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Use of a Standardized Patient Paradigm to Enhance Proficiency in Risk Assessment for Adolescent Depression and Suicide

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ABSTRACT

Purpose: Although routine adolescent depression and suicide risk assessment (ADSRA) is recommended, primary care physician (PCP) ADSRA training is needed for successful ADSRA implementation. This study examined the effect of an intervention using standardized patients (SPs) on PCP ADSRA confidence, knowledge, and practices.

Methods: The intervention consisted of a 60-minute seminar followed by a 60-minute SP session to practice ADSRA skills in simulated clinical situations.

Intervention: PCPs ($n = 46$) completed pre- and postintervention assessments. Untrained PCPs interested in the intervention ($n = 58$) also completed assessments. Assessments evaluated ADSRA self-reported confidence and practices and objectively assessed knowledge. The main outcomes were (1) changes in pre-/postintervention PCP ADSRA confidence and knowledge, and (2) ADSRA practices in untrained versus postintervention PCPs.

Results: Compared with untrained PCPs, PCPs 5–10 months postintervention were more likely to screen most adolescents for depression (40% vs. 22%, $p = .05$), to use a depression screening tool (50% vs. 19%, $p = .001$), to have diagnosed at least one adolescent with depression in the past 3 months (96% vs. 78%, $p = .013$), and to have screened depressed adolescents for suicide risk factors, including access to weapons (51% vs. 25%; $p = .007$) or an impulsive violence history (27% vs. 11%; $p = .037$). PCP confidence and knowledge about depression assessment and treatment also significantly improved postintervention.

Conclusions: This study supports the use of an SP intervention to improve PCP ADSRA confidence, knowledge, and practices. Widespread implementation of similar educational efforts has the potential to dramatically improve adolescent morbidity and mortality.

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IMPLICATIONS AND CONTRIBUTION

PCPs need additional training to identify adolescents with depression and other suicide risk factors. Forty-six PCPs who participated in a training intervention using SPs reported improved confidence, knowledge, and practices in identifying adolescents with depression and other suicide risk factors.

Through early identification of symptoms of depression and other suicide risk factors [1], primary care physicians (PCPs) could vastly expand their vital role in the prevention of major morbidity [2–4] and mortality [5] associated with both adoles-

cent depression and suicide. PCPs are in a unique position to recognize at-risk adolescents, as they see >70% of adolescents annually in the United States [6,7]. However, evidence suggests that limited adolescent depression and suicide risk assessment (ADSRA) occurs [8,9]. Klein et al conducted a study of 318 adolescents seen in community health centers and found that a minority reported being screened for adolescent depression (16%) and suicidality (7%) before a provider training intervention

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[8]. Ozer et al found similar results; of adolescents ($n = 1,089$) surveyed immediately after a well visit, approximately one-third (34%) reported that they had talked to their doctor about their mood [9]. In surveys of PCP practices, <20% of PCPs reported screening all their adolescent patients for depression [10–12], and only 23% frequently or always screened for suicide risk factors [11]. The consequences of limited screening are missed opportunities for identification and early intervention [9,13].

To promote such early interventions for adolescent depression, the U.S. Preventive Services Task Force now recommends screening all adolescents between 12 and 18 years of age for major depressive disorder in the pediatric practice [14]. The American Academy of Pediatrics has endorsed guidelines for adolescent depression assessment and treatment in primary care [15,16] and called for routine adolescent suicide risk factor assessment [17,18]. Although screening guidelines represent an important step toward improved identification of adolescent depression and suicide risk, implementation models are needed to affect major change in screening practices. Historically, guidelines in the absence of implementation efforts have not dramatically changed physician practices [19,20]. Data suggest that insufficient provider training is one of the most significant barriers to providing adolescent health care [21]. Indeed, PCPs report limited training and confidence in adolescent depression identification [22]. Therefore, PCP ADSRA training, which has been identified as a promising strategy for adolescent suicide prevention [23–25], should be a key component of the implementation plan.

Skills-based training that combines didactics with opportunities to practice and refine skills has been found to be effective at improving physician practices in screening adolescents for risky behaviors [26,27], but has not been studied for ADSRA practices specifically. A skills-based intervention using standardized patients (SPs) [28], individuals trained to portray patients in clinical scenarios, has shown promising results in improving pediatric resident confidence and knowledge in adolescent suicide risk assessment [29]. However, SP interventions have not been tested with PCPs who are the main target for the public health initiative. Targeting PCPs as opposed to just residents is particularly important given that PCPs care for the vast majority of adolescents. Training PCPs using SPs presents certain challenges, as many PCPs may be unfamiliar with the use of SPs and reluctant to take time from their busy practices to participate. Given their well-established practice patterns, PCPs may not be as responsive to SP interventions as pediatricians-in-training.

The main objective of this study was to extend previous findings with pediatricians-in-training by testing whether an ADSRA SP intervention would: (a) improve PCP confidence and knowledge and (b) result in more frequent PCP practices in ADSRA when compared with an untrained sample of PCPs. We hypothesized that participation in this skills-based intervention would result in: (a) improved PCP ADSRA confidence and knowledge and (b) more frequent screening for depression and suicide risk factors when compared with an untrained sample of PCPs.

Methods

Design

The study goals were to: (1) determine the effects of the SP intervention on PCP ADSRA confidence and knowledge, and (2) compare ADSRA practices in untrained PCPs versus PCPs 5–10

months postintervention. A confidence and knowledge questionnaire tracked ADSRA confidence and knowledge: (1) at baseline on the intervention day, (2) immediately postintervention on the intervention day, and (3) 5–10 months postintervention in November 2010. A survey of practices was used to compare ADSRA practices between untrained PCPs ($n = 58$) and PCPs 5–10 months postintervention ($n = 46$). See Figure 1 for details of the study design. Surveys and follow-up questionnaires were sent via mail and e-mail and also could be completed online. To obtain an accurate depiction of practices, the survey for the untrained group was anonymous. The study was approved by the Washington University School of Medicine (WUSM) Human Research Protection Office.

Participants and recruitment

All PCPs in the greater St. Louis area ($n = 399$), identified through the WUSM Continuing Medical Education (CME) office, were mailed study advertisements to participate in a research intervention using SPs designed to improve ADSRA skills. As an incentive, complimentary CME credit was offered. The study was also advertised at several community lectures for PCPs. Approximately 25% ($n = 111$) of PCPs expressed an interest in participating in the ADSRA SP intervention by returning interest forms by mail, fax, or at lectures. All interested PCPs were asked to complete a survey of practices before training to serve as an untrained comparison group, and 58 PCPs completed it. A total of 46 PCPs (44 pediatricians and two family practitioners; $n = 37$ women [80%]) participated in the intervention. On average, intervention PCPs had been in practice for 18 years (range, 1–47). The majority of these PCPs (56%) cared for >200 adolescent patients in their practice.

ADSRA intervention

The 2-hour ADSRA SP intervention consisted of a 60-minute seminar followed by a 60-minute SP session. The purpose of the seminar was to teach ADSRA by using evidence-based screening tools and algorithms that could be incorporated into PCP practice. The SP session was designed to provide an interactive learning format where immediate feedback regarding clinical skills could be provided. The intervention was offered six separate times on various weekdays, including at night, over the course of 5 months (January–June 2010) at WUSM.

ADSRA seminar development. The PI conducted focus groups with four well-respected PCPs familiar with the landscape of community pediatric practice. The goal of the focus group was to determine the range of PCP ADSRA clinical practices and educational needs. The focus group consensus was that PCPs had minimal mental health training overall, performed limited ADSRA, rarely used screening tools, and would benefit from learning algorithmic ADSRA strategies. PCPs requested training in pharmacologic management of depression.

Based on focus group feedback, an expert panel of child and adolescent psychiatrists and medical educators developed a 50-minute case-based ADSRA seminar with a 10-minute discussion period to apply evidence-based ADSRA algorithms. The Patient Health Questionnaire-9 Item, a validated adolescent depression screening instrument [30], was used as a model for office-based screening. PCPs were introduced to algorithms for depression assessment, treatment, and monitoring developed by the study

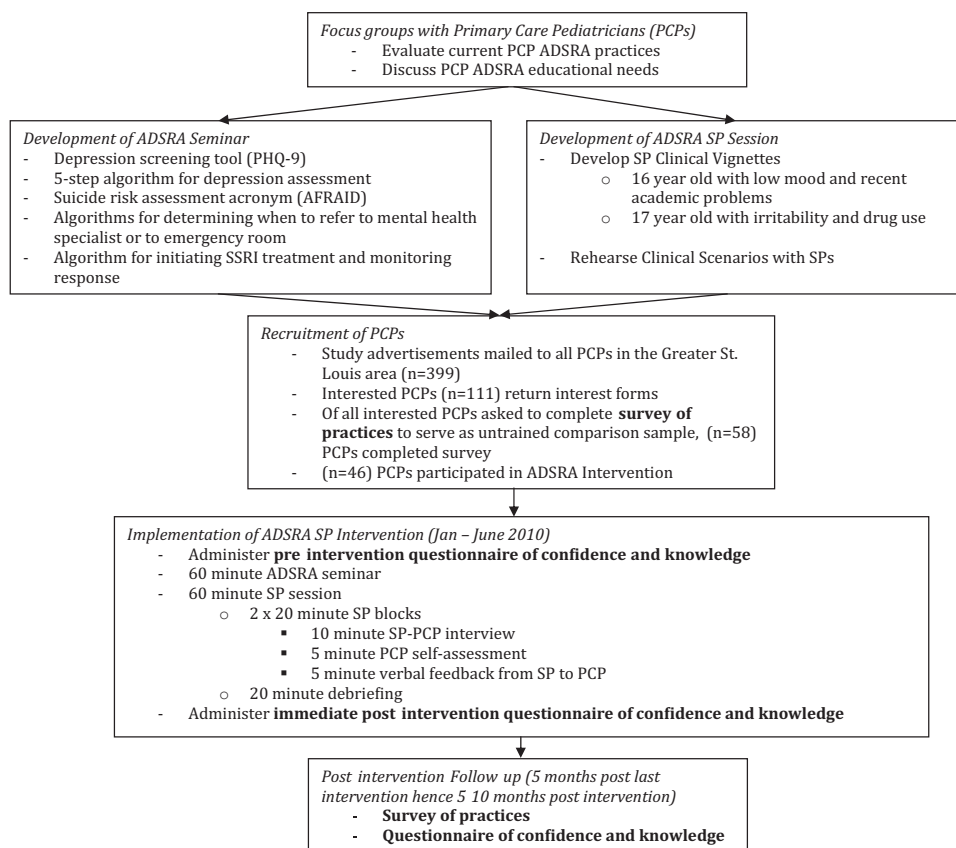


Figure 1. Development and implementation of adolescent depression and suicide risk assessment intervention.

team and based on evidence-based guidelines for the initial management of adolescent depression [16]. The 5-step depression assessment algorithm involved an evaluation of: (1) depression symptoms based on *Diagnostic and Statistical Manual of Mental Disorders-IV* criteria [31], (2) depression severity, (3) common depression comorbidities, (4) suicidality, and (5) suicide risk factors. Suicide risk assessment was taught using an evidence-based acronym [29]. The algorithm for the initial treatment of depression included referral recommendations, selective serotonin reuptake inhibitor (SSRI) dosing strategies, benefits and risks of SSRI treatment (including a review of the black box warning), and strategies for monitoring treatment response. PCPs were asked to apply these algorithms to clinical vignettes. All PCPs received an educational packet with the Patient Health Questionnaire-9, algorithm pocket cards, and SSRI dosing recommendations. All seminars were led by the primary investigator.

ADSRA SP session development. After consultation with the focus group, two SP clinical vignettes of adolescents presenting in an outpatient pediatric clinic with symptoms of depression and at least one suicide risk factor were developed: (1) a 16 year old with low mood and recent academic problems, and (2) a 17 year old with irritability and drug use. Twenty-five adolescent-appearing adult actors with previous SP experience rehearsed these scenarios. The 3-hour rehearsal for the SPs was designed based on a literature review [32,33], led by the study team, and included a 1-hour education session about relevant mental sta-

tus examination features for adolescents with depression and other suicide risk factors. Videotaped interviews of similar adolescent SP scenarios were shown. The WUSM SP medical director and SP trainer reviewed the protocol for giving verbal feedback about communication skills. SPs rehearsed in pairs for 1 hour while the training team provided real-time feedback about role portrayal. Each SP then practiced a videotaped interview with a pediatrician or child psychiatrist (including residents), gave verbal feedback, and received performance feedback. Afterward, each SP reviewed his/her own video. SPs were debriefed postsimulation as a group to limit performance-related stress [34].

ADSRA SP session logistics. The ADSRA SP session was conducted in the WUSM SP Center, which has 12 outpatient clinic examination rooms. PCPs were oriented to the logistics of the SP session and assigned to one of the clinic rooms for two 20-minute SP blocks. At the start of each block, PCPs read a clinical vignette and were instructed to practice their ADSRA skills during a 10-minute interview with an SP. Following each interview, PCPs self-assessed their performance using a computerized checklist for 5 minutes and then received verbal feedback for 5 minutes from their SP about communication skills. Each PCP completed both clinical vignettes during the two blocks. Finally, all PCPs met with the study team for a 20-minute debriefing session to discuss ADSRA challenges and ways to change their ADSRA practices.

Evaluation of the ADSRA SP intervention

The two instruments used to measure the effects of the intervention, the confidence and knowledge questionnaire and the survey of ADSRA practices, were designed by a team of experts in child and adolescent psychiatry and educational research.

Confidence and knowledge questionnaire. In the questionnaire, PCPs were asked to rate their confidence in: (1) interpreting depression screening tools, (2) diagnosing depression, (3) assessment of suicide risk, (4) initiating treatment with an SSRI, (5) providing supportive counseling, and (6) monitoring treatment response. Confidence was rated using a 5-point Likert scale (where 1 = very low, 2 = low, 3 = moderate, 4 = high, and 5 = very high) previously piloted with pediatric residents [29]. Knowledge was determined based on mean PCP scores on a five-question ADSRA quiz that was initially piloted with a focus group of PCPs to determine face validity. The ADSRA quiz included three clinical vignettes with questions testing: (1) initial steps in the evaluation of a depressed adolescent, (2) assessment of adolescent suicide risk in different clinical scenarios, and (3) appropriate SSRI titration for adolescent depression. Two additional multiple-choice quiz questions tested identification of suicide risk factors and conditions commonly comorbid with depression. A composite depression score represented the mean score on three questions about depression. Likewise, a composite suicide risk assessment score represented the mean score for two questions about suicide risk assessment. Notably, knowledge questions were slightly different in the pre- and post-SP intervention quizzes to avoid artificial test–retest score increases. Efforts were made to match the difficulty level for each question.

Survey of ADSRA practices. The survey examined the frequency of screening for depression [33] and other important suicide risk factors (including guns in the home, previous suicide attempt, a history of impulsive violence, use of drugs or alcohol) at annual visits, depression screening tools used, average percentage of patients newly diagnosed with depression by the PCP in the past 3 months, and suicide risk assessment practices at annual visits and with depressed adolescents. The postintervention survey contained additional multiple-choice questions about recent changes in ADSRA practices, including “What factors most contributed to catalyzing changes in your practice?”

Statistical analyses

The purpose of the evaluation was (1) to assess pre- and (both immediate and 5–10 months) postintervention mean changes in self-rated ADSRA confidence and objective knowledge, and (2) to compare self-reported ADSRA practices in the PCPs 5–10 months postintervention versus untrained PCPs. First, we present changes in mean PCP confidence using the Wilcoxon matched pairs test. Then, we present changes in mean PCP knowledge (as measured by changes in the mean composite depression and mean composite suicide risk assessment scores) using paired *t* tests. Finally, we compare frequencies for ADSRA practices between untrained PCPs versus PCPs 5–10 months postintervention using the χ^2 test. We also compare follow-up confidence, knowledge, and practices between PCPs 5 versus 10 months postintervention using the Wilcoxon rank sum test, *t* test, and χ^2 test, respectively. Statistical significance was determined using

Table 1

Pre- versus post-training PCP confidence in adolescent depression and suicide risk assessment, mean (SD)

Confidence questionnaire item	Pretraining	Immediate post-training	5–10 months post-training
Interpreting depression screening tools	2.38 (.86)	3.45** (.82)	3.40** (.75)
Diagnosing depression	2.91 (.67)	3.67** (.64)	3.44** (.59)
Assessment of suicide risk	2.87 (.73)	3.58** (.76)	3.33* (.71)
Initiating depression treatment with a SSRI	2.53 (1.03)	3.34** (.81)	3.06* (.93)
Providing supportive counseling	2.24 (.91)	2.98** (.92)	2.67* (.95)
Monitoring treatment response	2.48 (.85)	3.17** (.74)	2.92* (.80)

SSRI = selective serotonin reuptake inhibitor.

Confidence rated on a scale of 1–5: (1 = very low, 2 = low, 3 = moderate, 4 = high, 5 = very high).

* *p* < .05 versus pretraining.

** *p* < .001 versus pretraining.

p < .05. Statistical analyses were performed using SAS version 9.2 (SAS, Cary, NC).

Results

Of the 46 intervention PCPs, 98% (*n* = 45) completed all the pre- and postintervention questionnaires and the 5–10-month postintervention survey of practices. Fifty-eight untrained PCPs completed the survey of practices and the confidence and knowledge questionnaire.

Effects of ADSRA SP intervention on pre-post PCP ADSRA confidence

PCPs in the SP intervention group reported low to moderate mean pre-SP intervention confidence in interpreting depression screening tools, diagnosing adolescent depression, assessing suicide risk, initiating treatment for adolescent depression with an SSRI, providing supportive counseling, and monitoring treatment response (Table 1). At follow-up (i.e., 5–10 months post-SP intervention), there was a significant improvement in PCP confidence resulting in moderate to high confidence in depression screening, assessment, and treatment as well as suicide risk assessment. There was no significant difference in follow-up confidence between the 5- versus 10-month postintervention PCPs.

Effects of ADSRA SP intervention on pre-post PCP ADSRA knowledge

There was significant improvement in depression knowledge at follow-up as measured by changes in mean quiz scores on three questions about adolescent depression assessment and SSRI titration for depression (Table 2). Although there was an immediate improvement in suicide risk assessment knowledge as measured by changes in mean quiz scores for two questions about this subject, this was not maintained. Total quiz scores improved significantly from baseline to follow-up. There was no significant difference in follow-up knowledge between PCPs 5 versus 10 months postintervention.

Table 2

Pre- versus post-training mean (SD) physician scores on adolescent depression and suicide risk assessment quiz (n = 46)

	Pretraining	Immediate post-training	5–10 months post-training
Depression composite score	.52 (.33)	.81** (.28)	.87** (.26)
Suicide risk assessment composite score	.54 (.39)	.73** (.36)	.52 (.35)
Total score	.53 (.32)	.78** (.26)	.73* (.23)

Depression composite score = average score (range 0–1) for three quiz questions on depression assessment and selective serotonin reuptake inhibitor titration for depression.

Suicide composite score = average score (range 0–1) for two quiz questions on suicide risk assessment.

* $p < .05$ versus pretraining.

** $p < .001$ versus pretraining.

Comparison of PCP ADSRA practices between postintervention and untrained groups

In the sample of untrained PCPs, 22% of PCPs reported that they had screened almost all adolescents for depression in the past 3 months, and 19% used a formal depression screening tool. As illustrated in Table 3, when compared with the untrained PCPs, intervention PCPs surveyed at follow-up were significantly more likely to use a formal depression screening tool (50% vs. 19%; $p = .001$, $\chi^2 = 10.64$) and to have diagnosed at least one adolescent with depression in the past 3 months (96% vs. 78%; $p = .013$, $\chi^2 = 6.21$). A greater percentage of intervention PCPs surveyed at follow-up reported screening almost all adolescents for depression at annual visits (40% vs. 22%; $p = .054$, $\chi^2 = 3.73$). Compared with the untrained PCPs, intervention PCPs surveyed at follow-up were more likely to screen adolescents with depression for specific suicide risk factors such as access to weapons (51% vs. 25%; $p = .007$, $\chi^2 = 7.33$) or a history of impulsive violence (27% vs. 11%; $p = .037$, $\chi^2 = 4.34$) (Table 3). The majority of intervention PCPs surveyed at follow-up reported that during

Table 3

Practices in adolescent depression and suicide risk assessment

	Untrained PCPs numbers (%) (n = 58)	PCPs 5–10 months postintervention numbers (%) (n = 45)	χ^2	p
Depression screening				
Screen almost all adolescents for depression at annual visits	13 (22)	18 (40)	3.73	.054
Use formal depression screening tool	11 (19)	22 (50)*	10.64	.001
Depression diagnosis				
Diagnosed at least one adolescent with depression in the past 3 months	43 (78)	43 (96)*	6.21	.013
Suicide risk assessment at annual visits—always screen adolescents for the following suicide risk factors				
History of impulsive violence	2 (4)	7 (16)*	4.41	.036
Access to weapons	15 (27)	13 (29)	.06	.814
Drug use	31 (54)	27 (60)	.32	.570
Family conflict	13 (23)	16 (36)	2.01	.156
Prior suicide attempt	5 (9)	7 (16)	1.11	.291
Suicide risk assessment for depressed adolescents—always screen adolescents for the following suicide risk factors				
History of impulsive violence	6 (11)	12 (27)*	4.34	.037
Access to weapons	14 (25)	23 (51)*	7.33	.007
Drug use	35 (63)	31 (70)	.69	.405
Family conflict	26 (46)	25 (57)	1.25	.264
Prior suicide attempt	28 (50)	25 (56)	.31	.578

* $p < .05$ versus untrained PCPs.

the past 3 months, they were screening adolescents more frequently for depression (89%) and suicide risk factors (82%). When asked to select the factor that most contributed to catalyzing this change, nearly all (98%) attributed these changes to participation in the SP intervention. PCPs surveyed 10 months versus 5 months postintervention were more likely to screen almost all depressed adolescents for drug use (55% vs. 15%, $\chi^2 = 4.12$, $p = .042$).

Discussion

This study shows that participation in ADSRA SP intervention resulted in: (1) improved PCP ADSRA confidence and knowledge, as well as (2) more frequent screening for depression and suicide risk factors when compared with an untrained sample of PCPs.

Adolescent depression and suicide risk assessment practices in light of national recommendations

Despite national efforts to publicize the importance of early identification of adolescent depression and suicide risk factors through routine ADSRA [8–10], only a minority of PCPs reported practices congruent with these recommendations at baseline. In fact, the rate of routine depression screening (22%) reported by untrained PCPs in our study is comparable with low rates (17% [12], 16% [13], 14% [14]) reported in surveys that predate these recommendations. In other words, although major national organizations (including the U.S. Preventive Services Task Force and American Academy of Pediatric) have identified adolescent depression and suicide prevention as major public health priorities, it seems that few PCPs have incorporated screening practices to identify at-risk adolescents. Could PCPs be unaware of these recommendations? Feedback from focus groups and debriefing sessions suggests this is not the case. Instead, insufficient ADSRA practices appear strongly related to inadequate ADSRA confidence and knowledge. Untrained PCPs reported limited ADSRA knowledge and lower ADSRA confidence than that of senior pediatric residents [22]. Such limited ADSRA confidence

and knowledge highlights the importance of PCP ADSRA training to improve PCP ADSRA implementation.

Positive effect of the SP intervention on PCP ADSRA practices, confidence, and knowledge

According to this study, participation in the intervention was associated with significant improvements in PCP ADSRA confidence and knowledge specific to depression assessment and treatment. In addition, those PCPs who participated in the intervention reported significantly more frequent practices in depression screening and diagnosis, as well as aspects of suicide risk assessment when compared with untrained PCPs. Given the paucity of interventions that prevent the morbidity and mortality associated with adolescent suicide [35], these findings of improved PCP practices in identifying at-risk adolescents following this intervention are particularly promising. These findings are consistent with previous work on the effectiveness of skill-based interventions to improve primary care screening processes [26,27]. However, this is the first study to date to test a skills-based ADSRA intervention following the national recommendations. These findings suggest that this type of intervention may facilitate implementation of national guidelines for screening and assessment of adolescents for depression and suicide risk.

Although PCP ADSRA practices significantly improved following the intervention, they were still not on par with national recommendations (i.e., 40% reported routine screening for adolescent depression). Supplemental training sessions may help to further improve practices. In addition, efforts to address systemic barriers to implementation of depression and suicide risk assessment (i.e., inadequate PCP reimbursement for mental health, limited access to mental health professionals) could affect even greater changes in practices. Improvements in PCP knowledge about suicide risk assessment were not maintained at follow-up. More didactic emphasis on suicide risk assessment, including incorporation of standardized tools [36], may be helpful to maintain improvements for future educational sessions.

Overall, there was a positive impact seen 5–10 months after participation in this brief 120-minute session. What aspect of this intervention is responsible for these results? Consistent with previous findings of best educational practices [37,38], it is likely that the experiential SP component was critical for skill development. Indeed, the vast majority of PCPs (98%) attributed improved screening practices to participation in the interactive SP session.

Limitations

One limitation of the study is the measurement of physician practices using self-report instead of adolescent patient report, which has been found to better characterize physician practices [39]. Notably, there was still a remarkable difference in practices between the untrained and postintervention PCPs. Future studies may benefit from paired, objective pre-post measures of practices.

Because 12% of community PCPs participated in the intervention, we can only speculate about how these findings generalize to the larger community. This sample of intervention PCPs represents possibly a motivated cohort that may be more likely to benefit from the intervention. A practice-based SP intervention may target a more representative sample. Given that 25% community PCPs expressed interest in the intervention after one

solicitation, it is likely that more aggressive efforts to recruit PCPs for a validated intervention would yield even greater participation. Indeed, given the evidence that approximately half of PCPs report limited confidence in adolescent depression assessment [22], it is likely that this educational intervention to improve depression and suicide risk assessment skills would be appealing to a large audience of PCPs.

Future directions

This study extends previous findings with pediatricians-in-training [29]; experienced PCPs appeared to benefit from a skills-based SP intervention with improved ADSRA confidence and knowledge as well as superior ADSRA practices relative to untrained PCPs. Most of these changes were maintained at up to 10 months postintervention. To drive the large-scale PCP behavioral change needed to achieve early identification of adolescent depression and suicide risk, systematic ADSRA training with a thoughtful experiential component should be offered during pediatric residency as well as in national CME activities for PCPs.

Conclusion

This study supports the use of a skills-based intervention using SPs to improve PCP ADSRA confidence, knowledge, and practices. Widespread implementation of similar educational efforts for PCPs has the potential to dramatically improve adolescent morbidity and mortality associated with depression and suicide.

Acknowledgments

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References

- [1] Borowsky IW. The role of the pediatrician in preventing suicidal behavior. *Minerva Pediatr* 2002;54:41–52.
- [2] Asarnow JR, Jaycox LH, Duan N, et al. Depression and role impairment among adolescents in primary care clinics. *J Adolesc Health* 2005;37:477–83.
- [3] Fergusson DM, Woodward LJ. Mental health, educational, and social role outcomes of adolescents with depression. *Arch Gen Psychiatry* 2002;59:225–31.
- [4] Aalto-Setälä T, Marttunen M, Tuulio-Henriksson A, et al. Depressive symptoms in adolescence as predictors of early adulthood depressive disorders and maladjustment. *Am J Psychiatry* 2002;159:1235–7.
- [5] Centers for Disease Control and Prevention, National Center for Injury Prevention and Control. Web-based injury statistic query and reporting system (WISQARS). <http://www.cdc.gov/injury/wisqars/LeadingCauses.html>. Accessed April 12, 2011.
- [6] Elster AB, Levenberg P. Integrating comprehensive adolescent preventive services into routine medicine care. Rationale and approaches. *Pediatr Clin North Am* 1997;44:1365–77.
- [7] Newacheck PW, Brindis CD, Cart CU, et al. Adolescent health insurance coverage: Recent changes and access to care. *Pediatrics* 1999;104:195–202.
- [8] Klein JD, Allan MJ, Elster AB, et al. Improving adolescent preventive care in community health centers. *Pediatrics* 2001;107:318–27.
- [9] Ozer EM, Zahnd EG, Adams SH, et al. Are adolescents being screened for emotional distress in primary care? *J Adolesc Health* 2009;44:520–7.

- [10] Halpern-Felsher BL, Ozer EM, Millstein SG, et al. Preventive services in a health maintenance organization: How well do pediatricians screen and educate adolescent patients? *Arch Pediatr Adolesc Med* 2000;154:173–9.
- [11] Frankenfield DL, Keyl PM, Gielen A, et al. Adolescent patients—healthy or hurting? Missed opportunities to screen for suicide risk in the primary care setting. *Arch Pediatr Adolesc Med* 2000;154:162–8.
- [12] Marks A, Fisher M, Lasker S. Adolescent medicine in pediatric practice. *J Adolesc Health Care* 1990;11:149–53.
- [13] Richardson LP, Russo JE, Lozano P, et al. Factors associated with detection and receipt of treatment for youth with depression and anxiety disorders. *Acad Pediatr* 2010;10:36–40.
- [14] U.S. Department of Health and Human Services, Agency for Healthcare Research and Quality, United States. Preventive services task force. “Screening and treatment for major depressive disorder in children and adolescents: recommendation statement; March 2009. Available at: <http://www.ahrq.gov/clinic/uspstf09/depression/chdeprrs.htm>. Accessed November 30, 2010.
- [15] Zuckerbrot RA, Cheung AH, Jensen PS, et al. Guidelines for adolescent depression in primary care (GLAD-PC): I Identification, assessment, and initial management. *Pediatrics* 2007;120:e1299–312.
- [16] Cheung AH, Zuckerbrot RA, Jensen PS, et al. Guidelines for adolescent depression in primary care (GLAD-PC): II. Treatment and ongoing management. *Pediatrics* 2007;120:e1313–26.
- [17] Committee on Psychosocial Aspects of Child and Family Health and Task Force on Mental Health. Policy statement—the future of pediatrics: Mental health competencies for pediatric primary care. *Pediatrics* 2009;124:410–21.
- [18] Shain BN, Committee on Adolescence. Suicide and suicide attempts in adolescents. *Pediatrics* 2007;120:669–76.
- [19] Lomas J, Anderson GM, Domnick-Pierre K, et al. Do practice guidelines guide practice? The effect of a consensus statement on the practice of physicians. *N Engl J Med* 1989;321:1306–11.
- [20] Ellen JM, Franzgrote M, Irwin CE, Jr, Millstein SG. Primary care physicians' screening of adolescent patients: A survey of California physicians. *J Adolesc Health* 1998;22:433–8.
- [21] Blum RW, Bearinger LH. Knowledge and attitudes of health professionals toward adolescent health care. *J Adolesc Health* 1990;11:289–94.
- [22] Olson AL, Kelleher KJ, Kemper KJ, et al. Primary care pediatricians' roles and perceived responsibilities in the identification and management of depression in children and adolescents. *Ambul Pediatr* 2001;1:91–8.
- [23] Mann JJ, Apter A, Bertolote J, et al. Suicide prevention strategies: A systematic review. *JAMA* 2005;294:2064–74.
- [24] Gould MS, Greenberg T, Velting DM, Shaffer D. Youth suicide risk and preventive interventions: A review of the past 10 years. *J Am Acad Child Adolesc Psychiatry* 2003;42:386–405.
- [25] Taliaferro LA, Borowsky IW. Perspective: Physician education: A promising strategy to prevent adolescent suicide. *Acad Med* 2001;86:342–7.
- [26] Lustig JL, Ozer EM, Adams SH, et al. Improving the delivery of adolescent clinical preventive services through skills-based training. *Pediatrics* 2001;107:1100–7.
- [27] Ozer EM, Adams SH, Lustig JL, et al. Increasing the screening and counseling of adolescents for risky health behaviors: A primary care intervention. *Pediatrics* 2005;115:960–98.
- [28] Ainsworth MA, Rogers LP, Markus JF, et al. Standardized patient encounters. A method for teaching and evaluation. *JAMA* 1991;266:1390–6.
- [29] Fallucco EM, Hanson MD, Glowinski AL. Teaching pediatric residents to assess adolescent suicide risk with a standardized patient module. *Pediatrics* 2010;125:953–9.
- [30] Richardson LP, McCauley E, Grossman DC, et al. Evaluation of the patient health questionnaire-9 item for detecting major depression among adolescents. *Pediatrics* 2010;126:1117–23.
- [31] American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 4th ed. Washington, DC: American Psychiatric Association, 2000.
- [32] Amano H, Sano T, Gotoh K, et al. Strategies for training standardized patient instructors for a competency exam. *J Dent Educ* 2004;68:1104–11.
- [33] Perera J, Perera J, Abdullah J, Lee N. Training simulated patients: Evaluation of a training approach using self-assessment and peer/tutor feedback to improve performance. *BMC Med Educ* 2009;9:37.
- [34] Hanson MD, Niec A, Pietrantonio AM, et al. Effects associated with adolescent standardized patient simulation of depression and suicidal ideation. *Acad Med* 2007;82(Suppl 10):S61–4.
- [35] Brent DA. Preventing youth suicide: Time to ask how. *J Am Acad Child Adolesc Psychiatry* 2011;50:738–40.
- [36] Wintersteen MB. Standardized screening for suicidal adolescents in primary care. *Pediatrics* 2010;125:938–44.
- [37] Davis D, O'Brien MA, Freemantle N, et al. Impact of formal continuing medical education: Do conferences, workshops, rounds, and other traditional continuing education activities change physician behavior or health care outcomes? *JAMA* 1999;282:867–74.
- [38] Satterlee WG, Eggers RG, Grimes DA. Effective medical education: Insights from the Cochrane library. *Obstet Gynecol Surv* 2008;63:329–33.
- [39] Klein JD, Graff CA, Santelli JS, et al. Developing quality measures for adolescent care: Validity of adolescents' self-reported receipt of preventive services. *Health Serv Res* 1999;34:391–404.