**Frequent Assessment of Suicidal Thinking does not Increase Suicidal Thinking:
Evidence from a High-Resolution Real-Time Monitoring Study**

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Summary

Researchers, clinicians, and patients are increasingly using real-time monitoring methods to understand and predict suicidal thoughts and behaviors. These methods involve frequently assessing suicidal thoughts, but it is unknown if asking about suicide repeatedly is iatrogenic. We tested two questions about this approach: (1) does repeatedly assessing suicidal thinking over short periods of time increase suicidal thinking? (2) is more frequent assessment of suicidal thinking associated with more severe suicidal thinking? In a real-time monitoring study ($N = 81$, number of surveys = 9,819), we found no evidence to support the notion that repeated assessment of suicidal thoughts is iatrogenic.

Suicide is a leading cause of death and there is an urgent need for more research to understand, predict, and prevent it (1). Suicide research, however, comes with a unique set of ethical challenges (2). A long-standing concern has been whether asking people about suicide might be harmful (3). Prior research has found no evidence that asking about suicide at one point in time is iatrogenic (4,5). However, given that researchers, clinicians, and patients are increasingly using real-time monitoring methods with multiple smartphone-based surveys each day, it is important to know whether asking about suicide repeatedly is iatrogenic (6). Here we used a real-time monitoring design to test two questions about the safety of this approach: (1) Does repeatedly assessing suicidal thinking over short periods of time increase suicidal thinking? (2) Is more frequent assessment of suicidal thinking associated with more severe suicidal thinking?

Methods

Participants were 81 adults who reported active suicidal thoughts in the past week, recruited with online advertisements. Each participant downloaded a smartphone-based survey app that sent them three types of surveys over a 6-week period: daily surveys (1 time per day), momentary surveys (5 times per day), and burst surveys (6 times/hour, 2/day, 4 days/week). Each survey assessed the desire, urge, and intent to kill oneself on a 0 to 10 scale, which were combined to create a suicidal thinking severity score.

The authors assert that all procedures contributing to this work comply with the ethical standards of the relevant national and institutional committees on human experimentation and with the Helsinki Declaration of 1975, as revised in 2008. All study procedures were approved by the Harvard University-Area Institutional Review Board (IRB# 19-1819; “High-Resolution

Real-Time Capture of Suicidal Thoughts and Urges”). Written informed consent was obtained from all participants.

For aim 1, we ran a three-level ordinal model where responses were nested within participants and burst episodes (total number of surveys= 8,056 over 2,212 episodes). The predictor was time (i.e., minutes between the first completed burst survey and the last burst survey). If frequent assessments were iatrogenic, we would expect to see a positive association between the severity of suicidal thinking over time during a burst episode. To address the possibility those with increased suicidal thoughts stopped completing surveys, we ran a multilevel survival analysis on missing data. The outcome was time (i.e., minutes between the first and the last completed burst surveys) with a binary variable (suicidal thinking increased vs. no change/decreased) as the predictor. If assessments were iatrogenic, participants with increased suicidal thinking would stop assessments earlier. The survival analysis was estimated with the *coxme* package (7).

For the second aim, we ran a multilevel ordinal model where the outcome was daily reports of the severity of suicidal thinking (number of surveys= 1,763) and the predictor was a day with burst surveys (maximum total surveys sent=18) or without the burst surveys (maximum total surveys sent=6). All multilevel models were estimated within a Bayesian framework with the *brms* package (8). Results were interpreted by summarizing the 95% highest density interval (HDI) around the median beta values. If the 95% HDI includes zero, it’s indicative of a null effect.

Results

Frequently assessing suicidal thoughts was not associated with a change in the severity of suicidal thoughts (*median* = 0.001, *95% HDI* = -0.002 to 0.004). The trajectories of suicidal

thinking are shown in **Figure 1**. There was no evidence that increased severity of suicidal thinking was followed by decreased completion of surveys ($HR = 0.95$, $95\% CI = 0.88$ to 1.03 , $p = 0.21$). At the daily level, there was no association between the frequency of assessments and the severity of suicidal thoughts ($median = 0.014$, $95\% HDI = -0.147$ to 0.200 , **Figure 1**).

Discussion

This is the highest resolution study to date on the potential iatrogenic effects of assessing suicidal thoughts. We found no evidence to support the notion that repeated assessment of suicidal thoughts is iatrogenic. These findings align with prior research on longer-term reactivity (9). For both participant safety and scientific ecological validity, the lack of reactivity to frequent assessments supports the safety of real-time monitoring of suicidal thoughts.

References

1. Gordon JA, Avenevoli S, Pearson JL. Suicide Prevention Research Priorities in Health Care. *JAMA Psychiatry*. 2020 Sep 1;77(9):885–6.
2. Pearson JL, Stanley B, King CA, Fisher CB. Intervention research with persons at high risk for suicidality: safety and ethical considerations. *J Clin Psychiatry*. 2001;62:17–26.
3. Blades CA, Stritzke WGK, Page AC, Brown JD. The benefits and risks of asking research participants about suicide: A meta-analysis of the impact of exposure to suicide-related content. *Clinical Psychology Review*. 2018 Aug 1;64:1–12.
4. DeCou CR, Schumann ME. On the Iatrogenic Risk of Assessing Suicidality: A Meta-Analysis. *Suicide and Life-Threatening Behavior*. 2018;48(5):531–43.
5. Polihronis C, Cloutier P, Kaur J, Skinner R, Cappelli M. What’s the harm in asking? A systematic review and meta-analysis on the risks of asking about suicide-related behaviors and self-harm with quality appraisal. *Archives of Suicide Research*. 2020 Jul 25;0(0):1–23.
6. Kleiman EM, Nock MK. Real-time assessment of suicidal thoughts and behaviors. *Current Opinion in Psychology*. 2018 Aug 1;22:33–7.
7. Therneau TM. coxme: Mixed Effects Cox Models [Internet]. 2020 [cited 2020 Nov 23]. Available from: <https://CRAN.R-project.org/package=coxme>
8. Bürkner P-C. Advanced Bayesian Multilevel Modeling with the R Package brms. *The R Journal*. 2018;10(1):395–411.
9. Law MK, Furr RM, Arnold EM, Mneimne M, Jaquett C, Fleenor W. Does assessing suicidality frequently and repeatedly cause harm? A randomized control study. *Psychological Assessment*. 2015;27(4):1171–81.

Figure 1. The Effects of Frequent Assessment of Suicidal Thinking

A) Suicidal Thought Severity Trajectories Over 1 Hour. *Note:* The blue line represents a smoothed average.

B) Daily Suicidal Thought Severity by Frequency of Real-Time Assessments.

Note: Lower = Maximum of 6 surveys per day, Higher = Maximum of 18 surveys per day