suggests that case management in the emergency department might be effective for preventing suicide. Further study, however, with more sophisticated methodology is required to establish a procedure to prevent suicide reattempt.

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Association between neuronal cell adhesion molecule (*NRCAM*) single nucleotide polymorphisms and schizophrenia in a Korean population

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WE EVALUATED POLYMORPHISMS of the neuronal cell adhesion molecule (*NRCAM*) gene for an association study with schizophrenia because this gene plays a crucial role in synapse formation and maturation of the nervous system.[1] Previous reports have shown the association between *NRCAM* and several psychiatric disorders.[2–4] In this study, the association between polymorphisms of *NRCAM* and schizophrenia in the Korean population was investigated.

A total of 285 schizophrenic patients (185 male, 42.8 ± 10.9 years [mean ± SD]; 100 female, 42.9 ± 10.8) and 302 control subjects (145 male, 39.9 ± 5.8; 157 female, 33.5 ± 6.2) were evaluated. All patients were diagnosed by two well-trained psychiatrists according to the Diagnostic Statistical Manual of Mental Disorders, 4th edition. Written informed consent was obtained from all subjects. The study was approved by the ethics review committee of the Medical Research Institute, Kyung Hee University Medical Center, Seoul, Republic of Korea. We searched for all single nucleotide polymorphisms (SNP) of the *NRCAM* gene region in human SNP databases (http://www.ensembl.org; http://www.ncbi.nlm.nih.gov/SNP; http://www.hapmap.org) and finally selected 13 SNP. The selected 13 SNP consisted of three exonic SNP (rs1802993, rs1043895, and rs1269634), six intronic SNP within an average distance of 300 bp from the nearest exon (rs2142325, rs6970656, rs722519, rs6954366, rs1990162, and rs917251), three promoter SNP (rs3763463, rs10235968, and rs6967368), and one SNP near the 3′ gene region (rs17155059). Multiple logistic regression models were used to calculate the odds ratio, 95% confidence interval, and corresponding *P*-values, controlling for age and gender as covariables, and to analyze associations between SNP and schizophrenia.

Of the 13 SNP examined, seven were polymorphic. The genotype distributions of five SNP (rs1990162, rs917251, rs3763463, rs10235968, and rs6967368) were in Hardy–Weinberg equilibrium (HWE; $P > 0.05$). Two SNP (rs1269634 and rs6970656) were not in HWE ($P < 0.05$). As a result, none of five SNP were associated with schizophrenia ($P > 0.05$; *P*-value was corrected using the Bonferroni method). Using the Gabriel method, two linkage disequilibrium blocks were

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Dopamine D_2 Receptor Gene Polymorphisms Are Associated with Suicide Attempt in the Japanese Population

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Key Words
Dopamine D_2 receptor · –141C Ins/Del · Suicide attempt · *Taq*IA · Polymorphism

Abstract

Background: Some reports have suggested the involvement of the D_2 dopaminergic function in the expression of suicidal behavior. Here, we examined associations between suicide attempts and two kinds of functional polymorphisms in the dopamine D_2 receptor (DRD2) gene, namely, *Taq*IA and –141C Ins/Del. ***Methods:*** Subjects included 120 suicide attempters and 123 unrelated volunteers. Those who attempted suicide were severely injured and were transferred to the emergency unit in our university hospital. To determine each genotype, we performed polymerase chain reaction and restriction fragment length polymorphism analyses. ***Results:*** We found significant differences in genotypic and allelic frequencies of –141C Ins/Del and *Taq*IA polymorphisms between suicide attempters and healthy controls (–141C Ins/Del, p = 0.01; *Taq*IA, p = 0.036). The Ins allele of –141C Ins/Del was significantly more frequent in suicide attempters (p = 0.011), as well as the A2 allele of *Taq*IA (p = 0.017). Haplotype analysis revealed no significant linkage disequilibrium between –141C Ins/Del and *Taq*IA polymorphisms ($D' = 0.226$, $r^2 = 0.016$, p = 0.10). ***Conclusions:*** These findings suggest that DRD2 gene polymorphisms may be involved in the biological susceptibility to suicide.

Introduction

Suicide is an important public health problem thought to be caused by different susceptibility factors. Several data from studies of family history suggest that transmitted factors have partial effects on suicidal behavior [1, 2]. Moreover, investigations on twins including adoption studies strongly support a genetic component in suicidal behavior, and rule out the effects of a shared environment [3–6]. Therefore, previous studies have pursued a possible genetic risk factor for suicide.

On the other hand, some studies have reported low cerebrospinal fluid (CSF) levels of the dopamine metabolite homovanillic acid (HVA) in depressed patients with a history of suicide attempts [7–10]. Bowden et al. [11] provided results supporting reduced dopamine turnover in the basal ganglia in depressed suicide completers by demonstrating decreased levels of dihydroxyphenylacetic acid, which is one of the metabolites of dopamine.

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These studies suggest an involvement of the D_2 dopaminergic function in the mechanisms of suicidal behavior.

A number of functional polymorphisms have been identified in the dopamine D_2 receptor (DRD2) gene to date [12]. Considering the possible association of DRD2 with the mechanisms of suicidal behavior, these polymorphisms can be considered as candidate genes for such behavior. Among these, the –141C Ins/Del polymorphism (rs1799732) in the promoter region was suggested to affect promoter activity, as shown by an expression study using human cells [13]. A previous study reported the possible association between –141C Del allele and attempted suicide in alcohol dependents [14]. *Taq*IA (rs1800497), which is located in the 3′ flanking region of DRD2 [15], is also associated with reduced DRD2 expression in vitro [16] and in vivo [17, 18], and with reduced D_2 receptor binding as measured by autoradiography [19]. This polymorphism is closely associated with personality traits [20], especially novelty seeking, which has been reported as a risk factor for suicide attempts [21, 22]. Therefore, these two polymorphisms are suspected to have a strong association with suicidal behavior.

In the present study, we screened for two kinds of DRD2 polymorphisms, namely, –141C Ins/Del and *Taq*IA, and assessed genetic associations with the occurrence of suicide attempt. To the best of our knowledge, this is the first association study between functional DRD2 polymorphisms and suicide attempters regardless of psychiatric disorders.

Materials and Methods

The study population consisted of 120 subjects (male = 45, female = 75) who attempted suicide and were admitted to the emergency unit of Yokohama City University Medical Center. The controls consisted of 123 unrelated healthy volunteers (male = 42, female = 81). All controls were recruited after informed consent was obtained, and were diagnosed as healthy using physician-conducted interviews and the Mini-International Neuropsychiatric Interview [23]. Subjects with current and chronic psychiatric disorders and a history of suicidal behavior were excluded.

All subjects were ethnically Japanese. The methods of suicide attempt were extracted from the patient's record, and divided into violent and nonviolent attempts according to the operational criteria of Yamada et al. [24] and subsequently analyzed. The violent suicide group was defined as follows: (1) mechanical ventilation was required for life support; (2) surgery was performed under general anesthesia; (3) the method of attempted suicide carried a high risk of death, specifically, hanging, gunshot, jumping from a high place, inhalation of gas, solvents, or other agricultural chemicals, thermal injury, or drowning.

Peripheral blood was drawn from suicide attempters and healthy controls, and leukocyte DNA was extracted for genotype determination. Polymerase chain reaction and restriction fragment length polymorphism analyses were performed to determine *Taq*IA genotypes according to Grandy et al. [15], and –141C Ins/Del genotypes according to Hori et al. [25]. Differences in the genotypic and allelic frequencies of the two gene polymorphisms between suicide attempters and control subjects were tested for significance using the χ^2 test and Fisher's exact test. The presence of Hardy-Weinberg equilibrium was determined using the χ^2 test. This analysis was performed with SPSS 11.0 for Windows (SPSS Japan, Tokyo). Pairwise linkage disequilibrium and estimated haplotypes were analyzed using Arlequin 2.000 [26]. We investigated the difference in genetic distribution in estimated haplotypes between suicide attempters and controls by the χ^2 test. In addition, logistic regression analysis was performed to evaluate simultaneously the possible associations between suicide attempts and independent variables (DRD2 genotypes, gender, and age). Probability differences of $p < 0.05$ were considered statistically significant.

Results

Table 1 shows the genotypic and allelic frequencies of two polymorphisms investigated in the suicide attempters and healthy controls. No deviation from Hardy-Weinberg equilibrium was observed in either the suicide attempters or healthy controls. We found a significant difference in genotypic distribution in the –141C Ins/Del polymorphism between the suicide attempters and healthy controls ($\chi^2 = 8.429$, d.f. = 2, $p = 0.015$). In addition, the frequencies of the –141C Ins allele were significantly higher in the suicide attempters than in the healthy controls ($p = 0.011$). On the other hand, we found no significant differences in the genotypic and allelic distribution between violent and nonviolent attempters (genotypic distribution, $\chi^2 = 1.827$, d.f. = 2, $p = 0.401$; allelic distribution, $p = 0.295$, detailed data not shown). The odds ratio (OR) for the suicide attempts associated with the Ins allele was 1.85 [95% confidence interval (CI), 1.16–2.94]. In addition, we found a significant difference in the genotypic distribution in *Taq*IA polymorphism between suicide attempters and healthy controls ($\chi^2 = 6.76$, d.f. = 2, $p = 0.034$). The frequency of the A2 allele of *Taq*IA was significantly higher in suicide attempters than in healthy controls ($p = 0.017$), and the OR for the suicide attempts associated with the A2 allele was 1.56 (95% CI, 1.09–2.25). Similarly, as shown in table 2, logistic regression analyses showed a significant association between suicide attempts and the –141C Ins/Del genotypes ($p = 0.014$; OR, 1.95; 95% CI, 1.15–3.32) and *Taq*IA genotypes ($p = 0.014$; OR, 1.58; 95% CI, 1.06–2.35). However, we found no significant genetic and allelic frequency differences between violent and nonviolent attempters (genotypic distribution, $\chi^2 = 0.520$, d.f. = 2, $p = 0.771$; allelic distribution, $p = 0.762$, detailed data not shown).

Pairwise linkage disequilibrium was also analyzed and no significant linkage disequilibrium was detected between –141C Ins/Del and *Taq*IA polymorphisms ($D' = 0.226$, $r^2 = 0.016$, $p = 0.10$). As shown in table 3, no significant difference was found in the estimated haplotype frequencies between suicide attempts and controls ($\chi^2 = 12.12$, d.f. = 3, $p = 0.07$). Using SPSS Sample Power version 2.00, we estimated that the statistical power of our study was 64–74%.

Table 1. Genotype distributions and allele frequencies of polymorphisms in the DRD2 gene: –141C Ins/Del and *Taq*IA polymorphisms

	All suicide attempters (n = 120)	Controls (n = 123)	p
–141C Ins/Del			
Genotypes			
Ins/Ins	86 (71.7)	66 (53.7)	0.015*
Ins/Del	33 (27.5)	55 (44.7)	
Del/Del	1 (0.8)	2 (1.6)	
Alleles			
Ins	205 (85.4)	187 (76.0)	0.011*
Del	35 (14.6)	59 (24.0)	
*Taq*IA			
Genotypes			
A1/A1	13 (10.8)	27 (22.0)	0.034*
A1/A2	63 (52.5)	64 (52.0)	
A2/A2	44 (36.7)	32 (26.0)	
Alleles			
A1	89 (36.5)	118 (48.0)	0.017*
A2	151 (63.5)	128 (52.0)	

Figures in parentheses indicate percentages. p = Significance probability between all suicide attempters and controls; * = significant difference between suicide attempters and controls.

Table 2. Logistic regression analysis of independent variables of suicide attempters

Independent variables	Partial regression coefficients	p	OR (95% CI)
Gender	0.033	0.001	1.033 (1.013–1.053)
Age	–0.141	0.618	0.869 (0.500–1.511)
*Taq*IA genotype	0.455	0.026	1.576 (1.056–2.350)
–141C Ins/Del	0.668	0.014	1.950 (1.147–3.317)

Table 3. Estimated haplotype distribution of the DRD2 gene polymorphisms between suicide attempters and controls

	Suicide attempters (n = 120)	Controls (n = 123)
A1-Ins	0.272	0.370
A1-Del	0.107	0.098
A2-Ins	0.582	0.395
A2-Del	0.039	0.138

$p = 0.07$.

Discussion

The role of the dopaminergic system in the mechanisms of suicidal behavior has not yet been fully clarified. Several studies have reported low CSF HVA levels in depressed patients with a history of suicide attempts compared with healthy controls [7–10]. Low CSF levels of HVA could be a more reliable index of suicidal behavior than low CSF 5-hydroxyindoleacetic acid [10]. Pitchot et al. [27] suggested a smaller growth hormone response to apomorphine, which is a dopaminergic agonist, in depressed patients with a history of suicide attempts compared with nonattempters. This study indicates a specific role for the dopamine system, particularly DRD2, in the pathogenesis of suicide. Therefore, functional polymorphisms of the DRD2 gene, which affect the DRD2 function, should be of great interest in investigating vulnerability to suicide attempts.

In the present study, we performed screening for two functional DRD2 polymorphisms, and assessed the relationship between suicide attempts and these polymorphisms. We found significant differences in genotypic and allelic frequencies of the –141C Ins/Del polymorphism between suicide attempters and healthy controls. The frequencies of the –141C Ins allele were significantly higher in the suicide attempters. Jönsson et al. [17] demonstrated by positron emission tomography that the striatal DRD2 density in healthy subjects with the Del allele was higher than that in those without the Del allele. In view of the functional relationship of DRD2 –141C Ins/Del polymorphisms to DRD2 activity, our results suggest that the –141C Ins variant, which reduces DRD2 density, plays an important role as a risk factor for suicide attempts.

On the other hand, we did not observe any significant differences between high and low lethality of suicide attempts. Some previous studies showed differences in the concentrations of CSF 5-hydroxyindoleacetic acid and HVA between the two groups [28–30]; however, the results of these studies were inconsistent. Pitchot et al. [31, 32] reported that the growth hormone peak responses to apomorphine showed no difference between depressed patients with a history of high-lethal suicide attempt and patients with a history of low-lethal suicide attempt. Our result indicates that violent and nonviolent attempters may have a similar pathogenesis, particularly in the DRD2 function influenced by gene polymorphisms.

We also found a significant difference in the genotypic distribution associated with *Taq*IA polymorphism between suicide attempters and healthy controls. The frequencies of the *Taq*IA A2 allele were significantly higher in the suicide attempters. In previous reports, *Taq*IA polymorphism was suggested to be associated with reduced DRD2 expression in vitro [33] and in vivo [17, 19]. However, Pohjalainen et al. [18] and Laruelle et al. [34] showed no association between *Taq*IA polymorphism and D_2 dopamine binding potential in a positron emission tomography study. The unreplicated result regarding human striatal DRD2 density remains of great interest. However, the results of receptor function studies in vivo have been inconsistent to date, and we could not specifically elucidate the pathogenetic mechanism of suicide in the present study. Since this is the first association study between suicide attempters and *Taq*IA polymorphisms, further studies using larger samples are needed to confirm the present results.

From our findings, the DRD2 –141C Ins/Del and *Taq*IA gene polymorphisms are suggested to affect the pathogenesis of suicide. However, this study has some limitations. First, we examined suicide attempters and not suicide completers. There are some reports suggesting differences between these two subject groups [35]. Previous reports, however, have also pointed out biological similarities between suicide completers and suicide attempters [30]; therefore, we speculated that genetic studies on our subjects who attempted suicide would reflect the possible mechanisms underlying suicidal behavior. Second, we were unable to carry out association studies between psychiatric disorders and suicide attempt because the sample number was too small. Moreover, although it is known that a family history of suicide increases suicide risk [36], we did not investigate the association regarding family history of psychiatric disorders for all 2 degrees of relationship. In the present study, we cannot completely exclude the possibility that the psychiatric disorders and family suicidal histories of the subjects might have affected our results.

Third, our total sample size was relatively small. Replication studies using larger samples are required to specifically clarify the possible effects of –141C Ins/Del and *Taq*IA polymorphisms of the DRD2 gene on the pathogenesis of suicide.

Conclusion

Our findings indicate that –141C Ins/Del and *Taq*IA polymorphisms of the DRD2 gene are involved in the suicidal behavior of attempters. A more conclusive study employing a substantially larger sample may be required to verify the associations between the two polymorphisms and suicide attempts. Moreover, we believe that the gene polymorphisms and physiological processes involved in suicide attempts involve many complex factors. Another approach to fully clarify the above-mentioned associations possibly involves a study of the combination of other genetic factors, such as serotonin-related genes, which has the potential to elucidate genetic risk factors involved in suicide.

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Characteristics of suicide attempters with family history of suicide attempt: a retrospective chart review

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Abstract

Background: Family history of suicide attempt is one of the risks of suicide. We aimed at exploring the characteristics of Japanese suicide attempters with and without a family history of suicide attempt.

Methods: Suicide attempters admitted to an urban emergency department from 2003 to 2008 were interviewed by two attending psychiatrists on items concerning family history of suicide attempt and other sociodemographic and clinical information. Subjects were divided into two groups based on the presence or absence of a family history of suicide attempt, and differences between the two groups were subsequently analyzed.

Results: Out of the 469 suicide attempters, 70 (14.9%) had a family history of suicide attempt. A significantly higher rate of suicide motive connected with family relations (odds ratio 2.21, confidence interval 1.18–4.17, $p < .05$) as well as a significantly higher rate of deliberate self-harm (odds ratio 2.51, confidence interval 1.38–4.57, $p < .05$) were observed in patients with a family history of suicide compared to those without such history. No significant differences were observed in other items investigated.

Conclusion: The present study has revealed the characteristics of suicide attempters with a family history of suicide attempt. Further understanding of the situation of such individuals is expected to lead to better treatment provision and outcomes, and family function might be a suitable focus in their treatment.

Background

Suicide is a complicated phenomenon, and various factors are implicated in its pathogenesis [1]. Suicide risk has been reported to be associated with single marital status [2], indebtedness, unemployment [3], lower social class, male gender [4], somatic illness and psychiatric disorder [5], and history of a suicide attempt [6,7]. In addition to these risk factors, there is growing recognition that suicide and suicidal behavior (any deliberate action with potentially life-threatening consequences) tend to be familial [8-12]. Familial suicide behavior may be mediated by the transmission of endophenotypes, such as impulsivity. Environmental conditions may also result in familial transmission [13,14]. In addition, parental impulsive aggression predisposes individuals to family instability and abuse, which further increases the risk of suicidal behavior in offspring [8,15,16]. Suicidal behavior is known to aggregate in families, and both genetic and non-genetic factors responsible for familial transmission of suicidal behavior should be discernible among suicide attempters and may be suitable targets for preventive therapeutic intervention [9].

In this study, we examined the suicidal behavior and detailed sociodemographic data of suicide attempters with and without a family history of suicide attempt in order to explore our main hypothesis that suicide attempters with a family history of suicide attempt have some characteristics related to family environmental conditions. A better understanding of the situation of suicide attempters with such a history could prove useful in the provision of patient care.

Methods

The present study was performed at the Advanced Critical Care Medical Center, Yokohama City University Medical Center, which is located in Yokohama, a mega city with a population of about 3.6 million people. The center receives all patients with potentially fatal conditions from the southern part of the city, and suicide attempters account for on average 13.0% (April 1, 2003 – March 31, 2008) of all admitted patients.

Procedure

Between April 1, 2003 and March 31, 2008, a total of 686 suicide attempters were admitted to the center. Attempted suicide was defined as any intentional self-inflicted harm alongside suicidal ideation. Among these, 102 patients who committed suicide were excluded from the study since we could not confirm suicidal intent or obtain sufficient research information as their identities were unknown when in our care. Of the remaining 584 patients who attempted suicide, 38.2% ($n = 223$) were male and 61.8% ($n = 361$) were female, with an age ranged of 14 to 88 years and a mean of 38.0 years, standard deviation 15.9 years ($M = 41.1$, $SD = 15.9$ years for males; $M = 36.2$, $SD = 15.5$ years for females). Psychiatric diagnosis was made according to DSM-IV criteria [17] by agreement of two psychiatrists. The most common axis I diagnosis of DSM-IV was major depressive disorder (23.1%), followed by adjustment disorder (19.5%), schizophrenia (15.4%), and substance use disorder (10.4%). The most common axis II diagnosis of DSM-IV was personality disorder (32.0%), followed by mental retardation (1.2%). The breakdown of the axis II diagnosis of DSM-IV was borderline personality disorder (55%), personality disorder not otherwise specified (33%), antisocial personality disorder (9%), and others.

Patients were interviewed by two psychiatrists on the following items: 1) family history of suicide attempt, 2) living status, 3) education, 4) previous psychiatric history, 5) somatic complications, 6) method of suicide attempt, 7) history of suicide attempt, 8) history of deliberate self-harm (no suicidal ideation), and 9) motive of suicide attempt. Regarding suicide motives, patients selected the motive that corresponded most closely to their situation from the following 7 options: family relations, human relations (work place or school), male-female relationships, health issues, financial situation, work environment, or other reason.

Subjects were divided into two groups based on the presence or absence of a family history of suicide attempt, and the differences between the two groups were subsequently analyzed. We counted every suicide attempter among a first-degree relative and grandparent. No suicides among children were reported by the patients in our sample. The flow of the patients through this study is presented in Figure 1.

Statistical analyses

Statistical analyses were conducted using SPSS for Windows version 16.0. The chi-square test and t-test were used to compare those who reported a family history of suicide attempt and those who did not. The chi-square test was used to explore the differences between those with and without a family history of suicide in relation to gender, living status, and education. The t-test was used to compare the differences between those with and without a family history of suicide in relation to age. Further, logistic regression analysis was performed to determine differences between those with and without a family history of suicide in relation to previous psychiatry history, somatic complications, method of suicide attempt, history of suicide attempt, history of deliberate self-harm, and motive of suicide attempt. In the logistic regression model, we used age, gender, and living status as adjustment variables. A probability level of $p < .05$ was considered statistically significant.

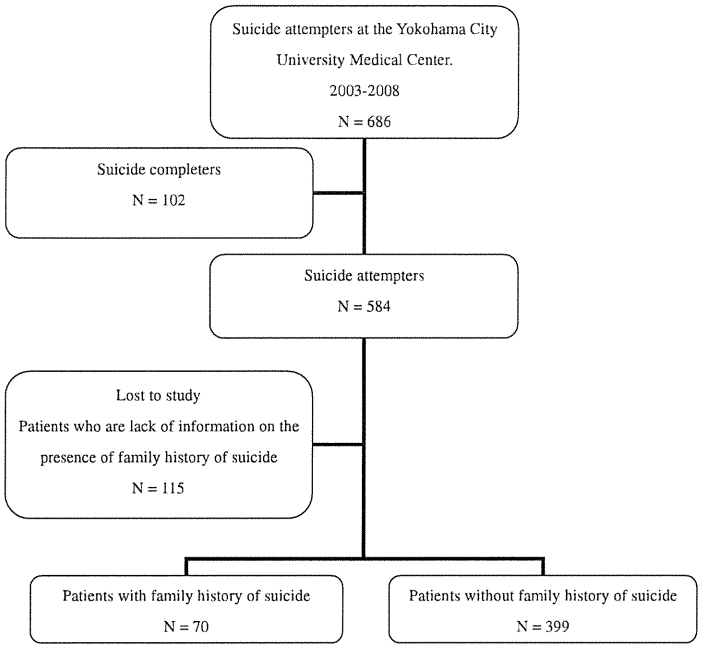

Figure 1
Flow of subjects through the study.

Ethics

The study protocol was approved by the ethics committee of Yokohama City University School of Medicine, and conforms to the provisions of the Declaration of Helsinki in 1995. We obtained informed consent from all participants and their anonymity was preserved.

Results

Among the original sample of 584 patients, data from 115 patients (20%) were not submitted due to lack of information regarding the presence of a family history of suicide attempt. Information was lacking either because hospitalization in the emergency department was too short to obtain all information or in the case that a patient had consciousness disturbance due to head injury. Nevertheless, these untraced 115 patients did not differ significantly from the traced patients in terms of either gender or age ($p > .05$). Finally, data from 469 patients were analyzed and the results are presented below. The sample was composed of 173 (36.9%) males and 269 (63.1%) females, with an age range of 14 to 88 years and a mean of 38.1 years, standard deviation of 15.7 years ($M = 40.6$, $SD = 15.7$ years for males; $M = 36.7$, $SD = 15.5$ years for females).

Analysis revealed that 70 (14.9%) had a family history of suicide attempt and 399 (85.1%) had no such history. Sociodemographic and clinical characteristics when divided into presence or absence of a family history of suicide attempt are shown in Table 1. Figure 2 shows the breakdown of motive of suicide attempt by percentage, where the most common motive among patients with a

family history of suicide attempt was revealed to be family relations (34.9%), followed by health issues (18.6%), and other reason (17.1%). For patients without a family history of suicide attempt, the most common motive of suicide attempt was health issues (28.3%), followed by family relations (22.4%), and other reason (19.0%). Thus, patients with a family history of suicide attempt showed a significantly higher rate of suicide motive connected with family relations than those without such history, with an adjusted odds ratio of 2.21 (1.18 to 4.17, $p < .05$, adjusted for age, sex, and living status), as well as a significantly higher rate of deliberate self-harm (DSH) (50% versus 34.0%, respectively), with an adjusted odds ratio of 2.51 (1.38 to 4.57, $p < .05$, adjusted for age and sex) (Table 2). Aside from these two characteristics, no significant differences between the two patient groups were observed for any other items investigated.

Discussion

This study was performed to determine whether suicide attempters with a family history of suicide attempt showed characteristics different from those without such history. Of note, this is the first study to focus on motives

Table 1: Sociodemographic and clinical characteristics of suicide attempters, and presence/absence of family history of suicide

	Total *n* (%)	Patients with family history of suicide *n* (%)	Patients without family history of suicide *n* (%)
Living status (*n* = 453)			
Alone	100 (22.1)	14 (21.2)	86 (22.2)
Together	353 (77.9)	52 (78.8)	301 (77.8)
Education (*n* = 451)			
Compulsory education*	125 (27.7)	23 (33.8)	102 (26.6)
High school education and over	326 (72.3)	45 (66.2)	281 (73.4)
Previous psychiatric history (*n* = 467)	329 (70.4)	53 (76.8)	276 (69.3)
Somatic complications (*n* = 469)			
Permanent damage	12 (25.6)	2 (2.9)	10 (2.5)
No permanent damage			
Require in-patient treatment	45 (9.6)	4 (5.7)	41 (10.3)
Require out- patient treatment	84 (17.9)	15 (21.4)	69 (17.3)
Without physical complications	328 (69.9)	49 (70.0)	279 (69.9)
Method of suicide attempt (*n* = 469)			
Drug overdose	244 (52.0)	37 (52.9)	207 (51.9)
Laceration	71 (15.1)	12 (17.1)	59 (14.8)
Jumping from high place	58 (12.4)	9 (12.9)	49 (12.3)
Poisoning	44 (9.4)	8 (11.4)	36 (9.0)
Burning	14 (3.0)	0 (0)	14 (3.5)
Traffic death	13 (2.8)	1 (1.4)	12 (3.0)
Hanging	18 (0.2)	3 (4.3)	15 (3.8)
Drowning	4 (0.9)	0 (0)	4 (1.0)
Other	3 (0.6)	0 (0)	3 (0.8)
Previous suicide attempt (*n* = 443)	206 (44.8)	38 (55.1)	168 (43.0)
Previous deliberate self-harm (*n* = 460)	161 (36.3)	33 (50.0)	128 (34.0)
Motive of suicide attempt (*n* = 416)			
Family relations	101 (24.3)	22 (34.9)	79 (22.4)
Human relations (work place or school)	19 (4.6)	4 (6.3)	15 (4.2)
Male-female relationships	59 (14.2)	7 (11.1)	52 (14.7)
Health issues	113 (27.2)	13 (20.6)	100 (28.3)
Financial situation	42 (10.1)	4 (6.3)	38 (10.8)
Work environment	19 (4.6)	1 (1.6)	18 (5.1)
Other reason	63 (15.1)	12 (19.0)	51 (14.4)

* Compulsory education lasts for 9 years; statutory schooling ages are between 6 and 15 years in Japan.

Table 2: Results of examining the difference between patients with and without family history of suicide (*N* = 469)

	Adjusted OR (CI 95%)	*p* value
Deliberate self-harm†	2.51 (1.38–4.57)*	0.003
Motive of suicide attempt connected with family relations‡	2.21 (1.18–4.17)**	0.013

Note. * Odds ratio (OR) adjusted for sex and age.
** OR adjusted for sex, age, and living state.
† Nine of the 469 patients were excluded from the analysis due to insufficient data.
‡ Fifty-three of the 469 patients were excluded from the analysis due to insufficient data.
Confidence interval = CI.

of suicide attempt in suicide attempters with a family history of suicide.

In this study, 14.9% of the suicide attempters at our emergency department had a family history of suicide attempt, which is similar in frequency (13.2%) to that among suicide attempters with a family history of suicide attempt recently reported by Diaconu et al [15]. The rate of suicide motive connected with family relations and the rate of the deliberate self-harm were significantly higher among patients with a family history of suicide attempt in our study. A number of studies have reported on the etiology of the familial transmission of suicidal behavior. The effects of family history are thought to be mediated through both shared biologic vulnerability and family environmental conditions [8,18-20]. Considering the factor of family environment, family function is regarded as one of the key elements [13,21]. Children and adolescents who present with deliberate self-harm often experience major life problems, especially in relationships with family members [22,23]. Family discord has consistently been shown to be both a correlate and predictor of adolescent suicidal behavior [24]. Our finding is not in conflict with these previous studies. While family dysfunction might be related to the cause of suicide, we were not aware of the details of their "family relations" motive or of whether it marked the beginnings of possible family dysfunction in each case.

Family therapy for suicide attempters and their families is beneficial for maintaining family function. Morrison et al. stated that the attempted suicide would affect the entire family, and the treatment plan for each family should be based on family interaction and the individual functioning of each member within the family [25]. Kerfoot et al. reported that family interventions are an effective means of addressing the issues associated with adolescent suicidal behavior [26]. Some of our subjects were bereaved

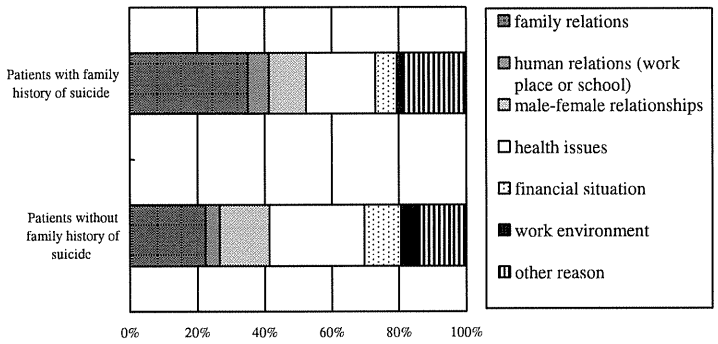

Figure 2
Classified subitems of motive of suicide attempt. The most common motive of suicide attempt concerned family relations (34.9%) in patients with a family history of suicide attempt.

due to family history of suicide, and in the case of bereavement, previous studies have indicated the effectiveness of intervention and social support to reduce distress and suicidal ideation [27-29]. In addition, there is also a pressing need for studies that ask those with a family history of suicide attempt themselves what has been of help or what they feel so that interventions can be designed to strengthen the natural coping efforts of families [30]. Reducing the stigma of suicidal behavior and increasing awareness of the psychological distress of individuals who experience suicidal behavior of their family will make it much easier for them to access social support. In Japan, where the increasing number of suicides is of grave concern, the National Suicide Prevention Measure Outline established in 2007 stated the need to provide care and social resources for both bereaved families and families of suicide attempters [31].

We recognize some limitations of our study. First, we did not conduct structured interviews with suicide attempters to diagnose psychiatric disorder. Hospitalization in our emergency department is too short to perform structured interviews for patients. Instead, psychiatric diagnosis was made on the consensus of two attending psychiatrists. The second limitation is that the situation of cohabitation at the time when a family member attempted suicide was unclear. The third limitation is that some of the suicide attempters may have been unaware of a family history of suicide attempt.

Conclusion

In the emergency department, 14.9% of suicide attempters had a family history of suicide attempt. We observed significantly higher rates of suicide motive connected with family relations and of deliberate self-harm in suicide attempters with a family history of suicide attempt than in those without such history. These findings indicate that care for the suicide attempters should take into consideration a family history of suicide. Replication of these findings in future studies that perform more extensive investigation is warranted.

Abbreviations

DSM: The Diagnostic and Statistical Manual of Mental Disorders.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

MN, RS, YI contributed to data collection. MN, CK, TY, HH, TO, YH wrote the analysis plan. MN and SM conducted the statistical analysis. CK discussed the ideas in paper and contributed to manuscript preparation. All authors contributed to the interpretation of the results and the final manuscripts.

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A randomized controlled multicenter trial of post-suicide attempt case management for the prevention of further attempts in Japan (ACTION-J)

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Abstract

Background: A previous suicide attempt is a potent risk factor for suicide later on. Crisis intervention, psychiatric and psychosocial evaluation at emergency medical facilities, and follow-up care for suicide attempters are considered important components for suicide prevention. The Japanese Multimodal Intervention Trials for Suicide Prevention (J-MISP) includes a randomized, controlled, multicenter trial of post-suicide attempt case management for the prevention of further attempts (ACTION-J) to address the continuing increase in suicides in Japan. The primary aim of ACTION-J is to examine the effectiveness of an extensive intervention for suicide attempters in prevention of recurrent suicidal behavior, as compared with standard intervention. This paper describes the rationale and protocol of the ACTION-J trial.

Methods/Design: In this clinical trial, case management intervention will be provided at 19 emergency medical facilities in Japan. After crisis intervention including psychiatric evaluation, psychosocial assessment, and psychological education, subjects will be randomly assigned to either a group receiving continuous case management or a control group receiving standard care. Suicidal ideation, depressive symptoms, and general health condition will be evaluated as secondary

measures. The intervention was initiated in July 2006. By December, 2009, 842 subjects will be randomized. Subject follow-up will continue for 1.5 to 5 years.

Discussion: Suicide is a complex phenomenon that encompasses multiple factors. Case management by multi-sector collaboration is needed. ACTION-J may provide valuable information on suicide attempters and may develop effective case management to reduce future risk for suicide attempters.

Trial registration: UMIN Clinical Trials Registry number, UMIN000000444. ClinicalTrials.gov number, NCT00736918.

Background

A history of suicide attempt as a risk factor for suicide

Based on studies in Europe, North America, and Australasia, a previous suicide attempt is a key risk factor for completed suicide [1-3]. After a follow-up period of 1 year, 12% to 15% of repetitions of cases of self-harm or suicide attempt are non-fatal, whereas 0.8% to 2.6% are fatal. After a follow-up period of 9 years, 3% to 12% ended in completed suicide [4]. Given these statistics, intervention for suicide attempters is an important element to prevent suicide.

Recent increase in suicides in Japan

For approximately two decades (from 1978 to 1997), the suicide rate in Japan has been between 17.0 and 21.0 per 100,000 people. In 1997, 24,931 suicides were reported in Japan. In 1998, a dramatic 1.35-fold increase in the number of suicides in Japan occurred, as 32,863 suicides were reported. Since 1998, suicide rates in Japan have been between 25.2 and 27.0 per 100,000 people. For 11 years, the annual number of suicides in Japan has remained over 30,000 [5]. According to statistics from the World Health Organization (WHO) compiled in 2007 concerning worldwide suicide rates, the suicide rate in Japan was the eighth highest in the world [6].

Recent preventive measures against suicide in Japan

"The Declaration of Suicide Prevention" was issued in 2002 in Japan by the Advisory Panel on Strategy for Suicide Prevention. Since 2002, various measures associated with suicide prevention have been implemented, such as publication of suicide prevention manuals for the work place and medical practitioners. However, the number of suicides has not yet declined significantly. Therefore, in 2005, an intensive deliberation on suicide prevention was held by the Health, Labour, and Welfare Committee in the House of Councillors, and "The Resolution on Urgent and Effective Promotion of Comprehensive Strategies for Suicide" was passed in July 2005.

Also in 2005, two research projects (Japanese Multimodal Intervention Trials for Suicide Prevention: J-MISP [7]) funded by The Japanese Ministry of Health, Labor and Welfare (JMHLW), were launched to develop effective strategies to prevent suicide. J-MISP consists of a community intervention trial of a multimodal suicide prevention program (NOCOMIT) [8] and a randomized controlled multicenter trial of post-suicide attempt case management to prevent further attempts (ACTION-J).

Review of strategies of intervention for suicide attempters

Various studies on intervention for suicide attempters as well as systematic reviews of these studies have been reported [9-14]. Few randomized controlled trials that focused on intervention methods showed a significant decrease in the repetition rate for attempted suicide. Van Herringen and colleagues investigated the effects of various strategies to increase compliance with referrals for outpatient aftercare [9]. Twenty-one of 196 patients (10.7%) in the experimental group and 34 of 195 patients (17.4%) in the control group repeated their suicidal behavior. The odds ratio was 0.57 (95% CI: 0.32 to 1.02).

A summary of 5 studies comparing cognitive behavioral therapy with standard aftercare demonstrated an odds ratio of 0.70 (confidence interval, 0.45 to 1.11), indicating the effects on suicide prevention. A summary of 6 studies involving intensive outreach, brief inpatient treatment, and nursing care, as compared with standard care, produced the odds ratio of 0.83 (CI: 0.61 to 1.14) [12].

Small sample sizes in the primary studies selected for the systematic review resulted in a wide range of confidence intervals for the odds ratios. Fewer than 600 subjects in both the experimental and control groups participated in the 5 studies to evaluate cognitive behavioral therapy and the 6 studies to investigate the effects of outreach programs. Thus, the total number of subjects in these studies was under 1,200. In addition, the follow-up period after enrollment was only 6 to 12 months. Hawton and colleagues [11] and Gaynes and colleagues [13], noting the limitations of studies with too few subjects and too short a study period, emphasized the need for large trials at

multiple sites in order to determine the benefits of interventions.

Overall scheme of ACTION-J

The act of suicide is complex. Findings from previous psychological autopsy studies in other countries indicate that more than 80% of patients who completed suicide could be diagnosed with a psychiatric disorder [15,16]. Over 80% of highly lethal (incomplete) suicide attempters taken to emergency medical centers in Japan were diagnosed with axis I psychiatric disorders, according to the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) [17]. Proper psychiatric assessment and treatment of suicide attempters may be critical to suicide prevention.

Based on these findings, we chose to utilize emergency medical facilities as trial sites and designed an intervention trial involving close collaboration between emergency medicine and psychiatric medicine for management of suicide attempters with psychiatric disorders. We planned a large-scale, multisite study in Japan.

In this trial, case management is employed as an intervention method. Case management provides multi-dimensional and comprehensive care that has not been studied in previous research, and includes psychological education, follow-ups to increase compliance with referrals for outpatient treatment, individualized casework including coordination of use of social resources, and information technology-based services. Prevention of further suicide attempts will be compared between subjects in the experimental group who receive the specialized, case management care and subjects in the control group who receive standard care.

Objective of this study

The objective of this study is to examine the effectiveness of a trial intervention to prevent recurrent suicidal behavior by suicide attempters in Japan, as compared with a control intervention. It is expected that the case management administered in this study will be effective to prevent recurrence of suicide attempts.

Methods/Design

ACTION-J is an open, randomized, controlled, multicenter study which examines the effectiveness of a trial intervention for suicide attempters in Japan. The trial intervention involves the implementation of case management for suicide attempters transported and admitted to emergency medical facilities. The task schedule is presented in Table 1.

Organization

JMHLW selected the Japan Foundation for Neuroscience and Mental Health (JFNMH) as the primary institution responsible for J-MISP, in close collaboration with the National Center of Neurology and Psychiatry. The J-MISP administration office in JFNMH will organize overall administrative procedures regarding the operations of the ACTION-J study group. The office will also establish and operate the steering committee, central research ethics

Table 1: Task schedule

	during admission	at discharge	1 w after discharge	4 w	8 w	12 w	6 m	12 m	18 m	24 m	30 m	36 m	42 m	Interim/ Final analysis
Psychiatric diagnosis	◎													
Psychoeducation 1*	◎													
Informed consent	◎													
Enrollment/ randomization	◎													
Input data at time of discharge		◎												
Case management (Psychodeucation 2**, others)	○		○	○	○	○	○	○	○	○	○	○	○	
Psychiatric evaluation	◎						◎		◎		◎		◎	
Event	Input content of the event (ie, recurrent suicidal behavior, adverse event) into the web system as occasions require													
Participant survival (or cause of death of the participant)														◎
Actions to critical situations	In both groups during the study as occasions require													
Reports of a serious adverse event	Prompt report to the director of the hospital and the study group management office in both groups as occasions require													

◎ : implemented in both groups; ○ : implemented only in experimental intervention group
*: Psychoeducation Program I to all participants in both groups
**: Psychoeducation Program II to their family members during hospitalization in the experimental group
w: week, m: month

committee, study evaluation committee, and study progress control committee.

The ACTION-J study group will include 19 participating hospitals in Japan. The study group will comprise the following: the study group management office, each participating hospital, the steering committee, the principal statistician, the independent statistician, the intervention program committee, the event review committee, and the data management center for technical support.

Each participating hospital will have psychiatrists, emergency department physicians, case managers, and other personnel. In addition, one coordinator, either a psychiatrist or an emergency physician, will be assigned to each participating hospital. Other participating researchers in this study include experts in suicide prevention, nurses, clinical psychologists, psychiatric social workers, biostatisticians, epidemiologists, and coordinators of the data management center.

Subjects

Subjects will include individuals who are admitted to emergency medical facilities in Japan, are evaluated by an emergency physician or a psychiatrist in the emergency department, and are diagnosed as having made a suicide attempt. Subjects must also meet the following inclusion criteria:

Inclusion criteria

1) Subject is over 20 years old.

2) Subject has been diagnosed with a psychiatric disorder classified into DSM-IV axis I.

3) Subject has had suicidal intentions confirmed at least twice using the Suicide Intent Scale [18].

4) Subject is able to understand the description of the study and provide informed consent.

5) During hospitalization, subject is able to attend an interview and the *Psychoeducation Program I* (see *Intervention* section), which will be required before enrollment in the study.

6) Subject is able to visit the participating hospital regularly for evaluations and case management and be contacted directly from the hospital on a regular basis.

Exclusion criterion

1) Individual has a primary diagnosis that is not classified into DSM-IV axis I.

Estimation of sample size

The total sample size is 842 participants, including 421 participants in each of the two treatment groups. Calculation of the desired sample size was based on the following rationale. According to a study of suicidal individuals transported to psychiatric emergency facilities in Japan, the annual incidence rate of events (including death) was set at 15% in the control group [19]. The target reduction in recurrent suicidal behavior in the trial intervention group was set at approximately 30%; the annual incidence rate of events (including death) in the intervention group was estimated to be 10.5% [20].

Based on this estimation, we calculated the sample size using the method of Shoenfeld and Richter, in order to confirm that the intervention group is superior, with a significance level of 2.5% for the one-sided test and a power of 90%, dependent on a 3.5-year-enrollment period and a 1.5-year follow-up period after enrollment. Given these assumptions, the desired number of participants per group was calculated to be 518, and number of events was expected to be 296. Sample size was set to increase the likelihood that the expected number of events (≥ 90% if no participant is lost to follow-up) would be observed during the study period.

Informed consent

Participants will be patients admitted to the participating hospitals on an emergency basis, those who meet the inclusion criteria, and who provide informed consent to participate in this study.

Enrollment

Participant enrollment will be based on the following procedural outline (Figure 1). Any physician in an emergency facility will contact a psychiatrist when suspecting that a patient has made a suicide attempt. The psychiatrist will collect information and make a psychiatric diagnosis when examining the patient. At this point, the patient's suicidal intention will be confirmed (first check for suicidal intention). The investigator will confirm that the patient has not yet participated in this trial (i.e., that this event is not a repetition of suicidal behavior of a participant already enrolled in this trial) and will determine whether the patient is eligible to participate in this study by reviewing the inclusion and exclusion criteria. The investigator will explain this study, as well as the *Psychoeducation Program I* (see the description in the *Intervention section*), to a patient who is confirmed to have suicidal intentions and obtain patient consent. Next, a practitioner in charge of the psychoeducation program will provide the *Psychoeducation Program I* to the patient.

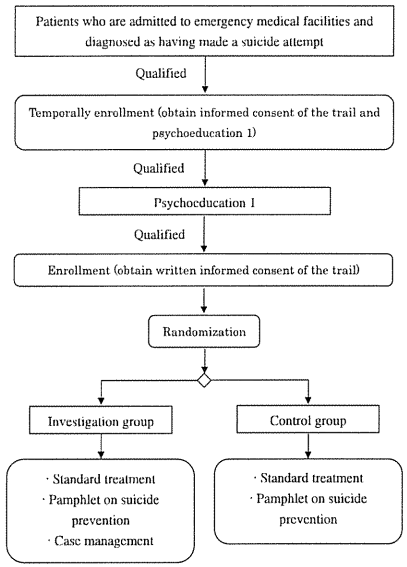

Figure 1
Flow diagram of the study.

The investigator will again confirm the suicidal intentions of a patient who is deemed eligible to participate in the study. After the patient completes the *Psychoeducation Program I*, the investigator will reconfirm the suicidal intentions of a patient who is deemed eligible to participate in the study (second check for suicidal intention). The investigator will obtain written consent from the patient to participate in this study. On-site research staff at the participating hospital will collect data from the participant at the time of enrollment and enter the information via a web input system to receive a random assignment. The participant will be informed about his/her assigned group and the subsequent schedule within 1 week (by the time of the first interventional treatment).

Randomization

Using the minimization method, participants will be randomly assigned to either the intervention group or control group. Central assignment involving an Internet-based assignment system will be performed.

Participants will be randomly assigned to one of the two groups according to the following factors:

1) Hospital

2) Gender

3) Age (< 40 or ≥ 40 years)

4) History of suicide attempts

Intervention

All participants will attend the semi-structured *Psychoeducation Program I*, which will involve a discussion of psychological changes leading to suicide, risk factors for suicide and the relationship to psychiatric disorders; introduce stress management; demonstrate the usefulness of psychological and social support; and make patients aware of social resources. After randomization, the following interventions will be carried out in the respective groups (Table 1).

Case management intervention in the experimental group

Case managers will periodically contact participants assigned to the experimental intervention group (on the 1st, 4th, 8th, and 12th week and the 6th month after the day of written consent, and every 6 months thereafter until the end of the study). Case managers will inform participants about the date of their scheduled interviews in advance, via e-mail or regular mail. E-mail messages for participants will be prepared with the e-mail form on the input system and sent via the dedicated e-mail address for this study; the dedicated e-mail address does not permit any replies. Regular mail will be sent by participating hospitals, and words such as suicide will not be printed on the envelopes.

In principle, case management should be accomplished through direct dialogue (face-to-face interviews), where a telephone conversation is the next best option. Interviews should be conducted at participating hospitals. If case managers cannot reach participants, case managers will approach participant family members who have given their consent to be contacted in advance.

The interview scheduled for the first week should be conducted within two days before or after the scheduled date. Interviews for the 4th, 8th, and 12th weeks should be conducted within a week, for the 6th month within 2 weeks, and thereafter within 1 month before or after the scheduled date.

Case management will include the following activities:

1) Periodic interviews (either face-to-face or via telephone) with participants

2) Collection of information about each participant's background and treatment status

3) Encouragement of psychiatric treatment to the participants

4) Coordination of appointments with psychiatrists and primary care physicians

5) Encouragement of psychiatric treatment to the participants who have stopped receiving the treatment

6) Referrals to social resources and private support organizations and coordination for utilization of these resources

7) Providing information to participants and the *Psychoeducation Program II* to their family members during hospitalization

8) Providing Internet-based information (website only for the experimental intervention group)

Case managers will conduct periodic case conferences with psychiatrists. The study group management office and the intervention program committee will periodically hold case conference meetings with the study group, visit the participating hospitals, and meet with case managers, as necessary.

Regarding Internet-based information, participants in the experimental intervention group who access the website will receive information about the psychoeducation program, support organizations, and a self-diagnosis program. The dedicated intervention website will contain pages providing an introduction to social resources and serial articles, applied intervention (including psychoeducation and self-evaluation tools), and crisis intervention. The Intervention Program Committee will periodically update the content and articles on the website.

Standard treatment will be provided to subjects in the experimental group at each participating hospital. In addition, each participant in the experimental group will receive a pamphlet on suicide prevention following the psychoeducation program and at hospital visits after enrollment.

Control intervention

Participants in the control group will receive standard treatment with casework at the participating hospitals. Also, participants in the control group will receive a pamphlet on suicide prevention following the psychoeducation program and during their visits for periodic evaluations 6 months after enrollment and every year thereafter.

Evaluations

Psychiatric Evaluations

Evaluators including psychiatrists, clinical psychologists, psychiatric social workers, and/or other mental health professionals, will conduct the psychiatric evaluations. In order to conduct blinded evaluations, evaluators will not know the participants' assigned groups, status of implementation of the intervention, or information on events obtained by other on-site research staff. Moreover, to achieve blinded evaluations, evaluators will not serve as case managers or practitioners in charge of the *Psychoeducation Program II*.

These evaluators will conduct psychiatric evaluations of all participants enrolled at the hospitals and will use a case sheet at 6 months from the date written consent was obtained and every year thereafter until the completion of the study. Evaluations can be carried out up to 1 month before or after the scheduled date.

Evaluations generally will take place as face-to-face interviews at the participating hospitals. The evaluators will notify the participants of the interview schedules 7 days before the scheduled dates via e-mail or regular mail. E-mail messages will be prepared with the e-mail form on the input system and sent via the dedicated e-mail address for this study; the dedicated email address does not permit any replies. Regular mail will be sent by the participating hospitals, and words such as suicide will not be printed on the envelopes. The evaluators will schedule the next evaluation date and inform participants at the end of each interview.

Evaluations will include the following:

1) Participant survival (or cause of death noted in the case of death of the participant)

2) Whether or not suicidal behavior has been repeated

3) Any events other than (1) or (2)

4) Stress factors

5) Persons and/or organizations to consult

6) Treatment status (outpatient or inpatient)

7) Physical function

8) Drinking habits

9) Evaluations using scales

a) Beck Hopelessness Scale [21]

b) Beck Depression Inventory-II (BDI-II) [22]

c) SF-36 [23]

Events

Events will be classified as follows:

1) Recurrent suicidal behavior

2) Total deaths (from any cause)

3) Self-harm

4) Adverse events other than (1), (2), or (3): Any unfavorable and unintended occurrence in a participant, whether or not there is a causal relationship with the intervention, will be recorded.

When identifying an event, the on-site research staff at the participating hospital will record the information according to the event review sheet and will confirm the information with the investigator. If there are no complications, the on-site research staff will enter the content of the event into the web input system. If necessary, on-site research staff will consult with the on-site research coordinator and the study group management office regarding any aspects of the event that are unclear. The on-site research coordinator will notify the hospital director about any serious adverse event and will fax the event review sheet directly to the study group management office.

The data center will consolidate the input data and periodically provide data to the study group management office and the chairperson of the event review committee, according to data management procedures. The study group management office and the chairperson of the event review committee should hold monthly event review meetings to evaluate and assess details of events based on the material provided.

Specific aspects of events will be described in the event definitions and event review procedures.

Time periods during the study

Study period: August 2005 through March 2011

Enrollment period: July 2006 through December 2009

Follow-up period: July 2006 through June 2011

Preconditions for hospital participation in the study

A hospital satisfying the following preconditions may participate in the study: The hospital should have both emergency medicine and psychiatry departments and an established collaborative agreement between those departments, so that the hospital can provide patients with psychiatric interventions to the emergency department.

Within the enrollment period, the hospital can recruit and obtain consent from at least 20 patients who are eligible to participate in the context of inclusion and exclusion criteria. The hospital will perform follow-up on the patients until study completion.

All participating researchers should take a seminar on suicide prevention (epidemiology, risk factors, psychology, prevention, intervention, and postvention). According to their respective roles, each participating researcher may take other seminars on psychiatric diagnosis (Mini International Neuropsychiatric Interview [M.I.N.I.; [24]]), the psychoeducation program, psychiatric evaluation, and assessment by scales (Suicide Intent Scale [18], Beck Hopelessness Scale [21], BDI-II [22], and SF-36 [23]).

Approval of the study protocol

The study protocol will be reviewed and approved by the Central Research Ethics Committee. In principle, the study protocol also will have to be reviewed and approved by the On-site Research Ethics Committee at each participating hospital.

Data collection

Data collection listed will be conducted according to the appropriate timing and each aspect of the relevant information.

Data collected at time of enrollment

1) Basic information on the participant

Initials, ID number, age, gender, other people living with the participant, marital status, education, employment, and other information

2) Information about suicidal behavior

Date and time, means, motivation, Beck Suicide Ideation Scale, and other details of past suicidal behavior

3) Demographic status (items marked with an asterisk on the forms are allocation adjustment factors): Age, gender, history of suicide attempts, DSM-IV diagnosis with M.I.N.I. [24], history of psychiatric treatment, history of

hospital visits for physical problems, drinking habits, family history, and individuals to consult

4) Condition (psychiatric and physical diagnoses) at the time of enrollment

a) Suicide Intent Scale (only at the time of enrollment) [18]

b) Beck Hopelessness Scale [21]

c) BDI-II [22]

d) SF-36 [23]

Data collected at time of discharge
1) Date of hospital discharge

2) Discharge plans

Data collected during case management
1) Psychological and social conditions

2) Status of treatment for psychiatric and/or physical problems

3) Utilization of social resources

4) Utilization of dedicated intervention website

5) Degree of participant satisfaction with case management

Data collected during psychiatric evaluations
1) Participant survival (or cause of death of the participant)

2) Whether or not a suicidal behavior has been repeated

3) Any events other than (1) or (2)

4) Stress factors

5) Individuals and/or organizations to consult

6) Other medical services received (during clinical visits and/or hospital admission)

7) Physical function

8) Drinking habits

9) Evaluations using scales

a) Beck Hopelessness Scale [21]

b) BDI-II [22]

c) SF-36 [23]

Outcomes

Primary outcome
The incidence of first recurrent suicidal behavior (expressed as attempted or completed suicides/person-year) will be used as the primary outcome, because an individual who reattempts suicide is at high risk for completion of suicide. Therefore, in order to develop effective suicide prevention strategies, it is essential to measure the time to the next suicidal behavior.

Secondary outcomes
Secondary outcomes will include the following:

1) Mortality rate (for any cause of death/person-year) during the study period2) The number and incidence rate of recurrent suicidal behavior, expressed as repeated suicidal attempts/person-year

3) The number of self-harm behaviors

4) Types and numbers of individuals and/or organizations to consult

5) Other medical services received (during clinical visits and/or hospital admission)

6) Physical function

7) Beck Hopelessness Scale score

8) BDI-II score

9) SF-36 score

Evaluation of events

The event review committee will assess events related to the primary and secondary outcomes, while the assignment of the participants remains blinded. The event review committee will specify the evaluation criterion in the event definitions and event review procedures.

Safety management

The on-site research staff at the participating hospitals will take necessary and appropriate actions to ensure the safety of participants when a serious adverse event occurs or a participant is at impending risk of suicide during the study. The on-site research staff will contact the on-site research coordinator at the hospital, and the coordinator

will submit a report promptly to the director of the hospital and the study group management office.

Statistical analyses

Primary analysis
The primary objective of this study is to examine whether or not the period of time until recurrent suicidal behavior (either attempt or completion of suicide) of participants in the experimental intervention group is significantly different from that of the control group. The stratified log-rank test based on allocation factors will be performed for all eligible participants in the intent-to-treat analysis, in order to examine the null hypothesis that the two groups are equal in the period of time until the incidence of the event.

A one-sided test will be conducted, because there would be no interest in the case that the experimental intervention is found to be significantly inferior to standard treatment. In this case, the level of significance will be set at 2.5% for the one-sided test, and the power will be set at 90%.

Sensitivity analyses will be performed as necessary, and a regression analysis will be performed with risk factors of potential influence.

Interim analyses
Interim analyses will be performed to evaluate achievement of the primary objective of the study. The analyses will be conducted twice during the study. Participant recruitment will be continued during the interim analyses.

For the interim analysis, the Lan-DeMets spending function will be used to adjust for multiplicity and to maintain the alpha error of the overall study at 2.5% for the one-sided test. The difference between the two groups in the period up to the event occurrence, using the O'Brien-Fleming alpha-spending function, will be examined for statistical significance.

The study will be terminated if the period up to the event occurrence in the trial intervention group exceeds that of the control group and the p-value of the log-rank sum test is less than the significance level defined by the method described above.

Secondary analysis
Secondary outcomes will be examined in order to reinforce the findings of the primary analysis. For analysis of secondary outcomes, the period up to event occurrence will be analyzed with the stratified log-rank test. Subgroup analysis of the primary and secondary outcomes will be performed by hospital, gender, age (< 40 or ≥ 40 years), and occurrence of suicide attempt before enrollment in this study. Because of the exploratory nature of the secondary analysis, no adjustment for multiplicity will be made.

Ethical considerations

In this study, the rights and welfare of the participants will be protected according to the World Medical Association Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects. The study will comply with the ethical guidelines of the Ministry of Health, Labour, and Welfare in Japan. Ethical validity, including safety, scientific legitimacy, and reliability of results are ensured. Personal information collected by the participating hospitals in this study will include no identifiers that could be used to determine the identity of an individual and, therefore, will be made anonymous.

Study monitoring

Periodic monitoring
The data management center will submit a monitoring report, including the information listed below, to the J-MISP administration office once every 3 months. The J-MISP administration office will send the monitoring reports to the study progress control committee, the Central Research Ethics Committee, and the study group management office.

The study progress control committee will examine the periodic monitoring reports and submit the evaluation to the J-MISP director. As a third party, the central research ethics committee will evaluate the periodic monitoring reports and make recommendations to the J-MISP director to revise the study protocol or stop the study, if ethical problems, such as safety and efficacy issues, should arise.

Contents of monitoring reports
1) Progress of the study, including enrollment

2) Status of the implementation of psychiatric evaluations

3) Data on the occurrence of events (according to the blinded group allocations)

4) Data on the occurrence of adverse events (according to the blinded group allocations)

5) Other relevant information, such as presence of undesirable issues and/or events

Revision of the study protocol and due process

The J-MISP director will immediately inform the ACTION-J principal investigator of the decisions of the central research ethics committee if the committee has recommended that the study protocol be revised due to the emergence of safety issues based on the interim analysis,

periodic monitoring, serious adverse events, and/or other issues that might affect the conduct of the study. The ACTION-J principal investigator will call a meeting of the study group and discuss protocol revision based on the decisions of the central research ethics committee. If necessary, the principal investigator will propose the revised study protocol and submit it to the J-MISP director.

If the study evaluation committee and the central research ethics committee approve the revised protocol, the J-MISP director will adopt the revised protocol after deliberation in the steering committee. The study group management office will immediately distribute the revised protocol to all the on-site research staff through the on-site research coordinator. The on-site research coordinator will submit the revised study protocol to the on-site research ethics committee at each participating hospital.

The study is to be resumed after the revised protocol has been approved by each committee.

Study termination

Based on the findings of the interim analyses, the Central Research Ethics Committee can make a recommendation to the J-MISP director to terminate the study. The committee can decide to terminate the study because of safety issues. This decision will be based on the findings of the interim analyses, the periodic monitoring, the occurrence of a serious adverse event, or other issues that possibly could affect continuation of the study. The principal investigator will promptly convene a meeting of the steering committee to consider whether this study should be terminated, according to the conclusion of the central research ethics committee. Then, if study termination is confirmed to be appropriate, the final decision will be made.

Discussion

Suicide is a complex phenomenon that encompasses multiple factors. Ratios between 10 and 18 suicide attempts to 1 completed suicide have been estimated in other countries [25,26]. Although the ratio of suicide attempts to completed suicide is not known in Japan, many patients with self-injury from suicide attempts are transported to emergency departments in Japan [5].

In the absence of effective measures against suicide attempters, it has been difficult to reverse an increasing suicide trend in Japan. Case management by multi-sector collaboration is required.

The ACTION-J study is designed to evaluate the effectiveness of emergency facility-based case management for suicide prevention in 19 participating hospitals in Japan. ACTION-J is intended to provide valuable information on suicide attempters and to develop effective case management to reduce future risk for suicide attempters.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

All authors participated in the design of the study. All authors contributed to the writing of the manuscript and have approved the final manuscript.

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【原著論文】

自死遺族の精神的健康に影響を及ぼす要因の検討

Exploring the variables related to mental health of suicide survivors

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【和文抄録】

自死遺族の精神的健康に影響を及ぼす要因について探索するため、111名分の自死遺族を対象に質問紙調査を実施し、精神的健康、意味再構成、社会的状況、死別からの経過月数についてたずねた。重回帰分析の結果、自死遺族の抑うつ・不安傾向には、意味再構成のうち、とくに意味了解の活動が影響すること、また人生の充実感を感じることには、意味了解、ソーシャル・サポート、死別からの経過月数が影響することが示唆された。

Abstract

This research aims to shed light on the mental health of suicide survivors and its relation with meaning reconstruction, social context, and time since the loss occurred. 111 suicide survivors completed the questionnaire, which consisted of the items of mental health (i.e. K6, life-fulfillment scale) , meaning reconstruction (i.e. sense making, benefit finding, identity change) , social context (i.e. social support, secondary wounding) , and information concerning how many months age the death occurred. A multiple liner regression analysis was conducted to identify the statistical model that best explained mental health of suicide survivors. In results, sense-making predicts adaptation to loss of suicide survivors. Furthermore, social support and time since the loss were also significantly related to their mental health.

【Key Words】

suicide survivor, bereavement, mental health, meaning reconstruction

I. はじめに

愛する人との死別は遺された人に様々な影響を及ぼす。それは死別以前に抱いていた前提や世界に対するものの見方が、愛する人の死によって大きく揺らぎ、あるいは崩壊するためである[13]。しかしそうした危機において、人はただ無力に打ちひしがれるだけではない。人間は人生の目的や生きる意味を見出したり、創造したりする心理学的欲求に突き動かされており、それ故どのような体験にも何らかの意味を探り出す存在である[8]。死別を経験した人は、その人らしいやり方で故人の死を意味づけ、人生に対するものの見方を再構成するのである[33),34),35)]。

しかし、こうした死別後のあり様は、愛する人がどのように亡くなったのかによって大きく異なると考えられる。とくに自殺は1998年の急増以来、年間3万人超を記録し続けており、自殺によって近しい人との死別を経験した人（以下、自死遺族）はその数倍いると推測されるが、「自殺って言えなかった」[14]という言葉からもうかがえるように、スティグマの影響を受け、癌などによって死別を経験した人とは異なった死別後の適応プロセスをたどることが予想される。

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これまで、自死遺族を対象にした調査の多くは、自殺と他の死因による死別の精神的健康[注1]の比較を中心に行ってきた[3),15),23),31)]。系統的なレビューをおこなったSveenとWalbyによると、先行研究においては自死遺族と他の死別者の精神的健康（全般的な精神的健康度、抑うつ、PTSDなど）に明確な差異は見出されていないという[41)]。ただし自死遺族と他の死別者の異同は別として、自殺による死別が遺された人の精神的健康に多大な影響を及ぼすことは疑いない[2),14),42)]。グリーフケア・サポートプラザは自助グループや支援グループに参加している自死遺族への調査を行い、不眠や疲労感などの身体的変化とともに、抑うつ感、孤立感、希死念慮などの精神的健康の悪化を報告している[11)]。しかしながら、一部の散発的報告を除き、日本で自死遺族を対象にした実証的研究はほとんど行われてきていない。平成19年に策定された自殺総合対策大綱において、自死遺族の実態及び支援方策についての調査研究の推進が明記されているのも、そのためである。とくに自死遺族のケアに有効な方法[16)]を同定することは喫緊の課題であり、そのためにも、自死遺族の精神的健康に影響する要因を特定することが必要であろう。そこで本研究では以下に示すように、自死遺族の精神的健康に影響する要因として悲嘆、社会的状況、死別からの経過時間に着目したい。

悲嘆については、一般的な悲嘆尺度を用いた比較研究では自死遺族と他の死別者との明確な差異は認められないが、自殺に特化した悲嘆尺度（たとえば、亡くなった原因や説明を求めること、スティグマ化、恥といった項目を含むGrief Experience Questionnaire（GEQ）[1)]）を用いた場合には、差が認められることが報告されている[41)]。この理由として、自死遺族の悲嘆のありようが、特定の側面においては、他の死別者と異なることが関連していると考えられる。とくに亡くなった原因や説明を求めること、換言すれば、「なぜ自殺したのか？」と自殺した動機や故人のこころのうちを理解しようともがくことが自死遺族に特徴的であると考えられる[15)]。加えて、死別後に認められたうつ病症状の回復には、自殺に対して何らかの意味づけを行うことが重要であると指摘している[2)]。こうした自死遺族の悲嘆の特徴、すなわち意味の探求が顕著であるという特徴を掬いつつ、精神的健康との関連を把握することが必要である。

そこで本研究では、近年多くの臨床家や研究者の注目を集めてきている、「意味再構成理論」（Meaning Reconstruction Theory）[10),35)]に着目する。死別後の悲嘆に関する研究はこれまで、悲嘆の段階説[27),33)]の検討あるいはその拡張に大きな関心を払ってきたが、その関心は、死別後の悲嘆を標準的モデルへ還元することから、死別者が能動的に意味を再構成するプロセスとして捉えることへ移行しつつある[33),34)]。意味再構成理論はそうした悲嘆研究の新しい動向を受け、「喪失に対する意味再構成は悲嘆における中心的なプロセスである」[34)]ことをその基本概念として提案された理論である。そして喪失に対する反応として意味を再構成する際、人間は意味了解（sense making）、有益性発見（benefit binding）、そしてアイデンティティの変化（identity change）の3つの主要な活動に従事すると考える[10),35)]。意味了解は、喪失の原因を理解することで、死別によって揺らいだ意味構造の秩序や一貫性を修復しようとする活動である。有益性発見は、死別によって愛する人を失うという辛い経験にもかかわらず、そこにポジティブな含み（positive implication）、あるいは明るい面（silver lining）を見出そうとする活動である。そしてアイデンティティの変化は、自己や社会的世界の潜在的な価値や生きる目的を再発見すること、あるいは一変した世界での新しい役割を試みることである[22)]。意味再構成理論に基づき、自死遺族の悲嘆を丁寧に検討した研究は見当たらないが、トラウマ的な死を経験した人は、意味了解が困難であると報告されている[6),26),30)]。また喪失に対する意味了解ができないことは、暴力的な死別（殺人、自殺、事故）の衝撃と複雑性悲嘆症状を媒介するほぼ完璧な要因であるとも報告されている[4)]。これらを考慮すれば、自死遺族においても意味再構成と精神的健康の間に何らかの関係性が認められることが予想される[注2]。

社会的状況については、死別者の適応を促進するものと阻害するものが考えられる。前者に該当するソーシャル・サポートは、死別後の適応に関連することがこれまでも報告されてきた[37),40)]。たとえば福岡らは、航空機事故の遺族への調査を通じて、ソーシャル・サポートが、死別者の人間的な成長を促し、精神的健康の向上に寄与することを指摘している[9)]。他方、後者に該当するものとして、自死遺族の手記等では、自殺による死別という出来事その

ものに加えて、周囲の人の言動や社会のスティグマによってさらに深く傷つけられたとの声が散見される[11),14)]。こうした二次的に傷つけられる体験も、自死遺族の適応を考える上でとくに重要である[19),42)]。しかしながら死別後の適応とこうした要素との関連について、自死遺族への調査研究は非常に乏しい[16)]。とくにわが国では、あしなが育英会とグリーフケア・サポートプラザにおける調査から、自死遺族を取り巻く社会的状況の輪郭が浮かび上がっているものの、実証的なデータは著しく不足している。

そして死別からの経過時間について、張は心理学的剖検（psychological autopsy）協力者への追跡調査を行う中で、16名の遺族のうち、死別後にうつ病症状を示した人は10名であったが、そのうち7名は1年以内に症状の回復があったと報告している[2)]。つまり時間の経過が死別後の適応に関連することが示唆されているのである。

以上を受けて、本研究では自死遺族の意味再構成、社会的状況、死別からの経過月数に着目し、それらが精神的健康に及ぼす影響を検討することを目的とする。

II. 方法

1. 調査対象者と手続き

自死遺族を対象とする本研究では、遺族に対して様々な社会的スティグマがあること、これまで大規模な調査がなされていないこと等から、調査協力を得ることが容易ではないと予想された。そこで本調査では2007年12月から2008年6月の期間において、調査開始時までに確認できた全国の自死遺族支援団体および自助グループ32団体に対して調査協力の依頼を行った。そして協力の得られた23団体に461部の質問票を郵送し、自死遺族に調査用紙を配布してもらうよう依頼した。遺族にはアンケート終了後、返信用封筒での郵送を求めた。本研究では、最終的に回収できた111名分（24.1%）を分析対象とする。対象者の属性は、男性が24名（21.6%）、女性が87名（78.4%）であった。年齢は10代が1名(0.9%)、20代が8名(7.2%)、30代が14名(12.6%)、40代が20名（18.0%）、50代が39名（35.1%）、60代が22名(19.8%)、70代以上が7名(6.3%)であった。故人の属性は男性が70名（63.1%）、女性が41名（36.9%）であった。故人の年齢は、「答えたくない」と回答したもの1名を除き、10代が14名（12.7%）、20代が30名（27.3%）、30代が23名（20.9%）、40代が17名（15.5%）、50代が11名（10.0%）、60代が11名（10.0%）、そして70代以上が4名（3.6%）であった。さらに故人の続柄は無回答の4名、その他の4名を除き、親が21名（20.4%）、配偶者が23名（22.3%）、きょうだいが11名（10.7%）、子どもが48名（46.6%）であった。死別からの経過月数は平均78.16ヶ月（SD 99.08）であった。なお故人の属性について、4名の回答者が2名の故人を、また1名の回答者が3名の故人を報告したが、本研究では最初に挙げられた故人の属性のみを分析の対象とした。

本調査は国立精神・神経センター倫理審査委員会の承認（平成19年9月21日）を得て実施した。また協力者が質問紙の回答時に、故人の想起などにより心理的負担が生じる可能性を考慮し、そのような負担が生じた際に「答えたくない」という回答項目を設置することで、遺族の心理的負担を和らげる配慮[20)]を行った。

2. 調査内容

調査項目には、自殺への態度、支援に対するニーズなどの項目が含まれていたが、本研究では、精神的健康、意味再構成、社会的状況、死別からの経過月数についてたずねた設問への回答を検討する。

1）精神的健康

抑うつ・不安傾向　日本における死別研究では、精神的健康度の指標としてGHQ（The General Health Questionnaire）が頻繁に用いられているが[9),17),39),40)]、欧米では抑うつに関する尺度も多用されている[41)]。そこで本研究では、回答者の負担を軽減するため、項目数が少ないこと、質問項目に答えにくい問いが含まれていないこと、標準化された尺度であることを重視し、抑うつ・不安傾向を測定しうるK6を用いた。これはKesslerらが項目反応理論に基づき提案した精神疾患を効率よく拾い上げるスクリーニング尺度であり、K10の短縮版である[21),23)]。なおK6では気分・不安障害の頻度10%の集団に対して、9点以上の群では50%以上の確率で気分・不安障害が認められるとされているが、本研究ではカットオフではなく合計得点を連続量として扱うことで精神的健康の指標とした。各項目に対して、過去30日の間でそう感じた頻度を5件法（全くない=0、いつもある=4）でたずねた。**人生の充実感**　人間の精神的健康を考えた場合、WHOの健康の定義を引き合いに出すまでもなく、不適応や疾病のみを扱うのではなく、生きがいやQOLといった健康のよりポジティブな側面にも目を向けなければならない。死別研究において、こうした側面を扱った研究は非常に乏しいが、たとえば河合と佐々木[17)]は、配偶者と死別した中高年の幸福感に着目し、GHQによって測定される精神的健康とは、基本属性や死別後の変化との関連が異なっていることを報告している。そこで本研究では、精神的健康のポジティブな側面をより簡便かつ包括的に把握するため、熊野による生きがいとその類似概念（QOL、主観的幸福感、心理的ウェルビーイング）の構造[25)]を参考にした。そして人生肯定、人生の意味、生活の充実感、人生享楽、他者との親密性、そして身体の健康の6つの要素に着目した。これらによって構成される精神的健康のポジティブな側面を人生の充実感として操作的に定義し、一次元性を想定した質問項目を準備した。各項目に対して、過去30日の間でそう感じた頻度を5件法（全くない=0、いつもある=4）でたずねた。

2）意味再構成

意味了解、有益性発見、アイデンティティ変化の3つの意味生成活動はそれぞれ1項目の質問で測定することができる[4),5),6),12),26),29),36)]。そこで本研究でも、先行研究と同様に、意味了解は「あなたは故人の死を理解できるようになったと感じることはありますか」、有益性発見は「大切な人を亡くされた方の中には、その体験を通じて自身や他者についての何かを学ぶことができたと感じておられる方もいらっしゃいます。あなたは、体験を通じて学んだことや気づいたことがあると感じることはありますか」、そしてアイデンティティの変化は「故人の死を通じて、ご自身が何か大きく変わったと感じることはありますか」の質問を準備した。各質問には、4件法（全く感じない=1、強く感じる=4）での回答を求めた。

3）社会的状況

ソーシャル・サポート　死別から現在までの間に得られたと感じる、ソーシャル・サポートについて把握するため、中島ら[32)]を参考に質問項目を準備した。複数の対象（家族、親戚、友人、近隣の住民、職場の上司・同僚など、学校の先生、警察官、消防職員・救急隊員、医療従事者（医師、看護師、心理士など）、弁護士、宗教家（僧侶、牧師など）、行政職員、民間の遺族支援団体の職員、自死遺族当事者の集まりや団体など、報道関係者、その他）に対して、支えや助けになったと感じた経験についてたずねた。回答の形式として、調査票では、「答えたくない」や「関わりがなかった」との選択肢を設けたが、本研究ではそれらを除した上で、支えや助けになったと感じた程度を、「なかった=0」「少しあった=1」「中くらいあった=2」「かなりあった=3」「非常にあった=4」で得点化した。ただし「その他」は、無回答や関わりがなかったと回答したものが顕著に多かったため、分析から除外した。**二次的傷つき体験**　死別から現在までの間に得られたと感じる、二次的傷つき体験について把握するため、中島ら[32)]を参考に質問項目を準備した。ソーシャル・サポートと同様の対象に対して、死別から現在までの間に傷つけられたと感じた経験についてたずねた。傷つけられたと感じた程度を、「なかった=0」「少しあった=1」「中くらいあった=2」「かなりあった=3」「非常にあった=4」で得点化し、「その他」を除く15対象の得点を分析の対象とした。なお中島らは二次被害という言葉を用いているが、本研究では、二次「被害」という表現が自死遺族の経験を表す上で適切かどうか、とくに、自死は遺族にとって一次被害と呼ぶべきか否かという点を考慮し、二次的傷つき体験という表現を用いた[18)]。

4）死別からの経過月数

死別からの経過月数に関して、「亡くなられてから、どのくらいの日にち、年月が経過していますか？」とたずねた。

III. 結果

1. 精神的健康に関する尺度の検討と属性変数との関連

K6の信頼性を確認するため、Cronbachのα係数を算出したところ.88と高く、内的一貫性が確認できたため合計得点を算出した（平均得点9.59 SD 6.13）。また、人生の充実感に関する尺度の一次元性を確認するため主成分分析を行った結果、一次元性が確認された（Table1）。Cronbachのα係数を算出したところ.88と高い内的一貫性が確認できたため、“人生充実感尺度”と命名し合計得点を算出した（平均得点12.88　SD 6.65）。K6の合計得点

Table1　人生充実感尺度の主成分分析結果

項目	成分	共通性
1. 人と会うのが楽しいと感じる	.79	.62
2. 毎日の生活が充実しているように感じる	.87	.76
3. 生きがいがあると感じる	.85	.72
4. 人生には意味があると感じる	.75	.56
5. 食事がおいしいと感じる	.85	.73
6. よく眠れると感じる	.66	.44
平方和	3.82	
寄与率（%）	63.62	

と人生充実感尺度得点との間には、高い負の相関（$r = -.67, p < .001$）が見られた。

精神的健康と属性変数との関連を把握するため、対象者の性別、故人の性別に関してはt検定を、対象者の年齢、故人の年齢、そして死別からの経過総月数については相関係数の算出を、故人の続柄に関しては、親、配偶者、きょうだい、子どもの4つを独立変数として一要因分散分析を行った。結果、故人の年齢とK6（$r = -.20, p < .05$）との間に有意な相関が確認された。総経過月数については、人生充実感（$r = .24, p < .05$）とK6（$r = -.29, p < .01$）との間に有意な相関が見られた。その他の属性においては有意な結果が得られなかった。

2. 諸変数の基礎統計量と相関関係

意味再構成の3つの活動（意味了解、有益性発見、アイデンティティ変化）、社会的状況（ソーシャル・サポート、二次的傷つき体験）、死別からの経過月数の平均得点、標準偏差、変数間の相関係数はTable2の通りである。なおソーシャル・サポート、二次的傷つき体験についてCronbachのα係数を算出した結果、ソーシャル・サポートは.70、二次的傷つき体験は.77と十分な値が確認できたため、合計得点を算出し、以降の分析に用いた。

変数間の相関関係について、意味了解は有益性発見（$r = .21, p < .05$）との間で有意な値を示した。有益性発見はアイデンティティの変化（$r = .50, p < .001$）と有意な相関を示した。ソーシャル・サポートと死別からの経過月数の間（$r = -.36, p < .001$）にも有意な相関が確認された。

3. 因果関係の検討

意味再構成、社会的状況、死別からの経過月数の諸変数が精神的健康に与える影響を検討するために、精神的健康のK6、人生充実感をそれぞれ基準変数とした重回帰分析を実施した。なお有益性発見

Table2　意味再構成，社会的状況，死別からの経過月数の平均，標準偏差，相関係数

	平均得点	SD	2	3	4	5	6
1. 意味了解	2.70	.85	.21*	.08	−.01	−.10	.14
2. 有益性発見	3.29	.89		.50***	.16	−.13	.07
3. アイデンティティの変化	3.44	.85			.17	.15	.08
4. ソーシャル・サポート	14.12	7.47				.16	−.36***
5. 二次的傷つき体験	7.81	7.27					−.11
6. 死別からの経過月数	78.16	99.08					

*** $p < .001$, ** $p < .01$, * $p < .05$

Table 3　精神的健康への重回帰分析結果

基準変数	精神的健康	
	K6	人生充実感
説明変数	β	β
意味了解	−.24*	.26*
有益性発見	−.21	.19
ソーシャル・サポート	−.09	.33**
二次的傷つき体験	.20	−.16
死別からの経過月数	−.23	.32**
R-square	.26**	.33***

*$p < .05$, **$p < .01$, ***$p < .001$

とアイデンティティの変化の間に高い相関が認められたことから、多重共線性の問題を回避するため、回帰モデルにはアイデンティティの変化を除いた5つの変数（意味了解、有益性発見、ソーシャル・サポート、二次的傷つき体験、死別からの経過月数）を説明変数として投入した。

結果、Table3に示したとおりK6と人生充実感の回帰モデルにおいて、いずれも決定係数が有意な値を示した。K6については、意味了解からの標準偏回帰係数のみが有意であった（$\beta = -.24, p < .05$）。人生充実感については、意味了解（$\beta = .26, p < .05$）、ソーシャル・サポート（$\beta = .33, p < .01$）、死別からの経過月数（$\beta = .32, p < .01$）からの標準偏回帰係数が有意であった。

IV. 考察

本研究の目的は、自死遺族の意味再構成、社会的状況、死別からの経過月数に着目し、それらが精神的健康に及ぼす影響を検討することであった。

精神的健康の指標として抑うつ・不安傾向と人生の充実感に着目し、前者についてはK6を用いて測定することを試みた。また後者については、人生充実感尺度を準備し、一定の信頼性および妥当性を確認した。さらに精神的健康と属性変数との関連を検討したところ、故人の年齢と死別後の経過月数を除いて有意な結果が得られなかった。

続いて意味再構成、社会的状況、死別からの経過月数の基礎統計と相関関係を確認したところ、意味了解と有益性発見の間で有意な相関関係が認められた。この結果は、意味了解と有益性発見の間には統計的な相関関係は認められないという先行研究[5]の知見とは一致しない。この結果が、自死遺族に特有のものであるのかどうかについては、他の死因による遺族への調査を展開し、検討することが必要である。また有益性発見とアイデンティティ変化との間に高い相関が確認されたことから、死別の体験からより多くの学びや気づきを得る人は、自分自身が大きく変化したと感じる傾向にあるといえる。ソーシャル・サポートと死別からの経過月数との間で相関関係が見られたが、これには二通りの解釈が可能である。つまり一方は、死別から時間が経過するほど、周囲からの助けや支えを受けやすくなる可能性であり、他方は時間が経過するほど、周囲からの助けや支えを感じられるようになる可能性である。しかし本研究は、一時点での調査データに基づく検討であるため、ソーシャル・サポートの程度が実際に時間を追っていかに変化するのかを測定してはいない。縦断的デザインでの検討が求められる。

重回帰分析の結果、自死遺族の精神的健康には、とくに意味了解の活動が影響を及ぼすことが示された。この結果は、意味再構成の活動が苦痛を和らげることと関連するという先行研究[4),5),6),29)]の結果、さらに意味了解は有益性発見よりも顕著な活動かつ、死別後の適応への強力な予測因子であるとの指摘[12)]と符合する。また死別後に認められたうつ病症状の回復への、自殺に対する意味づけの重要性を指摘した張の見解[2)]とも一致する。

ところで意味了解の平均得点は中位点（2.5）を上回っているものの、Neimeyerらによる大学生を対象とした死別研究[4),12),36)]で報告された、平均得点が3以上という結果よりも低い。トラウマ的な死を経験した人は、意味了解が困難であるとの報告[6),25),30)]を考慮すれば、本研究の対象となった自死遺族は、いまだ意味を了解しようと苦闘する活動の只中にいるのかもしれない。自死遺族ケアにとって重要なことは、意味了解、すなわち故人の死を理解することの困難に寄り添いながら、それを支えていくことであると考えられる。

先行研究では有益性発見が苦痛の軽減に寄与すると報告されているが[5),12),39)]、有益性発見が精神的健康に影響するという因果関係は本研究では確認できなかった。ただし坂口[39)]が指摘するように有益性発見の内容によって適応への影響に差異が生じることも考えられる。有益性発見の内容を詳細に検討した上で、この問題について再度検証することが必要かもしれない。

また人生充実感への重回帰分析の結果からは、意味了解に加えて、周囲から助けや支えを得られたと感じること、死別から時間が経過することが、人生に肯定的な感情を抱くことに影響を及ぼすことがうかがえた。ソーシャル・サポートが死別後の適応を促すという指摘はこれまでにもなされていたが[37)]、本研究ではK6への標準偏回帰係数においては有意な値が得られず、人生充実感において有意な値が確認された。ここから、ソーシャル・サポートは抑うつや不安とは直接には関連しないが、生きがいや人生の意味を見出す上で一定の役割を担うことが示唆された。ただし、本研究では自死遺族を取り巻く社会的状況を列記し、各対象からの支えや助けになった程度を測定したため、サポート内容に着目した場合には、本研究とは異なる結果が得られるかもしれない。今後、たとえば坂口[39),40)]や福岡ら[9)]が検討しているように、情緒的サポートと道具的サポートの具体的な内容と自死遺族の精神的健康との関係について把握することが求められる。

V. 今後の課題

本研究ではサンプル数の少なさから、対象者を基本属性によって区別することなく重回帰分析に投入したが、たとえば親を亡くした場合と子どもを亡くした場合では、遺族を取り巻く社会的状況は大きく異なり、また意味再構成のプロセスが死別後の精神的健康に及ぼす影響も異なる可能性がある。今後、より多くのサンプルを収集し、複数の母集団を想定したモデルの検証が必要である。

また今回、自死遺族支援グループおよび自助グループを通じた調査を実施したが、グループに参加しない、あるいはできない遺族が実際には多く存在すると思われる。そしてそうした人々の適応プロセスは、本研究の対象となった、グループに参加する人々のものとは異なることも十分考えられる。実際、インターネットの支援グループに参加している自死遺族は、対面の支援グループに参加している遺族よりも、スティグマを強く感じており、抑うつ傾向が高いことが指摘されている[7)]。今後、さらに調査を展開し、多様な自死遺族への支援方策を検討していくことが必要である。

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注

1. メンタルヘルス（mental health）には、保健行動としての精神保健と、健康状態としての精神健康の二重の意味があるが[24]、本研究では自死遺族ケアという精神保健福祉活動への展開を視野に入れつつ、後者に焦点を当てる。
2. 本研究が拠り所とする意味再構成理論は、これまでの研究が自責や怒りといった悲嘆の情動的側面を中心に扱ってきた一方で、悲嘆の認知的側面を軽視しているとの批判とともに提唱された理論である[10),22),34)]。そのため本研究では理論との整合性を鑑み、悲嘆の認知的側面に焦点化する。

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研究報告

日本語版 Suicide Intervention Response Inventory(SIRI)作成の試み*

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Suicide Intervention Response Inventory (SIRI)の日本語版を作成した。SIRIにはSIRI-1とSIRI-2の2つの得点算出方法があり，エキスパートの評価を基準とするSIRI-2は改善の余地がある。そこで自殺念慮者・自殺未遂者への対応経験がある医療従事者36名のデータから日本語版ベースラインを作成し，修正版SIRI-2の計算式を確定した。そして，自殺対策相談支援研修の前後で参加者108名のスキルの変化をSIRI-1，原版SIRI-2，修正版SIRI-2の方法で測定し，各計算式の有効性を検討した。結果として，まずは原版SIRI-2の方法を採用することが望ましい。

Key words

Suicidal ideation, Intervention, Skills, Suicide prevention support, Training

はじめに

日本の自殺者数は1998年の急増以来，年間3万人以上を記録し続けており，世界的に見ても，日本の自殺率（人口10万人あたりに占める自殺者数の割合）は，旧ソ連や東欧諸国が上位のほとんどを占める中，その高さが際立っている。日本でも2006年に自殺対策基本法が成立し，2007年に自殺総合対策大綱が閣議決定され，最近になってようやく自殺対策が本格化し始めたものの，課題は山積である。

その1つに自殺対策に携わる人材の育成が挙げられる。自殺総合対策大綱を受けて，自死遺族や未遂者にかかわる際の相談技法や知識の習得を目指した研修が開催されるようになってきているが，こうした研修の効果を測定する実証的研究が必要である。特に自殺念慮者・未遂者へのケアの観点から，援助者には適切なケアを行うための，自殺の危機に介入する高いスキルが要求されるため，そうしたスキルを測定することのできる尺度が臨床・実践現場から強く求められている。

そこで本研究では，米国において開発され，すでに研究蓄積のあるSuicide Intervention Response Inventory (SIRI)の日本語版を作成する。SIRIは，潜在的な自殺の危険性を有するクライエントの相談場面において適切な受け答えを選択することができるスキルを評定する，25項目からなる自己記入式調査尺度である。各項目におい

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* Development of the Japanese Version of the Suicide Intervention Response Inventory (SIRI)

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てまずクライエントの発言が提示され，それに対する2人の援助者(A，B)の受け答えが続いて提示され，回答者はその受け答えを評価する。

この尺度を選択した理由は，すでに多くの研究蓄積を得ていて[2,3,11-13,15]，100以上の自殺対策にかかわる研修において使用されており[14]，研修の効果を測定した研究も数多く報告されている[1,3,4,10,13,16,19]ためである。

SIRIには2つの得点算出方法がある。1つ目は，援助者A，Bの受け答えに対して，より適切な受け答えを選択するよう回答者に求め，その正答数を計算する方法(SIRI-1)[13]である[注1)]。2つ目は，それぞれの受け答えに対して−3(とても不適切な受け答え)から+3(とても適切な受け答え)で評価することを回答者に求めたうえで，その素得点と自殺対策のエキスパートの素得点との距離から得点を算出する方法(SIRI-2)[11,14]である。したがってSIRI-1では得点が高いほど正答数が多く，スキルが高いことを意味し，一方SIRI-2では得点が高いほどエキスパートから離れており，スキルが低いことを意味する。

欧米での先行研究によると，専門家群への実施ではSIRI-1に天井効果がみられることから，そうした問題を解決したSIRI-2が適しており，一方で非専門家群に対して実施する場合や研修での迅速なフィードバックが必要な場合はSIRI-1のほうが適しているという[11,14]。

ただしSIRI-2に関しては，ベースラインとなるエキスパートの素得点において標準偏差の大きい項目が複数あり，項目14のAとBに至っては偏りが著しく大きいことから除外されている[11]。そこで本研究ではまず，日本において自殺対策に先駆的に取り組んでいる対策拠点を通して，ベースラインの候補となる医療従事者に対する調査を実施し，新たなSIRI-2の計算式(以下，修正版SIRI-2)を算出する。そのうえで自殺対策の相談員に向けた研修において，作成した日本語版SIRIを実施し，SIRI-1，原版のSIRI-2，そして修正版SIRI-2の3つの計算式を比較することで，研修の効果測定に，より適切な得点算出方法を検討する。

注1) Neimeyerらは SIRI-2と対比させて，Neimeyer と MacInnes による得点算出方法[13]を Original SIRI と呼んでいるが[11,14]，ここでは読みやすさを考慮して SIRI-1とする。

方法

1. 質問紙

1）ベースラインの候補となる医療の専門家に対する質問紙内容

日本語版SIRIに加え，性別，年齢，職業，精神科医療に関連する資格の有無，頻繁に接する患者の特徴とその接し方，過去1年間の自殺念慮者の対応件数についての質問が含まれている。なお，日本語版SIRIは50個の質問項目(25項目についてAとBの2つの質問)からなり，回答の形式は原版と同様に7件法(−3＝とても不適切な受け答え，+3＝とても適切な受け答え)とした。また頻繁に接する患者の特徴については，日頃接する患者のうち，自殺に関連して最も頻繁に接するのは自殺企図者と自殺念慮者のどちらかを尋ねた。接し方については，電話と面前のどちらがより頻繁であるのかを尋ねた。

2）研修参加者に対する質問紙内容

日本語版SIRIの他，自殺予防と遺族支援に関する基本的知識，自殺対応への自信，基本的属性が含まれている。基本的知識は，自殺についての知識に関するテスト[1,16,17]を参考に，自殺念慮者への対応や自死遺族の状況など，自殺予防と遺族支援に関する知識をとらえられるように作成した。6項目からなり，2件法(そう思う＝1，そう思わない＝0)で尋ねた。自殺対応への自信については，自殺の対応への自信に関する質問[4,10]を参考にして作成した。6項目からなり，5件法(全くそう思わない＝1，強くそう思う＝5)で尋ねた。なお基本的属性は，性別，年齢，職業，業年数，自殺念慮者あるいは自死遺族からの過1年間の相談件数である。

2. 調査対象者

1）ベースラインの候補となる医療の専門家

原著者らは，ベースラインの算出に，アメリカ自殺予防学会や国際自殺予防学会などの専門的組織の現(元)理事を含む，自殺や危機介入に関する理論や研究，および実践への貢献が広く刊行されている国際的に著名な専門家をエキスパートとして選択した[11]。他方，日本においては，自殺予防の専門的組織の活動は緒に就いたばかりであり，多様な職種，学会からの参入が続いている状況にある。そのため，原版と同様の手続きを取ることは困難であった。ただし，日本においても自殺対策に先駆的に取り組んできた複数の対策拠点があり，そこでの実践がこれまでの日本の自殺対策を牽引してきたことも事実である。

そこで本研究では，自殺の対策拠点において1年以内に実際に自殺念慮を持つ人や自殺未遂者への直接の対応経験がある医療従事者をまずは候補として考えた。2008年11月から約1か月間，日本において自殺対策に先駆的に取り組んでいる複数の対策拠点に協力を依頼した。最終的に36名(男性23名，女性13名)から質問紙を回収した。なお属性に関して，20代が8名，30代が18名，40代が5名，50代が3名，そして60代が2名であった。また職業について，医師が27名，看護師が2名，ソーシャル・ワーカーが2名，臨床心理士が5名であった。精神科医療に関連する資格の有無について尋ねたところ，14名が精神保健指定医，2名が精神保健福祉士であった。頻繁に接する患者の特徴については，自殺企図者が7名，自殺念慮者が21名，そして自殺企図者と自殺念慮者の割合が同程度と回答したものが8名であった。接し方については，電話が1名，面前が35名であった。自殺念慮者および自殺未遂者への過去1年間の対応件数は平均79.0件であった。

2）研修参加者

2008年1月に2日間にわたり開催された，自殺対策相談支援研修における研修参加者108名(男性24名，女性84名)を対象に質問紙調査を実施した。年齢では40代が44名と最も多く，また職業では保健師が59名と最も多かった。過去1年間に自殺念慮者あるいは自死遺族から受けた相談件数は平均13.3件であり，就業年数は平均14.1年であった。なお研修は，自殺念慮者や自死遺族への相談技法などに関する知識の習得を主たる目的とし，講義形式で実施した。

3. 調査手続き

1）日本語版SIRIの作成手順

原著者の許可を得て翻訳したのち，日本の相談場面の状況や社会文化的背景に沿うよう修正した。翻訳に当たっては，自殺対応の経験が豊富な医師，看護師，臨床心理士などからの意見を踏まえ，日本の相談場面で自然にみられる受け答えになるように修正した。また，顕著な文化差がみられる項目については，欧米での臨床経験を持つ専門家に意見を求め，原版での項目の意味を損なわないよう配慮した。全項目について原版の英文を知らないバイリンガルによるバックトランスレーションを行い，最終的に原版と日本語版の項目の対応について原著者の確認を得た。

2）日本語版ベースラインの算出

自殺念慮者・未遂者への対応経験者のデータを収集し，ベースラインを構成する専門家として不適切なものを多変量外れ値の方法を用いて除外した。そして日本語版ベースラインを作成したうえで，修正版SIRI-2の得点算出方法を検討した。

3）計算式の有効性の検討

自殺対策相談支援研修の参加者に質問紙調査を実施し，研修前後でのスキルの変化をSIRI-1，原版SIRI-2，修正版SIRI-2の得点算出方法により測定することで，計算式の有効性を検討した。

結果

1. 日本語版ベースラインの算出と修正版SIRI-2の計算式の確定

1）日本語版ベースラインの算出

分析対象となった36名は実際に患者に接した経験を持つが，その回数や自身の職業・年齢はまばらであり，日本語版SIRIの質問への回答にも

ばらつきが認められた。そこで修正版SIRI-2のベースライン算出にあたり，日本語版SIRIの各項目に対する回答を用いて，まず外れ値の検出を行った。検出にはFilzmoserらによる多変量外れ値の方法[5]を使用した。この方法は，フリーの統計ソフトウェアRに含まれるパッケージ“mvoutlier”で実装されており，本分析でも“mvoutlier”を使用した。またFilzmoserらによる方法では，変数の数の2倍以上のサンプル数が必要になるが，本データはサンプル数が36名であるのに対し，25項目についてAとBの2つがあることから質問項目数は50であり，これを満たさない。そこで10項目ずつ5回に区切って分析を行い，外れ値の候補として2回以上検出された8名を後の分析からは除外し，日本語版ベースラインは28名の平均値とした。除した8名と28名では既述の属性に関する差はみられなかった($p>0.05$)。

2）計算式の確定

本研究では，より適した計算式を作成するため，スキルを測定する場合にはベースラインとの単純な差ではなく，重みつきの差を使用した。各項目の重要度を反映させるために，28名が比較的一貫した評価を行った項目の重みは大きく，一方ばらついた評価を行った項目の重みは小さくなるように，各項目の標準偏差の逆数を重みとした。また，重み自体が信用に足るものであるか否かも問題になるため，重みの標準誤差を10,000回のブートストラップ法によって算出した。その結果，標準誤差は非常に小さく，スキルの測定には問題がないと判断し，修正版SIRI-2の計算式を確定した。すなわち「得点＝Σ(|各項目の素得点－各項目の日本語版ベースライン|×重み)」である。

注2) 得点＝Σ(|各項目の素得点－各項目の原版ベースライン|)。なお原版ベースラインでは14A，Bは省かれており，質問項目数は48(24項目についてAとBの2つ)であるため，本研究でも原版SIRI-2の得点算出の際には14AおよびBは除外した。

なお，得られた日本語版ベースラインを原版ベースラインと比較したところ，おおむね評価のパターンは共通しているものの，原版と比較して日本語版では全体的に評価が「どちらでもない」に近接していた。表1に原版ベースライン，日本語版ベースライン，日本語版ベースラインの標準偏差および重みを示した。

2. 計算式の有効性についての検討—SIRI-1，原版SIRI-2，修正版SIRI-2

まず自殺予防と遺族支援に関する基本的知識，自殺対応への自信によって研修の効果を確かめた。知識について，本研究では自殺予防と遺族支援に関する幅広い基本的知識を尋ねたため，合計得点ではなく，各項目の正答数をプレテストとポストテストのそれぞれで確認した。結果，研修前後で正答数が変化しなかった1項目(「死別後の悲嘆の多くは，生体の正常な反応である」)を除いたすべてで正答数が増加していた。他方，自信についてはα係数がプレテスト，ポストテストともに0.83と高く内的一貫性が確認できたため，合計得点を算出したところ，プレテストで平均18.36(*SD* 3.64)，ポストテストで平均21.64(*SD* 2.82)と，研修によって有意に向上していた($t(107)=11.93$, $p<0.001$)。これらの結果より，研修内容は，自殺予防に対する正確な知識の習得を促し，自殺対応への自信を向上させたと判断された。

次に日本語版SIRIの3つの計算式の有効性について検討するために，研修前後のスキルの変化についてNeimeyerとPfeifferによるSIRI-1[14]での得点を算出したところ，プレテスト平均得点19.59(*SD* 2.17)，ポストテスト平均得点20.44(*SD* 2.24)であった。SIRI-1では，研修によってスキルが向上していたと判断された($t(107)=4.21$, $p<0.001$)。原版SIRI-2の計算式[注2)]ではプレテスト平均得点58.99(*SD* 12.16)，ポストテスト平均得点54.59(*SD* 12.40)であり，SIRI-1の結果と同様，研修によってスキルが向上したと判断された($t(107)=-3.90$, $p<0.001$)。一方，修正版SIRI-2の計算式では，プレテスト平均得点48.31(*SD* 12.18)，ポストテスト平均得点52.50(*SD* 13.66)であり，SIRI-1および原版SIRI-2の結果とは異なり，研修によってスキルが低下したと判断された($t(107)=3.56$, $p<0.001$)。

表1 原版ベースライン，日本語版ベースライン，標準偏差，重み

項目	原版ベースライン	日本語版ベースライン	*SD*[1)]	重み[1)]	項目	原版ベースライン	日本語版ベースライン	*SD*	重み
1A	−2.71	−1.82	0.89	1.13	14A[2)]		1.96	0.73	1.37
1B	1.86	2.18	0.38	2.61	14B[2)]		0.71	1.25	0.80
2A	−2.71	−2.14	0.99	1.01	15A	−2.57	−0.46	1.24	0.81
2B	1.86	1.86	1.16	0.86	15B	2.14	1.36	0.93	1.07
3A	−2.14	−1.29	1.28	0.78	16A	2.14	1.11	1.45	0.69
3B	2.14	1.54	0.91	1.10	16B	−2.86	−2.50	0.82	1.21
4A	1.29	1.18	0.89	1.13	17A	1.57	1.25	0.87	1.15
4B	−2.71	−1.71	1.19	0.84	17B	−1.71	−0.82	1.47	0.68
5A	2.43	0.82	0.93	1.08	18A	−2.00	0.29	1.06	0.94
5B	−2.71	−1.96	0.82	1.22	18B	1.43	1.07	0.92	1.08
6A	−2.00	−1.00	1.22	0.82	19A	−2.29	−1.36	1.11	0.90
6B	2.57	1.54	0.68	1.47	19B	1.57	1.36	0.67	1.50
7A	2.00	1.43	0.78	1.29	20A	2.00	1.39	0.67	1.49
7B	−1.29	−0.21	1.59	0.63	20B	−2.86	−2.04	0.87	1.16
8A	−2.29	−1.54	1.05	0.95	21A	1.86	1.04	0.87	1.16
8B	2.14	1.50	0.78	1.28	21B	−1.57	0.82	1.07	0.93
9A	−1.29	−0.07	1.00	1.00	22A	−2.71	−1.96	0.63	1.60
9B	1.29	0.04	1.27	0.79	22B	1.43	1.46	0.94	1.06
10A	2.29	1.18	0.80	1.24	23A	1.57	0.93	0.96	1.04
10B	−2.43	−2.00	1.04	0.97	23B	−2.57	−2.43	0.68	1.48
11A	−2.42	−0.57	0.90	1.11	24A	−2.43	−0.46	1.50	0.67
11B	2.43	0.57	1.24	0.81	24B	2.14	−0.39	1.82	0.55
12A	2.00	1.04	1.09	0.92	25A	−2.57	−1.25	1.30	0.77
12B	−3.00	−1.57	0.98	1.02	25B	2.43	0.79	1.15	0.87
13A	−2.57	−2.07	0.84	1.19					
13B	2.29	1.21	1.01	0.99					

注1) 日本語版ベースラインの標準偏差と重み。
2) 原版ベースラインでの14A，Bは意見が分かれたため，ベースラインは算出されていない。

日本語版SIRIの各計算式の信頼性を確かめるため，まずSIRI-1の25項目についての信頼性係数をKuder-Richardson 20の公式を用いて算出したところ，プレテストで0.43，ポストテストで0.51であり，先行研究[3,13]において報告された値を大きく下回った。他方，原版SIRI-2についてCronbachのα係数を算出したところ，プレテストで$\alpha=0.71$，ポストテストで$\alpha=0.73$と十分な値を示した。修正版SIRI-2ではプレテストで$\alpha=0.81$，ポストテストで$\alpha=0.87$と高い値を示した。

修正版SIRI-2が原版SIRI-2やSIRI-1とは異なる結果を示した原因を探るため，計算式によって結果が異なる回答者(たとえば，原版SIRI-2では研修効果があったと判断されたが，修正版SIRI-2では研修効果がないと判断されたもの)の属性を検討した[注3)]。特に研修による知識や自信の極端な向上(あるいは低下)や，これまでの就業年数，実際に相談に携わった件数が，研修効果の矛盾を引き起こした可能性が考えられる。そこで修正版SIRI-2と原版SIRI-2の研修効果の有無，

注3) SIRI-1については信頼性が確認されなかったため分析から除外した。