

Pilot Study of a Primary Care Internet-Based Depression Prevention Intervention for Late Adolescents

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ABSTRACT

Introduction: There is currently no depression prevention intervention available to adolescents in primary care. **Method:** Fourteen late adolescents evaluated the acceptability (performance and ratings), potential adverse effects (negative emotions), and benefits (pre/post measures of three risk factors for depression) of a combined primary care Internet-based depression prevention intervention. Nearly all participants engaged the website (13/14) and 8/14 completed the entire intervention. **Results:** Completers reported high levels of readability and ease of understanding and low levels of negative emotions. Completers showed favorable trends for the targeted risk factors: depressive symptoms, dysfunctional thinking, and low social support. **Conclusion:** A primary care/prevention intervention may be acceptable and favorably impact risk factors for depression.

Key Words: depression, prevention, psychotherapy, attitudes, Internet, youth

RÉSUMÉ

Introduction: Il n'existe actuellement en soins primaires aucune intervention dans le but de prévenir la dépression chez l'adolescent. **Méthodologie:** Quatorze adolescents plus âgés ont évalué une telle intervention via Internet. Ils ont jugé de la faisabilité (fonctionnement et facilité d'utilisation), des effets secondaires possibles (émotions négatives) et des bénéfices (mesures pré et post-utilisation quant à trois facteurs de risque pour la dépression). Presque tous les participants (13/14) se sont rendus sur le site Internet et 8/14 se sont rendus jusqu'à la fin de l'intervention. **Résultats:** Ceux qui se sont rendus jusqu'à la fin de l'intervention affirmèrent que le texte était facile à lire et à comprendre; il y eut peu d'émotions négatives. Ceux-ci furent aussi d'avis que les facteurs de risque ciblés étaient appropriés, soit les symptômes mêmes de la dépression, la pensée dysfonctionnelle et l'absence relative de support social. **Conclusion:** Une intervention de prévention en soins primaires peut être acceptable et avoir une influence favorable sur les facteurs de risque de la dépression.

Mots-clefs: dépression, prévention, psychothérapie, attitudes, Internet, jeunesse

INTRODUCTION

Although twenty-five percent of adolescents will experience a depressive episode by age 24, there is currently no primary care preventive approach for depression available to primary care physicians (PCPs), the front-line clinicians often seeing most of those with depressive episodes (Kessler & Walters, 1998). PCPs currently implement risk factor based preventive strategies for a variety of disease processes affecting youth (e.g., infectious disease, trauma, and substance abuse). Psychological treatments such as cognitive-behavioral therapy and interpersonal psychotherapy, targeting modifiable risk factors (e.g., depressive symptoms, dysfunctional thinking, and low social support) reduce the risk of depression initial incidence or recurrence (Clarke et al., 2001; Frank, Kupfer, Wagner, McEachran, & Cornes, 1991; Willemse, Smit, Cuijpers, & Tiemens, 2004). However, face-to-face interventions may not be cost-effective for prevention, feasible for PCPs, and are not acceptable to many primary care patients, particularly adolescents (Jaycox et al., 2003; Van Voorhees et al., 2003). Self-directed web-based interventions may reduce depressed mood and dysfunctional thinking, but few individuals complete them without supervision (Christensen, Griffiths, & Korten, 2002; Patten, 2003).

To address this need, we developed a combined primary care/

web-based depression prevention intervention for adolescents based on manuals from interventions with demonstrated benefit (Clarke, 1994, 1995; Klerman, Weissman, Rounsaville, & Chevron, 1986; Stuart, 2003). This intervention targets modifiable risk factors for the onset of major depression which include sub-threshold depressive symptoms (Cuijpers & Smit, 2004). This intervention can be described as either "secondary prevention" (versus "primary," where no symptoms are present) in the traditional classification or as "indicated" prevention (versus "universal," which targets the entire population) in the Institute of Medicine framework (Mrazek, 1994). In both "secondary" and "indicated" approaches, high-risk individuals who display early symptoms of the disorder, but who do not yet meet full diagnostic criteria, are the focus of a preventive intervention (Gillham, Shatte, & Freres, 2000).

In this intervention, PCPs use a motivational interview to engage adolescents at risk for depression with a web-based self-directed depression skills training program targeting modifiable risk factors. We conducted a pilot study of this intervention with fourteen late adolescents recruited from two urban primary care settings to evaluate the acceptability, potential adverse effects, and potential benefits (i.e., reduction of risk factors for depression) of the intervention.

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METHOD

Study Design: We recruited fourteen late adolescents (ages 18-24) from primary care settings (2 sites, urban primary care and university health clinic) who were at-risk for developing depression to evaluate the acceptability of the intervention. Eligibility criteria included having at least one risk factor for developing depression (personal or family history of a depressive episode). We excluded those having a moderate probability of having major depression (Center for Epidemiologic Studies of Depression Scale (CES-D) score > 16; Radloff, 1991), suicidal ideation, or active substance abuse. After consent and enrollment, each participant completed the initial interview and was given instructions on how to use the website. The principal investigator, an Internist-Pediatrician, performed all the primary care interviews. Participants received pro-rated payments for up to US \$100.00 for completing the study. This study was approved by the University of Chicago Institutional Review Board.

Intervention: The intervention includes an initial motivational interview in primary care, eleven Web-based modules based on cognitive-behavioral therapy (CBT; Clarke, 1994, Clarke, 1995) and interpersonal psychotherapy (IPT; Klerman et al., 1986; Stuart, 2003), and a follow-up motivational interview in primary care (to enhance behavior change, (Miller & Rollnick, 2002). In the initial motivational interview, the PCP helped the adolescent to identify personal goals, understand the risk to these goals posed by depression, and then promoted self-efficacy in order to boost motivation to change behavioral risk factors. Using everyday examples, non-technical language and seventh grade reading level to enhance acceptability and motivation, the web-based modules taught participants how to set goals, counter pessimistic/irrational thinking, plan responses to difficult situations, strengthen social support, negotiate relationship conflict and cope with transitions. The focus of the follow-up interview was motivating the participants to change risk factor behaviors identified in the web-training.

Instructions to Participants: The study was conducted in the late spring and early summer of 2004. Participants were given general instructions to complete the web-based intervention over 2-3 weeks within 3-4 sessions, each of one-hour duration. In the study, the mean time session was 41.1 minutes (SD=32.1), time between session was 3.5 days (SD=3.4), and total time from start to end of use of the web-based program was 10.8 days (SD=6.1). The time elapsed from enrollment to follow-up interview (completers) ranged from 1-6 weeks.

Training of Study Personnel: The development of the motivational interview and training of the PCP was supervised by a psychologist clinician investigator who had previously adapted this approach for psychiatric rehabilitation (Corrigan, McCracken, & Holmes, 2001). Training involved the PCP reading the relevant materials on motivational interviewing. Three one-hour supervision sessions were used to develop and model the motivational interview script for the adolescent participants and confirm that the PCP was adhering to the motivational interview training manual. The PCP in this study had six years of community practice experience and two year of experience as a medical educator training resident physicians in brief counseling interventions. The PCP used the manuals

during both motivational interviews for each participant and recorded the techniques used for fidelity review. Following the first few motivational interview sessions with the participants, the psychologist reviewed the motivational interview techniques conducted by the PCP.

Outcome Measures: We evaluated three outcomes: 1) acceptability (performance, satisfaction ratings), 2) adverse effects (reasons for non-completion, negative emotions) and, 3) evidence for benefit (perceived change; Zabinski et al., 2001) using pre/post comparisons of reliable and valid measures of depressive symptoms (CES-D; Radloff, 1991), dysfunctional thinking (Automatic Thoughts Questionnaire Revised, ATQ; Kendall, 1989), and social support (Social Support Questionnaire – Short Form, SSQ-6; Sarason, 1987). Performance and reasons for non-completion were obtained from diary entries during the course of the intervention or follow-up telephone call (non-completers). Acceptability ratings and pre/post measures were available only for those who completed the study (completers).

Statistical Analyses: Paired two-tailed t-tests and effect sizes were calculated for the pre/post measures of depression risk factors. The Pearson correlation coefficient was calculated for the relationship among depressive symptoms and dysfunctional thinking. STATA (Version 7.0) was used for all analyses.

RESULTS

Sample: Almost all who were qualified to enter the study enrolled (14/16). This was a diverse group of participants (8/14 males, 6/14 African American, 1/14 Hispanic). Half (7/14) had no prior treatment for depression. All completed high school, 10/14 participants were full time university students, and 4/14 were not currently employed. The mean CES-D score was 13 (SD =6.7), indicative of a mildly depressed mood. With regard to substance abuse, 1/14 reported “binge drinking” and 2/14 reported drinking >5 drinks in one sitting in the last month.

Acceptability: All participants completed the first motivational interview, 13/14 used the website, and 8/14 completed the entire intervention (57% completion rate). Completers finished 11 modules (SD=0) during a total average time of 145 minutes (SD=80 minutes) versus those of non-completers (modules completed, M=3.3, SD=2.0, total time, M=53.1 minutes, SD=36.8). Completers and non-completers were similar in age (20.2 versus 19.8 years, p=0.65), gender (50% male in both groups), education (14.6 versus 14.3 years, p=0.58), depression symptom levels (11.6 versus 14.8, p=0.39). However, non-completers were more likely to be African American versus white/Hispanic (83.3% versus 12.5%, Fisher’s exact test, p=0.02).

Mean scores along with their standard deviations (SD) are reported below with ratings on a 1-5 scale, (strongly disagree to strongly agree). Completers reported high levels of readability (M=4.7, SD=0.5), ease of understanding (M=4.7, SD=0.4), and helpfulness (M=3.9, SD=0.8). Global satisfaction (1-10 scale) was highest for the motivational interview (M=8.5, SD=1.6) and lower for the Internet-based components (M=5.9, SD=2.9). Completers reported on average that they would pay US \$20.63 (SD=\$15.00) to participate in this program outside of a research setting.

Evidence of Adverse Effects: Total count of reasons for non-

TABLE 1: CHANGES IN PRE/POST MEASURES OF DEPRESSION RISK FACTORS

Risk Factor	Pre-treatment Mean (SD) (n=8)	Post-treatment Mean (SD) (n=8)	p-value	Effect Size Cohen's d (95% CI)
Depressive Symptoms (CES-D)	11.62 (7.60)	8.62 (6.30)	0.15	-0.43 (-1.4, 0.58)
Dysfunctional Thinking (ATQ-R)	49.55 (18.72)	46.62 (15.0)	0.51	-0.17 (-1.14, 0.82)
Social Support (SSQ-6)	28.25 (7.66)	30.04 (5.28)	0.13	0.27 (-0.73, 1.24)

Note: SD=standard deviation, CI=confidence interval

completion included medical illness (n=1), recommendation by counselor or family member that the participant discontinue the intervention because of experiencing anxiety (n=2), technical problems with the website (n=1), lack of motivation (n=1), and preference of face-to-face approach for current problem (n=1). Those who completed the intervention reported low levels of experiencing negative emotions (M=2.0, SD=0.8).

Evidence for Benefit: On a scale of 1-10, completers reported the “extent to which the program had helped you.” Ratings were highest for CBT-related skills: affect regulation, “keeping negative unrealistic attitudes about myself from making me feel depressed” (M=7.3, SD=2.2), the ability to recognize “triggers of depressed mood” (M=7.5, SD=1.5), countering dysfunctional thinking, “challenge negative thought patterns about myself” (M=7.4, SD=1.8) or about “every day situations” (M=7.3, SD=1.8). Helpfulness ratings for IPT related skills were lower: “express my feelings and reactions to important people in my life” (M=6.4, SD=2.9), “coping with transitions” (M=6.4, SD=3.1), “solving relationship problems” (M=6.0, SD=2.8), and “expressing thoughts and feelings to people who are important to me” (M=6.4, SD=2.9).

Table 1 and Figure 1 show pre/post measures of depressive symptoms, dysfunctional thinking, and social support, including effect sizes. All showed favorable, although not statistically significant, trends for completers in the expected directions with lower CES-D and ATQ scores, and higher SSQ scores. Our effect size calculations show small to moderate values in the expected direction for the depression risk factors. Also, there was strong correlation between declines in depressive symptoms and dysfunctional thinking ($r=0.84$, $p < 0.01$).

DISCUSSION

A primary care Internet-based depression prevention intervention may be acceptable and potentially beneficial to late adolescents in community settings, with minimal adverse effects. Participants in this study had higher completion rates and session lengths, total on-site times and periods between sessions than in stand-alone web-based learning programs for depressed mood (Christensen et al., 2002; Patten, 2003), and similar results to a recently published report of minimal contact psychotherapy in primary care for adults with minor depression (Willemse et al., 2004). Most reasons for non-completion are potentially

modifiable. Completers experienced favorable changes in known risk factors with effect sizes similar to those of other preventive interventions for depression (Jane-Llopis, Hosman, Jenkins, & Anderson, 2003; Willemse et al., 2004). Because this pilot study did not include a control group, we cannot know to what degree these changes would have occurred without an intervention.

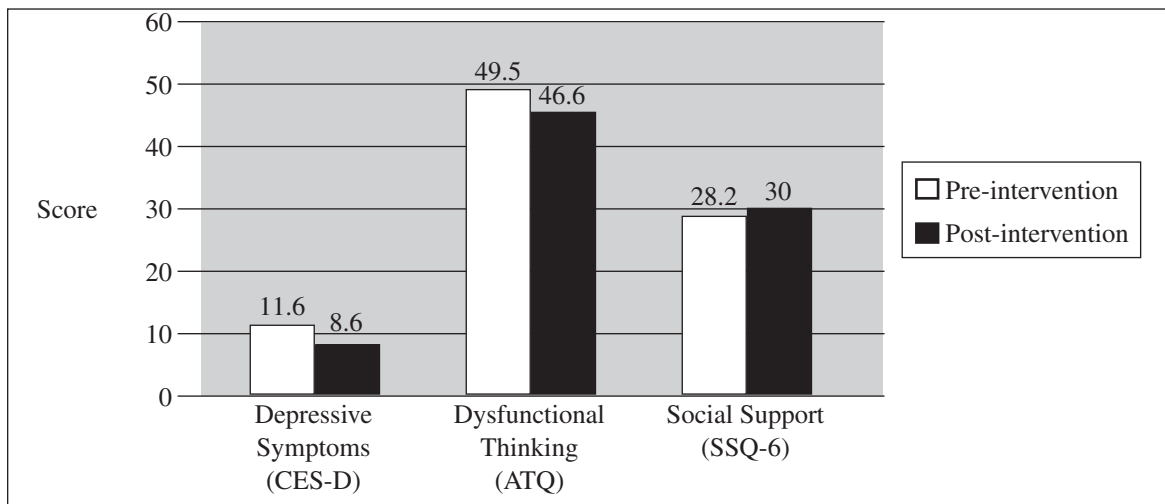
Limitations of this study include low completion rates among African Americans, small sample size, the use of non-web based diaries to record the time spent on the intervention, and short periods of engagement with the web-based program. While the proportion of female participation was less than expected in this study (50% in the study versus the expected 65% based on the percentage of individuals with major depression who are female; Kessler & Walters, 1998), this is well within the range found in studies of depression prevention programs (47 studies including both genders, M=57.9%, SD=20.4, range 3-95; Jane-Llopis et al., 2003). As many individuals find the anonymity conferred by the Internet more comfortable for disclosing information (Robinson, Patrick, Eng, & Gustafson, 1998), men and women may have been differentially attracted to this aspect of the intervention. Also, although the completers devoted less than three hours to engaging the website, this measure does not include time that may have been spent off-line completing exercises. Many of the completers reported that they were familiar with many of the concepts, but that the intervention helped deepen their understanding of the concepts and also helped change their behavior.

Results from the this study suggest that providing information to family and friends, preparing participants for coping with anxious feelings related to the intervention, resolving website technical issues, and shortening and consolidating the intervention into a smaller number of modules could increase completion rates. Brief telephone coaching may also be helpful (Willemse et al., 2004). Coupling a motivational encounter in primary care with Internet-based CBT and IPT training offers the promise of effectively engaging adolescents at risk for developing depression with a low-cost preventive intervention in a community setting.

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FIGURE 1: PRE/POST MEASURES OF RISK FACTORS FOR ONSET OF MAJOR DEPRESSION



Note: Mean scores are shown above each category, standard deviations (SD) provided in Table 1.

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