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Post-acute crisis text messaging outreach for suicide prevention: A pilot study

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ABSTRACT

Several post-suicide prevention strategies such as sending postcards or making phone calls have been used to keep in contact with suicide attempters. The continuity of care has been beneficial to the prevention of post-acute suicidal behaviors. The aim of the study was to evaluate the technical feasibility and acceptability of text messaging outreach in post-acute suicide attempters. Eighteen post-suicidal patients were included in a prospective, monocentric, open-label, 2 months pilot study. The text messages were sent from the intranet program that we specially developed for the study. Technical feasibility of this text message intervention was evaluated by the analysis of text message reports. Acceptability of such intervention was evaluated by a standardized phone interview. Our study showed that receiving text messages sent from an intranet program after a suicide attempt is technically possible. This post-crisis outreach program was accepted by the patients who found it to have a positive preventive impact. Text messaging outreach offers several advantages such as lower cost, and easier utilization compared to current post-acute care strategies. We suggest further randomized controlled trials in a large sample of suicidal patients to assess the efficacy of this novel outreach tool for prevention of post-acute suicide.

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1. Introduction

Post-crisis management of suicidal patients varies from hospital discharge to forced hospitalization. Suicide reattempt hospitalization rate ranges from 25% to 50% (Suominen and Lonnqvist, 2006). Hospitalization becomes mandatory for patients at high risk of suicide, i.e. those with severe psychiatric disorders associated with behavioral problems in accordance with the guidelines (Wasserman et al., 2012). The set-up of effective suicide-prevention and continuity of care strategies is a major challenge in the assessment and management of suicide- and reattempted suicide-prone patients, i.e. high-risk patients after they are discharged from a psychiatric inpatient setting.

Treating the psychiatric background such as depression or addiction is the first step in the management of suicide attempters (Wasserman et al., 2012). Monitoring interventions facilitate access to care in case of recurrence, i.e. to outreach the patient discharged from the emergency department via mail, or phone. Several works on interventions to outreach suicidal patients have been published

since 2001. The pioneer intervention was proposed by Motto and Bostrom (2001) and was based on postal contact. They proposed a follow-up in 15 years after having started the inclusions in 1969. The objective of the mail was to show that someone was concerned about the situation of the patient and to maintain positive feelings towards him or her. After 5 years, a significant decrease in suicide related deaths was observed in the contacted group (versus no-contact group) of high risk patients who refused ongoing treatment. Carter et al. (2005) programmed automated sent postcards. In the year following the suicide attempt, the authors reported a lower number of relapse in the contact group, especially among women. These encouraging results led to other studies exploring the effectiveness of telephone outreach call (Vaiva et al., 2006) or telephone hotline available 24 h a day, 7 days a week (24/7) (Evans et al., 2005).

The type of responding sub-group depends on the type of the outreach tool used (Vaiva et al., 2011). Cell phone intervention has already been tested in many clinical research fields such as monitoring of bulimia, anorexia, schizophrenia, diabetes, and asthma (Wei et al., 2011). Montes et al. (2012) recently proposed a text messaging strategy for enhancing patient's treatment compliance in schizophrenia. A Chinese study published in 2010 proposed to send text messaging to suicidal patients after discharge from the emergency

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department (ED) (Chen et al., 2010). They proposed to 15 patients after a suicide attempt to receive four text messages for four weeks. The text of the message varied for each transmission. The four text messages were the same for all patients. This work showed a good acceptability of the intervention. In line with the above study, we developed a software program allowing to send text messages, to simplify the inclusion of the patients, to have an optimized text sending, i.e. sending many messages over a long period, and to facilitate access to care for a large number of patients.

The primary aim of this study was to assess the technical feasibility of an automated and tailored text messaging tool in a sample of suicidal patients. We also assessed the patient's acceptability of such intervention through a phone interview.

2. Materials and methods

A prospective, open-label, 2 months study was conducted in the ED and psychiatric unit (PU) of the University Hospital of Brest, France. Data were collected between May and July 2011.

2.1. Patients selection

Inclusion criteria were male or female, aged 18 or older, surviving a suicide attempt, discharged from ED or PU, hospitalized for less than 7 days, giving consent, and able to be contacted by phone. Participation in the study was proposed to all suicidal adults referred to our psychiatric ED during dayshift (excluding the nightshift and the week-ends), meeting the above criteria. In our university hospital, adults who attempt suicide are admitted to the general ED and are evaluated by our ED psychiatrist who decides patients' discharge or hospitalization. Patients were enrolled after this evaluation. The same ED psychiatrist available during the day (i.e. not available during the evenings and the week-ends) was in charge of contacting the patients by phone in month 2. Some of the patients were discharged upon giving their consent to be part of the study. We expected a study sample size of at least 15 patients in accordance to the pilot design of our study.

The exclusion criteria were refusing to participate, underage, incarcerated, under guardianship, discharged over the week-end and the nightshift, without a mobile phone, enrolled in other trials, and in emergency situations where their state of health did not allow obtaining written consent.

In the case of discharge, a follow-up visit or planned hospitalization was scheduled.

2.2. Text messaging intervention

Text messages were customized by patient's name and in line with an identical outreach schedule for each patient. We sent four different text messages to each patient 48 h after discharge, at day 8, day 15 and day 30. All the text messages were sent at 1 pm. The four messages referred to the validation of the suffering, recall of the discharge agreement, and the monitoring system, i.e. our outreach continuing care intervention.

They also included elements corresponding to the monitoring doctor's name (psychiatrist or general physician), and the date of the scheduled appointment if applicable. The contact phone number was indicated in each text message transmission and the message appeared as sent from the psychiatric emergencies hotline number reachable 24/7. One example of the messages received by the patients was: "Mr X, we hope that your situation is getting better and that you could go to the Dr Y consultation (April 7th 2011 at 10h00). You can call us for anything you may need at 0298000000". A final reminder text message was sent 48 h before the callback telephone evaluation of the second month. Patients were followed up by the psychiatrist of their choice or by their general physician. Text messaging monitoring was proposed as an additional support to their standard of care.

Text messages were sent from our intranet portal using a software program that we developed for the study. The user interface with web engine is restricted in our Medical University Hospital. The identification of the user is done by user code and password. Patient data is stored in a secure server. They do not contain any sensitive data in accordance with the French Patients Data Protection Act. The data provided by the investigator is encrypted by Secure Socket Layer/Transport Layer Security (SSL/TLS) between the investigator computer and the server. Only the investigator had a user access code to the server. The investigator entered the date of the first transmission, thereafter, all the transmissions operated independently. Once the patient data was entered, the program generated four independent text messages containing patient's name, doctor's name and monitoring schedule from the date of inclusion. At any time, the patient data, date of sending the text message and the content could be modified. At any time, sending messages (transmissions)

could be interrupted. The number displayed on the recipient's mobile phone was the psychiatric ED.

2.3. Outcome measures

The technical feasibility was explored by analyzing the text messages status reports and the transmission rates issued by the web server engine. The server engine allowed inquiring on the text messages status at any time (e.g. scheduled, delayed, failed, canceled and transmitted). The technical feasibility was also evaluated by a standardized phone interview 2 months after inclusion.

Acceptability of such outreach intervention was assessed by a phone interview 2 months after inclusion using a standardized questionnaire. Patient consent was obtained in writing after verbal and written information.

3. Results

3.1. Baseline characteristics

During the inclusion period, 15 patients have been enrolled (Fig. 1). Our study consisted of four men and 14 women from 24 to 61 years old (mean age of 37.8 ± 8.6).

The majority of patients in this study presented a psychiatric disorder (11/18, 61%). The patient's characteristics are displayed in Table 1.

3.2. Primary outcome analysis

Our software was programmed to manage 50,000 messages per day. In our present study on a small sample of patients (sent messages, $n=18$; responded to the messages, $n=15$), we did not observe any system dysfunction. The only adjustment needed was the numerical identity of text messages. Indeed, some mobile phone

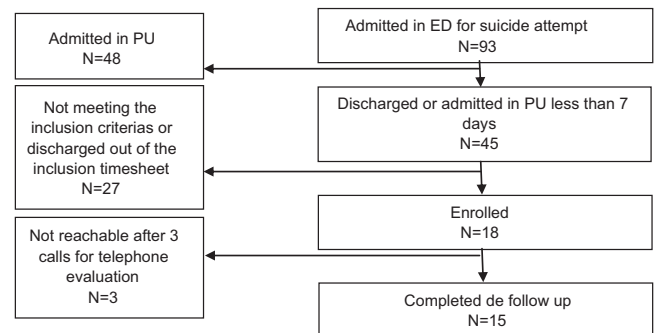


Fig. 1. Flow of patients during the study.

Table 1

Patients characteristics and ICD 10 (International classification of diseases version 10).

| Characteristics of patients | Number | Age (S.D.) |
|--|--------|------------|
| Male | 4 | 36.8 (5.4) |
| Female | 14 | 38.1 (9.2) |
| Psychiatric diagnosis (ICD10) ^a | | |
| Mental and psychiatric disorder due to alcohol abuse (F10.2) | 4 | |
| Depression (F32) | 3 | |
| Adjustment disorder (F43.2) | 2 | |
| Mixed anxiety and depressive disorder (F41.2) | 1 | |
| Dependent personality disorder (F60.7) | 1 | |
| Without psychiatric diagnosis (non-clinical) | 7 | |

^a Diagnosis for included patients having mental and behavioral disorders (11 patients on the 18 enrolled patients).

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