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博士論文

Text Messaging for Psychiatric Outpatients: Effect on Help-Seeking and Self-Harming Behaviors

(精神科通院患者への携帯メールによるアプローチ
～援助希求行動と自傷行為への効果～)

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When viewed globally, mental illness is an immediate and serious issue, with the Organisation for Economic Co-operation and Development (2014) reporting that 1 in 2 people will experience mental illness at some point in their lives. Mental illness is known to be a risk factor for suicide (Cho, Na, Cho, Im, & Kang, 2015), and it has been reported that help-seeking behaviors reduce the risk of suicide (Moskos, Olson, Halbern, Keller, & Gray, 2007; Owens, Lambert, Donovan, & Lloyd, 2005). Therefore, we developed and tested the effectiveness of a mobile phone (text messaging) program promoting psychiatric outpatients' help seeking. To our knowledge, this is the first study that promotes psychiatric outpatients' help seeking and reduction of self-harm and suicide using a text messaging intervention.

Previous studies have found few methods that significantly reduced the risk of suicide (Brown et al., 2005; Fleischmann et al., 2008). Brown et al. randomly assigned suicide attempters ($N = 120$) to a usual care group or a usual care plus cognitive therapy group and found a significantly reduced reattempted suicide rate in the intervention group. In five countries, Fleischmann et al. conducted randomized controlled trials with suicide attempters ($N = 1,867$), in which participants received either treatment as usual, or treatment as usual plus brief intervention and contact (BIC), including patient education and follow-up. Significantly fewer deaths from suicide occurred in the BIC group than in the treatment-as-usual group (0.2% versus 2.2%). These interventions are effective, and a specialist can provide cognitive therapy for a person who presents a high risk of suicide; however, highly skilled specialists are costly, so it is hard to provide follow-up care for all suicide attempters.

The International Telecommunication Union (2014) reported that there are high penetration rates for mobile devices around the world. Mobile phone technologies can enable intervention with large numbers of people at low cost and have the potential to effect behavior change. In a review of text messaging used for behavioral interventions, Wei, Hollin,

and Kachnowski (2011) found that, among 16 randomized controlled trials, 10 reported significant improvement with the interventions and six reported differences suggesting positive trends. Mobile phone technologies offer the possibility of managing noncritical care within the community, thus improving subjects' quality of life and controlling costs (da Costa, Salomao, Martha, Pisa, & Sigulem, 2010). Therefore, in this study we focused on suicide interventions sent via mobile phone text messaging technologies.

Method

Participants and Ethics

Participants were 30 psychiatric outpatients. Before the study, we consulted with psychiatrists at medical facilities to secure their agreement to assist with our research. The sample size was determined to be appropriate to conduct this pilot experiment safely under the management of and with the operational cooperation of relevant medical facilities. The patient participants satisfied the following inclusion criteria: aged 18 years or over; diagnosed with a mental disorder (International Classification for Diseases-10; ICD-10); having had suicidal ideation according to evaluation by the attending psychiatrist; having competency to join this study which judged by the doctor; and possessing a mobile phone or smartphone. They were recruited from a university hospital, a psychiatric hospital in Hyogo Prefecture, three medical center hospitals in Kobe City, a private psychiatric hospital, and three psychiatric clinics in Kobe City (population approximately 1.5 million). Written informed consent was obtained from each patient. Patients received all the services as usual whether they chose to participate or not. The recruitment period was between February 2013 and November 2013. The text messaging intervention was conducted up to May 2014. The study protocol was approved by the Kobe University Research Ethics Committee, Kobe City Medical Center hospitals, and Hyogo Prefectural Psychiatric Hospital. It was supported by

Kobe City Research and Development Expenses and the Japan Society for the Promotion of Science KAKENHI. The authors have no conflicts of interest to disclose, financial or otherwise.

Procedure

Participants received on their own mobile phone or smartphone two text messages per week for 6 months from our mail server and did not receive any payment for joining the program. The messages were sent automatically by a computer program at 12:30 pm every Monday and Thursday so that working participants could view the text messages at a convenient time. Moreover, to prevent participants from being shocked by having the regular text messages stop suddenly, we gradually extended the interval period between messages after the fourth month. There were 52 messages that were developed by psychiatric specialists, including three psychiatric nurses and two psychiatrists. Two psychiatric outpatients checked the messages, which were 150–250 Japanese language characters in length and specifically designed around the themes of dealing with stress, maintaining good mental well-being, promoting adherence to medication, methods of sleep improvement, the importance of consulting with someone about their problem, and information about local services, such as consultation services. Local service information messages were linked to a website address or phone number, so that participants could contact the services easily. When events such as a symposium for prevention of depression were held in Kobe City, participants received a message about the event approximately 2 weeks prior. Additionally, to support the continuation of treatment, we sent text messages informing them of medical appointments on the day before appointments. If participants were seen at the medical facility as scheduled, they received a positive feedback text message about their consultation behavior the next day.

Participants informed us of the name they wanted to be called, which was registered

on the computer by the researcher, and that name was displayed on the text messages participants received. No content was duplicated within a 6-month period, so that participants did not lose interest in the messages. Although they could not reply via their mobile phone to our text message, the program staff held monthly meetings where participants could ask questions about the messages.

Measures

Participants' demographic and clinical data were obtained from their attending psychiatrists via a questionnaire. In addition, psychiatrists reported at baseline on the presence or absence of participants' self-harm and intensity of suicidal ideation (0 = *no suicidal ideation* to 5 = *extremely intense suicidal ideation*) during the past 6 months.

To assess participants' baseline problems/troubles and their usage of social/personnel resources in their daily life, the following items were used:

1. What problems or troubles are you experiencing now?*
2. Did you consult with someone about your problems or troubles during the past 6 months? With whom did you consult?*
3. Did you use a social service, such as a job assistance facility or self-help group, during the past 6 months?
4. What service or support did you use?*

* A multiple choice response method was employed and multiple answers were allowed.

Participants were assessed at 3 months into the intervention using the following questions:

1. Did you consult with someone about your problems or troubles during the past 3 months?

2. With whom did you consult?*
3. Did you use a social service, such as a job assistance facility or self-help group, during the past 3 months?***
4. What service or support did you use?*
5. Was our text message helpful?***
6. What is the reason for its being helpful?*
7. What do you want from our text message?*

*Multiple answers were allowed.

***A 4-point Likert response scale was used (1 = *helpful*, 2 = *a little helpful*, 3 = *not too helpful*, 4 = *not helpful*).

The same assessments were then repeated after the 6 months of the program were complete and participants' psychiatrists were asked about their hospital attendance, presence or absence of self-harm, and intensity of suicidal ideation during the past 6 months compared with that at the end of the intervention.

Because patients who have committed self-harm in the past are at particularly high risk for suicide, we made the safety of the participants our first priority. To avoid possible upset when recalling past self-harm, we did not use an evaluation scale asking participants about suicidal ideation.

Statistical Analysis

Data were analyzed using SPSS version 22 for Windows. Variables related to help seeking and self-harm were compared with McNemar's test. Intensity of suicidal ideation was measured with the Wilcoxon signed-rank test.

Results

All participants received all text messages, and no one refused receipt of messages.

One participant did not complete the questionnaire at 3 months and another, at 6 months into the intervention.

Table 1 shows baseline demographic and clinical characteristics. The participants' mean age was 38.4 years, 50% were female, and the largest number had been diagnosed with mood disorders. Table 2 shows that more than half the participants had problems or trouble with illness, economic issues, work, and family relations at baseline. These problems/troubles were similar to those found in a previous report (Onishi, 2015) and were related to the text messages' focusing points. Table 3 shows the proportion of participants who consulted with someone in the 6 months before and during the 6-month study period. There was no significant difference before and after the intervention in terms of the proportion of participants who consulted someone about their problems or troubles; however, the proportion of participants who consulted specialists or consultation services staff was significantly higher after the intervention. As can be seen in Table 4, the proportion of participants who used some kind of social service significantly increased over the intervention period.

At the 3-month and 6-month time points of the intervention, more than 85% of participants reported that the text messages were helpful or a little helpful. Regarding their reasons, more than half answered, "Receiving the text message itself pleased me." In response to the question "What do you want from our text messages?" the highest number of participants answered that they were "Fully satisfied with the text messaging service and content." We obtained outcome data from participants' doctors (see Table 5). Participants who had committed self-harm during the previous 6 months at baseline accounted for 27.6% of the sample ($n = 8$), whereas the proportion at 6 months significantly decreased to 10.3% ($n = 2$, $p = .03$). Further, the intensity of suicidal ideation was significantly reduced after the intervention period ($p = .000$). Further, the intensity of suicidal ideation was significantly

reduced after the intervention period ($p = .000$). There were no significant relationships of self-harm or suicidal ideation to participants' demographic data ($p > .05$, assessed with logistic regression analyses). One participant did not visit a medical facility but did not refuse to receive the text messages. All others received ongoing outpatient care (96.7%).

Discussion

To our knowledge, this is the first intervention study to promote psychiatric patients' help seeking using text messaging. In the present study, the participants consulted with specialists or consultation services staff, and used social services more actively than before they enrolled in the study. The incidence of self-harm and participants' intensity of suicidal ideation significantly decreased. All participants received all text messages and the majority felt that the text messaging was helpful and were satisfied with this. Thus, because we were able to complete this study in a safe way, our intervention method had practical value and might lead to the prevention of suicide.

During the trial, consultation with specialists or staff about problems or troubles increased, suggesting that text messaging led participants to contact more specialized personnel. Although there was no significant difference, the number of participants who consulted with family members, friends, and/or their psychiatrist did increase; thus, it may be argued that their psychological resistance to consultation also decreased. The use of social services increased across five of the six items, which indicates that our text messages promoted wider use of these services among the participants. When we asked participants who did not use social services to explain their reasoning (data not shown), the most common reason at baseline was "I didn't know how to use it." However, at 6 months, the number of participants who gave that same answer decreased; thus, our text messaging might have given them the required information to make use social services. We believe that use of consultation

and social services not only solves problems but also enhances the feeling of connectedness, resulting in decreased incidence of self-harm and intensity of suicidal ideation.

An important strength of this study is that there was a high follow-up rate (over 96%). As previous studies show, participants who receive a text messaging intervention are less likely to drop out compared to other forms of intervention (Agyapong, Ahern, McLoughlin, & Farren, 2012; Free et al., 2011). Participants in this study reported a high level of satisfaction, which might be one of the reasons for this high rate.

The text messaging intervention has many advantages, including delivering support to wherever the person is located without their having to visit an institution (Free et al., 2009). It also allows for substantial numbers of messages to be sent simultaneously and independently, with the benefit of further reducing labor expenditure and costs. Because a text message can be kept on their mobile devices, recipients can reread messages at any time. In addition, our text message was linked to a website address or phone number for services, so participants could access social services more easily.

Mobile phone technology has the potential to provide support to those with other health problems. There is evidence that using text messages can support smoking cessation (Free et al., 2011), remind general medical patients of scheduled medical appointments (da Costa et al., 2010), and improve compliance with medication (Strandbygaard, Thomsen, & Backer, 2010). Currently, there are some available smartphone applications for improvement of mental health problems, such as posttraumatic stress disorder (Elias et al., 2014).

With the program we developed, we can easily change the content of the text messages and the time at which text messages are sent, according to the client's preference. Moreover, we safely completed this study with a sample of severely ill patients with suicidal ideation. Therefore, we think this approach could be applied to people other than psychiatric patients.

There are some limitations to this study. The sample size of 30 participants was small and the inclusion of patients depended on their psychiatrists' subjective opinion, although these were necessary aspects for us to conduct this pilot study. We cannot rule out the influences of other treatments, including medication or spontaneous recovery, on our participants' reported help-seeking and self-harming behaviors. To confirm the effectiveness of this approach, it will be necessary to conduct a randomized controlled trial using a larger sample size. We also need to follow up with the patients after 6 months to determine how long the effect of the text messaging intervention is sustained.

Conclusion

We safely completed this study on severely ill patients with suicidal ideation, and participants were satisfied with our text messaging. This is the first study that promotes psychiatric outpatients' help seeking and reduction of self-harm using a text messaging intervention. This intervention has practical value and may lead to the prevention of suicide.

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Table 1

Participants' Characteristics at Baseline (N = 30)

Sex	
Male	15 (50%)
Female	15 (50%)
Mean (<i>SD</i>) age (years)	
	38.4 (11.4)
Psychiatric diagnosis	
ICD-10 F3 (mood disorders)	19 (63.3%)
ICD-10 F2 (schizophrenia, schizotypal, and delusional disorders)	8 (26.7%)
ICD-10 F4 (neurotic, stress-related, and somatoform disorders)	3 (10.0%)
Employment status	
Unemployed	15 (50.0%)
Student	3 (10.0%)
Company employee	2 (6.7%)
Other	10 (33.3%)
Marital status	
Unmarried	20 (66.7%)
Married	8 (26.7%)
Divorced	2 (6.7%)
Household composition	
Live with someone	24 (80.0%)
Live alone	5 (16.7%)
Other	1 (3.3%)

Table 2

Number (Percentage) of Participants With Problems or Troubles at Baseline (multiple answers were allowed)

Illness	26 (86.7%)
Economic	24 (80.0%)
Work	21 (70.0%)
Family	18 (60.0%)
Interpersonal relationships	14 (46.7%)
Romance	8 (26.7%)
I have no mentor	6 (20.0)
I don't know where to go for help	6 (20.0)
School life	4 (13.3)
Burden of caring	2 (6.7%)
Bullying or harassment	1 (3.3%)
Other	5 (16.7%)

Table 3

Number (Percentage) of Participants Who Consulted Someone in the 6 Months Before and During the 6 Months of the Study, and With Whom They Consulted (multiple answers were allowed)

	In the 6 months before the study	After the study was complete	<i>p</i>
I consulted someone about my problem or trouble	24 (85.7%)	26 (92.9%)	.63
Person with whom the participant consulted			
Family	12 (42.9%)	15 (53.6%)	.38
Friend	9 (32.1%)	12 (42.9%)	.45
Psychiatrist	18 (64.2%)	23 (82.1%)	.18
Physician	3 (10.7%)	3 (10.7%)	1.00
Specialist or consultation services staff	1 (3.6%)	8 (28.6%)	.02*
Telephone counselor	0 (0.0%)	2 (7.1%)	.50
Internet	1 (3.6%)	0 (0.0%)	1.00
Other	8 (28.6%)	1 (3.6%)	.02*

Note. * $p < .05$.

Table 4

Number (Percentage) of Participants Who Used Social Services in Before the Study and During the 6 Months of the Study (multiple answers were allowed)

	Baseline	Postintervention	<i>p</i>
I used some form of social service	5 (17.9%)	11 (39.3%)	.03*
Form of social service			
Consultation service	0 (0.0%)	2 (6.9%)	.50
Telephone consultation service	0 (0.0%)	2 (6.9%)	.50
Social welfare facility	4 (14.3%)	5 (17.9%)	1.00
Self-help group	1 (3.6%)	0 (0.0%)	1.00
Symposium or workshop	2 (7.1%)	4 (14.3%)	.50
Other	2 (7.1%)	6 (21.4%)	.22

Note. * $p < .05$.

Table 5

Number (Percentage) of Participants Who Engaged in Self-Harm and Their Mean Intensity of Suicidal Ideation Before and During the 6 Months of the Study

	Baseline	Postintervention	<i>p</i>
Engaged in self-harm	8(27.6%)	2 (6.9%)	.03*
Mean (<i>SD</i>) intensity of suicidal ideation	2.00 (1.18)	0.83 (1.00)	.000**

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