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## Predictors of Primary Care Physicians' Self-reported Intention to Conduct Suicide Risk Assessments

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### Abstract

Primary care physicians play a significant role in depression care, suicide assessment, and suicide prevention. However, little is known about what factors relate to and predict quality of depression care (assessment, diagnosis, and treatment), including suicide assessment. The authors explored the extent to which select patient and physician factors increase the probability of one element of quality of care: namely, intention to conduct suicide assessment. Data were collected from 404 randomly selected primary care physicians after their interaction with CD-ROM vignettes of actors portraying major depression with moderate levels of severity. The authors examined which patient factors and physician factors increase the likelihood of physicians' intention to conduct a suicide assessment. Data from the study revealed that physician-participants inquired about suicide 36% of the time. A random effects logistic model indicated that several factors were predictive of physicians' intention to conduct a suicide assessment: patient's comorbidity status (odds ratio (OR) = 0.61; 95% confidence interval (CI) = 0.37–1.00), physicians' age (OR = 0.67; 95% CI = 0.49–0.92), physicians' race (OR = 1.84; 95% CI = 1.08–3.13), and how depressed the physician perceived the virtual patient to be (OR = 0.58; 95% CI = 0.39–0.87). A substantial number of primary care physicians in this study indicated they would not assess for suicide, even though most physicians perceived the virtual patient to be depressed or very depressed. Further

study is needed to establish factors that may be modified and targeted to increase the likelihood of physicians' providing one element of quality of care—suicide assessment—for depressed patients.

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Because suicide is a major public health concern, reducing rates of suicide in the USA is a national imperative. The urgency related to appropriately and accurately assessing and preventing suicide was communicated in the *Surgeon General's Call to Action to Prevent Suicide* report.<sup>1</sup> In 2004, someone committed suicide every 16 min in the USA, resulting in 89 suicides/day—more than 32,000 in that year alone.<sup>2</sup> Suicide affects people of all ages in the US population—from children to adults over the age of 65 years. In people ages 25 to 34, it is the second most prevalent cause of death.<sup>2</sup> In youth ages 15 to 24, it ranks third in causes of death.<sup>2–6</sup> The suicide rate in youth ages 15 to 24 years tripled between the years 1952 and 1996.<sup>6</sup> Although older adults make up only 13% of the entire US population, this age group represents 18% of the deaths by suicide in the United States.<sup>7</sup> According to Gaynes et al.<sup>3</sup> and Schulberg et al.,<sup>6</sup> people ages 65 and older, specifically men,<sup>6</sup> are more likely to complete suicide than people from any other age group in the USA.

Primary care physicians play a crucial role in suicide assessment and prevention. Toward this end, of those people (described above) whose lives have been claimed by suicide, up to two thirds saw a primary care physician within a month or less of their suicide completion.<sup>3, 8–10</sup> Feldman et al.<sup>11</sup> even estimated this percentage to be three fourths. Of significance, the rates of visits to primary care physicians preceding suicide completion are much higher than the rates of visits to mental health specialists, giving primary care physicians a significant and important role in suicide prevention.<sup>3, 6, 8, 11</sup> Therefore, because these providers are often the first line of protection against suicide, it is essential to understand which factors influence whether primary care physicians assess for suicide risk in patients presenting with depression.

Suicide assessment and prevention is one element of quality or optimal care for patients who present with depression. Primary care physicians must be prepared, trained, and competent in the suicide assessment and prevention process and must be familiar with the patient and provider factors that can influence this process. The current study explored select factors that may account for variation in primary care physicians' self-reported behavior regarding this vital element of quality of care for depressed patients.

In summary, although there appears to be a gender effect, and possibly an age effect, related to the assessment of suicide risk in primary care settings, little else is known about how patient factors and primary care physician factors are associated with suicide risk assessment as one element of quality of depression care. Because primary care physicians are the providers most likely to treat patients with depression and suicidal ideation, clarifying the related factors that increase the probability of suicide risk assessment is critical in providing quality of care.

Thus, the primary objective of the current study—which used standardized virtual patients rather than standardized live patients—was to describe what factors relate to suicide risk assessments in primary care settings. Suicide risk assessment is defined in the current study as physicians' self-reported intention to conduct a suicide risk assessment.

## Factors Related to Suicide Assessment in Primary Care Settings

One major factor related to suicide assessment among primary care physicians is a diagnosis of mental illness. Over 90% of suicide victims have a mental illness at the time of their death.<sup>3, 4, 9</sup> The mental disorders most commonly associated with suicide attempts and completion are depression and alcohol abuse.<sup>3, 12</sup> In a study comparing national trends in

suicidal thoughts and activity using data collected in the early 1990s and the early 2000s, Kessler et al.<sup>13</sup> found that major depressive disorder was the mental disorder most often associated with suicidal ideation or suicide attempts in both populations surveyed (data were gathered from respondents ages 18 to 54 years). Nutting et al.<sup>14</sup> and Mitchell et al.<sup>15</sup> asserted that the risk of suicide completion for those with major depression can be up to 20 times greater than the risk for the general population. Gaynes et al.<sup>3</sup> reported the increased risk of suicide for adults with depression to be lower than that suggested by both Nutting et al. and Mitchell et al. but still 10% greater than the risk of the general population.

Symptoms and warning signs of suicide, such as depression, may not be recognized by primary care physicians. Case complexity or comorbid medical illnesses may complicate the extent to which physicians detect mental health disorders such as depression. Schulberg et al.<sup>6</sup> cited findings that suggest around 60% of patients visiting a physician before suicide completion may be perceived as having mental health issues that may or may not be accompanied by physical complaints. They also reported that the percentage of cases in which patients openly verbalize their suicidal thoughts and plans to their primary care physicians may range from 19% to 54%. This means that a large majority of patients considering suicide may not speak about their suicidal thoughts openly and directly with their primary care physicians, making it important for primary care physicians to be trained and competent in reading their patients' nonverbal cues and to be receptive to initiating treatment conversations focused on suicide risk assessment.

Schulberg et al.<sup>6</sup> suggested that women and men who die of suicide have similar rates of visits to their primary care physicians close to the times of their suicides, but that women have typically seen their primary care physicians more frequently than men leading up to their last primary care visits. Combined with this suggestion is the idea that greater physician knowledge and awareness of patient suicide risks may lower the number of suicides for women but not for men, because women see physicians more often than do men.<sup>8</sup> Schulberg et al.<sup>6</sup> also report that men, who have a greater likelihood of suicide completion than women, have a much lower likelihood of acknowledging physical or mental stress in their lives in conversations with their physicians.<sup>6</sup>

In addition to gender, the age of the patient may also relate to whether a physician conducts a suicide assessment. As previously mentioned, suicide rates differ by age. Unless physicians are aware of and knowledgeable about these differences, they may miss out on important assessment, prevention, and intervention efforts. Another factor that may impinge upon reports of suicidal ideation and thoughts of and attempts toward suicide is the effect of age-related stressors (e.g., divorce, poor health, comorbid physical conditions, and isolation). Significantly, although suicidal ideation is reported to be higher among older adults than in younger populations, the likelihood that older adults will disclose these thoughts of death to others (e.g., physicians) is lower.<sup>3, 6, 7</sup> For these reasons as well, primary care physicians must be prepared, trained, and competent in the suicide assessment and prevention process in general, and they must be familiar with age-related factors that may influence this process and presenting symptomatology.

## Current Study

### Overview of research design

The current study is informed by previous research conducted by Feldman et al.<sup>11</sup> regarding assessment for suicidal risk in primary care patients. Although Feldman et al.<sup>11</sup> used standardized *live* patients (i.e., live actors) to assess one element of quality of care (suicide assessment), the researchers in the present study used standardized *virtual* patients (i.e., actors whose performances were recorded onto a CD-ROM that was played for physician-

participants) in the current study. The development and use of standardized virtual patients is described in the Procedure section of this paper. For the current study, the authors conducted a secondary analysis of a subset of data collected as part of a larger study, the Physicians' Decisions for Depressed Medically Ill Study.<sup>16</sup> Because a comprehensive description of the larger study can be found elsewhere,<sup>16</sup> the authors describe it concisely here.

Briefly, a factorial experiment was used to measure physicians' decision making for the treatment of depressed medically ill patients.<sup>16</sup> Specifically, in that study the researchers examined the effects of five patient factors ( $2^5 = 32$ )—which were portrayed in patient videos and presented on laptop computers—influencing physicians' treatment recommendations for depression. Physicians were shown one of the 32 video case vignettes, which depicted a patient with identical depressive symptoms (i.e., a diagnosis of depression). Following the interaction with the video case, physicians were interviewed about how they would proceed in their care (i.e., assessment, diagnosis, and treatment) of the presented video case, as if the patient were actually in their office.

The current secondary analysis is differentiated from the larger study<sup>16</sup> because of its specific focus on suicide risk assessment and the influence of several factors, including physicians' perceptions of *degree* of depression and physicians' *confidence* in treatment recommendations on the likelihood of physician-participants conducting a suicide risk assessment.

### Study sample

Nine hundred and forty-two physician-participants appearing on the American Medical Association master list and working in the Northeastern region of the USA were contacted to participate in the study. Of the physicians who were invited, 602 responded and were eligible. Of these 602 respondents who were eligible, 418 participated in the study. Finally, of the 418 physicians who were interviewed, 14 were later removed from the data analysis because of large amounts of missing data or significant technology problems (i.e., the computer program would not work). Thus, the final study sample was 404 primary care physicians (67% participation rate). Of these 404 physician-participants, 48% self-identified as general internists, and 51% self-identified as family physicians; 1% indicated cardiology as their specialty. Participants ranged in age from 29 to 88, with the total study sample's mean age being 47.66 (SD = 10.15). Race and ethnicity were diverse, with participants reporting non-Hispanic white (48%,  $n = 194$ ), non-Hispanic black (33%,  $n = 133$ ), Asian American (13%,  $n = 53$ ), or other race or ethnicity (6%,  $n = 24$ ) as their primary racial or ethnic identification. Each physician-participant received \$125 compensation for his or her time and contribution to the study.

### Instrumentation

Based on the foregoing research and the data set of variables derived from the Physicians' Decisions for Depressed Medically Ill Study,<sup>16</sup> the researchers examined several patient-focused variables and several physician-focused variables, described below.

**Patient variables**—All five patient factors (patient race, gender, medical illness, attributional style, and treatment preferences) were derived from and depicted in the standardized virtual patient vignettes. Standardized live patients involve the training of actors to portray certain medical or mental conditions in live visits to a physician's office.<sup>17–20</sup> Although this methodology is considered the gold standard in clinical research,<sup>21</sup> standardized live patients must be trained and must perform their roles consistently for research results to be valid and reliable.<sup>22</sup> They offer the advantages of real

human face-to-face interaction, controlled “variation in case mix,”<sup>19</sup> and the opportunity to collect “qualitatively rich” data.<sup>23</sup> The potential limitations of using standardized live patients are the high costs of training actors and implementing the scenarios,<sup>19</sup> the difficulty of ensuring consistency between scenario portrayals, and the inability to use a standard scenario portrayal to observe more than one physician.<sup>23</sup>

In contrast to live standardized patients, virtual standardized patients (that is, standard videos recorded of patients played by actors) offer more control and more consistent portrayals of patients.<sup>18, 19, 23, 24</sup> Virtual patients also offer the benefit of a “more accurate and objective evaluation of the content of the interview” (p. 428),<sup>23</sup> Limitations of virtual patients are the inability to conduct observations without physician knowledge, lack of nonverbal communication,<sup>23</sup> and the inability of the virtual patients to give information beyond the responses programmed beforehand, as well as the possibility that their answers might not directly address the physicians’ questions.<sup>18</sup>

One of the most significant differences between studies that have used live standardized patients and the current study is that the former studies employed an element of anonymity, while the current study allowed physician-participants to realize that the virtual patients were portraying scenarios in order to assess the physician’s interactions with and recommendations for patients. Also, other studies have involved physicians being observed secretly (with their prior consent), whereas the current study openly observed physicians with their knowledge at the time of observation.

A study conducted by Triola et al.<sup>23</sup> examined the use of standardized live patients versus standardized virtual patients to increase the knowledge and clinical skills of primary health care employees. The study involved 55 participants, including registered nurses, physicians, and other types of health care providers. The results of the study revealed that although standardized live patients seem more realistic than virtual patients, the physician-participants appeared to appreciate the value of learning from the virtual patient scenarios as much as from the live scenarios. Measurements assessing “performance, knowledge, and diagnostic abilities” (p. 428) also revealed no differences between those professionals exposed to standardized live patients and those who saw virtual patients.

Peabody et al.<sup>21</sup> conducted a study assessing the process of care in outpatient primary care settings by means of standardized patients, paper vignettes, and medical chart abstraction. That study, involving ten randomly selected physicians at two different sites, found that the vignette scores followed standardized patient scores (that is, what that study considered to be actual practice) closely enough that the vignettes “appeared to reflect actual physician practice” (p. 1720).

## Physician variables

**Demographic survey**—Several of the physician variables were derived from the study demographic survey. The demographic survey, which was created for the larger study,<sup>16</sup> asked for information regarding the physician-participant’s age, race, gender, practice specialty, practice setting, and type (solo vs. group practice).

**Physicians’ perception of degree of depression**—Physicians interacted with the patient for seven minutes. At the end of the interview, physicians were asked a single question on a scale of 1 (*not at all depressed*) to 5 (*very depressed*) regarding how depressed they perceived the patient to be.

**Physicians' treatment recommendations**—Physicians' treatment recommendations were obtained through the semi-structured interview. Physicians were asked what treatment recommendations they would make for the patient they observed in the video.

**Physicians' confidence in treatment recommendations**—Following the described treatment recommendations, physicians were asked a single question regarding their confidence in their treatment plan, ranging from 1 (*not at all confident*) to 5 (*very confident*).

## Procedure

Invitation letters, including a description of the study and a postcard refusal option, were sent to randomly selected primary care physicians in the Washington, DC, metropolitan area. Physicians who did not decline by postcard were then contacted by phone and were told (similar to the study description in the invitation letter) that they were invited to take part in a study about the diagnosis, assessment, and treatment of common presenting problems evidenced in most practices. Participants were instructed if they agreed to be a part of the study, they would consent to a one-time face-to-face interview at their practice location.

Specifically, the approximately 50-min research study protocol included the following: (1) the informed consent form, (2) the approximately 7-min interaction “dialogue” between the physician-participant and the virtual patient who portrayed major depression with a moderate level of severity (through video played on the study laptop), (3) the semi-structured interview between the physician-participant and a researcher, and (4) a paper-and-pencil survey about the physician-participant's demographics. All study procedures were approved by the Georgetown University School of Medicine Institutional Review Board.

## Statistical analysis

Statistical analyses were conducted using SAS statistical program, version 8.2 (SAS Institute, Cary, North Carolina). The authors first examined the associations between the study independent variables (patient and physician variables) and the dependent variable of suicide risk assessment. Table 1 presents the bivariate relations among the study variables. Next, using a logistic regression model, the authors examined the unique contribution of the independent variables on the dichotomous dependent variable of suicide risk assessment (see Table 2). Specifically, the standard approach suggested by Hosmer and Lemeshow<sup>25</sup> was used in developing the logistic regression analysis.

## Results

### Descriptive findings

Of the 404 participants, 36% ( $n = 145$ ) reported that they would conduct a suicide risk assessment with the standardized virtual patient presenting with major depression with moderate levels of severity. Despite this low rate of suicide risk assessment, 98% ( $n = 395$ ) of the physicians diagnosed the patient as depressed.

### Bivariate relations with suicide risk assessment

Several independent variables (patient and provider variables) were correlated with whether physicians would conduct a suicide risk assessment (see Tables 1 and 2). Physicians who assessed suicide risk were significantly more likely to be male and white and to specialize in family medicine than those who did not. Physicians were also more likely to assess suicide risk when the virtual patient had comorbid symptoms of psychosocial stress than when the patient had symptoms of myocardial infarction. Finally, physicians who did assess suicide



risk were significantly younger, rated the patient as having significantly more severe depression, and recommended mental health referrals more strongly than those who did not assess suicide risk.

### Partial relations with suicide risk assessment: logistic regression model

To understand the possible influences of multicollinearity, a logistic regression analysis was conducted to determine the unique ability of each of the predictors to explain the decision to perform a suicide risk assessment (see Table 3). The overall model was able to explain a significant amount of variability in the decision to perform suicide risk assessments ( $-2 \log$  likelihood  $\chi^2(16) = 66.59, p < .001$ ). In this model, the only patient variable that was significantly related to suicide risk assessment behavior was the presence of a comorbid illness, in that suicide risk assessments were made less commonly for those with myocardial infarctions than for those with psychosocial stressors. Among the physician variables, there was a significant independent effect of age and race, such that younger physicians were more likely to make suicide risk assessments than older physicians, and white physicians were more likely to suggest suicide risk assessments than non-white physicians. The authors found a significant independent effect of the physicians' perception regarding the patient's degree of depression: physicians were more likely to suggest a suicide assessment when they felt the patient's depression was more severe.

## Discussion

The primary aim of the current study was to examine the extent to which select patient and physician factors increase the likelihood of primary care physicians' intention to conduct a suicide risk assessment with a standardized virtual patient with major depression. The data for the current study were derived from the Physicians' Decisions for Depressed Medically Ill Study,<sup>16</sup> so the current study serves as a secondary analysis of a subset of data collected as part of that larger study. The following section describes the overall findings of the present study and the results of the tested model (i.e., the extent to which the study variables separately and together predict primary care physicians' intention to conduct a suicide risk assessment).

### Overall study findings

Only 36% of the physicians in the current study reported that they would conduct a suicide risk assessment when treating a patient presenting with major depression with moderate levels of severity. This result is similar to that obtained by Feldman et al.<sup>11</sup> and other researchers<sup>13, 14, 21</sup> and thus supports the consistent finding that primary care physicians tend to provide less than quality care (as measured by conducting a suicide risk assessment) for patients who present with depressive symptomatology. Even though the physician-participants indicated that they perceived the patient was "depressed" or "very depressed," many of them (64%) did not indicate they would assess for suicide risk. This result may suggest that the physicians in the current study believed the patient was at a low risk for suicide and thus did not deem a further suicide risk assessment necessary. Supporting this explanation is the fact that as the physicians assessed level of severity of depression symptomatology increased, so too did their reported plan to conduct a suicide risk assessment. Similar to findings evinced in Feldman et al.'s study,<sup>11</sup> physicians in the current study were more likely to assess suicide risk when mental health symptoms were more severe. Other significant bivariate relations uncovered were as follows: Physicians who assessed suicide risk were significantly more likely to be male and white and to specialize in family medicine than those who did not. They were also more likely to assess suicide risk when the virtual patient had comorbid symptoms of psychosocial stress than when the patient had symptoms of myocardial infarction.

In addition to exploring bivariate relations between study variables, the authors tested a model related to the predictive ability of select patient and physician variables. Among the patient and provider factors examined, only a few explained the variance in physicians' intent to conduct a suicide risk assessment in the regression model. Specifically, four variables emerged as significant predictors of physicians' provision of quality care, specifically suicide risk assessment, for depressed patients in the logistic regression model: (1) patients' comorbid medical illness, (2) physician's assessment of degree of depression (severity) experienced by the patients, (3) physicians' race, and (4) physicians' age.

With regard to significant patient factors in the model, the presence of a comorbid medical condition was the only factor that significantly predicted quality care. This finding is consistent with the empirical research base. Borowsky et al.<sup>26</sup> found that the presence of a medical condition in patients (in addition to patients' race and gender) is positively and significantly associated with providers' ability to detect depressive symptomatology. Those researchers suggested that physicians may be more attentive to patients who present with psychological distress and a comorbid medical illness and thus be more inclined to detect a range of problems evinced in these patients. Borowsky et al. also established that physicians' age is related to detecting depression in patients; older physicians were found less likely to detect depression than their younger counterparts.

Results in the current study also uncovered a link between physician variables and the study's measurement of quality care. More physician factors than patient factors were found to be related to the intention to conduct a suicide risk assessment. A physician's age and race significantly predicted whether the physician would perform a suicide assessment. Physicians who self-identified as white and younger were more likely to conduct a suicide risk assessment. These findings, particularly the age effect, may suggest that older physicians need continuing medical education regarding suicide risk assessment for patients who present with depressive symptoms. Supporting the need for additional and intensive continuing education specifically for older physicians are findings evidenced in the empirical literature base.<sup>27, 28</sup> For example, Choudry et al.<sup>27</sup> reported in their systematic review of the literature that "physicians who have been in practice for more years may be less likely to deliver high-quality care" (p. 260). The authors concluded that physician skill and competency may decline rather than improve over time in practice and thus as the physician gets older. This paradoxical and counterintuitive assertion has some support in the literature base and was evidenced in the current study. With regard to the present study's findings associated with physicians' race, it may be that physicians' own values and beliefs related to a diagnosis of depression influence their perceptions related to a patient's depressive symptomatology and therefore the physicians' intention to conduct suicide risk assessment. It is unclear specifically why black physicians were found less likely than their white counterparts to conduct a suicide risk assessment. Perhaps a qualitative study geared toward exploring this finding would be useful and relevant to potential gaps in training.

In addition to physicians' age and race, physicians' assessment of the severity of the patient's depressive symptoms was a statistically significant and unique predictor in the current study's regression model. This finding is consistent with results previously reported in the literature.<sup>11, 13, 14</sup> For example, Feldman et al.'s<sup>11</sup> results showed physicians to be more likely to conduct a suicide risk assessment with patients who present with more severe mental health symptoms (i.e., depressive disorder vs. adjustment disorder).

### **Standardized virtual patients**

The current study is unique because the researchers used standardized virtual patients to study physicians' suicide risk assessment behavior. The results from the study suggest preliminarily that the use of standardized virtual patients can capture physicians' practice



patterns and behaviors. This contention is a preliminary one that must be viewed with caution. Moreover, this finding must be tested in additional studies that include and compare findings derived from live patients and virtual patients concurrently. At a minimum, the current study's findings are consistent with other studies that have used standardized live patients to capture factors that help explain suicide risk assessment behavior by physicians in primary care (see Feldman et al.<sup>11</sup> and Peabody et al.<sup>21</sup>). The authors of the current study readily recognize the limitations, in that the study did not include a direct comparison of standardized live patients and standardized virtual patients; however, it is noteworthy that the results are comparable to the results reported in the literature base regarding standardized live patients, suggesting that both methods can yield similar findings. The virtual patients used in the current study were a type of video vignette, making the implications of the Peabody et al.<sup>21</sup> study applicable and relevant to the results of the study.

### Limitations of the study

The current study has limitations. The primary limitation is that standardized virtual patients do not offer the advantages of real, human, face-to-face interaction and the opportunity to collect as much "qualitatively rich" data<sup>23</sup> as studies involving standardized live patients. Another limitation of the study is the sample. Study participants were from only the DC-Baltimore area; and the participation rate was 67%, meaning that one third of eligible participants did not participate

A primary criticism and limitation of the methodology employed in the current study is the lack of feasible anonymity compared with studies using standardized live patients. In other words, how realistic and representative are the physician-participants' responses, given that they were aware of being observed and studied? Some researchers and scholars have contended that physicians are likely to put forward their very best response, irrespective of whether it is representative of what they would actually do in their daily practice.<sup>11, 29-32</sup> Given the similarities between the current findings and those of Feldman et al.,<sup>11</sup> however, the authors of the current study believe that physicians are likely to report what they would actually do in practice.

### Implications for Behavioral Health

The primary care setting is an ideal context for prevention and intervention efforts for depression care and suicide risk assessment. The findings of this study have implications for behavioral health and physician practice behaviors. Primary care physicians can benefit from translating findings from the current study into their daily practice, in addition to consistently and competently applying several related recommendations that have been put forward by the Centers for Disease Control and Prevention (CDC)<sup>2</sup> and also described in the *Surgeon General's Call to Action to Prevent Suicide* report.<sup>1</sup>

The role of primary care providers in assessing for suicide risk is critical. It remains unclear what interventions or educational measures may be the answer to having a positive impact on the long observed lower quality of depression care in general, and on suicide risk assessment as one element of quality care for depression evidenced in primary care settings, as examined in the current study.

Significantly, although some of the current study's findings uncovered relations between quality care and factors that are not modifiable (e.g., physician demographic variables), these findings in conjunction with findings from other studies may indicate the need for specific medical education about suicide risk during physicians' early training and may also point to the need to thoughtfully target physicians for additional training in later years. For example, supported by the results of the current study, medical schools and residency

programs could design modules that include a review of the possible long-term and paradoxical effects of age (and length of time in practice) relative to quality of care with regard to suicide risk assessment). Interns could be forewarned of the possibility of this practice pattern because it has been evinced in the empirical literature.<sup>27, 28</sup> Finally, although medical schools seem to be making improvements in teaching the importance of physicians' assessing for suicide in their patients it appears—based on the results of the current study with only 36% of the participants reporting they would assess for suicide—there is still room for improvement.

Other residency training modules and curricula related to physician variables could include discussions regarding physician-patient race concordance and discordance and how this element may relate to quality care. Primary care physicians must be aware that several provider factors in addition to patient factors may impinge upon the quality of their care for depressed patients. Physicians' own biases may play a role in appropriate assessment for suicide risk in primary care settings.<sup>33, 34</sup> Although factors such as discrimination and stereotyping of patients were not assessed in the current study, empirical studies have uncovered how racial factors may play a role in physicians' treatment decisions (see Schulman et al.<sup>35</sup> and Paez et al.<sup>36</sup>). Having honest and open conversations and trainings during residency programs regarding this element of patient care is important.

Several CDC<sup>2</sup> recommendations can also be considered to improve suicide risk assessment in primary care settings. First, primary care physicians ought to be aware of and use published depression guidelines for patient care. Second, primary care physicians should consider using a screening instrument for depression and suicide assessment with all of their patients, in particular those from at-risk or vulnerable populations (e.g., older adults or patients with comorbid medical conditions) who are less likely to report suicidal ideations. Third, primary care physicians may consider co-locating mental health care providers (such as clinical psychologists, clinical mental health counselors, and psychiatric nurses) in their practices.<sup>37</sup> In doing so, primary care physicians can create a collaborative care model and have clinicians to whom they can refer and with whom they may consult about severely depressed patients and possible severe suicide risk. Finally, physicians must be aware that somatic complaints, in particular among older patients, may be an indication of depression. An assessment for suicide is needed among these older patients because they may not report emotional or psychological distress.<sup>38</sup>

Though some researchers have recommended a systematic screening for depression and suicidality, there are no universally adopted guidelines for suicide assessment in primary care settings.<sup>11, 14</sup> The results from the current study taken together with findings derived from other studies may serve as an impetus for the development of such guidelines. One cannot overstate the importance of behavioral health research studies to investigate factors that uncover modifiable factors on which to intervene, as well as demographic factors on which to focus during medical education, in order to improve the quality of depression care, including suicide risk assessment. The benefits of targeted, intensified medical education programs for select providers will need to be empirically tested in future behavioral health studies. The findings of this study should begin to inform physicians' awareness of how patient and provider factors may relate to suicide assessment.

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**Table 1**

Bivariate relations of categorical variables with intention to conduct suicide risk assessment

Variable	Assessed for suicide <sup>a</sup> (N=145, 33%)	Did not assess for suicide <sup>a</sup> (N=295, 67%)	p value
Patient gender			
Male	71 (37%)	122 (63%)	.73
Female	74 (35%)	137 (65%)	
Patient race			
Black	68 (34%)	134 (66%)	.35
White	77 (38%)	125 (62%)	
Patient medical illness			
PS	92 (43%)	121 (57%)	<.01
MI	53 (28%)	138 (72%)	
Patient attributional style			
SOM	75 (36%)	133 (64%)	.94
PSY	70 (36%)	126 (64%)	
Physician gender			
Male	76 (31%)	172 (69%)	<.01
Female	69 (44%)	87 (56%)	
Physician race			
White	82 (42%)	113 (58%)	.01
Not white	61 (30%)	142 (70%)	
Physician specialty			
IM	54 (28%)	138 (72%)	<.01
FM	87 (42%)	119 (58%)	

Note: *p* values are based on  $\chi^2$  tests of independence.

*PS* psychosocial stressor, *MI* myocardial infarction, *SOM* somatic attributional style, *PSY* psychological attributional style, *IM* internal medicine, *FM* family medicine

<sup>a</sup>Physicians' self-reported intention to conduct a suicide assessment (yes/no)

**Table 2**

Bivariate relations of continuous variables with self-reported intention to conduct suicide risk assessment

Study variables	Mean (SD)		<i>p</i> value
	Physicians who assessed for suicide <sup>a</sup>	Physicians who did not assess for suicide <sup>a</sup>	
Physician age	44.45 (8.89)	49.47 (10.38)	<.001
Confidence in treatment plan	5.03 (4.15)	4.47 (4.20)	.20
Percent time in private practice	77.57 (39.56)	83.61 (31.65)	.10
Degree of depression (1=not depressed to 5=very depressed)	3.99 (.57)	4.14 (.67)	.03
Confidence in diagnosis of depression (1=not confident to 5=very confident)	4.47 (.60)	4.46 (.60)	.93
Medication (0=not recommended to 5=strongly recommended)	4.02 (1.61)	3.69 (1.84)	.07
Office-based counseling (0=not recommended to 5=strongly recommended)	.79 (1.73)	.86 (1.81)	.71
Mental health referral (0=not recommended to 5=strongly recommended)	2.54 (2.25)	1.82 (2.22)	.002

Note. *p* values are based on between-subjects *t* tests comparing the group means

<sup>a</sup>Physicians' self-reported intention to conduct a suicide assessment (yes/no)



**Table 3**

Logistic regression predicting self-reported intention to conduct suicide risk assessment

Variable	Adjusted odds ratio (95% CI)	<i>p</i> value
Virtual patient variables		
Gender (0=male, 1=female)	.87 (.55, 1.40)	.57
Race (0=white, 1=black)	.80 (.50, 1.27)	.34
Medical illness (0=psychosocial stressor, 1=myocardial infarction)	.58 (.36, .95)	.03
Attributional style (0=somatic, 1=psychological)	1.06 (.66, 1.68)	.82
Mental health treatment preference (0=prefers no treatment, 1=accepting of treatment)	.95 (.59, 1.52)	.83
Physician variables		
Gender (0=male, 1=female)	1.30 (.77, 2.22)	.33
Race (0=white, 1=not white)	.47 (.28, .80)	.005
Specialty (0=internal medicine, 1=family medicine)	1.55 (.95, 2.52)	.08
Age	.94 (.92, .97)	<.001
Percent of time spent in private practice	1.00 (.989, 1.003)	.26
Degree of depression (1=not depressed to 5=very depressed)	.57 (.39, .84)	.005
Confidence in treatment plan (1=not confident to 5=very confident)	1.09 (.74, 1.61)	.66
Medication (0=not recommended to 5=strongly recommended)	1.16 (.99, 1.35)	.06
Office-based counseling (0=not recommended to 5=strongly recommended)	.99 (.86, 1.13)	.87
Mental health referral (0=not recommended to 5=strongly recommended)	1.11 (.99, 1.23)	.07

All tests are based on Wald's Z. Physicians' self-reported intention to conduct a suicide assessment (yes/no)