

厚生労働省科学研究費補助金(障害者対策総合研究事業(精神障害分野))

「自殺対策のための効果的な介入手法の普及に関する研究」

分担研究報告書

包括的自殺対策のアプローチおよび自殺企図者に関する基礎的調査

研究分担者	酒井 明夫	岩手医科大学医学部神経精神科学講座 教授
	大塚 耕太郎	岩手医科大学医学部神経精神科学講座/ 災害・地域精神医学講座 教授
	黒澤 美枝	岩手県精神保健福祉センター 所長

研究要旨

我が国では「(自殺対策のための戦略研究)複合的自殺対策プログラムの自殺企図予防効果に関する地域介入研究(NOCOMIT-J)」での取り組み成果が明らかとなった。岩手県においても戦略研究の骨子をもとにした自殺対策が全県的に取り組まれてきた。今回の調査から、岩手県の各医療圏において、包括的な自殺対策を実施していることが確認された。また、精神科救急サービスにおける自殺関連行動への対応状況としては、身体合併症としての対応が求められ、入院率も高く、連携や地域ケアの導入においてケース・マネジメントを要する状況が明らかとなった。

A. 研究目的

岩手県では岩手県北地域の包括的自殺対策を久慈モデルとして全県的な自殺対策として推進している。本研究では、包括的自殺対策事業を岩手県全県的に検討するうえでの現状を把握することを目的とした。また、岩手県精神科救急システムにおける常時対応型病院である岩手医科大学における自殺関連行動への対応状況での実態を把握することを目的とした。

B. 研究方法

1. 岩手県の保健師対象の調査

「(自殺対策のための戦略研究)複合的自殺対策プログラムの自殺企図予防効果に関する地域介入研究(NOCOMIT-J)」の研究結果がPros One 誌に示された。この点を踏まえて、岩手県の自殺対策において岩手県保健福祉部障がい保健福祉課の全県の県保健師対象の研修会において、包括的な自殺対策の重要性に対して講義を行い、合わせて自殺対策の実施状況や意識について調査を実施した。

2. 精神科救急システムにおける自殺企図の実態

岩手県における精神科救急の常時対応型病

院である岩手医科大学の精神科救急(岩手医科大学附属病院1次2次外来および岩手県高度救命救急センター)における平成25年4月から12月までの精神科救急対応637件、身体合併症対応288件を対象として自殺企図関連行動での受診者状況を調査した。

(倫理面への配慮)

データは個人が特定可能な項目は除外し、データの管理や処理の過程でも個人情報の保護に配慮した。

C. 研究結果

1. 保健師研修会での調査

8医療圏の保健師(30代—50代、自殺対策経験年数1-4年、N=10名)が研修に参加した。研修内容は包括的自殺対策の有効性についての講義とグループワークからなるプログラムである。「久慈地域で行われている自殺対策の取り組みがどの程度、地域で有効だと思いますか?(VAS; visual analog index(0-100))」という質問では88.7と高い値であった。「担当に地域でどのくらい取り組まれていると実感されていますか?(VAS(0-100))」という質問の参加者の平均値では地域診断(63.5)1次予防(79.1)、2次予防(71.6)、3次予防(60.5)、ネットワーク(74.6)、精神障害への対策(70.4)、職域への対策(60.6)、災害支援(54.4)、ゲートキーパー教育(64.2)であった。また、「今回の研修会はどの程度役に立ちましたか?(VAS)」との問いに91.1と高い満

足度が認められた。

2. 精神科救急システムにおける自殺企図の実態

精神科救急対応の637件中25件が自殺関連行動での受診であり、そのうち入院は8件であった。身体合併症対応の298件で自殺関連行動での受診123件であり、そのうち73件が入院となった。

D. 考察

1. 包括的な自殺対策のアプローチの推進

岩手県においては岩手県精神保健福祉センターや、保健福祉部障がい保健福祉課、岩手医科大学が包括的自殺対策を各医療圏で推進する体制を継続してきた。実際の調査でも、その理念や実施状況が確認された。

2. 精神科救急システムにおける自殺関連行動への対応

精神科救急システムにおいては自殺関連行動の対応や、合併症対応としての位置づけが主体となっていることが確認された。

E. 結論

岩手県では包括的自殺対策をモデルとして、全県の自殺対策を推進しており、実際に対策が実施されていることが確認できた。今後、自殺対策の事業継続や地域特性にあわせた自殺対策の推進が課題となっていくと考えられる。特に、

被災地においても、地域の自殺対策の推進の重要性が高まっていくと考えられた。

一方、精神科救急システムにおいて自殺関連行動は身体合併症の枠組みで対応されることがあり、入院率も高いことから、入院施設を持つ精神科医療施設での対応や連携が重要であると考えられた。この点ではソーシャルワーカーなどを中心としたケース・マネジメントのアプローチが臨床現場で求められていると考えられた。

F. 健康危険情報

特記すべきことなし。

G. 研究発表

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monoxide poisoning. BMC Emergency Medicine 2014, 14:3

3. 大塚 耕太郎, 酒井 明夫, 岩戸 清香, 中村 光, 赤平 美津子:自殺念慮の早期発見と求められる対応. 精神科治療学 28(11): 1437-1441, 2013

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2. 学会発表

特記なし

H. 知的財産権の出願・登録状況

(※予定を含む)

1. 特許取得

特記なし

2. 実用新案登録

特記なし

3. その他

特記なし

III. 研究成果の刊行に関する一覧表

研究成果の刊行に関する一覧表

書籍

著者氏名	タイトル	書籍全体の編集者名	書籍名	出版社名	出版地	出版年	ページ
河西千秋	自殺予防学		自殺予防学	CNB社	韓国	2013	
加藤大慈, 河西千秋	自殺念慮／自殺企図	北川泰久, 寺本明, 三村将	神経・精神疾患診療マニュアル(日本医師会雑誌, 第142巻・特別号(2))	日本医師会		2013	140-141
河西千秋	セーフコミュニティにおける自殺予防対策の実践	精神保健福祉白書編集委員会	横浜市栄区. 精神保健福祉白書2014年版	中央法規出版	日本	2013	35

雑誌

発表者氏名	タイトル	発表誌名	巻号	ページ	出版年
河西千秋	自殺予防対策の進め方: 課題, 実践, そして検証	いしかわ精神保健	54	2-17	2013
河西千秋	Topics Q&A: 自殺問題をめぐる現況と最新の取り組み	Depression Journal	1	22-23	2013
河西千秋	自殺と死生観: 自殺と精神医学	最新精神医学	18	479-482	2013
Hirata M, Kawani shi C, Oyama N, Miyake Y, Otsuka K, Yamada T, Kishi Y, Ito H, Arakawa R.	Training workshop on caring for suicide attempters implemented by the Ministry of Health, Labour and Welfare, Japan.	Psychiatry Clin Neurosci	67	64	2013
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Kawashima Y, Yonemoto N, Inagaki M, Yamada M.	Prevalence of suicide at tempters in emergency departments in Japan: a systematic review and meta-analysis.	J Affective Disorders	In press		2014
Ono Y, Sakai A, Otsuka K, Uda H, Oyama H, Ishizuka N, Awata S, Ishida Y, Iwasa H, Kamei Y, Motohashi Y, Nakamura J, Nishi N, Watanabe N, Yotsumoto T, Nakagawa A, Suzuki Y, Tajima M, Tanaka E, Sakai H, Yonemoto N.	Effectiveness of a multimodal community intervention program to prevent suicide and suicide attempts: a quasi-experimental study.	PLoS One	8 (10)	e74902	2013
公益財団法人精神・神経科学振興財団・独立行政法人国立精神・神経医療研究センター	複合的地域自殺対策プログラムの自殺企図予防効果を研究—予防効果は、性別・世代、地域の特性によって異なることが明らかに—	http://www.nacnp.go.jp/pdf/press131010.pdf			
大野裕・田島美幸	今後の自殺対策のあり方	分子精神医学	13(2)	58-59	2013
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Kaoru Kudo, Kotaro Otsuka, Junko Yagi, Katsumi Sanjo, Noritaka Koizumi, Atsuhiko Koeda, Miki Yokota Umetsu, Yasuhito Yoshioka, Ayumi Mizugai, Toshi nari Mita, Yu Shiga, Fumito Koizumi, Hikaru Nakamura and Akio Sakai.	Predictors for delayed encephalopathy following acute carbon monoxide poisoning.	BMC Emergency Medicine	14	3	2013

大塚 耕太郎, 酒井 明夫, 岩戸 清香, 中村 光, 赤平 美津子	自殺念慮の早期発見と求められる対応	精神科治療学	28(11)	1437-1441	2013
大塚耕太郎、酒井明夫、中村光、赤平美津子	震災後の自殺対策とゲートキーパーの養成について(After the Great East Japan Earthquake: Suicide prevention and a gatekeeper program)	精神神経学雑誌	116(3)	196-202	2014

IV. 研究成果の刊行物・別刷

Training workshop on caring for suicide attempters implemented by the Ministry of Health, Labour and Welfare, Japan

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JAPAN'S SUICIDE RATE is the worst figure among developed countries since 1998. Following the introduction of the Basic Suicide Prevention Law in 2006, a project providing a training workshop on caring for suicide attempters was started by the Ministry of Health, Labour and Welfare in 2008 and is ongoing.¹ The 1-day workshop primarily targets medical staff in emergency units and involves lectures and case studies.

The authors conducted questionnaire research to investigate the understanding, willingness, and perceived need of the participants concerning caring for suicide attempters before they were educated. The questionnaire consisted of the 11-item Understanding Suicide Patient Scale (UPS) and six additional items, developed by Samuelsson *et al.*² and Kishi *et al.*,³ respectively. While the items of the UPS are not categorized, the UPS asks about understanding and/or willingness except for one item ('A person who has made several suicide attempts is at great risk of committing suicide.'). The additional questions asked about perceived needs for further training (two items) and preventive strategies for attempters (four items). The respondents answered with a 4-point rating scale from 1 (strongly agree) to 4 (strongly disagree).

This study was approved by the ethics committee of Yokohama City University School of Medicine. Informed consent was obtained from all participants ($n = 210$) in the workshops held in 2009 and 2010, and 203 answered the questionnaire. The mean scores for the UPS and the additional questions were 2.3 and 2.5, respectively. The highest score (2.9) on the UPS was observed in response to the statement 'Patients who have tried to commit suicide are usually treated well in my work unit'. For the additional questions, the highest score (3.4) was given to the statement 'I think my present training has provided me with adequate skills to take care of people who have tried to commit suicide'. Sixty-five percent of the participants felt they did not treat suicide attempters well enough; 89% of the participants reported they had not yet been provided with adequate skills to care for suicide attempters.

A previous suicide attempt is a potent risk factor for later suicide. Medical staff in emergency units can be gatekeepers for suicide prevention. Given that most staff reported they had not received enough training before the workshop, the session is considered important to help change negative attitudes and decrease the sense of difficulty. More medical staff members who work with suicide attempters are expected to participate in the training workshop in the future and the workshop content will need to be updated to reflect the latest research in the field.⁴

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Maki Hirata, BS,¹ Chiaki Kawanishi, MD, PhD,²

Nene Oyama, MA,² Yasushi Miyake, MD, PhD,³

Kotaro Otsuka, MD, PhD,⁶ Tomoki Yamada, MD, PhD,²

Yasuhiro Kishi, MD, PhD,⁷ Hiroto Ito, PhD⁴ and

Ryousuke Arakawa, MD, PhD⁵

¹Yokohama City University School of Medicine, ²Health Management and Promotion Centre, Yokohama City University Graduate School of Medicine, Yokohama, ³Department of Emergency Medicine, Showa University, ⁴Department of Social Psychiatry, National Institute of Mental Health, National Center of Neurology and Psychiatry, ⁵Ministry of Health, Labour and Welfare, Tokyo, ⁶Department of Neuropsychiatry, Iwate Medical University, Morioka and ⁷Department of Psychiatry, Nippon Medical School Musashikosugi Hospital, Kawasaki, Japan

Email: chiaki.kawanishi@gmail.com

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Resting motor threshold changes in vagus nerve stimulation-treated patients during on/off-stimulation conditions

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THE EFFECTIVENESS OF repetitive transcranial magnetic stimulation (rTMS) and vagus nerve stimulation (VNS) in the treatment of refractory major depression has been demonstrated in several studies.^{1–5} rTMS treatment includes the determination of the resting motor threshold (rMT), which defines treatment intensity and is based upon the excitability of the motor cortex. During treatment courses of several weeks, systematic changes in rMT have not been described.^{2,3} Based upon this combination therapy, we examined rMT in three male patients with therapy-resistant depression (mean age, 47.4 ± 6.8 years; Hospital Anxiety and Depression Scale, 20.5 ± 4.0 ; Cyberonics* model 102, Cyberonics, Houston, TX, USA; VNS parameters: 1.25 mA, 10 Hz, 30 s on time, 5 min off time). The patients gave informed consent to publish this letter. They were treated with VNS and rTMS trials of four sessions (rTMS parameters: 10 Hz; 80% motor threshold (MT); 1000 impulses in left dorsolateral prefrontal cortex stimulation). The patients

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Regular Article

One-year follow up after admission to an emergency department for drug overdose in Japan

Shuntaro Ando, MD, MScPH,^{1,2*} Toshihiko Matsumoto, MD, PhD,³ Sho Kanata, MD,² Aya Hojo, MD,⁴ Daisuke Yasugi, MD,⁴ Nobuaki Eto, MD, PhD,⁵ Chiaki Kawanishi, MD, PhD,⁶ Nozomu Asukai, MD, PhD¹ and Kiyoto Kasai, MD, PhD²

¹Department of Psychiatry and Behavioral Sciences, Tokyo Metropolitan Institute of Medical Science, ²Department of Neuropsychiatry, Graduate School of Medicine, The University of Tokyo, ³Center for Suicide Prevention, National Center of Neurology and Psychiatry, ⁴Department of Psychiatry, Tokyo Metropolitan Tama Medical Center, Tokyo, ⁵Department of Psychiatry, Faculty of Medicine, Fukuoka University, Fukuoka and ⁶Health Management and Promotion Center, Yokohama City University Graduate School of Medicine, Yokohama, Japan

Aim: The aim of the study was to investigate the incidence of and risk factors for repetition of suicidal behavior within a year after admission for drug overdose in Japan.

Methods: Patients admitted to the emergency department of a general public hospital in Tokyo for drug overdose of prescribed medicine and/or over-the-counter drugs between March 2008 and February 2009 were followed up after 1 year. Demographic characteristics, previous suicide attempts, and mental health state were examined by self-report questionnaire and interview at recovery from the initial attempt. Information about suicidal behavior during the follow-up period was obtained from the outpatient psychiatrists by postal questionnaire 1 year after discharge.

Results: Of 190 patients admitted to the emergency department, 132 patients answered the questionnaire and had the interview. Information about the

follow-up period for 66 patients was obtained. Of the 66 patients, 28 patients attempted suicide again and two patients committed suicide during the 1-year follow-up period. Psychiatric diagnosis of personality disorder and denial of suicidal intent at the time of recovery were associated with increased risk for another suicide attempt. Lethality levels of suicidal behaviors before and after admission were associated with each other.

Conclusion: The rate of fatal and non-fatal suicide attempt within a year after admission for self-poisoning was substantial. Psychiatric diagnosis of personality disorder was a risk factor for repetition of suicide attempt. Clinicians should pay attention to the means of previous suicide attempts even though the patient denies suicidal intent at recovery.

Key words: drug overdose, Japan, prospective cohort study, suicide attempt.

JAPAN HAS ONE of the highest suicide rates among developed countries.¹ For more than 10 years, suicide rates in Japan have been higher than 24.9 per

100 000 people.¹ Since the 'Basic Act on Suicide Prevention' was put into force in Japan in 2006, both community and medical models of suicide prevention projects have been conducted, such as publication of suicide prevention manuals and educational program for psychiatric professionals. However, there has been no clear effect of these projects on suicide rate.¹

Suicide attempt is the strongest risk factor for suicide, and a global strategy of suicide prevention by

*Correspondence: Shuntaro Ando, MD, MScPH, Department of Psychiatry and Behavioral Sciences, Tokyo Metropolitan Institute of Medical Science, 2-1-6 Kamikitazawa, Setagaya-ku, Tokyo 156-8506, Japan. Email: ando-st@igakuken.or.jp
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the World Health Organization included research on suicide attempts as an important focus.² Many previous studies, conducted mainly in Western countries, showed a high rate of suicide after suicide attempt,^{3–7} and several risk factors for suicide after suicide attempt have been reported. On the other hand, in Japan, studies on suicide attempters have been scarce,^{8–10} and there was no available study that followed up suicide attempters and examined the risk for repeat of suicide attempt. Therefore, the risk factors for recurrence of fatal and non-fatal suicide attempt following a suicide attempt are unknown among the Japanese. As culture affects suicidal behaviour,¹¹ studies are required to investigate the risk for repetition of suicide attempt in Japan, specifically examining risk factors for repetition of suicidal behavior within a short period after suicide attempt, as suicide risk after suicide attempt was found to be highest during the first 3 years and especially in the first 6 months.⁵

This study focused on patients who were admitted to hospital for drug overdose, because a previous study found self-poisoning to be the most prevalent type of suicide attempt that required admission.¹² The objectives of this study were to: (i) investigate the incidence of suicidal behavior after admission for drug overdose in Japan; and (ii) investigate risk factors for repetition of suicidal behavior within a year after admission for drug overdose.

METHODS

Study design

This study was a fixed-length cohort study that followed up the patients for 1 year.

Study sample

This study followed up the samples in a cross-sectional survey that investigated depression and dissociation in patients who were admitted to the emergency department of a public hospital in Tokyo owing to drug overdose. The hospital was one of the three hospitals that had emergency rooms in the catchment area of approximately 970 000 inhabitants within 96 km². Admission to the emergency department was decided by the doctors in the emergency department based on the need for physical care. The inclusion criteria for the cross-sectional

survey were all the patients who were admitted to the emergency department for drug overdose between March 2008 and February 2009, and who could communicate enough in Japanese. Drug overdose was defined as the intentional self-administration of more than the prescribed dose of prescribed medicine and/or over-the-counter drugs. It was made explicit that involvement with the survey was on a voluntary basis, and written informed consent for participation in the study was obtained from participants. All the participants in the cross-sectional survey were included in the cohort study. If there were patients who were admitted repeatedly owing to drug overdose in the study period, only the first episode of self-poisoning was included in the cohort. Data were kept anonymously and securely in electronic forms. This study was conducted with permission from the ethics committee of Tokyo Fuchu Metropolitan Hospital (since 2010, Tokyo Metropolitan Tama Medical Center).

Data collection

Eligible patients were given a self-report questionnaire and interviewed by trained psychiatrists in the hospital after they recovered from coma and became clearly conscious, as judged by the psychiatrists who conducted the interviews. The interviewers examined sociodemographic background, psychiatric history, and current use of psychiatric services. They also evaluated severity of suicidal intent at the time of recovery using the response list for Question 9 in the Beck Depression Inventory ('I don't have any thoughts of killing myself', 'I have thoughts of killing myself, but I would not carry them out', 'I would like to kill myself', and 'I would kill myself if I had the chance'). Psychiatric diagnosis based on International Statistical Classification of Diseases and Related Health Problems was given by the interviewer.

The self-questionnaire included the Kessler Psychological Distress Scale (K10) and the Adolescent Dissociation Experience Scale (ADES).^{13,14} The K10 is a 10-item, five-point Likert scale questionnaire developed by Kessler for population surveys and is also suggested for use in screening for mental illness.¹⁵ The score ranges from 10 to 50, and individuals with a score over 25 are considered to have a moderate or severe mental disorder.¹⁶ The Japanese version of K10 showed performance equivalent to the original version.¹⁷ The ADES is a 30-item self-report measure

for screening pathological dissociation.¹⁴ Armstrong *et al.* developed this scale targeting adolescents by revising the Dissociation Experience Scale (DES), which is a similar self-reporting questionnaire targeting adults. However, the ADES has been employed in several studies using an adult sample as it is easier to use than the DES,^{18,19} which consists of 28 analogue scales, and it has already been confirmed that the score of the ADES is 10 times the score of the DES.¹⁴ The validity and reliability of the Japanese version of the ADES is already established.²⁰ Each item of the ADES has an 11-point Likert scale with a score from 0 to 10, and a mean score of the 30 items over 4.0 points suggests pathologic dissociation.¹⁹

At discharge, those without current psychiatric service use were referred to psychiatrists near the patient's home address. One year after the admission for self-poisoning, a questionnaire was sent to each outpatient psychiatrist to obtain information about the incidence of completed suicide, suicide attempt, and self-cutting during the follow-up period of 1 year. Self-cutting was defined as 'deliberate cutting of the surface of the body with or without suicidal intent'. Definition of suicide attempt was not given in the questionnaire, and identification of these incidents was based on the psychiatrist's written reply to the dichotomous questionnaires, including the method of suicide attempt (e.g. 'Has the patient attempted suicide by drug overdose during the follow-up period?'). In addition, for cases of completed suicide since hospital discharge, we spoke with the outpatient psychiatrists to confirm the information.

Data analysis

Data were analyzed using Microsoft EXCEL, STATA version 11.0, and SPSS version 17.0. Sociodemographic background, psychiatric history of the patients, and severity of depression, dissociation, and suicidal intent were regarded as the independent variables. The dependent variable was suicidal behaviors within the 1-year period of follow up.

The difference in the exposures of interest between those who were followed up and those who were lost to follow up was examined. The χ^2 -test was performed to compare proportions for binary or categorical variables, and the Student's *t*-test was performed to compare means of continuous variables. Residual analysis was conducted to compare distribution of psychiatric diagnosis between the two

groups. The Mann–Whitney *U*-test was performed for each question of the Intent Scale as the answers were not normally distributed. Statistical significance was evaluated using 0.05 level, 2-sided tests.

For the analysis of risk factors for suicide attempt during the follow-up period, cases without information for the entire follow-up period were excluded. Univariable logistic regression was performed to investigate the odds of suicide attempt for each exposure variable. The association between the variables that were found to increase the odds of suicide attempt was examined using the χ^2 -test, and multivariable logistic regression was performed to adjust for possible confounders.

The association between the variables that were found to be associated with increased risk for suicide attempt in the univariable logistic regression and lethality of suicidal behavior after admission for drug overdose was examined using the χ^2 -test. We divided the means of suicide attempt into two categories based on the violence of the means. Self-poisoning, gas, and drowning were defined as non-violent suicide attempts, and all other suicide attempts were defined as violent suicide attempts according to a previous study.²¹ Based on external knowledge, violent suicide attempt was considered as the most lethal suicidal behavior, followed by non-violent suicide attempt and self-cutting. If a patient used multiple means of suicide attempt, the most lethal means was taken into consideration.

RESULTS

A total of 199 admissions of 190 patients to the emergency department for drug overdose were observed between March 2008 and February 2009. Of the 190 patients, 39 patients missed recruitment due to absence of the psychiatrists in charge of this research, 16 patients refused to participate in the study, two patients died due to acute intoxication after drug overdose during hospitalization, and one patient could not communicate well in Japanese. The mean age and sex ratio were not significantly different between the participants and non-participants in the cross-sectional survey. A total of 132 patients participated in the cross-sectional survey and completed the interview and the self-report questionnaire. Of the 132 patients, 66 patients were followed up for 1 year, for a follow-up rate of 50.0%. The reasons for loss to follow up were: 41 cases of no reply, 24 cases

Table 1. Comparison of the characteristics between followed up patients and patients lost to follow up

	Followed up patients (n = 66)	Patients lost to follow up (n = 66)	P-value
Sociodemographic characteristics			
Mean age (years) (SD)	33.3 (11.5)	30.2 (12.0)	0.122
Sex (female)	48 (73.7%)	54 (81.8%)	0.213
Having cohabitant	49 (74.2%)	42 (64.6%)	0.232
Education (≥12 years)	59 (89.4%)	52 (78.8%)	0.096
Having occupation	42 (64.6%)	44 (67.7%)	0.711
Psychiatric diagnosis in ICD-10			
F2	7 (10.9%)	4 (7.4%)	0.509
F3	29 (45.3%)	12 (22.2%)	0.001
F4	11 (17.2%)	23 (42.6%)	<0.001
F5	1 (1.6%)	2 (3.7%)	0.459
F6	13 (20.3%)	11 (20.4%)	0.992
F7	2 (3.1%)	0 (0.0%)	0.190
F8	1 (1.6%)	2 (3.7%)	0.459
Psychiatric history			
History of self-cutting	36 (61.0%)	28 (44.4%)	0.067
Past admission in psychiatric department	37 (58.7%)	19 (30.2%)	0.001
Ongoing psychiatric medication	62 (95.4%)	40 (61.5%)	<0.001
History of suicide attempt			
Self-poisoning	47 (73.4%)	41 (63.1%)	0.206
Suicide attempt using charcoal	2 (3.1%)	0 (0.0%)	0.151
Jumping	7 (10.9%)	6 (9.2%)	0.747
Hanging	7 (10.9%)	7 (10.8%)	0.975
Other suicide attempt	6 (9.4%)	5 (7.7%)	0.732
Mental health status at recovery			
Mean K10 score	33.9 (8.3)	32.7 (10.2)	0.497
K10 ≥ 25	53 (91.4)	46 (78.0)	0.044
Mean ADES score	3.7 (2.3)	3.1 (2.4)	0.211
ADES ≥ 4	20 (39.2)	18 (38.3)	0.926
Suicide intent at recovery			
'I do not want to commit suicide at all'	25 (37.9%)	26 (39.4%)	0.887
'I think of death but do not want to commit suicide'	32 (48.5%)	31 (47.0%)	
'I want to commit suicide'	6 (9.1%)	6 (9.1%)	
'I am seeking a chance to commit suicide'	3 (4.6%)	3 (4.6%)	

ADES, Adolescent Dissociation Experience Scale; K10, Kessler Psychological Distress Scale.

of disengagement from the psychiatrist's service, and one refusal by the patient to give information.

The baseline characteristics of patients who were followed up and of those who were lost to follow up are shown in Table 1. In general, there were only a few differences between the two groups. Those who were followed up were more likely to have had the experience of admission to the psychiatric department, to take ongoing psychiatric medication ($P = 0.001$ and $P \leq 0.001$, respectively), to have had

depression above the threshold level ($P = 0.044$), and to have the psychiatric diagnosis of F3 (mood disorders) ($P = 0.001$), while those lost to follow up were more likely to have the diagnosis of F4 (neurotic, stress-related and somatoform disorders) ($P \leq 0.001$). There was no difference in suicide intent at recovery between those followed and those lost to follow up.

Of the 66 patients who were followed up for 1 year, 25 patients (37.9%) performed self-cutting, 28

Table 2. Suicidal behaviors within 1-year follow up of 66 patients who were admitted for drug overdose

	n	Crude rate per 1000 person-years
Completed suicide	2	30.3
Suicide attempt		
Any	28	424.2
Self-poisoning	25	378.8
Jumping	5	75.8
Hanging	3	45.5
Gas	0	0.0
Other suicide attempt	0	0.0
Self-cutting	25	378.8

patients (42.4%) attempted suicide, and two patients (3.0%) committed suicide within the 1-year follow-up period, one by drug overdose and the other by hanging (Table 2).

From the univariable logistic regression analysis, a history of admission to the psychiatric department (odds ratio [OR] 3.34; 95% confidence interval [CI] 1.09–10.26), a psychiatric diagnosis of personality disorder (OR 8.89; 95%CI 1.40–56.57), denial of suicide intent at recovery (OR 4.36; 95%CI 1.38–13.84), and a previous history of suicide attempt (OR 5.76; 95%CI 1.16–28.48) were associated with attempted suicide within a year after admission due to drug overdose (Table 3). After adjusting for possible confounders, the psychiatric diagnosis of personality disorder (OR 8.20; 95%CI 0.99–68.01) ($P = 0.051$) and denial of suicide intent on recovery (OR 4.82; 95%CI 1.27–18.34) ($P = 0.021$) were associated with a suicide attempt within a year after admission due to drug overdose.

Among the variables that were found to be associated with a suicide attempt during the follow-up period in the univariable logistic regression, only a previous history of suicide attempt tended to be associated with the lethality of suicidal behavior within a year after admission ($P = 0.085$). Therefore, we investigated the association between the lethality of suicidal behavior before and after admission due to self-poisoning. From ordinal logistic regression, both of them were associated with each other ($P < 0.001$). A history of more lethal suicidal behavior was associated with more lethal suicidal behavior within a year after admission for self-poisoning (Table 4). While only one of the patients without a

history of suicide attempt (1/12 patients, 8.3%) made a suicide attempt after admission, approximately half of the patients with a history of non-violent suicide attempt (16/35 patients, 45.7%) made a violent suicide attempt after the admission for self-poisoning. Approximately two-thirds of the patients with a history of violent suicide attempt (8/12 patients, 66.7%) made any suicide attempt after admission, and half of them (6/12 patients, 50.0%) made a violent suicide attempt.

DISCUSSION

This is the first prospective cohort study in Japan that has followed up patients who were admitted to an emergency department for drug overdose, and we observed a substantial proportion of fatal and non-fatal recurrent suicidal behavior within a year after discharge. Psychiatric diagnosis of personality disorder and denial of suicide intent at recovery were associated with increased risk for suicide attempt after discharge. Lethality of previous suicide attempt before the index admission was associated with lethality of suicidal behavior after discharge.

The suicide rate within a year after admission due to drug overdose was substantial in this first prospective cohort study in Japan which followed up patients admitting to an emergency department due to drug overdose. The observed suicide rate within a year after self-poisoning was relatively high in this study (2/66 in a year) compared with the previous studies.²² There may be several explanations for this. First, the patients included in the cohort were those who made a suicide attempt serious enough to require admission. Second, the patients followed up might have had more severe mental illness than those who were lost to follow up, as the patients who were followed up were more likely to have a history of self-cutting, a history of admission to the psychiatric department, and depression at recovery. The majority of those who repeated suicide attempt during the follow-up period took a non-violent method rather than a violent method, and the trend was similar to the population-based trend of suicide attempt in Japan.⁸

While neither depression nor dissociation at recovery were associated with suicide attempt after discharge, psychiatric diagnosis of personality disorder and denial of suicide intent at recovery were associated with increased risk for suicide attempt after

Table 3. Odds ratios of attempted suicide within 1 year after an emergency department admission for drug overdose

	Total n	n (%)	Crude OR (95%CI)	P-value	Adjusted OR (95%CI)	P-value
Sociodemographic characteristics						
Age group						
<20	6	1 (16.7)	(Reference)	-		
20–29	20	6 (30.0)	2.14 (0.20–22.48)	0.525		
30–39	23	15 (65.2)	9.38 (0.93–94.65)	0.058		
40–49	12	3 (25.0)	1.67 (0.13–20.58)	0.690		
50–59	2	1 (50.0)	5.00 (0.15–166.6)	0.368		
≥60	2	0 (0.0)	-			
Sex						
Male	17	5 (29.4)	(Reference)	0.304		
Female	48	21 (43.8)	1.87 (0.57–6.13)			
Having cohabitant						
Yes	49	19 (38.8)	(Reference)	0.725		
No	16	7 (43.8)	1.22 (0.39–3.85)			
Education (years)						
≥12	58	24 (41.4)	1.76 (0.32–9.87)	0.518		
<12	7	2 (28.6)	(Reference)			
Having occupation						
Yes	42	14 (33.3)	(Reference)	0.197		
No	22	11 (50.0)	2.00 (0.69–5.74)			
Psychiatric history						
Ongoing psychiatric medication						
Yes	61	26 (42.6)	-	-		
No	3	0 (0.0)	-			
History of admission in psychiatric department						
Yes	37	19 (51.4)	3.34 (1.09–10.26)	0.035	2.18 (0.53–9.03) [†]	0.280
No	25	6 (24.0)	(Reference)		(Reference)	
Psychiatric diagnosis in ICD-10						
F2	7	2 (28.6)	1.07 (0.13–8.79)	0.952	1.47 (0.14–15.71) [†]	0.749
F3	28	10 (35.7)	1.48 (0.31–6.88)	0.616	3.79 (0.52–27.60) [†]	0.189
F4	11	3 (27.3)	(Reference)	-	(Reference)	-
F5	1	0 (0.0)	-	-	-	-
F6	13	10 (76.9)	8.89 (1.40–56.57)	0.021	8.20 (0.99–68.01) [†]	0.051
F7	2	1 (50.0)	2.67 (0.12–57.62)	0.532	-	-
F8	1	0 (0.0)	-	-	-	-
Mental health status at recovery						
K10 score						
≥25	53	20 (37.7)	(Reference)	0.179		
<25	4	3 (75.0)	4.95 (0.48–50.9)			
ADES score						
≥4.0	20	10 (50.0)	2.00 (0.63–6.38)	0.241		
<4.0	30	10 (33.3)	(Reference)			
Suicide intent at recovery						
'I do not want to commit suicide at all'	25	14 (56.0)	4.36 (1.38–13.84)	0.012	4.82 (1.27–18.34) [§]	0.021
'I think of death but do not want to commit suicide'	31	7 (22.6)	(Reference)		(Reference)	
'I want to commit suicide'	6	2 (33.3)	1.71 (0.26–11.40)	0.577	2.51 (0.26–24.01) [§]	0.425
'I am seeking a chance to commit suicide'	3	3 (100.0)	-		-	-

Table 3. (Continued)

	Total <i>n</i>	<i>n</i> (%)	Crude OR (95%CI)	<i>P</i> -value	Adjusted OR (95%CI)	<i>P</i> -value
History of self-cutting						
Yes	36	14 (38.9)	0.92 (0.31–2.71)	0.879		
No	22	9 (40.9)	(Reference)			
History of suicide attempt						
Yes	49	24 (49.0)	5.76 (1.16–28.48)	0.032	4.02 (0.69–22.23) [†]	0.120
No	14	2 (14.3)	(Reference)		(Reference)	
Jumping						
Yes	7	5 (71.4)	4.17 (0.74–23.4)	0.105		
No	56	21 (37.5)	(Reference)			
Hanging						
Yes	7	4 (57.1)	2.06 (0.42–10.10)	0.373		
No	56	22 (39.3)	(Reference)			
Gas						
Yes	2	0 (0.0)	–	–		
No	61	26 (42.6)	–			
Other suicide attempt						
Yes	6	2 (33.3)	1.45 (0.25–8.60)	0.679		
No	57	24 (42.1)	(Reference)			

[†]Adjusted for psychiatric diagnosis and history of suicide attempt. [‡]Adjusted for history of admission in psychiatric department and suicide intent at recovery. [§]Adjusted for psychiatric diagnosis. [¶]Adjusted for history of admission in psychiatric department.
 ADES, Adolescent Dissociation Experience Scale; CI, confidence interval; K10, Kessler Psychological Distress Scale; OR, odds ratio.

discharge. Contrary to expectations, depression at recovery was not associated with increased risk of reattempt of suicide during the follow-up period. Risk factors for attempted suicide might be different from those for completed suicide. Also, contrary to

expectations, dissociation at recovery was not associated with suicide attempt within a year after discharge although dissociation was seen as associated with suicidality in a previous study.²³ There may be several explanations for this. First, while the previous study

Table 4. Lethality of suicidal behavior before the index admission for drug overdose and after discharge

	Suicidal behavior within a year after discharge <i>n</i> (%)				Total
	Violent suicide attempt	Non-violent suicide attempt	Self-cutting	No suicidal behavior	
History of suicide attempt before the index admission					
Violent suicide attempt	6 (50.0)	2 (16.7)	2 (16.7)	2 (16.7)	12 (100.0)
Non-violent suicide attempt	2 (5.7)	14 (40.0)	6 (17.1)	13 (37.1)	35 (100.0)
Self-cutting	0 (0.0)	1 (14.3)	2 (28.6)	4 (57.1)	7 (100.0)
No suicidal behavior	0 (0.0)	1 (8.3)	0 (0.0)	11 (91.7)	12 (100.0)
Total	8	18	10	30	66

History of suicide attempt before the index admission was associated with suicidal behavior within a year after discharge ($P < 0.001$ in ordinal logistic regression).

utilized an outpatient clinic, we utilized the patients who were admitted to the emergency department due to drug overdose. The average level of dissociation in the participants of this study might be relatively high, and thus having dissociation might not predict reattempt. Second, the number of subjects might be too few to produce the statistical power to detect differences between groups based on those exposures. Unexpectedly, those who denied suicidal ideation at recovery were more likely to attempt suicide than those who mentioned suicidal ideation but denied suicidal behavior. There are at least two possible explanations for this. First, those who had affective instability denied suicidal ideation at recovery even though they had it when they attempted suicide. Affective instability was found to be a risk factor for suicide.²⁴ Second, those who denied their suicidal ideation might have a relatively high level of suicidal ideation and wanted to reject further help or to avoid admission to the psychiatric department, and therefore might not speak about their suicidal intent even though they had it. A negative relation between a higher level of suicidal ideation and help-seeking intentions was shown in the previous study.²⁵ However, there was no significant difference of distributions of the patients who denied their suicidal ideation at recovery between the follow-up patients and those lost to follow up, which might be due to the small number of samples. Future study should utilize more samples and investigate help-seeking intention of the patients. Third, denial of suicidal ideation might reflect a 'cathartic effect' of suicide attempt (decreased suicidality following a suicide attempt).²⁶

We found that the lethality of the previous suicide attempt was associated with the lethality of suicidal behavior after discharge. This result is consistent with a previous study, which showed that the worst suicidal ideation in life was associated with an increased risk of suicide.²⁷ Also, it is possible that patients with an aggressive personality tend to repeat a violent method in attempting suicide.²¹

There are several limitations to this study. Because the participants were recruited from only one hospital in Tokyo, it is unlikely that the results of this study can be generalized to the whole of Japan. As there were 55 patients who were potentially eligible but not included in the cross-sectional survey, there might be a possibility of selection bias despite some similarities in demographic characteristics between participants and non-participants in the survey.

Among 190 patients admitted due to overdose, only 66 patients (35%) were followed up. As the follow-up rate was low, the suicide rate might be either overestimated or underestimated. The rate might be underestimated because a study following up self-poisoning reported that the least cooperative patients tended to repeat their acts of self-poisoning.²⁸ On the other hand, the suicide rate might be overestimated because more seriously ill patients might keep going to psychiatrists and be followed up. We did not obtain the information on how many reattempts have been conducted by each patient during the follow-up period. Because the sample was relatively small, the statistical power may be low. In addition, considering the low follow-up rate, the findings from this study should be interpreted with caution. Further, because we did not obtain information about what kinds of interventions (i.e. psychotherapy, case management, only medication) have been conducted for each patient during the follow-up period, we could not evaluate the effects of those interventions.

Even taking these limitations into consideration, the suicide rate within a year after admission for self-poisoning was substantial. This means that clinicians in Japan should carefully evaluate the suicide risk of patients who are admitted for drug overdose. As psychiatric diagnosis of personality disorder and denial of suicide intent at recovery were associated with increased risk for suicide attempt after discharge, these factors may be more reliable than mental health status at recovery when predicting future suicide attempt. As this study showed that a history of lethal suicidal behavior was associated with lethal suicidal behavior after discharge, clinicians should be especially careful about patients with a history of suicide attempts using lethal methods even though they remain engaged in psychiatric services. This may also mean that medication is not enough to prevent repetition of a violent suicide attempt, and that social and psychological supports, such as case management and intensive contact, are required to prevent the suicide of patients with a history of suicide attempt.^{9,29}

A similar study with more participants and a more efficient follow-up method is required to obtain more precise information about the incidence and risk factors for suicide within a short period after self-poisoning. Also, the effectiveness of social and psychological support for suicide attempters by drug overdose, in addition to psychiatric medication, should be investigated.

Conclusions

The rate of fatal and non-fatal suicide attempt within a year after admission for self-poisoning was substantial. Psychiatric diagnosis of personality disorder and denial of suicide intent at recovery were associated with increased risk for repetition of suicide attempt after discharge. Clinicians should pay attention to the means of previous suicide attempts because lethality of previous suicide attempt before the index admission was associated with lethality of suicidal behavior after discharge.

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