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The Effect of Brief Alcohol Intervention on Postpartum Depression

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Abstract

Purpose—This paper reports on secondary results from the Healthy Moms Study, a clinical trial to test the efficacy of brief intervention on reducing alcohol use and alcohol-related harms in postpartum women.

Study Design and Methods—Data from a randomized clinical trial conducted between 2002 and 2005 with a sample of Wisconsin women was analyzed. This report presents comparison data on depressive symptomatology between postpartum women drinking above recommended levels who received a brief alcohol intervention and those who received no intervention.

Results—At six month follow-up, there was a significant reduction in mean depression scores compared to baseline in the women who received the alcohol intervention ($p < .001$). There was not a significant reduction in depressive symptomatology in the control group. Mean level of depression at six months was significantly predicted by baseline depression and the intervention ($p = .018$). Alcohol use at either baseline or follow-up was not a predictive factor in determining mean depressive symptomatology.

Clinical Implications—The results of the Healthy Moms Study support the importance of both alcohol and depression screening during the postpartum period. Brief alcohol intervention during this time may also positively affect depressive symptomatology.

Keywords

Postpartum depression; Brief intervention; Co-morbidity; Health screening

Alcohol abuse and co-occurring depression are important negative postpartum outcomes, presenting challenges in both accurate identification and appropriate treatment for patients affected and their families (Homish, Cornelius, Richardson, & Day, 2004). Although there are an increasing number of assessment tools available to screen for both postpartum depression (e.g., Edinburgh Postnatal Depression Scale, Postpartum Depression Screening

World Wide Web Sites for Further Information:

United States Department of Health and Human Services: A Federal Source for Women's Health Information

www.4women.gov

www.womenshealth.gov/faq/postpartum.htm

Mayo Clinic: Tools for Healthier Lives

www.mayoclinic.com/health/postpartum-depression/DS00546

National Institute on Alcohol Abuse and Alcoholism

www.niaaa.nih.gov

Suggested Clinical Implications:

- Results support the importance of screening for both risky alcohol use and depressive symptomatology during the postpartum period
- Brief alcohol intervention may also positively affect the symptoms of depression
- Professional support during this critical period for women can decrease both alcohol use and depressive symptomatology

Scales, Patient Health Questionnaire—PHQ-2) and alcohol use disorders (e.g., TWEAK, T-ACE, CAGE), research on this population is lacking.

Postpartum depression (PPD) alone is a major health concern affecting between 10% and 15% of women following delivery (Verkerk, Pop, Van Son, & Van Heck, 2003; Wisner, Chambers & Sit, 2006). Defined as a major depressive disorder with onset within four weeks of postpartum (APA 2005), PPD not only affects the new mother, but her children and family as well. Mothers with depressive symptoms are less likely to breast feed, follow routines, or talk and play with their child (Lovejoy, Graczyk, O'Hare & Neuman, 2000; McLearn, Minkovitz, Strobino, Marks & Hou, 2006) and have an increased frequency of non-routine infant visits (Chee, Chong, Lee, Tan, & Fones, 2008). Children of mothers who are depressed may experience impaired mental and motor development, low self-esteem, behavioral challenges, and poor self-regulation (Goodman & Gotlib, 1999; Kahn, Zuckerman, Bauchner, Homer & Wise, 2002).

The health consequences associated with alcohol use by women are well documented and include increased risks of liver, intestinal, and breast cancer (Poschl & Seitz, 2004; Lin et al., 2005); disability (World Health Organization, 2004); depression (Landheim, Bakken, & Vaglum, 2006); partner violence; unwanted sexual experiences and pregnancies; and fetal alcohol spectrum disorders in some children of women who drink during pregnancy (Manwell, Fleming, Mundt, Stauffacher, & Barry, 2000; Tsai, Floyd, & Bertrand, 2006).

In addition to health concerns to the mother, risky drinking by new mothers can also affect their ability to parent effectively. Mothers who drink are less attentive to their children, and may not be able to provide a good quality home environment (Jester, Jacobson, Sokol, Tuttle, & Jacobson, 2000). Unfortunately, although new mothers typically have increased contact with primary health care providers (including obstetricians and gynecologists, pediatricians, nurses, and internists or family practitioners), oftentimes physical and mental health issues are not disclosed (Gunn, Southern, Chondros, Thomson, & Robertson, 2003).

For nearly 15 years, analyses of brief counseling interventions have reported efficacy in reducing alcohol consumption as well as associated health risks (Chang, McNamara, Orav, & Wilkins-Haug, 2006). Women of childbearing age have been targeted as recipients of this research due to the negative effects of alcohol abuse on mothers and their children in the postpartum period (Homish et al., 2004).

This analysis reports secondary results from the Healthy Moms Study, a clinical trial designed to test the efficacy of brief intervention on reducing alcohol use and alcohol-related harms by postpartum women who were drinking above recommended limits. The purpose of this analysis was to identify the relationships between depressive symptomatology as measured by the Edinburgh Postnatal Depression Scale (EPDS), alcohol consumption, and the effectiveness of a brief intervention in reducing psychological distress.

METHODS

The Healthy Moms Study was a randomized control trial of a brief alcohol intervention that recruited between July 2002 and April 2005. The intervention was provided to consenting women who screened positive for risky drinking in the postpartum period. Study recruitment took place at 34 obstetricians' offices in Wisconsin. The study protocol was approved by the University of Wisconsin's Health Sciences Institutional Review Board (IRB), and 11 additional IRBs within respective partner healthcare systems. All participants provided signed informed consent.

Research Procedures

Postpartum women 18 to 44 years old were asked to fill out a brief health screening survey (HSS) at the time of their routine six-week postpartum visit. The HSS contained items on alcohol, tobacco, and exercise. At-risk drinking included: (a) ≥ 7 drinks/week, or (b) 3 or more drinking days/week, or (c) ≥ 5 drinks/day, or (d) 4 or more drinks on 2 or more occasions within the previous four weeks, or (e) a score of 2 or greater on the CAGE alcohol screening instrument (Cut down, Annoyed, Guilty, Eye opener). Women who were eligible and agreed to be contacted were recruited by research staff to participate in an in-depth, face-to-face baseline assessment interview (BAI). The BAI contained questions about alcohol, tobacco, and other drug use, depression, health care utilization, neighborhood disorder, domestic violence, life stress, social strain, and self-esteem. Inclusion criteria for the randomization phase of the trial included (a) ≥ 20 drinks in the previous four weeks, or (b) four or more drinks on four or more occasions in the previous 28 days. Eligible women were randomized into either the brief intervention or usual care group. Those who completed each phase of the study earned \$150. Figure 1 depicts the study flow.

The brief intervention consisted of two in-person sessions with a clinician or psychologist. Although the intervention was manualized and clinicians were trained in its use (i.e., a standardized intervention booklet was filled out with each participant that included discussion about health risks associated with alcohol use, health education, and homework assignments), the clinicians also utilized their own clinical skills in administering the intervention. The sessions ranged from 15 to 30 minutes on average and were scheduled approximately one month apart, with a follow-up phone call being conducted after each session. The intervention combined the counseling methods of cognitive behavior therapy and motivational interviewing (MI) allowing interventionists to meet the patient at whatever “readiness to change” stage she was at—while adding the accountability of homework assignments and telephone follow-up. The intervention was adapted from the previous successful trial, Project TrEAT (see Fleming, Lawton Barry, Manwell, Johnson & London, 1997). Cognitive therapy is based on personality theory and recognizes that how a person thinks fundamentally determines how one feels (Beck & Weishaar, 1995). MI has been linked to self-determination theory (SDT) (Markland, Ryan, Tobin & Rollnick, 2005) a framework similar to personality development. These two techniques when combined can provide a powerful support to positive behavior change. Women who were randomized into the “usual care” group did not receive the intervention, but continued with usual postpartum care through their clinic. Follow-up interviews were conducted on both groups.

Sample

Participants were 235 postpartum women 18 years of age or older who completed all screening requirements detailed above and were randomized into either the intervention or the control group. Nearly 82% of participants were Caucasian, 6.8% were African American, 7.2% were Native American with the remainder identifying themselves as either Asian, Hispanic or Other. Over 86% of the mothers had at least a high school diploma, and over 60% of the participants were married. Table 1 provides detailed sample demographics.

Instruments

The Baseline Assessment Interview contained several standardized assessment tools. This paper reports on two of the assessments. The Edinburgh Postnatal Depression Scale (Cox, Holden, & Sagovsky, 1987) is a 10-item scale that is designed to be used as a depression screen at 6–8 weeks following delivery. Items solicit information about a new mother’s mood during the previous week. Individual items are summed with total scores ranging from 0–30. Women who score above 9 are generally considered at risk for depression and warrant further screening.

Alcohol consumption was determined by a 28-day timeline follow-back (TLFB) interview. The TLFB is a retrospective, calendar-based review of daily alcohol consumption (Sobell & Sobell, 1992). Several memory-aid tools and procedures were utilized in the interview to assist women in recalling their drinking including use of a visual calendar with key dates highlighted; using conversion cards to determine standard drink equivalents; and using verbal cues to avoid vague recall.

Data Analysis

Sample size determination for the main Healthy Moms trial was based on previous results of a brief physician advice model for problem alcohol drinkers (Fleming, 1997). Data from the 1997 study provided estimates on treatment effect sizes for the main planned analysis regarding alcohol consumption over a 28-day period. Assuming similar effect sizes, assessment of the main hypotheses ($\alpha = .01$, $1 - \beta = .80$) could be achieved with an approximate sampling of 360 total subjects (180 per treatment arm). With an attrition rate of 6%, a total sampling of approximately 382 patients (191 per treatment arm) was deemed appropriate to assure adequate power ($1 - \beta = .80$) for testing the initial hypotheses related to alcohol reduction. Recruitment fell short of the projected goal, with 235 women completing all portions of the study.

Depression was included as a secondary outcome, and no specific power analysis was conducted to address this variable. Data were analyzed using logistic and ordinary least squares regression techniques with SPSS-15. Depression was examined as the dependent variable both as a continuum of depressive symptomatology and as a dichotomy derived from prior research (Freeman et al., 2005). The treatment condition was entered as the independent variable in these models. Covariates used in the final models included, baseline depression, and alcohol use at baseline and follow-up. Descriptive results are reported as percentages, means, and medians with appropriate statistical tests of significance (Chi-square, t-tests).

RESULTS

Table 1 presents demographic information by group. The group was primarily Caucasian reflecting the population in Wisconsin. Nearly one third of the sample were college graduates, with an equal amount reporting some college, suggesting a strongly educated sample. There were no significant differences at baseline between the intervention and the control group in participant demographics, risky alcohol use or depressive symptomatology.

Alcohol Consumption

Six month follow-up results from the main study indicated significant reductions in the previous 28 days on several drink indicators including number of drinking days ($p < 0.024$), mean number of total drinks ($p < 0.013$), and heavy drinking days ($p < 0.019$). For a complete review of the main study results see Fleming, Lund, Wilton, Landry & Scheets (2008).

Depressive Symptomatology

Table 2 shows mean depression levels by group over time. While there was no difference in depressive symptomatology between groups at baseline, there was a significant reduction in mean depression scores compared to baseline in the women who received the alcohol intervention ($p < .001$). There was not a significant reduction in depressive symptomatology in the control group.

Table 3 reports the regression of group and the covariates on mean depression levels at six-month follow-up. Mean level of depression at six months is significantly predicted by baseline depression and the intervention ($p=.018$). Alcohol use at either baseline or follow-up was not a predictive factor in determining mean depressive symptomatology. Table 4 reports the percentage of women who were depressed at baseline by group over time. The experimental group had significantly fewer women at six-month follow-up who were depressed ($p<.05$).

DISCUSSION

This analysis examined the secondary effect of a brief alcohol intervention on depressive symptomatology in postpartum women who were drinking above recommended levels within six weeks of delivery. The results showed a significant reduction in depression indicators as measured by the Edinburgh Postnatal Depression Scale. On average, women in the brief alcohol intervention condition reported significantly greater reduction in depressive symptoms at the six-month follow-up than those in the control group.

Depression is a common disorder in the postpartum period, is the most frequent cause of maternal morbidity (O'Hara, 1997), and is seen as a major predictor of subsequent depression (Campbell & Cohn, 1997). Women with high levels of depressive symptomatology early in the postpartum period continue to experience significant distress and depressed mood throughout the year following delivery.

Research suggests several factors associated with postpartum depression: perceived lack of social and emotional support (Forman, Videbech, Hedegaard, Salvig & Secher, 2000); a previous psychiatric history; co-morbid alcohol use; tobacco use; binge drinking (Homish et al., 2004), financial hardship and an unwanted pregnancy (Rich-Edwards et al., 2006). Unfortunately, many women who experience postpartum depression may not follow-up with routine healthcare appointments, and therefore not be identified as being in need of treatment.

Co-morbid alcohol use and postpartum depression is a complex problem that has received very little attention in the literature. Homish et al. (2004) analyzed longitudinal data on pregnancy outcome and identified antenatal risk factors associated with these co-occurring conditions. The experience of either increased depressive symptomatology, binge drinking, or smoking at any time during a pregnancy increases a new mother's risk of co-occurring alcohol abuse and postpartum depression.

Results from the present study looked at the co-occurrence of alcohol use and depressive symptomatology. As screening and brief intervention models become more widely incorporated into the standard of care for women, the resulting improvements will positively affect not only the mother, but the entire family system as well.

The strengths of this study include a sample of women and clinical practices in Wisconsin that includes both rural and urban communities, state of the art research procedures, a large sample, long-term follow-up at 6 months, and high follow-up rates.

This study has several limitations. All reports of alcohol consumption are self-reported. Further, the treatment and control groups did not vary equally with respect to subject loss. Significantly more cases in the treatment group were lost to follow-up. It is possible that those women who completed the study were more motivated and ready to change, thus producing more positive results. And, although the EPDS is a widely-used screening for postpartum depression, it is not a clinical diagnosis of depression. Finally, this study should be replicated with to include a more diverse sample of women of color and a wider range of

educational backgrounds to determine what other factors that could be contributing to these results.

The combination of reduced alcohol consumption and reduced depressive symptomatology in new mothers is important due to the broad psychosocial consequences on their children. This novel finding is an initial indicator that brief alcohol interventions can have a more broad impact on postpartum women and other populations than has been considered in previous studies.

Acknowledgments

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Figure 1.
Flow of Participants

Table 1

Sample Demographics by Group

	Control (N=113)		Treatment (N=122)	
	N	%	N	%
Age				
18–21	17	15.0	19	15.6
22–25	20	17.7	22	18.0
26–30	32	28.3	40	32.8
31–35	28	24.8	22	18.0
36–40	15	13.3	15	12.3
41 or more	1	0.9	4	3.3
Race				
Caucasian	90	79.6	102	83.6
African American	10	8.8	6	4.9
Native American	9	8.0	8	6.6
Asian	1	0.9	1	0.8
Hispanic	2	1.8	4	3.3
Other	1	0.9	1	0.8
Marital status				
Married	64	56.6	79	64.8
With partner/not married	28	24.8	23	18.9
Separated	1	0.9	2	1.6
Divorced	1	0.9	0	0.0
Widowed	1	0.9	1	0.8
Never married	18	15.9	17	13.9
Education				
Less than HS	9	8.0	21	17.2
HS graduate	33	29.2	23	18.9
Some college	35	31.0	39	32.0
College degree	35	31.0	39	32.0
Employment				
Working full-time	14	12.4	15	12.3
Working part-time	9	8.0	8	6.6
On maternity leave	58	51.3	53	43.4
Unemployed, seeking employment	9	8.0	21	17.2
Not in labor force	21	18.6	20	16.4

Table 2

Mean Depression Levels by Group Over Time

	Baseline	Six Months	Sig of change (t- test)
Control (n=108)	8.47 (5.6)	8.06 (5.7)	t=0.95, 107 d.f., p = .342
Experimental (n=97)	8.84 (5.5)	6.84 (5.2)	t=3.69, 96 d.f., p < .001
Sig of Diff	F = .266, p = .61	F=2.56, p = .111	

Table 3

Regression results—Mean Depression At 6 months

Variable	B (s.e.)	Beta	T	sig	CI-95
Constant	2.97 (.75)		3.94	< .001	1.48, 4.45
Baseline depression	0.60 (.06)	.622	10.71	< .001	.492, .714
Drinks per month at baseline	.000 (.02)	-.001	-.025	.98	-.031, .031
Drinks per month at 6 months	.000 (.01)	-.001	-.022	.98	-.030, .029
Experimental group	-.46 (.612)	-.134	-2.39	.018	-.67, -.258

Table 4

Percent Depressed by Group Over Time

	Baseline	Six Months	P
Control (n=108)	43.5%	39.8%	.54
Experimental (n=97)	44.3%	30.9%	.04

Total change is significant $p < .05$