A Community-Based Depression Prevention Intervention With Low-Income Single Mothers

Ann R. Peden, Mary Kay Rayens, and Lynne A. Hall

BACKGROUND: *There is growing support that cognitive-behavioral interventions may prevent the onset of clinical depression in at-risk individuals.* ***OBJECTIVES:*** *This article describes the long-term effects of a cognitive-behavioral group intervention in reducing depressive symptoms, negative thinking, and chronic stressors in low-income single mothers at risk for clinical depression.* ***STUDY DESIGN:*** *One hundred thirty-six women were randomly assigned to either an experimental or no-treatment control group. The experimental group participated in a 6-hour cognitive-behavioral group intervention targeting identification and reduction of negative thinking. Data were collected on depressive symptoms, negative thinking, and chronic stressors at 1, 6, and 12 months postintervention.* ***RESULTS:*** *The women in the intervention group experienced a greater reduction in depressive symptoms, negative thinking, and the perception of chronic stressors. These positive effects continued over a 12-month period.* ***CONCLUSIONS:*** *Negative thinking can be reduced using thought stopping and affirmations. These interventions are also cost-effective and easy to administer.* ***J Am Psychiatr Nurses Assoc, 2005; 11(1), 18-25. DOI: 10.1177/1078390305275004***

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There is growing evidence that depression can be prevented in at-risk individuals (Clarke et al., 2001; Hollon et al., 2002; Munoz, Le, Clarke, & Jaycox, 2002; Peden, Hall, Rayens, & Beebe, 2001). According to the Institute of Medicine, major depression is the most preventable mental illness (Mrazek & Haggerty, 1994). Cognitive-behavioral interventions can prevent the initial onset of depression in at-risk individuals (Gillham, Shatte, & Freres, 2000; Munoz, 1993). The prevention intervention tested in this study targets the reduction of depressive symptoms in low-income single mothers, a group of women at risk for depression (Bifulco, Brown, Moran, Ball, & Campbell, 1998; Peden, Rayens, Hall, & Grant, in press). They experience poverty, multiple chronic stressors, unstable social networks, and social isolation (Bassuk, Browne, & Buckner, 1996). Depression affects the mother's well-being and that of her children (Bigatti, Cronan, & Anaya, 2001; Field, 1995; Sinclair & Murray, 1998). Depressed mothers have more negative views of their children and their behavior, possibly because they extend their own negative self-perceptions to their children (Gelfand & Teti, 1990). The purpose of this article is to describe the long-term effects of a cognitive-behavioral group intervention in reducing depressive symptoms, negative thinking, and chronic stressors in low-income single mothers identified as at risk for clinical depression.

Ann R. Peden, ARNP-CS, DSN, is a professor of nursing at the College of Nursing, University of Kentucky, Lexington; arpede01@uky.edu.

Mary Kay Rayens, PhD, is an associate professor at the Colleges of Nursing, Public Health, and Medicine, University of Kentucky, Lexington.

Lynne A. Hall, RN, DrPH, is a professor at the Colleges of Nursing, Behavioral Science, and Public Health, and assistant dean for Research and PhD Program, College of Nursing, University of Kentucky, Lexington.

BACKGROUND

Single mothers are more likely to suffer from depression than married mothers. In a 2-year prospective study, Brown and Moran (1997) found that single mothers were two times more likely to experience the onset of depression than were married mothers. Single mothers who experienced severe life events and had low self-esteem and low social support were at greatest

risk for depression. The majority of the severe events experienced by single mothers were related to disruptive behavior of their children, boyfriends, or close relatives. Compared to married mothers, single mothers also were at greater risk for a chronic depressive episode that lasted a year or more. Hall, Gurley, Sachs, and Kryscio (1991) found that the higher a single mother's everyday stressors, the greater the probability of a high level of depressive symptoms. Chronic everyday stressors may contribute to depressive symptoms in low-income single mothers.

Low-income single mothers are a vulnerable population who experience daily coping with loss, change, loneliness, limited resources, and barriers to success (Keating-Lefler, Hudson, Campbell-Grossman, Fleck, & Westfall, 2004). In mothers of young children, the prevalence of a high level of depressive symptoms ranged from 60% (Hall et al., 1991) to 78% (Peden et al., in press). Rosman and Yoshikawa (2001) examined the effects of welfare reform in a sample of 1,602 single mothers with children between 3 and 6.5 years. Forty-nine percent of the mothers had a high level of depressive symptoms as measured by the Center for Epidemiologic Studies–Depression Scale (Radloff, 1977). They concluded that maternal depression interfered with participation in work opportunities and contributed to behavior problems in their children. Depressed individuals are often less able to perform as parents or workers and often perceive themselves as being in worse health (Hays, Wells, Sherbourne, Rogers, & Spitzer, 1995).

Jayakody, Danziger, and Pollack (2000) surveyed 2,728 single mothers who were participating in required work under welfare reform. Nineteen percent had psychiatric disorders including major depression. In a study of 4,423 single mothers, those with psychiatric disorders had a 25% less chance of working compared with employed single mothers.

The investigators concluded that the presence of psychiatric symptoms increased mother's stress, affected their ability to parent, and interfered with their ability to access community services (Jayakody & Stauffer, 2000).

Negative thinking (Hollon, DeRubeis, & Seligman, 1992; Seligman, 1991) has been identified as a predictor for later development of depression in women (Brown, Andrews, Harris, Adler, & Bride, 1986; Ingham, Kreitman, Miller, Sashidham, & Surtees, 1987). Peden, Hall, Rayens, and Beebe (2000a) identified that negative thinking mediated the relationship between self-esteem and depressive symptoms in college women at risk for depression. It also mediated the effects of self-esteem and chronic stressors on depressive symptoms in at-risk low-income single mothers (Peden et al., 2004). This same team of researchers successfully tested a nursing intervention that decreased negative thinking and depressive symptoms in both of these groups (Peden, Hall, Rayens, & Beebe, 2000b; Peden, Rayens, Hall, & Grant, under review).

Experts are recommending the use of specific cognitive-behavioral techniques with at-risk individuals rather than using all the techniques in a complex treatment package (Hollon et al., 2002). In a meta-analysis of depression prevention programs, Jane-Llopis and Hosman (2003) identified those programs with more than eight sessions, with session lengths of 60 to 90 minutes, and conducted by health care providers as more effective in reducing depressive symptoms. Such interventions must possess beneficial and enduring effects, be acceptable to both client and clinician, be easily implemented by a variety of health care providers, not be too expensive, be easy to evaluate, and address functional impairment and problems in living (Hollon et al., 2002).

This article describes the use of thought-stopping techniques and affirmations or positive self-talk as means for managing negative thoughts to decrease depressive symptoms in an at-risk group. This easy-to-administer intervention is readily transportable to community-based settings. Interventions that target negative thinking may be the first step in preventing the first episode of depression in at-risk populations. Reducing mothers' negativity and depressive symptoms may improve their perceptions of their children's behavior and ultimately result in more favorable parent-child interactions.

METHODS

Design and Sample

A randomized, controlled prevention trial was conducted to test the effectiveness of an intervention designed to reduce negative thoughts and decrease depressive symptoms in low-income single mothers (Peden et al., under review). To be eligible for study participation, the single mothers had to have at least one child between 2 and 6 years of age living with them and be at or below 185% of the poverty level. Not currently receiving psychiatric care or counseling, not taking antidepressant medication, not suicidal, not currently pregnant, and not having a child less than 1 year old were additional inclusion criteria. Of the 311 women screened and invited to participate, an initial sample of 205 women was recruited and completed the baseline survey.

For these 205 low-income single mothers, baseline data were collected on negative thoughts and depressive symptoms, as well as sociodemographic characteristics (Peden et al., 2004). The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961) and the Center for Epidemiologic Studies—Depression Scale (CES-D; Radloff, 1977) were administered to identify those with a high level of depressive symptoms. To be classified as having a high level of depressive symptoms, a score of 10 or above on the BDI (Beck et al., 1961) and/or a score of 16 or above on the CES-D (Radloff, 1977) was required. Of the 205 women who completed the baseline data collection, 136 were identified as at risk for clinical depression and agreed to participate in the intervention phase of the study. As participants were enrolled in the intervention phase of the study, they were randomly assigned to the control or experimental group, with 74 randomized to the control group and 62 to the intervention group. Those in the intervention group were invited to participate in a 6-hour cognitive-behavioral group intervention distributed over 4 to 6 weeks.

Of the 136 low-income single mothers who completed the interview of the study, 86 (63%) completed all three postintervention interviews. The mean age of the 136 women in the intervention study was 27.2 (*SD* = 5.6). Slightly more than half of these mothers were Caucasian (52%, n = 71), with the majority of the remaining mothers of African American ethnicity. More than half had at least some postsecondary education (55%, n = 71). Many of the mothers were employed (57%, n = 78). Of the 78 women with jobs outside the home, 60% or 47 women had full-time employment, yet the majority of the sample (80%, n = 109) had an annual household income of $15,000 or less. Most of the low-income single mothers had never been married (58%, n = 79), whereas the remainder of women were either divorced or separated.

Measures

Depressive Symptoms

The 20-item CES-D (Radloff, 1977) contains items relating to depressed mood and psychologic indicators of depression. Respondents rated how often each symptom was experienced during the past week on a 4-point scale of *rarely or none of the time* (0) to *most or all of the time* (3). Scores range from 0 to 60, with a score of 16 or above indicating a high level of depressive symptoms. This cut point corresponded to the 80th percentile of scores in community samples (Comstock & Helsing, 1976) and has been used extensively in other studies. Both the reliability and validity of the CES-D have been supported in numerous studies (e.g., Hall, Kotch, Browne, & Rayens, 1996; Peden et al., 2000a, 2000b). Cronbach's alpha in this study ranged from .80 to .93.

The 21-item BDI (Beck et al., 1961) assesses affective, behavioral, cognitive, motivational, and vegetative aspects of depression. Each item consists of four statements, scored from 0 to 3, with 0 indicating *no symptoms* and 3 indicating *severe distress*. Subjects rated each item in terms of how they felt in the last week. Beck recommended a cutoff score of 10 or above as indicative of at least mild depression (Beck et al., 1961). Cronbach's alpha for the different administrations in this sample ranged from .78 to .93.

Negative Thoughts

The Crandell Cognitions Inventory (CCI; Crandell & Chambless, 1986) was used to measure negative thoughts. The 45-item CCI was developed using both depressed and nondepressed psychiatric patients. The negative self-statements are rated for frequency of occurrence from *almost never* (1) to *almost always* (5). Total scores range from 34 to 170, with higher scores indicating higher frequency of negative thinking. Crandell and Chambless (1986) reported a Cronbach's alpha of .95 in a sample of depressed, psychiatric, and normal individuals. Cronbach's alphas ranged from .90 to .91 in repeated assessment of negative thinking in 246 college-age women (Peden et al., 2001). Cronbach's alphas for the different administrations in this sample ranged from .94 to .97.

Chronic Stressors

The Everyday Stressors Index (ESI; Hall, 1983), a 20-item instrument that assesses common problems faced daily by mothers with young children, was used to measure chronic daily stressors. The instrument was derived from literature review, expert consultation, and adaptation of some items from the Hassles Scale (Kanner, Coyne, Schaefer, & Lazarus, 1981). The domains measured by this scale include financial concerns, role overload, employment problems, parenting worries, and interpersonal conflict. On a 4-point scale from *not at all bothered* (0) to *bothered a great deal* (3), mothers rated how much each problem worried, upset, or bothered them from day to day. A summary score of 0 to 60 is computed, with higher scores indicating more stress. Internal consistency coefficients using Cronbach's alpha ranged from .80 to .85 (Hall et al., 1996; Hall et al., 1991). The Cronbach's alpha for the ESI in this sample ranged from .80 to .87.

Table 1. Four-Week Group Intervention for Reducing Negative Thinking

Focus	Content	Homework
Session 1		
• Getting acquainted • Understanding the effect thinking has on mood and behavior • Using a cognitive-behavioral technique to manage negative thinking ("STOP")	• Overview of group • Group rules • What you think affects how you feel: An overview • Teach and practice STOP technique • Use affirmations with STOP technique; write and record • Introduce thought distortions	• Read thought distortions handout • Begin to identify how your thinking affects your feelings and behavior • Listen to STOP tape twice a day. Use STOP without tape throughout day • Work with two affirmations
Session 2		
• Using relaxation and affirmations	• Discuss thought distortions • Practice STOP technique • Select new affirmations; write and record • Practice relaxation exercise using affirmations	• Continue using STOP technique • Do relaxation exercise each day • Listen to taped affirmations twice a day • Look at written affirmations as needed
Session 3		
• Creating your own affirmations	• Discuss how to write own affirmations • Write and record own affirmations • Write on cards, post-its • Discuss thought distortions	• Use STOP as needed • Listen to tape affirmations twice each day • Do relaxation technique
Session 4		
• Changing behavior	• Identifying behaviors that foster depression • Strategies to fight depression • Review all techniques • Discuss which were most helpful	

Experimental Intervention

Those single mothers assigned to the intervention group participated in six 1-hour or four 90-minute group sessions that targeted identification of negative thinking and its affects on feelings and depressive behaviors. The original intervention was designed using a 6-week 1 hour per week format; however, committing to attending a 6-week group proved challenging for this at-risk population. To reduce the number of sessions, the intervention was formatted into four sessions, with each lasting 90 minutes. The same content was covered; however, participants attended fewer sessions. See Table 1 for a description of each of the intervention sessions.

The intervention was designed to specifically incorporate cognitive-behavioral techniques to assist in reducing negative thinking in depressed women (Peden, 1998, 2000). Thought stopping and positive self-talk (affirmations) were identified as key strategies in reducing negative thoughts. The intervention was designed using specific content from the Insight program (Gordon & Tobin, 1991), *The Depression Workbook* (Copeland, 1992), and Dr. Peden's own clinical practice with depressed women. Affirmations and direct actions were adapted from the Insight program, with permission. *The Depression Workbook* provided information on thought stopping, creating affirmations, and distorted thinking styles. Cognitive distortions (e.g., generalization, all-or-nothing thinking, mind reading, polarized thinking) were introduced to the participants and discussed weekly. Women were taught to incorporate affirmations using several techniques. These included listening to audiotapes of their own voice repeating the affirmations, posting written affirmations in their home or workplace, and incorporating affirmations into a deep-breathing relaxation technique.

Depressed women benefit from group treatment (Gordon & Tobin, 1991; van Servellen & Dull, 1981) because it allows contact with peers with similar problems, reduces isolation, promotes change, and is cost-effective. Because of these advantages, the intervention was offered in small group sessions that lasted either 60 or 90 minutes. Each group had approximately six members. A script was developed for each session to

ensure consistency in delivering the intervention. Participants received a notebook that contained all the intervention materials, including homework assignments. A psychiatric nurse with experience in leading client groups offered the intervention.

To facilitate attendance, all the sessions met in the early evening. Childcare was provided, and both the mothers and children received a light meal. To ensure attendance, each mother received a reminder call about the group the night before the meeting and the day of the meeting. Although two reminder calls seems excessive, participants needed them to remember to attend the group. These women live chaotic lives and appreciated the efforts investigators made in reminding them about the group.

Procedure

This study was approved by the University of Kentucky Medical Institutional Review Board. Data on depressive symptoms, negative thinking, and chronic stressors were collected via self-report questionnaires at baseline (prior to randomization) and from the control and experimental groups 1 month after the intervention and at the 6- and 12-month follow-ups. Study recruiters were located in the Women, Infants, and Children offices; local health department clinics; and child health clinics. Information about the study was placed in housing offices, food stamp offices, and other social service agencies. Personal letters were sent to women participating in a self-sufficiency program for single parents. All women received $20 for each of the three postintervention interviews.

Data Analysis

Differences in sociodemographic characteristics of control and experimental participants at baseline and between women who completed all four interviews and those who dropped out were examined using the *t* test or chi-square test of association, as appropriate. For each series of comparisons, a Bonferroni correction to the .05 significance level was done to control the overall Type I error rate.

The longitudinal effect of the intervention on each of the outcome variables (CES-D, BDI, CCI, and ESI) was assessed with repeated measures analysis of variance (ANOVA) using mixed model methodology (the procedure PROC MIXED in SAS [SAS Institute, 1999-2001]) with fixed effects of time, treatment, and the interaction between time and treatment; subject was included as a random effect. This mixed-model methodology allowed the use of data from all 136 intervention study participants, even if they did not complete all three postintervention interviews. Fisher's least significant difference procedure was used to make post hoc comparisons. Although not all women randomly assigned to the intervention group completed all sessions of the intervention, they were retained in this group during the data analysis, using the conservative intention-to-treat convention. For the longitudinal analyses, p values of .01 or less were deemed significant, as a multiple-comparisons adjustment to the usual .05 value.

RESULTS

Comparison of Control and Treatment Groups

There were no significant differences between control ($n = 74$) and experimental ($n = 62$) groups on maternal age, race, marital status, education, income, employment status, child's age, or gender. These two groups also were not significantly different on baseline CES-D scores, BDI scores, negative thoughts, or chronic stressors. Similarly, there were no differences in any of these baseline sociodemographic characteristics or outcome measures between those who completed all four interviews ($n = 86$) and those who had dropped out by the fourth interview ($n = 50$). The dropout rate did not vary by treatment group; 60% of the treatment group and 66% of the control group completed all four interviews.

Effects on Depressive Symptoms

The interaction between group and time was significant, indicating that the profile of mean scores for the CES-D over time differed between the groups, $F(3, 275) = 4.3, p = .006$; see Figure 1. Although depressive symptoms declined over time for both groups, the decline was more pronounced in the treatment group. Post hoc analysis using Fisher's least significant difference procedure revealed that within the treatment group, the mean CES-D score at baseline was significantly higher than at any of the postintervention interviews ($p < .0001$ for each pairwise comparison). Other relevant post hoc comparisons included lower scores for the treatment group at 1 month postintervention compared with the control group at this same time point ($p = .006$), and the 12-month control group average was significantly lower than either the baseline ($p < .0001$) or 1-month mean ($p = .001$) for that group. Other pairwise comparisons were not significant.

Shown in Figure 2 are the raw means for the BDI at baseline, 1-month, and 6- and 12-months postinter-

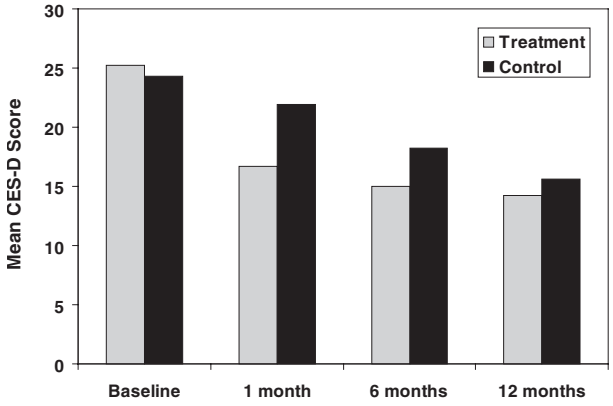

FIGURE 1. Means for Center for Epidemiologic Studies—Depression Scale (CES-D) over time by group.

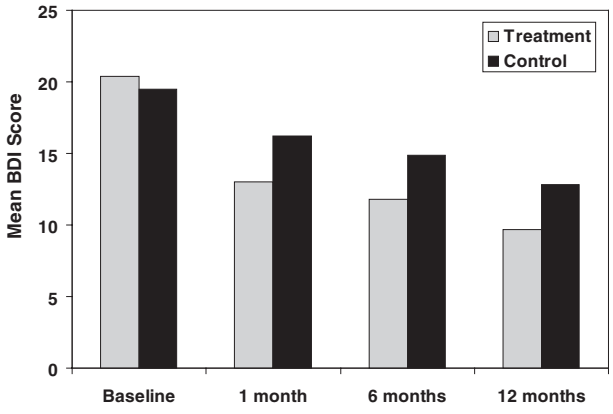

FIGURE 2. Means for Beck Depression Inventory (BDI) over time by group.

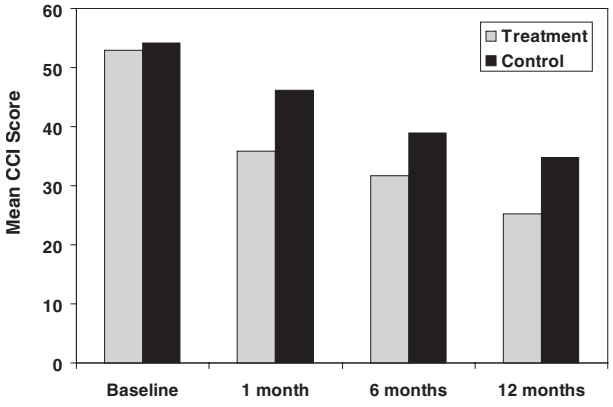

FIGURE 3. Means for negative thinking (Crandell Cognitions Inventory [CCI]) over time by group.

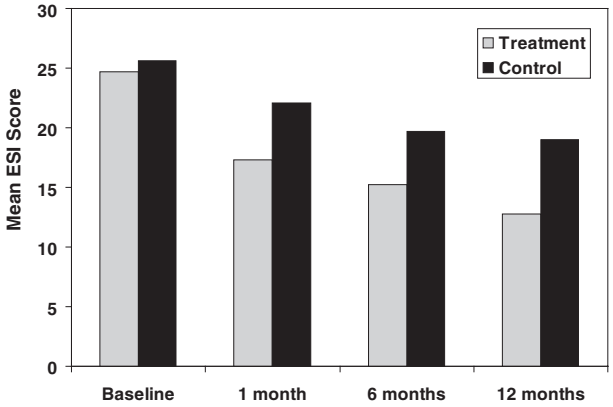

FIGURE 4. Means for chronic everyday stressors (Everyday Stressors Index [ESI]) over time by group.

vention for control and experimental groups. The repeated measures ANOVA revealed a significant interaction effect, $F(3, 275) = 5.0$, $p = .002$. Again, the decrease in depressive symptoms occurred in both groups, but the decrease was greater in the treatment group. Post hoc analysis indicated that for the treatment group, all three postintervention means were significantly lower than the baseline average ($p < .0001$ for each comparison). The control group demonstrated a similar pattern, with significantly lower means at 1 month ($p = .0001$), 6 months ($p = .002$), and 12 months ($p < .0001$) relative to the baseline mean.

Effects on Negative Thinking

The group-by-time interaction for CCI also was significant, $F(3, 275) = 5.4$, $p = .001$; see Figure 3. Negative thinking declined over time in each group but to a greater extent in the treatment group. Fisher's least significant difference procedure for this interaction term revealed significantly fewer negative thoughts for treatment group participants during each of the three postintervention interviews compared with baseline ($p < .0001$ for each comparison). Similarly, among control mothers, the average CCI score at each postintervention period was lower than baseline ($p < .0005$ for each pairwise comparison). The treatment group had less negative thinking than controls at 1 month ($p = .005$). Within the control group, there was a significant decline in negative thoughts from 1 month to 12 months postintervention ($p = .008$).

Effects on Chronic Stressors

The raw means for chronic stressors at each time and for each group are displayed in Figure 4. As with

the other outcomes, chronic stressors decreased over time; however, the decrease was larger in the treatment group. The repeated measures ANOVA demonstrated a significant group-by-time effect, $F(3, 275) = 4.5$, $p = .004$. The post hoc analysis indicated significant differences between baseline and each of the postintervention interviews for both the treatment and control participants ($p < .0001$ for each of the three comparisons within the treatment group and $p < .0005$ for the three control group comparisons). Furthermore, at 1 month postintervention, treatment participants reported fewer chronic stressors than controls ($p = .005$); this difference also was significant at 12 months postintervention ($p = .004$).

DISCUSSION AND CLINICAL IMPLICATIONS

This study adds to the growing body of evidence that depression can be prevented in at-risk groups. It also provides support for the effectiveness of cognitive-behavioral interventions in preventing depressive symptoms in at-risk individuals. Not only did the intervention decrease depressive symptoms, the effects were consistent across all outcomes, decreasing both negative thinking and modifying the mother's perception of chronic stressors.

In considering the intervention, it employs specific techniques that are delivered in four 90-minute or six 60-minute sessions (6 hours of contact). The groups were conducted by advanced practice psychiatric nurses; however, the intervention could easily be delivered by any psychiatric nurse with group skills. The effects of the intervention were enduring (over a 12-month period). This cost-effective intervention teaches women to apply selected cognitive-behavioral skills to their own life situations. For example, the cognitive distortions assist women in understanding how their thinking may contribute to negative feelings. The direct actions focus on changing individual behaviors that may sustain or continue depressive symptoms.

Both experimental and control groups benefited from participation in this project. All data collection activities occurred in the women's homes. When feasible, the same interviewer interviewed the women at each of the four data collection points. Although the interviewers were in the home only to administer the measures, it is likely that acknowledging the stressors experienced by these low-income single mothers and being interested in hearing their responses had a beneficial effect on all the research subjects. Each item on the questionnaire was read aloud to the woman. This may have provided an opportunity for each woman to reflect on her life as she formulated her verbal response. In addition, the interest of the research team in this vulnerable population may have boosted these mental health outcomes.

There are several limitations that must be addressed. By the conclusion of the study at 12-months postintervention, 37% ($n = 50$) of the participants had dropped out. Although the data analysis methods used allowed for missing data, less attrition could have strengthened the study. Both experimental and control groups benefited from participating in this study. Inclusion of a no-attention control group may address this limitation in future studies. Homework assignments were given to intervention participants. The assignments were discussed at the following session; however, records were not kept that reflected how many women actually did the homework. Better record keeping surrounding completion of homework assignments would allow linkages between outcomes and degree of participation.

The ultimate goal of prevention intervention research is to prevent the initial onset of clinical depression. Only one woman who received the intervention reported at the 12-month follow-up that she had received a diagnosis of clinical depression. This intervention has now been tested in different populations and continues to be effective in reducing negative thinking and depressive symptoms in at-risk groups. It may also be effective in other at-risk groups.

The challenge for psychiatric nurses is to offer cost-effective, easily accessible interventions to vulnerable populations. Although the challenges of working with these groups are great, interventions that prevent clinical depression are needed. Improving the mental health of low-income single mothers benefits not only the woman but also her family.

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