

Utility of the “No Response” Option in Detecting Youth Suicide Risk in the Pediatric Emergency Department



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Study objective: We examine the characteristics of adolescents who select “no response” on a suicide screening instrument.

Methods: This study used a preexisting data set containing records of 3,388 patients aged 12 to 17 years who completed a suicide screen after presenting to the emergency department with nonpsychiatric complaints. Respondents who answered no response to at least one item without any yes responses were assigned to the no response group (n=58), whereas respondents who selected yes for any question (n=167) were assigned to the yes group. Researcher and mental health provider notes were analyzed to determine suicide risk level, presence of referral, and readiness to engage in treatment.

Results: Suicide risk and need for mental health referral were substantial for both groups. Clinically significant risk was identified for 84.5% of the no response group and 93.4% of the yes group, with documentation of suggested mental health referral present for 50.0% and 65.1%, respectively. Individuals in the no response group were more likely to be in 1 of the 2 earliest stages of readiness for treatment engagement (40.9% compared with 25.7% of adolescents in the yes group).

Conclusion: To our knowledge, this is the first study to explore the relationship between a no response answer on a tablet-based screening instrument and risk for suicide as determined by a mental health provider. Although preliminary, this work indicates that youths who answer no response on suicide screening items are at elevated risk and may benefit from further evaluation or receipt of information on services. Further research is needed to better understand this population and their subsequent suicide risk. [Ann Emerg Med. 2019;74:11-16.]

Please see page 12 for the Editor’s Capsule Summary of this article.

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INTRODUCTION

Background

Suicide is the second leading cause of death among individuals aged 10 to 34 years in the United States.¹ The Joint Commission (TJC) has emphasized the need to screen for suicide risk in all clinical settings,² including the emergency department (ED), which is the only source of care for 1.5 million children across the nation.³ However, ED-based suicide screening remains uncommon despite evidence for feasibility⁴ and support by youths and parents.⁵ Brief, validated screening tools can facilitate the expansion of screening; however, a solid understanding of how to assess risk and proceed with interventions based on these tools is necessary to enlist EDs to target resources appropriately to reduce youth morbidity and mortality.

Importance

Patients who skip questions on suicide screening tools present a challenge for risk assessment. Some researchers score missing values as negative,⁶ but there is no evidence to support this, and the limited research available indicates that nonresponders may actually be at elevated risk for suicide.⁷ The Ask Suicide-Screening Questions is a tool that, in its first iteration, contained a “no response” option in addition to “yes” and “no” choices, presenting a unique opportunity to better understand nonresponders.⁸

Goals of This Investigation

This study used findings from brief mental health evaluations to compare suicide risk between adolescents who answered yes to Ask Suicide-Screening Questions and those who selected no response. Additionally, mental health

Editor's Capsule Summary*What is already known on this topic*

Brief, validated screens for suicidality can be effective in identifying at-risk youths in the emergency department.

What question this study addressed

Is a youth who fails to answer screening questions at risk for suicidality?

What this study adds to our knowledge

In this study of 3,388 children aged 12 to 17 years, suicide risk was substantial for both those who answered yes and those who did not respond to any of the 4 screening questions.

How this is relevant to clinical practice

Youths who fail to respond to suicide screening questions may be at risk and should have further evaluation.

referral rates and respondent likelihood of initiating treatment were compared. We hypothesized that adolescents who selected no response may be at risk for suicidality but be less ready to initiate treatment compared with those who answered yes to screening questions.

We also compared the demographic characteristics of these 2 groups with those of patients who answered no to all Ask Suicide-Screening Questions.

MATERIALS AND METHODS

This study made use of a preexisting data set from a quality improvement initiative that was conducted in the Cincinnati Children's Hospital ED. The work was classified as nonhuman subjects research by the hospital's institutional review board.

Between February 2013 and July 2015, medically stable patients aged 12 to 17 years and presenting with nonpsychiatric chief complaints were offered a voluntary (opt-in) screening for suicide risk if they visited the ED during predetermined hours (variable time blocks between 8 AM and 11 PM daily, depending on mental health provider staffing). Patients were informed that the effectiveness of a 4-item tablet-based screening was being compared with the hospital's standard 2-item verbal screening and that youths with positive screening results would be assessed by a mental health provider, which also occurs with the standard hospital screening. Patients who consented completed the Ask Suicide-Screening Questions,

a self-administered validated screening tool that was designed for use with adolescents in ED settings. It contains 4 items (Table 1), and the instrument's programming did not allow question skipping. Any patient who selected either yes or no response on at least one item was considered to have a positive screening result; those who marked no on all items were considered to have a negative screening result. If a patient's result was positive, a research coordinator briefly confirmed whether the choice was intentional. Research coordinators did not perform assessments, but noted whether participants stated they had misread the question or clicked the wrong choice. Patients who intentionally selected yes or no response to any screening question received a second, more extensive screening in the form of an evaluation by a mental health provider, who was shown the screening results. Mental health provider notes were visible to emergency physicians, and safety protocols were present to ensure the safety of youths at immediate risk; however, no instances of imminent risk were identified.

Patients with a positive screening result were further divided into 2 groups for analysis. All who answered no response to at least one of the Ask Suicide-Screening Questions without answering yes to any other question were assigned to the no response group. Patients who answered yes to at least one question were assigned to the yes group, which included participants who answered no response to any question if they also answered yes to at least one item. Sociodemographic information was gathered from the medical record.

In accordance with Ask Suicide-Screening Questions responses, mental health provider notes, and research coordinator notes, participants were categorized in terms of 3 criteria:

1. Suicide risk level. Risk level was assigned according to rules (Table 2) developed by consensus of a 4-person team of clinical and research professionals experienced with the literature on suicidality. Rules were applied through a 2-tier approach. Two members of the study team first assigned participants to a dichotomous category based on presence or absence of clinically significant suicide risk ($\kappa=1.00$). Individuals who were determined to exhibit any risk were then assigned to 1 of 3 categories by the same 2 raters ($\kappa=0.82$). Discrepancies were resolved through consensus among the study team.
2. Mental health follow-up suggested. This was a positive criterion if the mental health provider referred the participant for further evaluation, helped schedule treatment, or documented that the

Table 1. Number of positive Ask Suicide-Screening Questions responses per question.*

ASQ Item	Yes Group (167), No. (%)	NR Group (58), No. (%)	Difference (95% CI), %
1: In the past few weeks, have you wished you were dead?	80 (48.2)	13 (22.4)	25.8 (0.6 to 51.0)
2: In the past few weeks, have you felt that you or your family would be better off if you were dead?	70 (42.2)	26 (44.8)	-2.6 (-24.9 to 19.7)
3: In the past week, have you been having thoughts about killing yourself?	40 (24.1)	13 (22.4)	1.7 (-24.6 to 28.0)
4: Have you ever tried to kill yourself?	91 (54.8)	25 (43.1)	11.7 (-10.2 to 33.6)

ASQ, Ask Suicide-Screening Questions; NR, no response; CI, confidence interval.

*Participants could select a positive response for more than one item; consequently, totals in columns add up to more than 100%.

participant planned follow-up with a mental health provider of his or her choice.

3. Readiness to engage in mental health treatment.

When mental health provider notes contained adequate detail, the stages of change model⁹ was used to classify readiness to engage in treatment. A 2-person team developed rules for classifying participants according to their statements during evaluation, and a single rater classified participants according to this algorithm.

Primary Data Analysis

Descriptive analyses were performed, with confidence intervals calculated for the differences between groups (with

the exception of readiness to engage in treatment, for which only descriptive data are reported).

RESULTS

Characteristics of Study Subjects

A total of 4,946 patients were approached to participate, of whom 4,135 were eligible, 3,401 consented, and 3,388 completed the screening (clinical care or technical problems prevented completion for 13 patients who provided consent). Of the positive screen results, 58 patients were in the no response group and 166 were in the yes group. A total of 3,162 participants answered no to every screening question. Overall, demographic characteristics of the yes and no response groups were similar, but different from

Table 2. Suicide risk level.

Risk Level	Patient Answered Yes or NR to Any ASQ Item and Any of the Following Is True:	Yes Group, No. (%)	NR Group, No. (%)	Difference (95% CI) to %
Not clinically significant	Patient clarified that answer was a mistake or misunderstanding and verbally confirmed having no SI or past attempts.	11 (6.6)	9 (15.5)	-8.9 (-36.7 to 18.9)
Low	Patient successfully completed treatment after past SI or attempt and reports no current SI. Patient clarified having no SI within the past month. (SI was outside window screened for by ASQ, and patient had not noticed the time restriction in the screening question.)	17 (10.2)	8 (13.8)	-3.6 (-31.5 to 24.3)
Medium	No other information given after yes or NR answer to ASQ 1 or 2. No other information given after NR answer to ASQ 4. Patient clarified that a positive response to ASQ 4 referred to SI only or to nonsuicidal self-injury, and not an actual attempt. Patient had past attempt but is currently receiving or scheduled for treatment. Patient answered NR on ASQ 3 but verbally denied SI within the past week. (Patient had not noticed the time restriction in the screening question.) Patient had past treatment but reported recurring problems after treatment finished. Patient verbally confirmed recent SI but later denied any recent SI.	83 (50)	32 (55.2)	-5.2 (-25.5 to 15.1)
High	Patient reported SI within the past week. Patient confirmed past attempt for which treatment was never sought. Patient disclosed significant recurring hallucinations.	55 (33.1)	9 (15.5)	17.6 (-9.1 to 44.3)

SI, Suicidal ideation.

those of respondents with negative screening results (Table 3).

Both the yes and no response groups showed elevated rates of clinically significant suicidal ideation, with 93.4% of the yes group and 84.5% of the no response group categorized as being at some level of risk (Table 2). Both groups showed similar levels of low and medium risk, but the yes group was more than twice as likely to be classified as high risk. However, 15% of respondents who answered no response to an Ask Suicide-Screening Questions item without any yes responses were in the high-risk category.

Yes respondents were more likely to answer certain Ask Suicide-Screening Questions with a nonnegative response, but for 2 of the items, positive response rates were very similar. All Ask Suicide-Screening Questions had positive (yes or no response) response rates of at least 22% (Table 1) within the no response group.

Notes from the medical record also indicated that although mental health follow-up was suggested more frequently in the yes group compared with the no response group (65.1% and 50.0%, respectively; difference 15.1%; 95% confidence interval 0.3% to 29.9%), mental health providers recorded that substantial proportions of youths in both groups should receive further assessment. (Nonreferred patients classified as having significant risk were typically either already in treatment or had disclosed a past untreated attempt with no recent suicidal ideation).

A subset of participants had mental health provider notes detailed adequately enough to enable an exploratory assessment of readiness to engage in treatment (89.2% of the yes group and 75.9% of the no response group) according to the stages of change model.⁹ Nonresponders

appeared less ready to pursue treatment, with 40.9% making statements consistent with being in the precontemplative stage (the patient did not believe he or she would benefit from treatment) or contemplative stage (the patient was still considering treatment or stated an intent to do so only if the condition worsened) compared with 25.7% in the yes group.

LIMITATIONS

This study used preexisting data that were not originally intended to examine characteristics of adolescents who answered no response to suicide-risk screening questions, and this introduced several limitations and sources of bias. First, mental health providers did not follow a specific protocol when entering notes, resulting in variable levels of detail and consequent limitations to the referral and stage of change analyses. Furthermore, no mental health assessments were carried out with participants with negative screening results, limiting the comparisons that can be drawn between the 2 groups with positive screen results and the respondents with negative results.

Neither mental health providers nor members of the study team were blinded to participant response group, which may have introduced bias; in the latter case, we attempted to mitigate this with the use of independent raters. Bias may also have been introduced by staffing constraints that precluded offering the screening to every eligible ED patient, particularly those who arrived overnight. Although the study population was representative of the ED population in terms of sex, it included a higher proportion of white participants

Table 3. Participant characteristics.

Characteristic	Population Differences Within Positive Screen Results, %			Population Differences Between Positive and Negative Screen Results, %		
	Yes Group	NR Group	Difference (95% CI)	Positive Screen Results Combined	Negative Screen Results	Difference (95% CI)
Mean age (3,381), y	14.64	14.64	0.00 (-0.46 to 0.48)	14.64	14.51	0.13 (-0.09 to 0.36)
Sex (%) (3,381)						
Girls (55.5)	123 (74.1)	46 (79.3)	-5.2 (-19.2 to 8.8)	169 (75.4)	1,709 (54.1)	-21.3 (-28.2 to -14.4)
Boys (44.5)	43 (25.9)	12 (20.7)	5.2 (-21.2 to 31.6)	55 (24.6)	1,448 (45.9)	21.3 (9.6 to 33.0)
Race (%) (3,379)						
White (60.7)	77 (46.4)	27 (46.6)	-0.2 (-22.1 to 21.7)	104 (46.4)	1,946 (61.7)	15.3 (5.5 to 25.1)
Black (33.0)	76 (45.8)	28 (48.3)	-2.5 (-24.1 to 19.1)	104 (46.4)	1,011 (32.0)	-14.4 (-24.4 to -4.4)
Other (6.3)	13 (7.8)	3 (5.2)	2.6 (-26.4 to 31.6)	16 (7.1)	198 (6.3)	-0.8 (-13.4 to 11.8)
Payer (%) (3,374)						
Commercial (52.4)	65 (39.4)	24 (41.4)	-2.0 (-25.0 to 21.0)	89 (39.9)	1,680 (53.3)	13.4 (2.8 to 23.9)
Public (83.6)	93 (56.4)	32 (55.2)	1.2 (-18.8 to 21.2)	125 (56.1)	1,348 (42.8)	-13.3 (-25.6 to -1.0)
Other (3.8)	7 (4.2)	2 (3.4)	0.8 (-28.4 to 30.0)	9 (4.0)	123 (3.9)	-0.1 (-13.4 to 13.2)

(Table 3) compared with the full ED census of patients aged 12 to 18 years who have nonpsychiatric complaints (55% white, 40% black, and 5% other), so it is possible the findings are not completely representative.

DISCUSSION

With suicide now the second leading cause of death among adolescents,¹ TJC has issued a mandate for the use of brief, validated screening instruments in all health care settings.² Such assessments can be effective,⁸ but their influence is limited by the difficulty of assessing risk in individuals who do not respond to all of the screening questions offered.⁷ Because the earliest version of the Ask Suicide-Screening Questions included no response as an overt answer choice, it presented a means to distinguish purposeful nonresponses from unintentionally skipped items. This attribute of the instrument, combined with availability of mental health provider medical record notes for patients with both yes and no response answers, presented a unique opportunity to increase our understanding of nonresponder risk.

As expected, nonresponders appear to have lower risk for suicidality than respondents who overtly answered yes to any Ask Suicide-Screening Questions. However, their risk is not definitively low. Our review found 84.5% of nonresponders to be presenting with at least some level of suicide risk; 15.5% were classified as high risk, meaning that during the mental health provider interview, they disclosed suicidal ideation within the past week, a past untreated attempt, or recurring hallucinations. Furthermore, mental health providers noted that mental health follow-up would be beneficial for fully half of nonresponders. Although the fact that mental health providers were not blinded to patient responses is an acknowledged source of bias, it is likely that this bias would take the form of leading to lower likelihood of making a referral or documenting high concern in the case of patients who entered no response rather than yes. The fact that relatively high levels of risk and referrals were documented even in the absence of blinding is compelling.

We know from past studies that adolescents often do not report suicidal ideation unless directly questioned on the topic.⁵ Brief screening instruments administered at ED encounters can help address this problem, but patients who choose to skip screening items have an unclear risk status. Classifying these patients as having positive screen results simultaneously increases instrument sensitivity and decreases specificity; further work is needed to explore how this trade-off may ultimately influence both patient outcomes and ED work flow, but this research indicates that, at the least, nonresponders should not be automatically classified as being at minimal risk.

It is also possible that the inclusion of the no response option reaches youths who are reluctant to seek treatment.⁷ In our exploratory analysis, individuals in the no response group tended to be less ready to engage in mental health treatment than those who marked yes on at least one Ask Suicide-Screening Questions item. This should be taken into account when interventions are designed, but should be viewed less as a barrier than an opportunity to start a conversation about mental health that youths and families may act on later, even if they are not ready to engage at the screening encounter. Opportunities to start this conversation with youths are sometimes hard to come by, and it is important that we begin missing fewer of them; for two-thirds of patients who complete suicide, there was no previous attempt to serve as a warning.¹⁰ Our study, although preliminary, suggests that youths who skip screening items may benefit from further assessment or provision of information on mental health services and indicates the need for targeted research aimed at better understanding this population.

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