

Single-session Motivational Intervention to Decrease Prenatal Alcohol Use



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Fetal Alcohol Spectrum Disorders



- FASD is one of the leading causes of mental retardation, neurodevelopmental disorders, and birth defects in US (Jacobs et al., 2000)

- Fetal alcohol syndrome – 2-7 out of 1000 births
 - Growth retardation
 - CNS abnormalities
 - Facial dysmorphism

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Fetal Alcohol Spectrum Disorders

- FASD affects 2-5% of all US live births (May et al., 2009)
- Alcohol-related neurodevelopmental disorders (ARND)
- Alcohol-related birth defects (ARBD)
- FASD is 100% preventable (US DHHS, 2005)

Alcohol Use During Pregnancy

- 7.6% of pregnant women reported drinking any alcohol in the last 30 days with 1.4 % bingeing (Marchetta et al., 2012),
- Up to 35% pregnant women drink alcohol during the entire pregnancy (Bobo, Klepinger, & Dong, 2006)
- Interventions to reduced alcohol-exposed pregnancies have varying degrees of effectiveness with outcomes dependent on dosage and ingredients (Chang et al., 2005; Floyd et al., 2007; Handmaker, Miller, & Manicke, 1999; Manwell et al., 2000; O'Conner & Whaley, 2007).
- ***Yet little is known about the mechanisms of interventions that evoke changes in a pregnant woman's drinking behaviors.***

Self-Determination Theory (SDT)

- An approach to human motivation that emphasizes a *person's inner resources* which facilitate personal growth, integration, well-being, and self-regulation of behaviors (Deci & Ryan, 2000).
- **3 Basic Psychological Needs**
 - Autonomy – Competence - Relatedness
- Satisfaction of these needs leads to more *intrinsically, autonomously motivated* behaviors.
 - External versus internal regulation of behaviors
- **External social environment**
 - Involvement – Autonomy Support - Structure

Motivational Interviewing (MI)

- *Client-centered, directive method for enhancing intrinsic motivation to change*” (Miller & Rollnick, 2002, p. 25)
- **4 MI principles:**
 - 1. establishing empathy
 - 2. developing discrepancy
 - 3. rolling with resistance
 - 4. supporting self-efficacy
- Promotes health behavior change – risky alcohol /drug use , diet , exercise, HIV risk reduction (Burke et al., 2003; Floyd et al., 2007; Handemaker et al., 1999; Hettema et al., 2005)

Study Aims

1. To determine the effectiveness of an MI intervention to decrease prenatal alcohol use.
2. To determine the influence of the MI intervention on the drinking behaviors of pregnant women as mediated by the Self-Determination Theory concepts of basic psychological need satisfaction and autonomous motivations to decrease prenatal alcohol use.

Methods

Experimental 2 group pretest/posttest design

Women at 3 prenatal clinics in a Midwestern university medical center

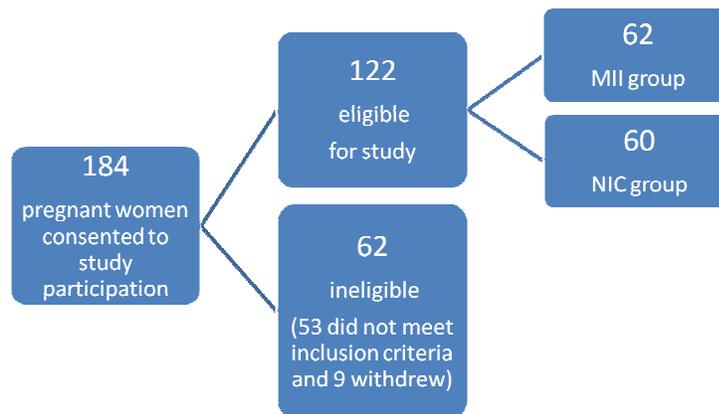
Inclusion criteria	Exclusion criteria
18 to 44 years of age, inclusive	Termination of pregnancy
≤ 36 weeks gestation	Fetal loss before completion of study
At a prenatal visit	
Able to speak and read English	
Positive for ANY alcohol use in previous year	
Available by phone for follow-up (30 day postbaseline and 30 day postpartum followup)	

Research Design

Eligibility Phase	Intervention Phase		Followup Phase 30 Day Postbaseline	30 Day Postpartum
O ₁	R O ₂	I ₁	O ₃	O ₄
Consent for study	V2	Motivational Interviewing Intervention (MII) Group	V1	V1
Demographic information	Basic Psychological Needs Scale (BPNS) – (Gagne, 2003)		Quantity/frequency drinking questions	Quantity/frequency drinking questions
V1	V3	OR	AUDIT	AUDIT
Quantity/frequency drinking questions	Treatment Self-Regulation Questionnaire (TSRQ) (Ryan & Connell, 1989; Ryan, Plant, & O'Malley, 1995)	No- MI Intervention Comparison (NIC) Group	V2 BPNS	V2 BPNS
Alcohol Use Disorders Identification Test (AUDIT) (Babor, Higgins-Biddle, Saunders, & Monteiro, 2001)	-Relative Autonomy Index (RAI) -Modified for pregnancy version (TSRQ-P) (Osterman, 2011)		V3 TSRQ-P	V3 TSRQ-P

Results

□ MII and NIC groups



Sample Demographics (N =

184)
 Mean age = 25.4 years

- Mean weeks gestation = 24.3
- The majority of the women were:
 - African American (63.6%)
 - Single (79.9%)
 - High school diploma or higher education (73.9%)
 - Annual income of less than \$15,000 (73.9%).
 - Mean number total pregnancies = 3.6
 - Mean number of deliveries in the women's lifetime = 1.9

Outcome Variables

Drinking Behaviors, BPNS, & RAI at Baseline, 30 Day Postbaseline, and 30 Day Postpartum Followups for the MII (n=62) and NIC (n=60) Groups

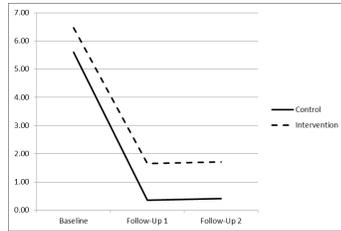
Means (SD)	Baseline		30 Day Postbaseline		30 Day Postpartum	
	NIC	MII	NIC	MII	NIC	MII
Drink Days per Week	0.12 (0.38)	0.13 (0.57)	0.04 (0.29)	0.00 (0.00)	0.08 (0.28)	0.16 (0.47)
Drinks per Day	0.24(0.88)	0.18 (0.60)	0.04 (0.29)	0.05 (0.30)	0.18 (0.49)	0.35(0.80)
AUDIT	5.60 (4.87)	4.86 (4.99)	0.35 (1.03)	0.45 (0.98)	0.41 (0.89)	0.53 (1.37)
BPNS	5.45(0.89)	5.69(0.80)	5.78 (0.96)	6.12 (0.77)	6.02 (0.85)	6.19 (0.68)
RAI	1.76 (1.21)	1.75 (1.30)	1.86 (1.10)	1.76 (1.28)	2.37 (1.19)	1.93 (1.06)

Analysis

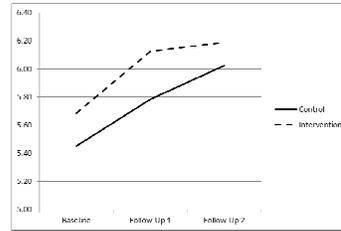
- Poisson regression – modeled all count outcome variables for drink days per week & drinks per day
- Linear regression – model outcome variables with non-count outcomes (BPNS, RAI)
- Generalized estimating equations (GEE) – examined whether the MI intervention significantly decreased women’s drinking behaviors across time, relative to the comparison group.

GEE Results

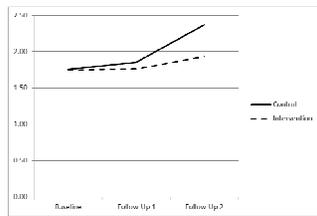
- No significant changes in Drink Days per Week or Drinks per Day over time or differences between groups noted
- Significant decrease in AUDIT scores across time ($b = -1.86$; $z = -14.21$, $p < 0.01$) for both groups, but no differences between groups noted
- Significant increases in the RAI ($b = 0.3$; $z = 3.32$, $p < 0.01$) and total BPNS scores across time ($b = 0.3$; $z = 5.75$, $p < 0.01$), but no differences between groups noted
- No significant interactions in any model



Predicted Counts of Total AUDIT Scores



Total BPNS Scores



RAI Scores

Conclusions

- MI was not effective in decreasing prenatal alcohol use in women reporting alcohol use in the previous year.
- No mediating effects of basic psychological need satisfaction or autonomous motivations to decrease prenatal alcohol use were found.
- Significant decreases in AUDIT scores and significant increases in BPNS and RAI were found across time for both groups

Discussion

- Single-session intervention not sufficient in dose or ingredients to decrease prenatal drinking behaviors
 - More effective with higher level drinkers (Ballesteros et al., 2004; Chang et al., 2005; Handemaker et al., 1998; Osterman & Dyehouse, 2012)
 - Future studies increase dose and ingredients of intervention
- Due to the low levels of alcohol use reported , there was limited room for improvement due to intervention
 - Recruit higher level drinkers in future – women with mental health and trauma histories, substance users
 - More reliable assessment alcohol use - TLFB, biomarkers

Discussion

- Women already motivated and ready for change – high BPNS scores at baseline
 - MI more effective if more resistant and less ready for change (Hettema et al., 2005)
 - More research needed to determine influence of theory-based mechanisms of behavior change
- Majority of women were African American
 - Drink less during pregnancy than White women (Marchetta et al., 2012)
 - More difficulty quitting (Tenkku et al., 2009)
 - More FASD reported in African American children (Miller et al., 2002)
 - Related to minority women in poverty (Abel, 1995; May et al., 2009)
 - Culturally-sensitive interventions

Conclusion

- With 2-5% of children affected by FASD, effective interventions are needed to assist pregnant women to decrease prenatal alcohol use.
- In the prevention of FASD, this study provides information essential in the future development and testing of interventions specific to the special needs of pregnant women who drink.

Publication

- **Osterman, R.L.,** Carle, A.C., Ammerman, R.T., & Gates, D. (2014). Single-session motivational intervention to decrease alcohol use during pregnancy. *Journal of Substance Abuse Treatment, 47*, 10-19.

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