Service Use History of Individuals Enrolling in an Online Suicidal Ideation Treatment Trial

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Abstract

Background: A significant recent innovation is the development of internet-based psychological treatments for suicidal thinking. However, we know very little about individuals experiencing suicidal ideation who seek help through online services, and in particular, their previous health service usage patterns.

Objective: The current study aimed to examine service use history and its correlates amongst adults experiencing suicidal ideation who enrolled in an online suicidal ideation treatment trial.

Methods: Participants (N = 418) at pre-intervention reported demographic information, clinical characteristics, and health service use over the previous six-months.

Results: Participants had a high rate of service use in the six months before enrolling in the treatment trial. The two most common contact points were General Practitioners (GPs) and mental health professionals. Notably, those with a previous single suicide attempt had lower odds of contact with any service than those with no attempt. Furthermore, those living in rural or remote areas had lower odds of contacting GPs or mental health professionals than those living in metropolitan areas.

Conclusions: Our study shows that individuals enrolling in an e-health intervention trial have often received treatment from GPs or mental health professionals. These services can therefore play an important role in preventing the escalation of suicidal thinking. Enrolment in our online treatment trial suggests though that face-to-face health services may not be enough. Finally, our study highlights the need to improve the provision of coordinated and assertive care after a suicide attempt, as well as health service availability and utilisation for those living in rural and remote areas.

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Original Paper

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Abstract

Background: A significant recent innovation is the development of internet-based psychological treatments for suicidal thinking. However, we know very little about individuals experiencing suicidal ideation who seek help through online services, and in particular, their previous health service usage patterns.

Objective: The current study aimed to examine service use history and its correlates amongst adults experiencing suicidal ideation who enrolled in an online suicidal ideation treatment trial.

Methods: Participants (*N* = 418) at pre-intervention reported demographic information, clinical characteristics, and health service use over the previous six-months.

Results: Participants had a high rate of service use in the six months before enrolling in the treatment trial (404 out of 418 participants had contact with services; 96.7%). The

two most common contact points were General Practitioners (GPs; 385 out of 418 participants; 92.1%) and mental health professionals (295 out of 418 participants; 70.6%). Notably, those with a previous single suicide attempt had lower odds of contact with any service than those with no attempt (OR = 0.21, *P* = .03, 95% CI 0.05 to 0.86). Furthermore, those living in rural or remote areas had lower odds of contacting GPs (OR = 0.35, *P* = .03, 95% CI 0.13 to 0.91) or mental health professionals (OR = 0.44, *P* = .01, 95% CI 0.23 to 0.83) than those living in metropolitan areas.

Conclusions: Our study shows that individuals enrolling in an e-health intervention trial have often received treatment from GPs or mental health professionals. These services can therefore play an important role in preventing the escalation of suicidal thinking. Enrolment in our online treatment trial suggests though that face-to-face health services may not be enough. Finally, our study highlights the need to improve the provision of coordinated and assertive care after a suicide attempt, as well as health service availability and utilisation for those living in rural and remote areas.

Trial Registration: Australian New Zealand Clinical Trials Registry ACTRN12613000410752; https://www.anzctr.org.au/ Trial/Registration/TrialReview.aspx?id=364016 (Archived by WebCite at http://www.webcitation.org/6vK5FvQXy); Universal Trial Number U1111-1141-6595 *Keywords:* internet; online; treatment; service use; health service; suicidal ideation; suicide attempt; suicide.

Introduction

Suicide and its precursors (suicidal thinking, plans, and attempts) are associated with individual and societal burden, making them an important public health concern [1]. Recognition that many people with suicidal thoughts do not seek help [2], coupled with rapid advances in technology and their uptake, has led to the development of internet-based cognitive-behavioural treatments for suicidal thinking [3-5]. Such interventions represent an important innovation in the prevention of suicidal behaviours, as they: (i) target suicidal thinking – the earliest precursor to suicide – and this has the potential for important downstream effects to occur in terms of reducing the possibility of suicidal thoughts converting to suicidal behaviour, and (ii) they can help to overcome several barriers to treatment, including: wanting to handle the problem alone, the desire for anonymity, stigma, treatment availability, and financial and time costs [2, 6]. Despite increasing availability of e-delivery

platforms targeting suicidal thoughts and behaviour [7], we know very little about the historical patterns of health service use among individuals who engage with online treatment programs. Understanding the previous health service usage patterns of individuals who seek online help for suicidal thoughts is critically important because it can help to identify who is most likely to use such e-health programs, service provision gaps, and provide new insight into the characteristics of service users to inform design and delivery of targeted interventions.

Existing research has focused on suicidal behaviour and healthcare use using population health surveys rather than assessing users of suicide prevention services. Previous research has shown that between 31% - 57% of individuals reporting past-year suicidal ideation and 52% - 68% of individuals reporting past-year (planned) suicide attempts across high-income countries had contact with (inpatient and outpatient) mental health services in the same period [2, 8]. Accessing mental health services for those with any past-year suicidal behaviour (ideation, plans, and attempts) was associated with higher education, higher income, and never-married status [2]. Moreover, past-year suicidal ideation has been associated with service utilisation after controlling for sociodemographic and clinical factors [9], whereas other research has found that being married increased and being male decreased the likelihood of service utilisation following a suicide attempt [10]. Collectively, however, the factors associated with any form of mental health service utilisation are not well understood. More specifically, there has been no investigation of the health service use histories and correlates of adults who are seeking online treatment for different suicidal behaviours.

The current study utilises baseline data from a recent randomised controlled trial (RCT) conducted by our group (The Healthy Thinking Trial) that recruited adults seeking online treatment for their suicidal ideation [5], to identify the patterns and correlates of participant health service use in the six-months prior to enrolling in the study. The specific aims were to:

(i) Examine health service use in the six-months prior to enrolment in the study among those who experienced suicidal ideation only and those who experienced suicidal ideation and suicide attempts; and

(ii) Describe the demographic and clinical characteristics associated with health service use.

Methods

Participants

Participants were recruited for an RCT testing the efficacy of a 6-week online self-help program aimed at reducing suicidal thoughts compared to a 6-week attention-matched control program (see [5, 11]). Between November 2013 and December 2015, community-dwelling adults were recruited via online media which included relevant websites, popular social networking sites, and advertising on popular search engines. Interested individuals were provided with a link to a webpage that allowed them to provide consent and complete an online screener that verified their eligibility for the trial. The following eligibility criteria were applied: aged between 18-65 years; have a valid email address; have reliable internet connection; located in Australia; fluent in English; no history of a diagnosed psychotic disorder; currently experiencing suicidal thoughts; no suicide attempts in the past month. These criteria were assessed by single self-report questions where participants answered 'yes' or 'no' (e.g., participants responded yes or no to the question "Are you currently experiencing suicidal thoughts?"). Eligible individuals were informed that the trial was not intended to replace treatment as usual. They were encouraged to continue any treatments they were already receiving or seek other treatments if they were not receiving any at the time. The final sample demographics are shown in Table 1.

Measures

The current study focuses on the participant baseline data of the RCT.

Demographics Questionnaire

Standard demographic information was collected including age, gender, relationship status (married/de factor, separated/divorced/widowed, never married), education (post-school qualification, school qualification only, no qualification), employment status (employed, unemployed, not in labour force), and region of residence (metropolitan, regional, rural/remote). Note that rural and remote categories for region of residence were initially separate categories but were ultimately combined because of the low number of participants

endorsing the remote category (n = 4). The demographic categories and subcategories were modelled on previous research [8, 12]. Participants were also asked to indicate the number of previous suicide attempts in their lifetime.

Center for Epidemiologic Studies Depression Scale (CES-D [13])

The 20-item CES-D assesses the symptoms of depression over the past week. The CES-D has good psychometric properties (e.g., in the current study, Cronbach's α = .87; see also [13]).

Generalised Anxiety Disorder Scale (GAD-7 [14])

The 7-item GAD-7 assesses the symptoms of anxiety over the past two weeks. The GAD-7 has good psychometric properties (e.g., in the current study, Cronbach's α = .85; see also [14]).

Columbia-Suicide Severity Rating Scale (C-SSRS [15])

A self-report version of the C-SSRS was used to indicate the severity of suicidal ideation over the past week. The C-SSRS has five items (answered yes/no) which assess the presence of five increasingly severe levels of suicidal thought (from 1 = wish to be dead to 5 = active suicidal ideation with specific plan and intent to act). A score of zero is assigned when no ideation is present. In the present study, participants who reported more than one level of severity of suicidal ideation were coded with the most severe level.

Client Service Receipt Inventory (CSRI [16])

The original CSRI assesses participant accommodation, employment, income, and use of health and social care services in the previous 12 months. For the current study, the CSRI was adapted for the Australian context and modified to focus on assessing whether there was any contact with the following services over the previous six months: general practitioner (GP), mental health professionals (includes psychiatrists and psychologists), hospital services for mental health (includes inpatient and outpatient services), acute services (includes psychiatric crisis support team, and police/ambulance for mental health crisis), mental health helplines (e.g., Lifeline), and other health services (includes social worker, counsellor, and self-help group). These service use categories were modelled on previous research (e.g., [2, 17]).

Procedure

Ethical approval was obtained from the Human Research Ethics Committees of the University of New South Wales (HC13117) and the Australian National University (2012/471).

Eligible individuals were provided with an information statement, which included specification of the trial's safety procedures that allowed individuals to remain anonymous in the trial if they chose (see [5, 11]). Subsequently, they provided consent, a valid email address, a name/nickname to register and a phone number (non-mandatory). Participants then completed the baseline measures, which included the demographics questionnaire, CES-D, GAD-7, C-SSRS, and CSRI amongst other measures (for details of other measures, see [5, 11]), and were subsequently randomised to condition. For an indication of the flow of participants through the trial, see Multimedia Appendix 1. For a screenshot of the online self-help program aimed at reducing suicidal thoughts, see Multimedia Appendix 2.

Analyses

Descriptive statistics were used to describe the full sample in terms of demographics and clinical characteristics. In addition, descriptive statistics were used to determine the number of participants in the full sample who had contact with different health services. These statistics were also obtained for three subsamples (i.e., those with suicidal ideation only, those with suicidal ideation and a single past suicide attempt, and those with suicidal ideation and multiple past suicide attempts). Multivariate logistic regression models were used to examine variations in health service use associated with demographic variables (age, gender, relationship status, education, employment status, region of residence) and clinical variables (depression and anxiety symptoms, suicidal ideation severity, lifetime suicide attempt status). All analyses were conducted with SPSS version 25.

Results

Sample characteristics and health service use

Table 1 shows the descriptive statistics for the demographics, clinical characteristics, and past six-month service use of the full sample and the subsamples of participants with ideation only, one previous suicide attempt, and multiple previous suicide attempts. A large majority of those with ideation only (186 out of 191 participants; 97.4%), single suicide attempts (83 out of 89 participants; 93.3%), and multiple suicide attempts (135 out of 138 participants; 97.8%) in our sample reported some form of contact with health services in the six months before enrolling in the online suicidal ideation treatment trial. The two most common contact points were GPs (179 out of 191 participants with ideation only had contact [93.7%]; 78 out of 89 participants with a single attempt had contact [87.6%]; 128 out of 138 participants with multiple attempts had contact [92.8%]) and mental health professionals (128 out of 191 participants with ideation only had contact [67.0%]; 60 out of 89 participants with a single attempt had contact [67.4%]; 107 out of 138 participants with multiple attempts had contact [77.5%]). Notably, 14 out of 418 participants (3.3%) in the full sample did not have any contact with health services in the previous six months.

Table 1

Demographics, clinical characteristics, and six-month service use of the sample [a]

	Full sample (N = 418)	Ideation only (n = 191)	Single attempt (n = 89)	Multiple attempts (n = 138)
Age mean years (*SD*)	40.64	41.77	39.93	39.52
Gender				
Male *n* (%)	93 (22.2)	53 (27.7)	15 (16.9)	25 (18.1)
Female *n* (%)	323 (77.3)	138 (72.3)	74 (83.1)	111 (80.4)
Relationship status				
Married/de facto *n* (%)	160 (38.3)	82 (42.9)	31 (34.8)	47 (34.1)
Separated/divorced/widowed *n* (%)	72 (17.2)	30 (15.7)	16 (18.0)	26 (18.8)
Never married *n* (%)	186 (44.5)	79 (41.4)	42 (47.2)	65 (47.1)
Education				
Post-school qualifications *n* (%)	349 (83.5)	161 (84.3)	76 (85.4)	112 (81.2)
School qualification only *n* (%)	44 (10.5)	19 (9.9)	8 (9.0)	17 (12.3)
No qualification *n* (%)	25 (6.0)	11 (5.8)	5 (5.6)	9 (6.5)
Employment status				
Employed *n* (%)	248 (59.3)	129 (67.5)	60 (67.4)	59 (42.8)
Unemployed *n* (%)	66 (15.8)	27 (14.1)	13 (14.6)	26 (18.8)

Not in labour force *n* (%)	104 (24.9)	35 (18.3)	16 (18.0)	53 (38.4)
Region				
Metropolitan *n* (%)	253 (60.5)	125 (65.4)	49 (55.1)	79 (57.2)
Regional *n* (%)	107 (25.6)	43 (22.5)	29 (32.6)	35 (25.4)
Rural/Remote *n* (%)	56 (13.4)	22 (11.5)	11 (12.4)	23 (16.7)
Clinical characteristics				
CES-D[b] mean (*SD*)	40.26	39.06 (8.88)	39.99 (9.69)	42.09
GAD-7[c] mean (*SD*)	13.27	12.90 (5.12)	12.78 (5.40)	14.10 (4.70)
C-SSRS[d] ideation severity mean (*SD*)	3.18 (1.18)	2.95 (1.17)	3.31 (1.06)	3.51 (1.11)
Service use				
Any service *n* (%)	404 (96.7)	186 (97.4)	83 (93.3)	135 (97.8)
GP[e] *n* (%)	385 (92.1)	179 (93.7)	78 (87.6)	128 (92.8)
Mental health professionals[f] *n* (%)	295 (70.6)	128 (67.0)	60 (67.4)	107 (77.5)
Hospital services for mental health[g]	93 (22.2)	26 (13.6)	18 (20.2)	49 (35.5)
Acute services[h] *n* (%)	84 (20.1)	19 (9.9)	16 (18.0)	49 (35.5)
Mental health helplines *n* (%)	126 (30.1)	46 (24.1)	26 (29.2)	54 (39.1)
Other services[i] *n* (%)	120 (28.7)	45 (23.6)	25 (28.1)	50 (36.2)

[a] In the full sample, there were two participants who did not indicate their Gender as male or female, and there were two participants who did not provide information on Region. There were no other missing data.
[b] CES-D = Center for Epidemiologic Studies Depression Scale
[c] GAD-7 = Generalised Anxiety Disorder Scale
[d] C-SSRS = Columbia-Suicide Severity Rating Scale
[e] GP = General Practitioner
[f] Mental health professionals include: psychologists and psychiatrists.
[g] Includes inpatient and outpatient services.
[h] Acute services include: psychiatric crisis support team and police/ambulance for mental health crisis.
[i] Other services include: social worker, counsellor, and self-help group.

Multivariate logistic regression predicting service use

Tables 2 and 3 show the predictors of six-month health service use in the full sample. Females had higher odds of contact with any service compared to males (P = .03). Of note was those who had experienced a single suicide attempt reported lower odds of contact with any service compared to those with ideation only (i.e., no previous suicide attempt; P = .03).

There were also different patterns of predictors across service categories (see Tables 2 and 3). Compared to living in the city, living in rural/remote areas was associated with lower odds of contact with a GP (P = .03) and lower odds of contact with mental health professionals (P = .01). Compared to those who were employed, those not in the labour force had higher odds of contact with mental health professionals (P = .02). Females (P = .04), those with more severe

suicidal ideation (*P* = .03), and those who had experienced multiple suicide attempts (*P* = .002) had higher odds of contact with hospital services for their mental ill health. Not surprisingly, those who had experienced multiple suicide attempts also had higher odds of contact with acute services (*P* < .001) and other services (social worker, counsellor, and self-help group; *P* = .046). Older individuals had lower odds of contact with mental health helplines (*P* = .004), whereas those with more severe depressive symptoms had higher odds of contact with mental health helplines (*P* = .04).

Table 2

Predicting six-month service use in the full sample

	Any service	GP[e]	Mental health professionals[f]
	OR[g] (95% CI[h])	OR[g] (95% CI[h])	OR[g] (95% CI[h])
Age	1.02 (0.96-1.07)	1.03 (0.99-1.06)	1.00 (0.98-1.02)
Gender			
Male	-	-	-
Female	**4.33[a] (1.19-15.72)**	2.10 (0.89-4.94)	1.52 (0.89-2.61)
Relationship status			
Married/de facto	-	-	-
Separated/divorced /	3.69 (0.42-32.66)	1.39 (0.41-4.73)	0.90 (0.48-1.69)
Never married	2.43 (0.61-9.59)	1.00 (0.41-2.42)	1.30 (0.77-2.19)
Education			
Post-school qualifications	-	-	-
School qualification only	1.34 (0.14-12.55)	1.99 (0.42-9.51)	1.37 (0.62-3.06)
No qualification	0.14 (0.02-1.14)	0.70 (0.14-3.51)	0.44 (0.17-1.10)
Employment status			
Employed	-	-	-
Unemployed	1.68 (0.26-10.89)	0.74 (0.26-2.13)	1.58 (0.82-3.07)
Not in labour force	1.48 (0.26-8.50)	0.82 (0.29-2.29)	**2.08[a] (1.12-3.85)**
Region			
Metropolitan	-	-	-
Regional	-[i]	1.32 (0.48-3.65)	1.35 (0.78-2.35)
Rural/Remote	0.35 (0.09-1.28)	**0.35[a] (0.13-0.91)**	**0.44[a] (0.23-0.83)**
Clinical			
CES-D[b]	0.99 (0.92-1.07)	1.05 (1.00-1.10)	0.99 (0.96-1.02)
GAD-7[c]	1.11 (0.97-1.27)	1.08 (0.99-1.18)	1.05 (1.00-1.11)
C-SSRS[d] ideation severity	1.00 (0.61-1.66)	0.77 (0.54-1.10)	1.06 (0.86-1.31)
Lifetime suicide attempt			
Ideation only	-	-	-

Single attempt	**0.21[a] (0.05-0.86)**	0.47 (0.18-1.19)	0.95 (0.54-1.69)
Multiple attempts	0.66 (0.13-3.40)	0.88 (0.33-2.32)	1.37 (0.79-2.38)

[a] $P < .05$. Please see the text for exact P values.
[b] CES-D = Center for Epidemiologic Studies Depression Scale
[c] GAD-7 = Generalised Anxiety Disorder Scale
[d] C-SSRS = Columbia-Suicide Severity Rating Scale
[e] General Practitioner
[f] Mental health professionals include: psychologists and psychiatrists
[g] OR = odds ratio
[h] CI = confidence interval
[i] All participants in the Regional category (n = 107) had used some form of health service. As there were no non-cases, an OR was not computed

Table 3

Predicting six-month service use in the full sample

	Hospital services for mental health[g]	Acute services[h]	Mental health helplines	Other services[i]
	OR[j] (95% CI[k])	OR[j] (95% CI[k])	OR[j] (95% CI[k])	OR[j] (95% CI[k])
Age	0.98 (0.96-1.01)	1.00 (0.97-1.02)	**0.97[b] (0.95-**	1.00 (0.97-1.02)
Gender				
Male	-	-	-	-
Female	**2.14[a] (1.02-**	1.34 (0.67-2.68)	1.39 (0.76-2.55)	1.71 (0.94-3.09)
Relationship status				
Married/de facto	-	-	-	-
Separated/divorced/	0.46 (0.20-1.07)	0.68 (0.31-1.49)	0.65 (0.31-1.37)	1.24 (0.66-2.34)
Never married	0.85 (0.48-1.50)	0.81 (0.44-1.46)	1.43 (0.86-2.40)	0.85 (0.51-1.43)
Education				
Post-school qualifications	-	-	-	-
School qualification	1.67 (0.75-3.74)	2.19 (0.99-4.82)	0.54 (0.24-1.19)	1.54 (0.76-3.13)
No qualification	2.41 (0.90-6.49)	1.08 (0.36-3.22)	0.97 (0.37-2.56)	1.79 (0.74-4.34)
Employment status				
Employed	-	-	-	-
Unemployed	1.02 (0.49-2.11)	0.74 (0.34-1.61)	1.12 (0.60-2.09)	1.22 (0.66-2.26)
Not in labour force	1.85 (0.99-3.43)	1.34 (0.71-2.51)	0.97 (0.53-1.75)	0.91 (0.51-1.62)
Region				
Metropolitan	-	-	-	-
Regional	1.29 (0.72-2.31)	1.20 (0.66-2.18)	1.29 (0.76-2.21)	1.08 (0.64-1.81)
Rural/Remote	0.78 (0.34-1.76)	1.07 (0.49-2.35)	1.97 (0.99-3.91)	0.97 (0.50-1.89)
Clinical				
CES-D[d]	1.03 (0.99-1.07)	1.01 (0.97-1.04)	**1.04[a] (1.00-**	1.02 (0.99-1.05)
GAD-7[e]	0.97 (0.91-1.03)	1.02 (0.96-1.09)	1.02 (0.97-1.08)	0.98 (0.93-1.03)

C-SSRS[f] ideation severity	**1.34[a] (1.03-1.73)**	1.26 (0.98-1.63)	1.23 (0.98-1.53)	0.95 (0.77-1.17)
Lifetime suicide attempt				
Ideation only	-	-	-	-
Single attempt	1.29 (0.64-2.59)	1.80 (0.86-3.79)	1.03 (0.56-1.90)	1.18 (0.66-2.13)
Multiple attempts	**2.59[b] (1.43-**	**4.18[c] (2.22-**	1.54 (0.90-2.65)	**1.71[a] (1.01-**

[a] $P < .05$. Please see the text for exact P values.
[b] $P < .01$. Please see the text for exact P values.
[c] $P < .001$. Please see the text for exact P values.
[d] CES-D = Center for Epidemiologic Studies Depression Scale
[e] GAD-7 = Generalised Anxiety Disorder Scale
[f] C-SSRS = Columbia-Suicide Severity Rating Scale
[g] Includes inpatient and outpatient services
[h] Acute services include: psychiatric crisis support team and police/ambulance for mental health crisis
[i] Other services include: social worker, counsellor, and self-help group
[j] OR = odds ratio
[k] CI = confidence interval

Discussion

This study aimed to examine health service use and its correlates amongst adults participating in an online suicidal ideation treatment trial. The overwhelming majority of the sample had some form of contact with health services in the six months before enrolling in the online suicidal ideation treatment trial, with the two most common contact points being GPs and mental health professionals. It is not possible to tell from our data whether suicidal thoughts or behaviours were addressed during contact with any of these health services because we did not assess this. That is, it cannot be assumed that suicidal thinking or suicide attempts were discussed during participant contact with the various health services, although they could have been. Nonetheless, the rates of service use of our sample, which was recruited for a treatment trial, were generally higher than that found in previous international [2] and Australian [8] general population studies. The relatively high rates of service use reported in the current study may be due to several factors, one being the high proportion of women who participated, given women are more likely to utilise health services than men (e.g., [18]). Other factors that may have resulted in a higher than usual representation of service users may be the high rates of metropolitan residency, employment, and tertiary qualifications noted among the participants, which are all likely to increase geographical and financial access to services [19-

22]. However, for a comparison in the Australian context, Johnston et al.'s [8] sample actually had similar rates of metropolitan residency and employment to the current sample, but a lower rate of women and post-school qualifications (see also [23]). The higher rate of women and post-school qualifications may thus have accounted for the greater rate of service use in our sample. Moreover, the relatively high rates of service use in our sample may also be indicative of a greater propensity towards help-seeking, given that higher education has been linked to higher levels of knowledge of mental health and treatment availability [24].

The high rate of service use of our participants together with their enrolment in the online intervention has two main implications. First, it suggests that some individuals experiencing suicidal ideation may want more help beyond in-person treatments. This may be because contact with various face-to-face services is not sufficient to meet their needs (e.g., shame or discomfort disclosing suicidal thoughts or behaviours face-to-face), or they may be willing to try any intervention that may provide additional help. Future research should investigate these possibilities. Second, it suggests that the treatment trial, from which the current study's sample is derived, failed to attract individuals experiencing suicidal ideation who do not normally seek help. This is despite one of the aims of the treatment trial to reach such individuals, for example, by permitting anonymous participation (see [5, 11]). Another important direction for future research will be to further improve online treatments to reach this group of individuals.

With respect to the correlates of health service use, the majority of results were as expected but two findings stood out. First, we found a previous single suicide attempt (compared with ideation only [no previous suicide attempt] status) was associated with lower odds of contact with any service. The data we collected did not allow us to determine for those participants with a previous single suicide attempt when their attempt actually occurred in their lifetime, and thus the temporal relationship with service use assessed in our study (e.g., attempt may have occurred many years prior to participating in the study, and this could explain the relatively lower odds of contact with services). However, given that a suicide attempt is predictive of future suicide attempts and death by suicide [25], and given that these participants with a previous single suicide attempt enrolled in our online treatment trial (indicating the presence of suicidal ideation), it is concerning that these participants had a relatively lower rate of contact with any service. One reason that might account for this finding is that in relation to a first suicide attempt, a lack of coordinated and assertive care after the

attempt may lead to a general disengagement from health services [26]. Alternatively, distressing treatment experiences after the attempt may also discourage health service use in general [26, 27]. The second notable result from our analysis, also of concern, was that among adults participating in our online treatment trial, those living in rural or remote areas had lower odds of previous six-month contact with a GP and mental health professionals than those living in metropolitan areas. This result is consistent with previous research demonstrating similar findings (e.g., [9, 21]), and in Australia, may reflect relatively lower rates of help-seeking in individuals living in rural or remote locations as well as the shortage of GPs and mental health professionals limiting service access in these areas [28, 29]. This result continues to highlight a critical need for strategies to improve health service provision and utilisation in rural and remote areas. In this regard, e-health interventions may hold significant promise for delivering more accessible, evidence-based interventions to at-risk persons.

Several critical considerations emerge from this study. Given the two most common services utilised by individuals with suicidal ideation before enrolling in an online treatment trial were GPs and mental health professionals, it is important that such services are aware that they may be crucial intervention points to prevent the escalation of suicidal thinking. In the case of GPs, as noted above, it was not possible to ascertain why individuals in our sample consulted their GP, but it may not have been for a mental health problem or for suicidal thoughts or behaviours. Indeed, previous research has shown that only 15% of individuals who died by suicide revealed suicidal thoughts or intentions in consultations with their GPs prior to suicide [30]. This suggests that there is scope for GPs to play an important role in preventing the escalation of suicidal thinking through the routine screening of patients for suicidal thoughts and behaviours, and upskilling in terms of their capacity to treat or refer suicidal patients to appropriate services [31-33]. Notably, in a mental health service model integrating e-mental health interventions with face-to-face services, GPs would be integral in referring suitable patients to evidence-based online therapies that target suicidal thinking and reduce suicide risk [5]. Our study also highlights the need for the provision of coordinated and assertive care after a suicide attempt, especially after the first suicide attempt, to encourage engagement with health services and prevent the maintenance or escalation of suicidal thinking. Finally, as noted above, there is a need for continued emphasis on improving health service availability and utilisation for those living in rural and remote areas who experience suicidal ideation.

Limitations

Several limitations of our study should be considered. First, participants in our study were recruited to a trial and not users of a service. Future research should replicate our study in a sample of suicide prevention service users. Second, our sample enrolled in an online suicidal ideation program after meeting inclusion criteria (and not meeting exclusion criteria) from an initial pool of 12,474 individuals who visited the registration website (see [5]). Although the exclusion of individuals was a necessity of the trial, results may have been different had these individuals been included. Third, the group of participants who did not use any services was very small, and future research should improve the recruitment of such individuals to further investigate the reasons behind their lack of service use and their decision to enrol in a treatment trial examining an online intervention for suicidal ideation. Fourth, the number of past suicide attempts was assessed with a single self-report item and future studies should improve the accuracy of identifying suicide attempts with a more in-depth assessment [34]. Fifth, our study examined cross-sectional baseline data, and the temporal relationships between the variables in our study are not known. Finally, as previously noted, although we assessed health service use history, we did not specifically assess whether suicidal thoughts or behaviours were addressed during contact with services. Future research should collect this information.

Conclusions

Our study highlights, for the first time, health service use history and its correlates amongst adults participating in an online suicidal ideation treatment trial. Our study highlights that these individuals have a high rate of contact with health services, particularly GPs and mental health professionals. These services can therefore play an important role in preventing the escalation of suicidal thinking. Enrolment in the online treatment trial, despite this high contact with services, suggests though that face-to-face health services may not be enough for individuals with suicidal ideation and they want more help. Finally, our study highlights the need to improve the provision of coordinated and assertive care after a suicide attempt, as well as health service availability and utilisation for those living in rural and remote areas.

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Conflicts of Interest

BvS is an author of the original Dutch web-based suicidal ideation program referred to in this paper. BvS is also an author of, and receives royalties from, an adapted paper version of the program, published under the title ‘Piekeren over zelfdoding’ by Boom: Amsterdam (2012). BvS and HC are authors of the English translation of the web-based program used in the Healthy Thinking Trial referred to in this paper.

Multimedia Appendix 1: Participant flow diagram for the randomised controlled trial that recruited adults seeking online treatment for their suicidal ideation (originally published in [5]).

Multimedia Appendix 2: Example screenshot of the online self-help program aimed at reducing suicidal thoughts.

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Supplementary Files

Multimedia Appendixes

Participant flow diagram for the randomized controlled trial that recruited adults seeking Web-based treatment for their suicidal ideation (reproduced from van Spijker et al [5]).
URL: http://asset.jmir.pub/assets/1060ec55e15357f53cbccd381c07b9c1.docx

Example screenshot of the Web-based self-help program aimed at reducing suicidal thoughts.
URL: http://asset.jmir.pub/assets/b5f3da7696e696132351921517488d6f.docx