ORIGINAL ARTICLE

A Randomized Effectiveness Trial of Interpersonal Psychotherapy for Depressed Adolescents

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Context: Adolescent depression is highly prevalent and has substantial morbidity, including suicide attempts, school dropout, and substance abuse, but many depressed adolescents are untreated. The school-based health clinic offers the potential for accessible and efficient treatment, although it is unknown whether school-based clinicians can be trained to implement evidence-based psychotherapies for depression in routine care.

Objective: To assess the effectiveness of interpersonal psychotherapy modified for depressed adolescents (IPT-A) compared with treatment as usual (TAU) in school-based mental health clinics.

Design: A 16-week randomized clinical trial was conducted from April 1, 1999, through July 31, 2002.

Setting: Five school-based mental health clinics in New York City, NY.

Patients: Sixty-three adolescents referred for a mental health intake visit who met eligibility criteria. Eligible patients had a mean Hamilton Depression Rating Scale score of 18.6 (SD, 5.5) and a mean Children's Global Assessment Scale score of 52.6 (SD, 5.5) and met *DSM-IV* criteria for major depressive disorder, dysthymia, depression disorder not otherwise specified, or adjustment disorder with depressed mood. Mean age was 15.1 years (SD, 1.9 years). The sample was predominantly female (n=53 [84%]), Hispanic (n=45 [71%]), and of low socioeconomic status.

Intervention: Patients were randomly assigned to receive IPT-A (n=34) or TAU (n=29) from school-based health clinic clinicians.

Main Outcome Measures: The Hamilton Depression Rating Scale, Beck Depression Inventory, Children's Global Assessment Scale, Clinical Global Impressions scale, and the Social Adjustment Scale–Self-Report.

Results: Adolescents treated with IPT-A compared with TAU showed greater symptom reduction and improvement in overall functioning. Analysis of covariance showed that compared with the TAU group, the IPT-A group showed significantly fewer clinician-reported depression symptoms on the Hamilton Depression Rating Scale ($P=.04$), significantly better functioning on the Children's Global Assessment Scale ($P=.04$), significantly better overall social functioning on the Social Adjustment Scale–Self-Report ($P=.01$), significantly greater clinical improvement ($P=.03$), and significantly greater decrease in clinical severity ($P=.03$) on the Clinical Global Impressions scale.

Conclusions: Interpersonal psychotherapy delivered in school-based health clinics is an effective therapy for adolescent depression. This effort is a significant step toward closing the gap between treatment conducted in the laboratory and community clinic.

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ADOLESCENT DEPRESSION IS A highly prevalent disorder (1.6%-8.9% in a year).[1] Untreated adolescent depression is associated with substantial morbidity, including school dropout, teenage pregnancy, suicide, and substance abuse,[2,3] as well as considerable health expenditure.[4] Adolescents with mental health problems, including depression, are largely undertreated. Fewer than 3 of 10 adolescents with mental health problems in the United States receive mental health services.[5-7] There is a large gap between the use of and need for mental health services.[8] In recent years, school-based health clinics have emerged as an important treatment setting for adolescents with mental health and general medical problems.[9-12]

Several efficacious treatments are available for depression, including serotonin reuptake inhibitors,[13-15] cognitive behavior therapy, interpersonal psychotherapy, and various group therapies.[16-22] Most of these treatments have been assessed in university hospitals under controlled conditions. Even then, the general response rate for cog-

Table 1. Demographics and Sample Characterisitics*

Characteristics	IPT-A (n = 34)	TAU (n = 29)	*P* Value
Age, mean (SD), y	15.3 (2.1)	14.9 (1.7)	.47
Female	31 (91.2) [81.13-100.0]	22 (75.9) [59.89-91.91]	.11
Hispanic	26 (76.5) [61.50-91.50]	19 (65.5) [48.03-82.97]	.35
Living in single-parent home†	23 (79.3) [63.62-95.03]	21 (75.0) [59.99-91.01]	.70
Public assistance‡	10 (34.4) [16.98-51.77]	9 (37.9) [19.96-55.90]	.77
Parental education, mean (SD), y			
Mother	10.54 (3.5)	11.34 (3.6)	.38
Father	11.22 (3.2)	11.24 (3.7)	.98
Current suicidal ideation	13 (39.4) [21.80-56.99]	8 (27.59) [11.20-43.98]	.33
History of suicidal attempt	5 (14.71) [2.2-27.3]	2 (7.14) [0-16.6]	.32
Diagnoses			
Major depression	18 (52.9) [35.3-70.6]	14 (48.3) [37.9-72.4]	.72
Dysthymic disorder	5 (14.7) [2.2-27.3]	6 (20.7) [13.0-28.4]	.54
Double depression	2 (5.9) [0-14.2]	2 (6.9) [2.1-11.7]	.87
Depressive disorder NOS	4 (11.8) [3.5-23.2]	3 (10.3) [4.6-16.2]	.86
Adjustment disorder§	5 (14.8) [2.2-27.3]	4 (13.8) [7.3-20.3]	.92
Previous treatment			
Mental health	9 (26.5) [10.9-42.1]	13 (31.0) [13.9-48.1]	.39
Mood/anxiety/depression	6 (17.7) [4.2-31.2]	4 (13.79) [1.1-26.5]	.68

Abbreviations: IPT-A, interpersonal psychotherapy for depressed adolescents; NOS, not otherwise specified; TAU, treatment as usual.
*Unless otherwise indicated, data are expressed as number (percentage) [95% confidence interval].
†Because 7 subjects live with neither parent, n = 56.
‡Owing to missing values, n = 60.
§Indicates adjustment disorder with depressed mood.

nitive behavior therapy, the most widely tested psychotherapy, is approximately 60%, leaving room for improvement.[23] It is not known whether evidence-based psychotherapy can be effectively delivered in community mental health settings by professionals with little formal training to broadly representative patient samples.

This report describes the results of an effectiveness study of interpersonal psychotherapy for depressed adolescents (IPT-A) in school-based health clinics. The goal was to assess the feasibility, acceptability, and efficacy of delivering IPT-A under prevailing resource constraints of urban public school–based clinics.

METHODS

PARTICIPANTS

The sample consisted of adolescents aged 12 to 18 years who were referred to mental health clinicians in 1 of 5 school-based health clinics (3 middle schools and 2 high schools). The sample had a mean age of 15.1 years (SD, 1.9 years), and was 84% female and 71% Hispanic (**Table 1**). The schools are located in urban, impoverished areas of New York City, NY.

DETERMINING ELIGIBILITY

All adolescents referred for a mental health intake in the school-based health clinic were eligible to undergo screening to participate in the study. To be eligible for enrollment, adolescents needed a Hamilton Depression Rating Scale (HAMD)[24] score of 10 or higher and a Children's Global Assessment Scale (C-GAS) score of 65 or lower[25] at initial clinical intake and again at study baseline. In addition, eligibility requirements included parental consent and a *DSM-IV* diagnosis of major depression, dysthymia, adjustment disorder with depressed mood, or depressive disorder not otherwise specified. Adolescents were not eligible if they were actively suicidal or mentally retarded; had a life-threatening medical illness or a current diagnosis of substance abuse disorder, psychosis, or schizophrenia; were currently in treatment for depression; or were taking antidepressant medication. English-speaking students were accepted at all 5 schools. In 2 schools, monolingual Spanish-speaking students were accepted as well. A child psychologist (K.P.D.) determined whether students met eligibility criteria using the Schedule for Affective Disorders and Schizophrenia for School-aged Children lifetime depression module–child report[26] and the baseline clinical interview.

If at any time an adolescent's symptoms or functioning appeared to be worsening (HAMD score, >25), they underwent evaluation by a child psychologist or psychiatrist masked to the treatment condition. If possible, adolescents were offered an adjunctive treatment such as medication. Adolescents who received antidepressants during the course of the study could remain in the study. They were removed from the treatment protocol if it was clinically necessary to refer them for a more restrictive level of care such as hospitalization or partial hospitalization.

The study was approved by the institutional review boards for the 3 hospitals that sponsored the 5 school-based mental health clinics and by the New York City Board of Education. Informed consent was received from parents or legal guardians, and assent was received from the adolescents.

DESIGN OVERVIEW

Randomization

Randomization occurred at clinician and student levels. With the use of a table of random numbers, mental health clinicians in the school clinics were randomized to provide IPT-A or treatment as usual (TAU). Half of the therapists at each of the 5 schools received IPT-A training. Adolescents were randomized to IPT-A or TAU within schools. In 1 school, clinicians were routinely restricted to treating students on a particular floor of the school; therefore, randomization occurred at the level of the clinician, but not the student (n=7).

Treatment

Interpersonal psychotherapy is a time-limited psychotherapy that focuses on current problems. The procedures are specified in a manual.[27] The goals of IPT-A are to reduce depressive symptoms and improve interpersonal functioning by relating the symptoms to 1 or more of 4 problem areas (grief, role disputes, role transitions, and interpersonal deficits) and by developing strategies for dealing with these problems.[28] Two independent studies have demonstrated the efficacy of IPT-A.[17,18] The IPT-A intervention was delivered as 12 sessions during a 12- to 16-week period. Therapists provided 8 consecutive 35-minute weekly sessions followed by 4 sessions scheduled at any frequency during the ensuing 8 weeks.

The TAU condition was whatever psychological treatment the adolescents would have received in the school-based clinic if the study had not been in place. The psychotherapy varied but closely resembled supportive counseling. Most adolescents in the TAU group received individual psychotherapy. Eight adolescents received 1 to 3 additional family/parent sessions, and 5 participated in group therapy.

Clinician Training

Participating school clinicians included 11 social workers and 2 doctoral-level clinical psychologists. Before participating, the clinicians had little formal specialized training in screening and identifying depression in adolescents and no training in evidence-based psychotherapy. Training in the screening battery was provided to all clinicians. A subset of 6 social workers and 1 psychologist were trained in IPT-A. The training included reading the IPT-A manual, 2 half days of didactic training, and weekly supervision throughout the project by 2 of us (L.M. or K.P.D.). Treatment adherence and competence were measured by checklists completed by therapists and supervisors. Overall competence in IPT-A was rated as satisfactory (mean, 3.3; SD, 0.87) on a scale of 1 (poor) to 5 (excellent). One of the 7 IPT-A therapists who treated a significant number of cases was a low outlier on the competency scale. The mean competence score without him was 3.6 (SD, 0.55). A future report will examine therapist adherence and competence in detail.

ASSESSMENTS

The primary domains assessed included (1) depression symptoms as measured by the clinician-rated HAMD and self-reported Beck Depression Inventory (BDI)[29]; (2) global functioning as measured by the clinician-rated Clinical Global Impressions scale (CGI)[30] and C-GAS; and (3) social functioning as measured by the Social Adjustment Scale–Self-Report (SAS-SR).[31] Higher scores on the HAMD and BDI indicate a greater number of symptoms; on the CGI and C-GAS, better functioning; and on the SAS-SR, worse functioning. Scores on the HAMD can range from 0 to 74; on the BDI, from 0 to 39; on the C-GAS, from 0 to 100; and on the SAS-SR, from 1 to 5.

All patient assessments were performed in both treatment conditions by a psychologist or a social worker masked to the patient's treatment condition and were not shared with the treating clinicians. The assessments were conducted at baseline and weeks 4, 8, 12, and 16, or at early termination from the protocol. At week 12, the mask was accidentally broken in 2 cases for one evaluator. After week 12, a second evaluator completed the assessments of these cases.

Three independent evaluators were trained in the assessments before the onset of the study and participated in a reliability study to establish comparability between their ratings. School-based clinicians also participated in the reliability study on the screening instruments (HAMD and C-GAS). Reliability for the Schedule for Affective Disorders and Schizophrenia for School-aged Children was obtained by the 3 independent evaluators rating 7 audiotaped interviews ($\kappa = 0.76$). Reliability of the HAMD was obtained from 21 clinicians (including school clinicians and independent evaluators) rating 20 audiotaped HAMD interviews (intraclass correlation coefficient, 0.84). To obtain reliability for the C-GAS, the 21 clinicians rated 20 case vignettes (intraclass correlation coefficient, 0.83).

STATISTICAL METHODS

The comparability of the patients in the IPT-A and TAU groups was examined for demographic characteristics, including sex, ethnicity, living in a single-parent home, receiving public assistance, and diagnoses, using the χ^2 test. Mean age and paternal and maternal education were analyzed using an unpaired t test. Between-group differences for major outcome measures (ie, BDI, HAMD, C-GAS, and CGI) at baseline were calculated using unpaired t tests.

Analyses were conducted for the intent-to-treat sample (n = 63). Overall efficacy of treatment was assessed by conducting an analysis of covariance controlling for pretreatment scores on all major outcome measures by treatment condition at termination. Clinical recovery was defined as a HAMD score of 6 or less and a BDI score of 9 or greater. Data were analyzed using a χ^2 test for the percentage of patients who reached these cutoff scores at the point of termination. The α level was .05 (2 sided).

Post hoc analyses examined differential treatment effects by severity of depressive symptoms and age. Those who were in the highest HAMD quartile score (≥ 22) and in the lower half of a median split of the C-GAS were considered to be the most severely ill. Age was stratified as 12 to 14 years and 15 to 18 years. A separate stratified analysis by each of these 3 baseline measures was conducted to evaluate the treatment effect.

Two statistical approaches were used to examine changes over time in the outcome measures. A repeated-measures analysis of variance (ANOVA) was conducted on each of the outcome measures of interest[32] with 2 treatment groups; the number of time categories varied, with the outcome measure ranging from 4 (weeks 0, 4, 8, and 12) for HAMD to 2 for C-GAS (weeks 0 and 12). For the 6 cases in which attrition occurred, the end point was carried forward. Although this approach is easily interpretable, it assumes that variances and covariances of observations across time points are homogeneous (assumption of compound symmetry). Violation of this assumption will frequently result in type I errors greater than the nominal values, therefore a random coefficients regression analysis[33] was performed to complement the repeated-measures ANOVA. This method accommodates attrition of subjects by using available data without carrying over end points and is not restricted to the assumption of compound symmetry. The primary parameters that were estimated by the random coefficients regression are overall slopes for each treatment supplemented by tests of differences among slopes.

RESULTS

PATIENT RECRUITMENT

Of the 509 adolescents who underwent screening from April 1, 1999, through January 31, 2002, 183 (35.9%) were initially eligible for baseline assessment, but 23 (12.6%) of the 183 were determined to be ineligible by the baseline assessment. Thus, 160 (31.4%) of those undergoing screening were eligible for the study. Of the 160 eligible, 96 (60.0%) refused to participate (**Figure 1**). Refusal to participate was not related to adolescent sex.

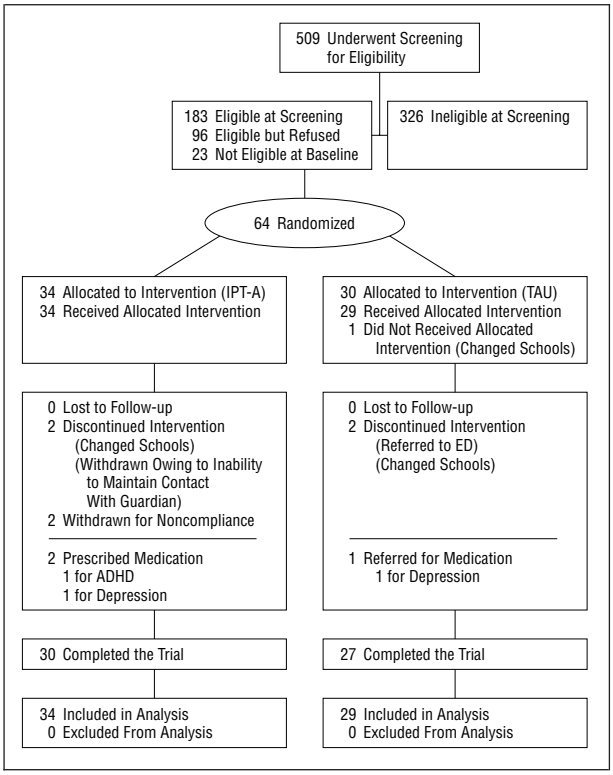

Figure 1. Flow diagram for the study. ADHD indicates attention-deficit/hyperactivity disorder; ED, emergency department; IPT-A, interpersonal psychotherapy modified for depressed adolescents; TAU, treatment as usual.

The most common reasons for refusal were related to the requirements intrinsic to a research protocol, including not wanting to be randomized (n=25 [13.7%]) and not wanting a parent contacted (n=26 [14.2%]). Other reasons for exclusion each represented less than 5% of the sample. No adolescents were excluded at screening or baseline because of current medication treatment.

BASELINE PATIENT CHARACTERISTICS

The treatment groups did not significantly differ in background demographic characteristics (Table 1). Other diagnoses regarded as possible or probable by results of the clinical interview at baseline were 20 patients (32%) with anxiety disorders, 5 (8%) with oppositional defiant disorder, 10 (16%) with substance use, and 4 (6%) with attention-deficit/hyperactivity disorder.

SIGNIFICANT EVENTS DURING CLINICAL TRIAL

Of the 64 participants initially enrolled in the study, 57 completed the full protocol. Reasons for attrition are displayed in Figure 1. In the IPT-A condition, 1 adolescent was referred to the emergency department for suicidality and hospitalized for 1 week. In the TAU condition, 1 adolescent was referred to the emergency department, hospitalized overnight, and withdrawn from the study. Four adolescents were referred for medication treatment during the protocol, including 2 in IPT-A and 2 in TAU. One of the 2 adolescents in IPT-A was prescribed medication during her weeklong hospitalization, but discontinued its use after 1 to 2 weeks. The second IPT-A patient received medication for attention-deficit/hyperactivity disorder, but discontinued its use after 2 weeks. One TAU patient was referred for but never received medication, and the second received the medication during an overnight hospitalization but was nonadherent after several days.

Table 2. Clinician-Related Depression Symptoms and Functioning at Baseline and Week 12 or Termination by Treatment

Clinician-Rated Measures	Intent-to-Treat Sample, Mean (SD) Scores: IPT-A Group (n = 34)	TAU Group (n = 29)	F	*df*	*P* Value	ES
HAMD*						
Baseline	18.9 (5.9)	18.3 (5.0)				
Week 12	8.7 (8.0)	12.8 (8.4)	4.62	2,60	.04	0.50
C-GAS†						
Baseline	52.6 (5.3)	52.7 (6.3)				
Week 12	66.7 (13.0)	59.5 (13.5)	5.03	2,60	.04	0.54
CGI (IE) severity of illness*						
Baseline	3.9 (0.8)	3.8 (0.7)				
Week 12	2.4 (1.3)	3.0 (1.4)	4.89	2,60	.03	0.48
CGI (IE) improvement*						
Baseline	5.0 (0)	5.0 (0)				
Week 12	2.3 (1.3)	3.1 (1.6)	5.28	1,61	.03	0.59

Abbreviations: C-GAS, Children's Global Assessment Scale; CGI (IE), Clinical Global Impressions scale (independent evaluator); ES, effect size; HAMD, Hamilton Depression Rating Scale; IPT-A, interpersonal psychotherapy for depressed adolescents; TAU, treatment as usual.
*Smaller values denote better outcomes. Total sample range is 0-41.
†Greater values denote better functioning.

MAIN OUTCOMES

Depression Symptoms

At baseline, there were no significant group differences in depression symptoms on the HAMD or BDI. Mean baseline score was 18.6 on the 24-item HAMD, whereas the mean BDI score was 21.4. On the HAMD, adolescents who received IPT-A compared with those who received TAU reported significantly greater decreases in depressive symptoms (week 12, 8.7 vs 12.8; $P=.04$) (**Table 2**). On the BDI, adolescents who received IPT-A reported fewer depressive symptoms than those who received TAU (8.4 vs 12.3; $P=.14$) at week 12 (**Table 3**).

At termination, 17 (50%) of the adolescents in IPT-A and 10 (34%) of those in TAU met the HAMD recovery criterion (score, ≤6). On the BDI, 25 (74%) of the adolescents in IPT-A compared with 15 (52%) of adolescents in TAU met the recovery criterion (score, ≤9) ($\chi^2_1=3.9$; $P=.048$). Effect sizes for the difference in treatment outcomes are shown in Tables 2 and 3.

The repeated-measures ANOVA showed a statistically significant interaction between treatment and time ($F_{3,169}=3.79$; $P=.01$). Post hoc pairwise contrasts of the treatment means at individual time points revealed significant differences between mean scores that emerged at week 8, with IPT-A reducing the mean score by a dif-

ference of 4.1 points greater than TAU ($t=-3.18$; $P=.003$) (**Figure 2**). The BDI analysis similarly showed a statistically significant interaction between treatment and time ($F_{3,169}=2.88$; $P=.04$) and significant differences between mean scores also at week 8, when IPT-A reduced the mean score by a difference of 5.42 compared with that of TAU ($t=-3.34$; $P=.001$).

In the random regression analysis to linearize change in HAMD scores, the time scale was transformed by using the natural logarithm of week+1. Thus, slope estimates approximate change in HAMD score per unit of change in logarithm of week after baseline. Significantly different slopes over time were found between the 2 treatment groups (treatment × time interaction, $F_{1,114}=8.85$; $P=.004$). The IPT-A group had a significantly faster rate of improvement relative to the TAU group during the 12 weeks. Slope estimates (per natural logarithm of week in treatment) for the 2 treatments ±SE were −4.55±0.54 for IPT-A and −2.29±0.53 for TAU. The rate of improvement for the IPT-A group on the HAMD was 1.99 U per time more rapid than in the TAU group. The average difference between treatments was 4.10 points at week 8 and 5.21 points at week 12.

General Functioning

Adolescents receiving IPT-A compared with those receiving TAU reported significantly greater improvement in overall functioning on the C-GAS ($F_{2,60}=5.03$; $P=.04$) at week 12 (Table 2). A repeated-measures analysis to determine changing patterns with time was not performed because there was only a single assessment made after baseline, at week 12.

At week 12, adolescents who received IPT-A as compared with those who received TAU were rated as significantly less ill ($F_{2,60}=4.89$; $P=.03$) (Table 2). At week 12, adolescents who received IPT-A compared with those who received TAU had significantly greater improvement in their symptoms ($F_{1,60}=5.3$; $P=.03$). The effect size for CGI severity of illness was 0.48 (95% confidence interval [CI], 0.15-0.81) and for improvement was 0.59 (95% CI, 0.24-0.94).

Social Functioning

At week 12, adolescents who received IPT-A compared with those who received TAU reported significantly greater improvement in dating ($F_{2,60}=4.7$; $P=.03$) and overall social functioning ($F_{2,60}=7.0$; $P=.01$) and a trend for greater improvement in family functioning ($F_{2,60}=2.8$; $P=.10$) on the SAS-SR. The repeated-measures ANOVA showed that patterns in variation of mean overall social functioning during the 12 weeks of treatment were significantly different between the 2 conditions (treatment × time interaction, $F_{3,167}=4.40$; $P=.003$) (**Figure 3**). Post hoc pairwise comparisons of treatment means at individual time points showed that significant differences emerged at week 8. The IPT-A condition reduced the mean score by a difference of 0.24 points compared with that of the TAU condition ($t=-2.24$; $P=.03$).

The random regression analysis showed that rates of improvement over time in the 2 treatment groups were significantly different (treatment × time interaction, $F_{1,114}=9.80$; $P=.002$). Although overall social functioning scores on average decreased linearly during the 12 weeks for IPT-A, these scores in TAU on average remained relatively unchanged. Slope estimates for the 2 treatments ±SE were −0.06±0.01 for the IPT-A and −0.02±0.01 for TAU, which translates into an average difference between treatments of 0.27 points at week 8 and 0.45 points at week 12.

Table 3. Self-reported Depression Symptoms and Functioning at Baseline and Week 12 or Termination by Treatment

Self-report Measures	Intent-to-Treat Sample, Mean (SD) Scores: IPT-A Group (n = 34)	TAU Group (n = 29)	F	*df*	*P* Value	ES
BDI*						
Baseline	20.8 (8.7)	21.8 (8.5)				
Week 12	8.4 (11.0)	12.3 (9.7)	2.21	2,60	.14	0.37
SAS-SR†						
School						
Baseline	2.40 (0.60)	2.34 (0.80)				
Week 12	2.07 (0.84)	2.33 (1.21)	1.48	2,60	.23	0.26
Friends						
Baseline	2.78 (0.62)	2.80 (0.61)				
Week 12	2.21 (0.73)	2.46 (0.82)	1.70	2,60	.20	0.33
Family						
Baseline	2.65 (0.83)	2.48 (0.74)				
Week 12	1.86 (0.79)	2.10 (0.72)	2.81	2,60	.10	0.32
Dating						
Baseline	3.66 (1.06)	3.47 (1.25)				
Week 12	2.87 (1.25)	3.40 (1.22)	4.68	2,60	.03	0.43
Overall						
Baseline	2.87 (0.49)	2.77 (0.52)				
Week 12	2.23 (0.66)	2.59 (0.67)	7.04	2,60	.01	0.55

Abbreviations: BDI, Beck Depression Inventory; ES, effect size; IPT-A, interpersonal psychotherapy for depressed adolescents; SAS-SR, Social Adjustment Scale–Self-Report; TAU, treatment as usual.
*Smaller values denote better outcomes. Total sample range is 0-41.
†Smaller values denote better outcome. Total sample range for the overall SAS-SR is 1.03-3.96.

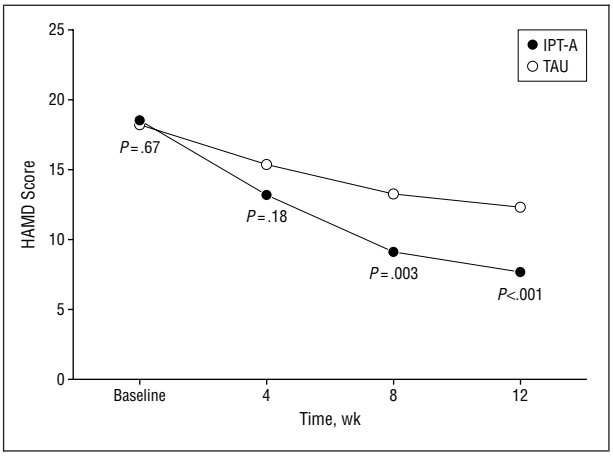

Figure 2. Repeated-measures analysis for the Hamilton Depression Rating Scale (HAMD). IPT-A indicates interpersonal psychotherapy for depressed adolescents; TAU, treatment as usual (treatment × time interaction, $P=.01$).

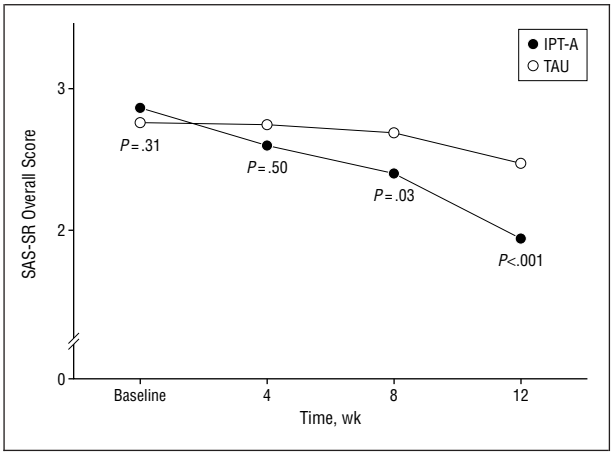

Figure 3. Repeated-measures analysis for Social Adjustment Scale–Self-Report (SAS-SR) overall scores. Other abbreviations are explained in the legend to Figure 2 (treatment × time interaction, $P=.003$).

POST HOC ANALYSIS OF TREATMENT ADHERENCE

Adolescents treated with IPT-A received a mean of 10.5 therapy sessions in 16 weeks compared with a mean of 7.9 therapy sessions for those who received TAU ($P=.01$). Part of the beneficial effects of IPT-A could be due to a greater dosage of therapy. Conventional methods for adjusting for covariates (number of sessions) were not appropriate for this study, because only 3 IPT-A patients received fewer than 8 sessions compared with 12 TAU patients. The 3 IPT-A patients dropped out of treatment, whereas only 2 of the 12 TAU patients with fewer than 8 sessions dropped out. This suggests that dropout status and number of sessions are confounded in IPT-A. To explore this issue further, we compared the subset of TAU patients who had at least 8 sessions (n=17) with the IPT-A patients with at least 8 sessions (n=30). There was a significant reduction in HAMD scores among the IPT-A patients compared with the TAU patients in this subgroup (week 12, $t=2.55$; $P=.01$). Of the 29 TAU patients, 17 had at least 8 sessions, whereas 12 had fewer than 8 sessions. We explored the possibility that among the TAU patients, those who had more than 8 sessions may be more severely ill than those with fewer sessions, a finding that would result in the previous comparison being biased in favor of IPT-A. These 2 subgroups of TAU were compared on their baseline, week 12, and week 16 HAMD scores. These analyses showed that there was no significant association between number of sessions and baseline HAMD scores (18.47 vs 18.17; $P=.87$) for TAU patients. In addition, no statistically significant differences were found between the number of sessions and HAMD scores at weeks 12 and 16 in these 2 TAU groups. In fact, those with at least 8 sessions showed somewhat greater improvement than those with fewer than 8 sessions.

POST HOC ANALYSIS OF TREATMENT EFFECTS BY INITIAL SEVERITY

Differential treatment effects were found on the HAMD and C-GAS by age at study entry (12-14 vs 15-18 years). A significant correlation was found between age and severity of illness measured on the CGI ($r=0.33$; $P=.008$) and age and global functioning measured on the C-GAS ($r=0.36$; $P=.004$). Specifically in the older group, IPT-A compared with TAU was more effective as demonstrated by a significantly lower HAMD score at week 12, with an average difference of 7.6 points ($P=.006$), and a significantly higher C-GAS score at week 12, with an average difference of 6.6 points ($P=.02$), controlling for the baseline scores. The difference between the 2 treatments was minimal and nonsignificant in the younger group. The interaction between age and treatment (IPT-A vs TAU) in the adolescents 15 years and older was marginally significant to predict HAMD scores ($P=.055$) and statistically significant to predict C-GAS score ($P=.03$) at week 12.

When baseline severity of illness was measured by the HAMD (using ≥22 as the top quartile of severity), IPT-A patients compared with TAU patients within the high-severity subgroup had significantly lower HAMD scores (difference of –9.3; $P=.04$) and higher C-GAS scores (difference of 13.6; $P=.04$) at week 12. The group difference was statistically nonsignificant in the low-severity HAMD subgroup. Baseline severity of impairment was measured by C-GAS using a median split rather than quartiles because of the limited variance in the C-GAS scores. Patients treated with IPT-A compared with those treated with TAU within the high-impairment C-GAS subgroup had significantly lower HAMD scores (difference, 7.8; $P=.02$) and higher C-GAS scores (–13.8; $P=.006$) at week 12. The difference between the 2 groups was statistically nonsignificant in the low-impairment subgroup.

TELEPHONE FOLLOW-UP AT WEEK 16

At week 16, a telephone follow-up interview was conducted with all patients (n=62) after completion of any remaining sessions between weeks 12 and 16. No attempt was made to contact 1 patient who did not attend any therapy sessions, and this patient was not included in the analysis. Assessments administered by telephone by the independent evaluators included the HAMD and C-GAS. The study findings were maintained at week 16. On the HAMD, the IPT-A patients compared with the TAU patients reported significantly greater decreases in depressive symptoms (6.9 vs 10.6; $P=.04$), an effect size of 0.51 (95% CI, 0.003-1.02), and a trend toward greater improvement in overall functioning on the C-GAS ($F_{2,59}=3.72$; $P=.06$).

COMMENT

Much has been written about the gap between clinical practice and clinical research. As Weisz and colleagues[34] have stated, the crucial question is whether community clinicians can actually benefit from the findings of outcome research, and an important task is to study the application of research therapy to community settings. The present study helps to bridge the gap by successfully applying modified research therapy procedures for the training of school-based clinicians to deliver an evidence-based therapy. Specifically, the results demonstrate the effectiveness of IPT-A compared with TAU for the treatment of adolescent depression in school-based health clinics in impoverished urban communities in New York City.

Adolescents who receive IPT-A have significant reductions in depression symptoms and impairment by clinician report and self-report and significant improvement in overall and specific domains of social functioning. Depressed adolescents treated with IPT-A rather than TAU improved faster and were significantly better after 8 consecutive weekly sessions of IPT-A, and this is not merely a dosage effect. The largest treatment effects occurred in the older and/or more severely depressed adolescents, consistent with findings in the adult IPT literature.[35] This finding suggests that milder depression in younger adolescents can be more easily treated with supportive psychotherapy, whereas more severe depression is more effectively treated with a structured treatment specifically targeted for adolescent depression. The current findings extend treatment effects observed in carefully controlled clinical trials with depressed adolescents[17,18] to treatment in school-based health clinics, and are an important first step in the study of the transportability of treatments from the laboratory to the clinic.

Although other research efforts have tried to disseminate treatments on a larger scale[36] and study their effectiveness in comparison with community care,[37] this study is one of the first to assess the effectiveness of an evidence-based treatment for adolescent depression as delivered by school-based clinicians. Concerns about implementation have been expressed regarding necessary adaptations in training and supervision, although little has been written about actual implementation. The results of this study are significant, despite the small sample size, in that they support the ability to implement evidence-based practices outside of university settings. Although organizational factors such as patient volume, staffing patterns, referral sources, and resource availability influenced delivery of the intervention and necessitated protocol modifications, it was still possible to implement IPT-A in a clinically effective manner. Modifications included abbreviated therapist training, monitored treatment adherence without audiotapes or videotapes, shortened session duration, flexibility in scheduling owing to school calendar constraints, acceptance of heterogeneous diagnostic profiles, and parental notification of treatment when otherwise unnecessary in the school clinics.[38]

The study involved training on-site clinicians rather than bringing in expert clinicians. A frequently asked question is what is needed to change clinician practice. Training was abbreviated compared with efficacy studies that have extensive therapist training.[39] After a brief didactic session, clinicians received 1 hour of supervision per 4 to 5 cases per week without the use of videotapes or audiotapes. It may be possible to streamline this training as graduate programs move toward training in evidence-based treatments and clinicians come to the job with greater knowledge of the treatments.

Although medication is seen as a frontline treatment for adolescent depression,[40] it is not easily accessed in the school clinics, and minority families are generally reluctant to accept antidepressants.[41] More recently, concerns have developed regarding the effects of antidepressant medications for children and adolescents.[42] With little physician time, clinics are unable to offer medication and must refer adolescents to nearby hospital centers. The 4 students who were prescribed antidepressant medication showed poor adherence with their regimens. An important future study would be to assess the effectiveness of medication alone and combined with psychotherapy for the treatment of more severely ill students.

This study has several limitations. The predominantly female sample does not permit the power to test for sex differences in treatment outcome. The size of the study sample also precludes analyses of treatment effectiveness in the middle vs high school students and other school or environmental effects that may facilitate or impede successful implementation of the intervention. At one school, therapists, but not students, were randomly assigned; however, this school contributed only 7 cases. Delivery of TAU may have been altered by our observation of its practice, and this likely made TAU more effective than normal. Attempts to monitor the number of visits attended in the TAU condition led to increased outreach and contact with the adolescents. Finally, the current study represents a relatively small-scale demonstration. An important challenge ahead is to expand this dissemination effort to a larger number and wider range of school-based clinics.

Although there was little attrition of students randomized to treatment, there was a significant rate of refusal to participate (60.0%) before baseline assessment. The most common reasons for refusal were related to research requirements, particularly parental notification and consent rather than a refusal to receive psychotherapy. At present, adolescents receive treatment in the clinics without parental knowledge. Many wish to retain this privacy and therefore decline to participate. Outside the study, we would expect better participation in treatment; however, such research requirements are likely to continue to hinder the conduct of research in this setting. We have no reason to believe that IPT-A is less effective with adolescents who declined participation for reasons related to technical research demands, although we are unable to evaluate the effectiveness of IPT-A with those who refused study participation.

CONCLUSIONS

The present study demonstrates a successful implementation of a brief psychosocial intervention (IPT-A) delivered by community-based clinicians in urban school-based health clinics serving minority students. The IPT-A intervention is a viable and effective model for organizing treatment delivery in this population and setting. The intervention can be learned and delivered by social workers and psychologists who work in these clinics. We found consistent reduction of depression symptoms and improved social and general functioning with IPT-A. This setting provided a rigorous test of the effectiveness of IPT-A. Similar or more robust intervention effects would likely be achieved in school settings with more clinical resources. Given the critical role that school clinics play in the provision of care for adolescents,[43] these findings are of public health importance for improving the delivery of mental health care to underserved, depressed adolescents.

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