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Case Management Reduces Drinking During Pregnancy among High Risk Women

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Abstract

Aim—Estimate the efficacy of Case Management (CM) for women at high risk for bearing a child with Fetal Alcohol Spectrum Disorders (FASD).

Design—Women were recruited from antenatal clinics and engaged in 18 months of CM.

Setting—A South African community with a subculture of heavy, regular, weekend, recreational drinking and high documented rates of FASD.

Participants—Forty-one women who were high risk for bearing a child with FASD.

Measures—Statistical analysis of trends in drinking and other risk factors.

Findings—At intake 87.8% were pregnant, most had previous alcohol-exposed pregnancies, most/all of their friends drink alcohol (67.5%), and 50.0% had stressful lives. CM was particularly valuable for pregnant women, as statistically significant reductions in alcohol risk were obtained for them in multiple variables: total drinks on weekends after six months of CM ($p = .026$) and estimated peak blood alcohol concentration (BAC) at six ($p < .001$) and 18 months ($p < .001$). For participants completing 18 months of CM, AUDIT scores improved significantly by 6-month follow-up (from 19.8 to 9.7, $p = .000$), and even though rising at 12 and 18 months, AUDIT scores indicate that problematic drinking remained statistically significantly lower than baseline throughout CM. Happiness scale scores correlated significantly with reduced drinking in most time periods.

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Conclusions—An enduring change in drinking behavior is difficult in this social setting. Yet, CM provided by skilled and empathic case managers reduced maternal drinking at critical times, and therefore, alcohol exposure levels to the fetus.

Keywords

fetal alcohol spectrum disorders (FASD); prevention; case management; alcohol abuse

Fetal alcohol spectrum disorders are the leading known preventable forms of birth defects and developmental disabilities in many human populations (May et al., 2008). Specific sub-populations in the Western and Northern Cape Provinces of the Republic of South Africa (ZA), have among the highest documented prevalence of Fetal Alcohol Syndrome (FAS) and FASD in the world (May et al., 2000; 2007; Urban et al., 2008; Viljoen, et al., 2005). FAS, the most severe diagnosis within the spectrum of FASD, is characterized by a unique pattern of facial features, physical growth retardation, and developmental delays. All are caused primarily by heavy exposure to alcohol in utero (Hoyme et al., 2005; Stratton, Howe, & Battaglia, 1996). The interaction of alcohol with other maternal risk factors such as nutrition, maternal age, childbearing history, and specific host and environmental conditions affect pregnancy outcome directly or possibly through epigenetic factors (May & Gossage, 2011). To the degree that maternal drinking and related co-factors of risk occur, various outcomes and diagnoses ensue: from children who are severely dysmorphic and behaviorally challenged (FAS and Partial FAS (PFAS)) to children with less dysmorphia and cognitive and behavioral symptoms that are often less clear cut in their manifestations and diagnoses (Alcohol-Related Neurodevelopmental Deficits (ARND)) and Alcohol-Related Birth Defects (ARBD)) (Stratton, et al., 1996).

Because it is theoretically possible and practical to eliminate or reduce drinking among pregnant women through behavioral interventions, the United States Institute of Medicine (IOM) recommended comprehensive prevention of FASD at three levels: universal, selected, and indicated (Stratton, et al., 1996). While universal methods such as public education and public policy are appropriate for entire populations, selected prevention techniques (e.g. special types of pregnancy advice of how to avoid alcohol before and during pregnancy) (Centre for Disease Control (CDC), 2005; Food and Drug Administration (FDA), 1981) are targeted to women of childbearing age. More specifically, indicated prevention of FASD is a tertiary-level approach where women of childbearing age who drink are provided birth control to prevent a pregnancy when they are drinking (Masis & May, 1991; Velasquez et al., 2010). But if pregnant, or about to become pregnant, Case Management (CM) can be utilized to educate, coach, and support women through a healthy pregnancy that is free from alcohol use or heavy drinking (Grant, Streissguth, & Ernst, 2002; Grant et al., 2009; May et. al., 2008). CM is a major tool for FASD prevention consisting of a set of social service functions that assists women to access their inner strengths and external resources that reduce alcohol use during pregnancy.

Program Design and Theoretical Underpinnings

CM was implemented by trained, bilingual project officers (social workers or nurses by professional training) who received two weeks of intensive, specialized training from experts in social work, Motivational Interviewing (MI), the Community Reinforcement Approach (CRA), and prevention. Most of the clinical training was carried out in the first language of the service population, Afrikaans; yet some programmatic research and public health training was in English. Additionally, professional mentoring/coaching on consistent implementation of CM was implemented in Afrikaans and English throughout CM activities. Proven principles and methods of social work (Brun & Rapp, 2001; Gursansky,

Harvey, & Kennedy, 2003; Rapp & Goscha, 2004; Timberlake, Farber, & Sabatino, 2002), MI (Miller & Rollnick, 2002), and CRA (Meyers & Smith, 1995) were used by case managers to encourage positive changes in lifestyle, childbearing practices, and drinking behavior.

Miller and Rollnick (2009) defined MI as a collaborative, person-centered form of guiding people to elicit and strengthen motivation for change. The MI approach is respectful, quietly attentive, and supportive of the individual's right to make decisions and take action. Our application within CM is based on four key MI principles: expressing empathy through reflective listening; developing discrepancy in clients about negative impacts of current behavior, goals, and values; rolling with client resistance to avoid arguments that undermine changes; supporting self-efficacy by expressing optimism for change and highlighting a client's responsibility to choose and carry out changes.

CRA is a comprehensive, behavioral program for treating substance abuse problems. Its goal is to make a sober lifestyle more rewarding than the use of substances (Meyers & Smith, 1995; Miller, Meyers, & Hiller-Sturmhofel, 1999; Meyers, Smith, & Lash, 2003). CRA has been used successfully as a treatment approach with family members and friends to respond more effectively to high risk behavior and reinforcing healthier choices (Herbeck, Hser, & Teruya, 2008; Roozen, et al., 2004).

METHOD

Recruitment of Subjects-Inclusion and Exclusion

As part of a community wide, comprehensive prevention program based on the IOM model of FASD prevention (Stratton, et al., 1996), public education on FASD (pamphlets, videos, and discussion) and screening for drinking during pregnancy were provided by NIAAA-funded, Stellenbosch University staff in government-funded local, community antenatal clinics. As depicted in Figure 1, inclusion in CM was specifically aimed at women who: 1) already had borne one child diagnosed with an FASD, or had drank heavily in a previous pregnancy; or 2) were drinking heavily when pregnant in their current pregnancy (8 or more drinks per week or one binge ≥3 drinks a day, any day of the week); or 3) scored high on the Self-Administered Questionnaire (SAQ) (Bad Heart Bull, Kvigne, Leonardson, Lacina, & Welty, 1999) or the Alcohol Use Disorders Identification Test (AUDIT) (Babor, de la Fuente, Saunders, & Grant, 1992). If a woman met none of the above inclusion criteria (e.g., was drinking at lower levels), then she was excluded from the study. The overarching, practical goals of CM were: to protect the health of the fetus through prenatal care; to work with and support heavy drinking pregnant women by motivating them to abstain or reduce their alcohol intake; and to contribute to a better life by improving their day-to-day quality of life and therefore reducing the prevalence of FASD.

If women contacted in the antenatal clinics were found to be drinking heavily or report drinking heavily in a past pregnancy, then they were screened further using the SAQ and/or the AUDIT. If found to be high risk, particularly if there was indication that a previous child had been heavily exposed to alcohol, then the individual was invited to participate in CM on a regular basis for 18 months.

Data Collection and Data Analysis

Data were collected via interview at baseline, and 6, 12, and 18 months after entering CM. Items used to assess outcome over time included: independent measures of quantity, frequency, timing and context of drinking, such as the number of drinks consumed per week, on weekends, and drinks per day when drinking. The drinking problem scale used in this evaluation to assess drinking problems, is the AUDIT (Babor et al., 1992). Scales assessing

participant mental health are also reported: the Happiness Scale (Meyers & Smith, 1995) and Psychological Pain (Schneidman, 1999). Blood Alcohol Concentrations (BAC) were estimated by the BACCUS technique (Markham, Miller, & Arciniega, 1993) which adjusts for person's sex, weight, type of beverage, amount consumed, and duration of drinking episode.

Data analysis using SPSS Version 19 (SPSS, 2010) consisted of repeated measures analyses, with Bonferroni post hoc testing as appropriate, analyses of variance, t-tests, and basic cross tabulation to examine descriptive and material risk characteristics of the sample, as well as examine change over time. Emphasis was placed on measures evaluating reduction or elimination of alcohol consumption during the index pregnancy.

RESULTS

Over the first, three year course of this research project (as of February, 2012), 41 women participated in the project. Of these women, 33 completed 6-month follow-up, 31 completed 12-month follow-up, and 30 completed the 18-month follow-up (see Figure 2). Thus, during this time period 11 (26.8%) women began, but did not complete the entire study period. Table 1 indicates that the women who did not complete CM had relatively similar risk profiles to those women who remained in CM the entire 18 months. Of the women who dropped out, all were pregnant, with the exception of one. Compared with the rest of the sample, drop outs were both significantly lower risk in some ways (lower gravidity and parity), but higher risk in others (lower average Body Mass Index (BMI), a smaller head circumference, and have been drinking regularly for more years) (see Table 1). At this point in the study we do not know what forces were most influential on retention vs. departure.

Data (Table 2) indicate that the women in CM were in the high risk categories in terms of age at pregnancy (approaching age 25 and older) and high gravidity. Low average BMI (under 25 BMI) is also indicative of high risk for producing affected offspring. Women in CM had started drinking at a younger age and their total years drinking regularly were both higher than indicated in community samples (see May et al., 2005, 2008). Several of the drinking variables at baseline confirm that these women are most likely already concerned about their drinking and have tried to reduce their alcohol consumption between contact at antenatal clinic and first CM visit where baseline data were collected.

Although over 95% of the CM participants reported being Christian, nearly a third (28.9%) reported never attending church (see Table 3). This may well be a problem of logistics for those who both live and work on farms. Over 70% of CM women do not work for money, and 87.8% were pregnant at the time of intake. The majority (67.5%) of the sample report that "half," "most," or "all," of their current friends drink alcohol. Half (50.0%) of the women report their lives to be "very" or "extremely" stressful.

Drinking Characteristics

Also in Table 2, the mean age of first drinking was 16.1 years and ranged from 10.0 years to 22.0 years of age. The mean duration of drinking (number of years that these women had consumed alcohol) was 8.0 years (minimum 1.0 years, maximum 18.0 years). At the intake interview, the mean number of drinks per week was 5.1 drinks (SD = 9.1), and ranged from no drinks to 45.1 drinks per week.

Most alcohol was consumed on weekends (Fridays, Saturdays, and Sundays), with a mean of 5.4 drinks (SD = 8.7), ranging widely from 0.0 drinks over the weekend to 40.7 drinks. In addition, over half the sample reported that "most" (15.0%) or "all" (42.5%) of their friends currently drink alcohol. Interestingly, there is a non-significant trend (F = .062, p = .805)

suggesting that persons who are employed consume more standard drinks per occasion ($\bar{x}$ = 4.4, *SD* = 4.2) than those who are unemployed ($\bar{x}$ = 3.9, *SD* = 4.2). Case managers indicate that those with more money can afford more alcohol.

Repeated measures analysis of total drinks consumed over a weekend (see Figure 3) show no significant within-subjects main effect for either time (F = .159, p = .918) or time x pregnancy (F = .423, p = .730). However, there is a significant between-subjects main effect: pregnant women consume significantly fewer drinks than do non-pregnant women in CM (F = 4.55, p = .043). Post hoc analyses indicate that at 6 months, pregnant women are consuming significantly less ($\bar{x}$ = 2.7, t = 3.62, p = .026) than non-pregnant women ($\bar{x}$ = 13.9).

Drinking Characteristics During Pregnancy

Estimated BAC's are presented from baseline to 18 months for pregnant and non-pregnant women in Figure 4. One participant's data were removed because of an erroneously excessive estimated BAC (e.g., Peak BAC > 8.000) leaving 29 subjects in this analysis. Although repeated measures analysis is not significant by time (F = .256, p = .857) nor by the time x pregnancy interaction (F = 2.00, p = .115), the between-subjects main effect of pregnancy is significant (F = 5.49, p = .022). Comparison between pregnant and non-pregnant women at 6 months shows significantly lower BAC for pregnant women during this critical time (t = −4.77, p = .000), as well as at 18 months (t = 3.67, p = .000). For those women who are pregnant, peak BAC standard deviations all went down, for all days (i.e., Friday, Saturday, and Sunday), at 6 months, indicating that heavier binges were reduced between baseline and 6 months.

The mean AUDIT score for these 29 women who were involved in CM for the entire 18 months was 19.4 at baseline (*SD* = 6.7) and ranged from 7.0 to 29.0 (Figure 5). There was a significant drop in AUDIT scores to 9.7 at six months and a slight rise to 10.8 at 12 months and 12.3 at 18 months. The top three AUDIT items (Figure 6) registering the largest reduction from baseline to 6 months were items 2, 3, and 5: "How many drinks containing alcohol do you have on a typical day when you are drinking?", "How often do you have six or more drinks on one occasion?", and "How often during the past 6 months have you failed to do what was normally expected from you because of drinking?"

The mean number of drinks per week prior to pregnancy was 20.0 ranging from 0.0 drinks to 87.5 drinks (See Table 4). Most women began CM in their third month of pregnancy. The mean number of drinks consumed per week in the second and third trimesters and overall during the index pregnancy is significantly lower (via paired t-test analysis) than the amount reported prior to pregnancy: 1st trimester was 19.3 drinks (*SD* = 17.4), when the women were usually not aware that they were pregnant; 2nd trimester was 10.4 (*SD* = 16.1); and third trimester was 3.7 drinks (*SD* = 14.1). Repeated-measures analysis also indicate that the overall within-subjects main effect of time is highly significant (F = 34.56, p = .000), with pairwise comparisons registering significant differences between number of drinks consumed per week prior to pregnancy and in the second trimester (p = .000) and third trimester (p = .000). Likewise, there is a significant difference between number of drinks consumed per week in the first trimester and in the second (p = .000) versus third (p = .000) trimester. There is also a significant difference between the number of drinks consumed in the second and third trimester (p = .001).

Mental Health Characteristics-Psychological Pain and Happiness

Half (50.0%) of the women reported their lives to be either "Very" (47.5%) or "Extremely" (2.5%) stressful. Total Psychological Pain scores (adapted from Shneidman, 1999) for the

sample of women was approximately at the lower third of the scale ($\bar{x}$ = 21.4, *SD* = 12.8); although, notes of the case managers conducting the interviews suggest that some women did not fully understand the concept of psychological pain. Nevertheless, a repeated measures analysis of Psychological Pain total score by time, approached significance (F = 2.44, p = .072), showing a steady reduction in pain from baseline ($\bar{x}$ = 21.0) to 18-month follow-up ($\bar{x}$ = 16.0).

General well being at intake, as measured by the Happiness Scale (Meyers & Smith, 1995), indicated a reasonable level of reported happiness among the sample of women ($\bar{x}$ = 97.0 out of 130 possible points, *SD* = 17.9). More specifically, Happiness Scale data tell us that money management and drinking/sobriety are the most worrisome areas of their lives. Though repeated measures analysis showed the total happiness score to not be significant (F = 1.18, p = .325), results were in the positive direction (higher scores indicating greater happiness), rising from baseline ($\bar{x}$ = 94.6) to 18-month follow-up ($\bar{x}$ = 98.5). Happiness score data over time are positive and reflect well on the case management process and the reduced drinking that occurred at 6 months and 12 months. At 6 months, the Total Happiness Score was significantly correlated with less Friday drinking (R = −.379, p = .032), but not with Saturday (R = −.279, p = .122) nor with Sunday (R = −.093, p = .612) drinking. At 12 months, Total Happiness Score was significantly correlated with less drinking on Friday (R = −.571, p = .002) and Saturday (R = −.646, p = .000), but not Sunday (R = −.276, p = .155). Total Happiness Score at 18 months was not significantly correlated with any drinking data.

DISCUSSION

CM instituted in this high risk community does reduce risk to the fetus by reduced levels of exposure to alcohol in pregnant women as measured by AUDIT score, average alcohol consumption, and estimated peak BAC measures. Therefore, unborn children/fetuses benefited directly from less drinking and the mother's lower peak BAC during gestation. CM appears to increase levels of happiness in the participants which correlates with reduced drinking. CM was not efficacious at producing changes in the women who were not pregnant. Once pregnancy was completed among the other women, long term improvements were not maintained, as the formerly pregnant women often returned to the heavier drinking pattern that is normative among drinking women in this subpopulation, although their post-partum drinking is at somewhat reduced levels.

Limitations and Other Considerations

One limitation of the study is that 26.8% of the women enrolled at baseline dropped out before the complete 18 month period of CM and evaluation. However, the comparison of non-completers to completers in Table one indicates more similarities than differences. But the question still remains: were those who dropped out much higher risk than others, and did any of the contact with CM have any effect on their drinking behavior? By limiting the longitudinal AUDIT score analysis to only those who completed 18 months of CM, the reduction in drinking problems reported here is a valid reduction in risk.

A second limitation of this evaluation may be that the subjects were not randomly assigned to either treatment or a control condition. Random assignments could have been made and the results evaluated by case control methods, but in a true public health spirit for this comprehensive prevention program in a small community, the ethics of such a design might be questioned. Our goal was to provide the maximum number of benefit to the maximum amount of people to help this community deal with the tremendous FASD problem uncovered by previous research. Therefore, it was believed to be both ethical and practical to evaluate efficacy through change over time.

Third, since this analysis estimates the value of CM over time and does not compare them to a control group, future studies need to provide drinking data for a matched control group. Fourth, some might say that this effort failed because complete abstinence was not achieved with most of the women throughout pregnancy. But our epidemiological research has shown repeatedly that many children can be exposed to substantial amounts of alcohol in the prenatal period and be born: with normal functioning and without a diagnosis on the continuum of FASD (May & Gossage, 2011). The measurements of success here indicate clearly that drinking, especially heavy, episodic (binge) drinking and high peak BAC's, were reduced significantly in pregnant women to levels that rendered a diagnosable FASD improbable in the majority of the children born to these mothers in these particular pregnancies. Our clinical research team members believe that the gold standard for prevention is the birth of a child with growth, development, and behavioral functioning within normal population parameters. If CM can help accomplish that, it is a success.

Conclusions

This study indicates that utilizing CM as a prevention method helps women abstain from or reduce their alcohol intake during pregnancy. Participants' problem drinking scores showed a significant improvement from baseline to their 6 month follow-up (from 19.8 to 9.7, $p = .000$); and although their scores rose incrementally from the 6 month follow-up to the 12 and 18 month follow-up, overall their scores remained lower than at baseline. Measures of the quantity of drinking that occurred and the estimated BAC to which the children were exposed for vitally important time periods in the pregnancies followed a generally similar and positive pattern. These results support the efficacy of case management for use with high risk drinkers, while also showing the often transitory nature and difficulty of making an enduring personal change in this particular environment where weekend drinking remains popular and is one of the only available forms of recreation.

Acknowledgments

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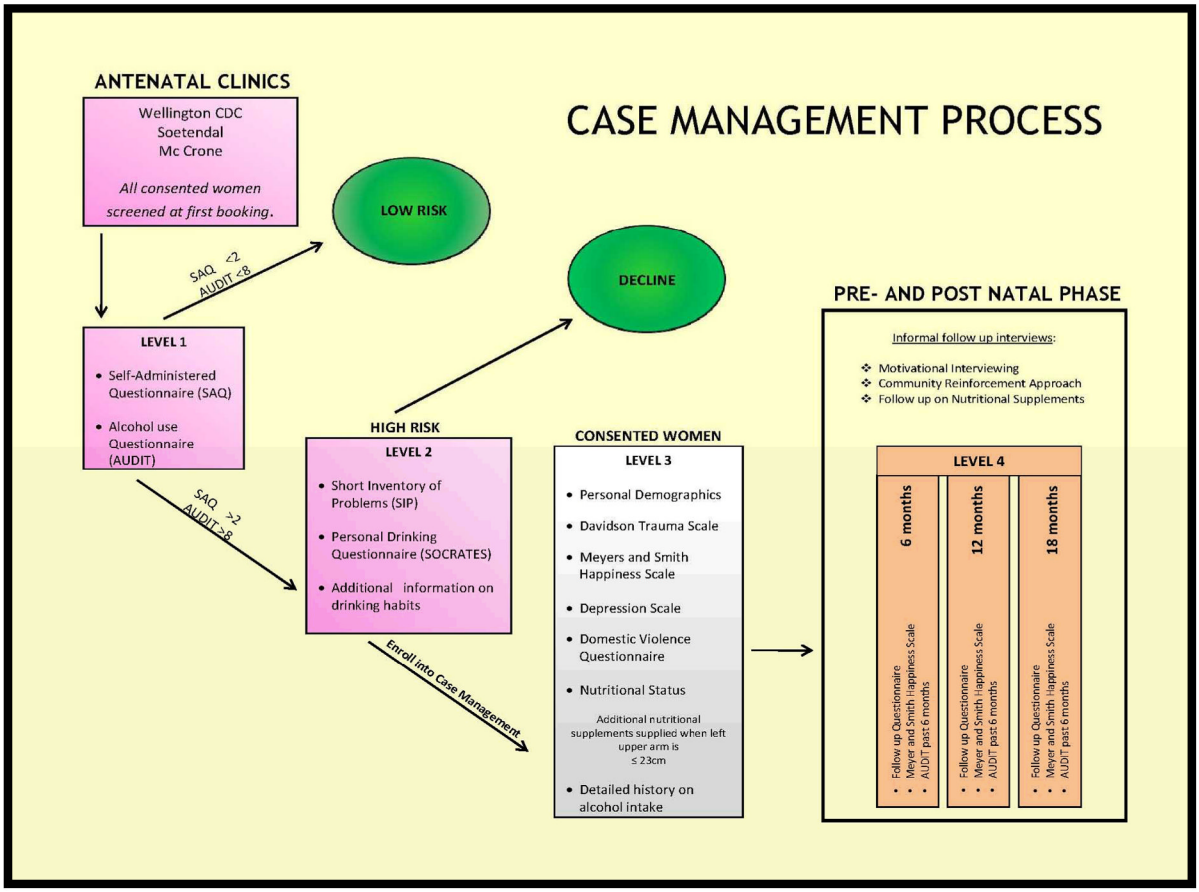

Figure 1.
Case Management Process

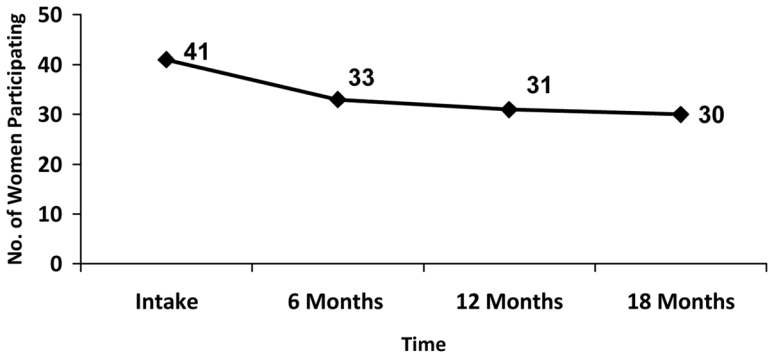

Figure 2.
Participation in Case Management over Time.

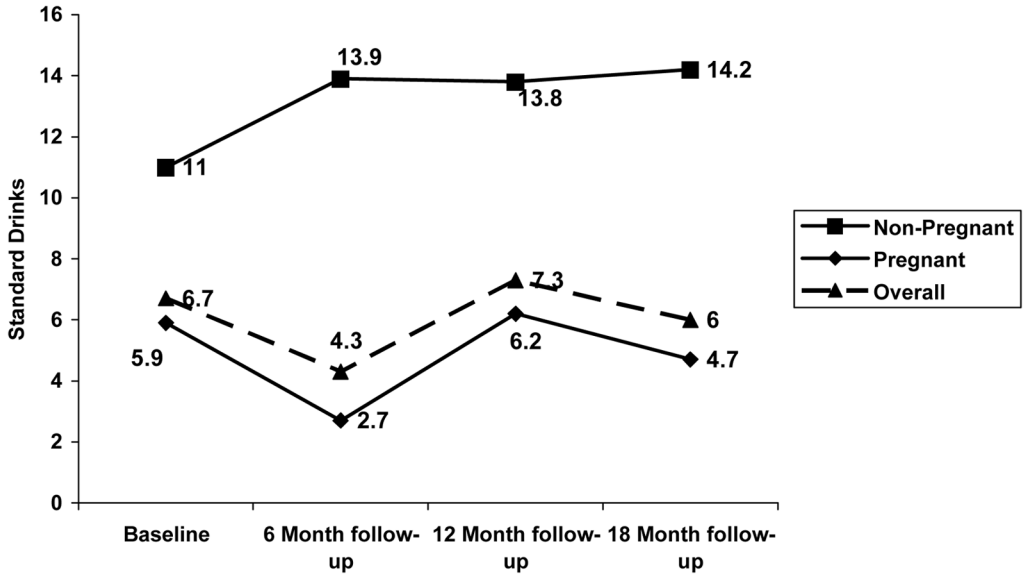

Figure 3. Total drinks consumed over a weekend at Baseline, 6, 12, and 18 month follow-up[a]

(N = 29; pregnant n = 25, non-pregnant n = 4, at baseline, 6 months, 12 months, and 18 months)

Repeated measures analysis, between-Ss effect, pregnancy: F = 4.55, p = .043

Repeated measures analysis, within-Ss effect, time: F = .159, p = .918

Repeated measures analysis, within-Ss effect, time x pregnancy: F = .423, p = .730

Pregnant vs, Non-Pregnant weekend drinking:

At baseline, t = .76, P = .486

At 6 months, t = 3.62, P = .026

At 12 months, t = 1.16, P = .275

At 18 months, t = 1.91, P = .120

[a]Data in Figure 2 include only those women who have data for all four time periods.

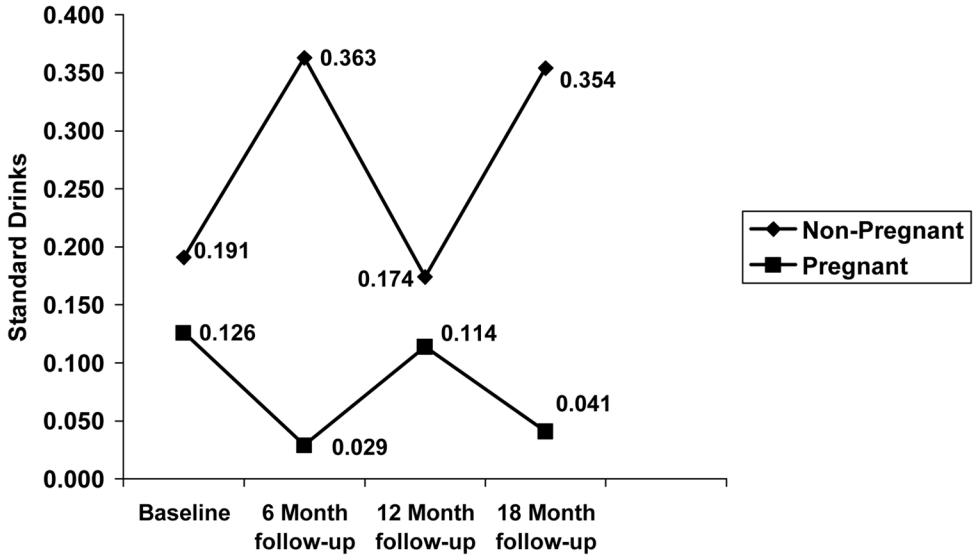

Figure 4. Estimated Peak BAC[a] at Baseline, 6, 12, and 18 month follow-up for Pregnant and Non-Pregnant Women[b]

(N = 29; pregnant n = 25, non-pregnant n = 4, at baseline, 6 months, 12 months, and 18 months)

Repeated measures analysis, within-Ss effect, time, F =.256, P = .857

Repeated measures analysis, within-Ss effect, time x pregnancy, F =2.00, P = .115

Repeated measures analysis, between-Ss effect, pregnancy, F = 5.49, P = .022

Comparison between Pregnant and Non-pregnant women:

- at Baseline, t = −.57, P = .571
- at 6 months, t = −4.77, P = .000
- at 12 months, t = −.61, P = .541
- at 18 months, t = 3.67, P = .000

[a]Estimated by the BACCuS technique (Markham, et al., 1993).

[b]Data in Figure 3 include only those women who have data for all four time periods.

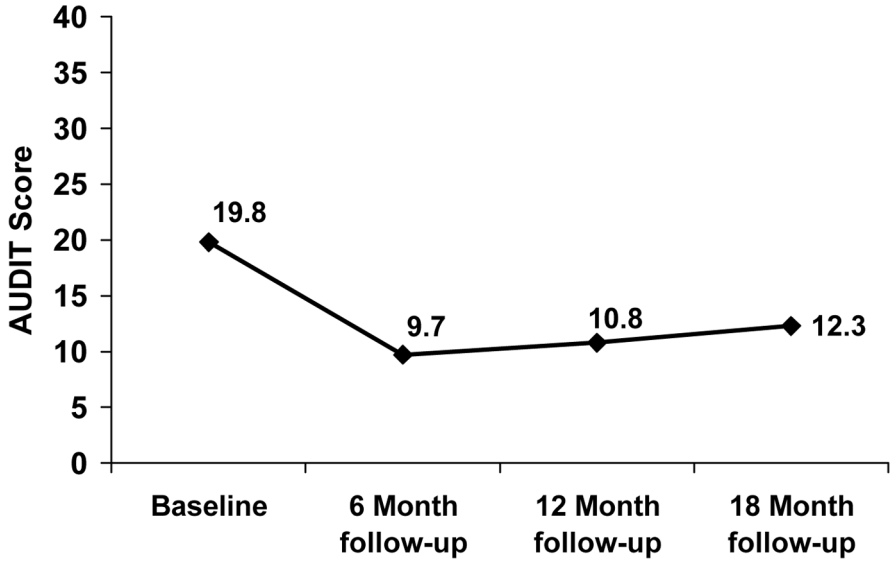

Figure 5. AUDIT Score at Baseline, 6, 12, and 18 month follow-up[a]

(N = 29 at Baseline, 6 months, 12 months, and 18 months)
Repeated measures analysis, within-Ss main effect: F = 14.26, *p* = .000
Pairwise comparisons (Bonferroni):

- Baseline vs 6 mo follow-up: *p* = .000
- Baseline vs 12 mo follow-up: *p* = .000
- Baseline vs 18 mo follow-up: *p* = .000

[a]Data in Figure 4 include only those women who have data for all four time periods.

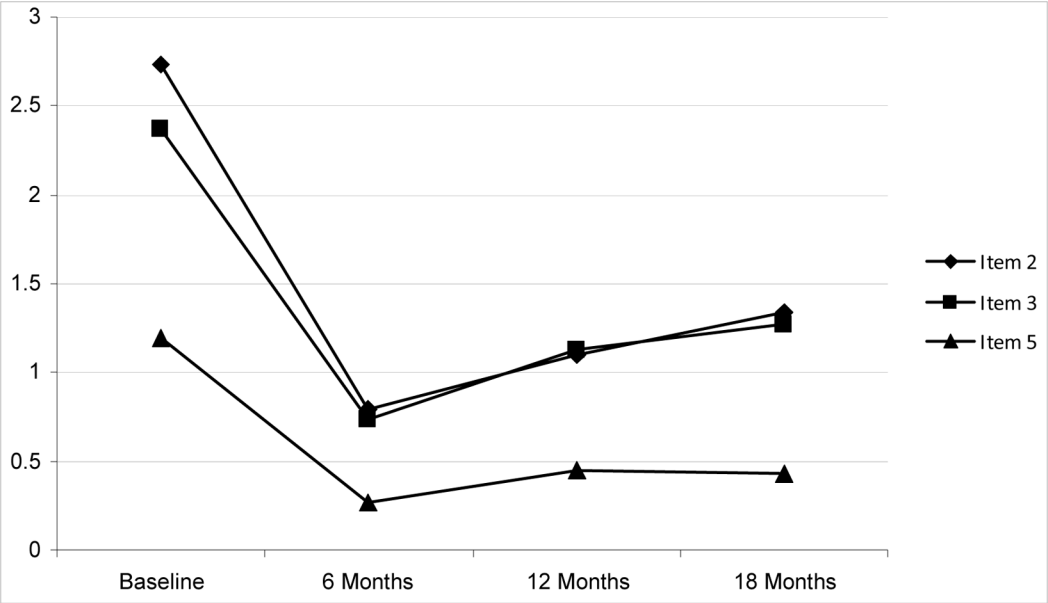

Figure 6. AUDIT Individual Item Scores by Time[a]

(N = 30 at Baseline, 6 months, 12 months, and 18 months)
Repeated measures analysis, within-Ss main effect, Time: $F = 53.57$, $P = .000$
Repeated measures analysis, within-Ss main effect, Time x Audit Item: $F = 2.19$, $P = .000$
Repeated measures analysis, between-Ss main effect, AUDIT Item, $F = 13.36$, $P = .000$
The **Top 3 Items** showing the ***largest average difference*** from Baseline to 6 Months are:

Item 2: How many drinks containing alcohol do you have on a typical day when you are drinking?

Item 3: How often do you have six or more drinks on one occasion?

Item 5: How often during the past 6 months have you failed to do what was normally expected from you because of drinking

[a]Data in Figure 5 include only those women who have data for all four time periods.

Table 1

Women Who Completed the Study (n = 30) Compared to Women Who Dropped Out (n = 11)

Maternal Risk Variable	Women who completed the study Mean (*SD*)	Women who dropped out of the study Mean (*SD*)	*t*	*p*
Age (years)	24.9 (5.7)	24.5 (5.3)	0.20	0.842
Gravidity	2.7(1.6)	1.4 (0.5)	2.78	0.012
Parity	2.1 (1.2)	0.6 (0.5)	3.84	0.002
Height (cm)	156.8 (7.6)	152.7 (6.0)	1.79	0.088
Weight (kg)	58.9 (14.2)	52.2 (7.0)	2.02	0.051
Head circumference (cm)	55.0 (2.1)	54.0 (2.0)	1.39	0.181
BMI	23.8 (3.9)	22.3 (2.2)	1.46	0.154
Age of first drinking	16.2 (2.4)	15.9 (2.9)	0.26	0.789
Age of first drinking regularly	17.3 (2.6)	16.1 (2.5)	1.33	0.201
Number of years drinking regularly	7.6 (4.5)	9.2 (3.4)	−1.19	0.248

Table 2

Selected Physical, Childbearing and Alcohol Use Data at Intake for Women in Case Management (N = 41)

Maternal Risk Variable	Mean (*SD*)	Minimum	Maximum
Age (years)	24.8 (5.6)	15.0	39.0
Gravidity	2.4(1.6)	1.0	6.0
Parity	1.7 (1.2)	0.0	4.0
Height (cm)	155.7 (7.4)	144.0	178.0
Weight (kg)	57.1 (12.9)	40.0	110.0
Head circumference (cm)	54.7 (2.1)	51.0	59.0
BMI	23.4 (3.6)	17.4	34.7
Age of first drinking	16.1 (2.5)	10.0	22.0
Age of first drinking regularly	17.0 (2.6)	12.0	23.0
Number of years drinking regularly	8.0 (4.3)	1.0	18.0
Percent abstinent at baseline in the last 7 days		50%	
Percent abstinent at baseline in the last 30 days		24.4%	
Percent abstinent at 6 month follow-up		36.4%	
Total number of drinks over the past 7 days (total sample, baseline)	5.1 (9.1)	0.0	45.1
Total number of drinks over the past 7 days (drinkers only, baseline)	10.3 (10.7)	0.7	45.1
Total number of drinks over weekends (total sample, baseline)	5.4 (8.7)[a]	0.0	40.7
Total number of drinks over weekends (drinkers only, baseline)	10.6 (10.0)	0.7	40.7
AUDIT score (baseline)	19.4 (3.6)	7.0	29.0

[a] The fact that this value is greater than total number of drinks over the past 7 days is likely due to either memory or reporting error.

Table 3

Religious and Social Maternal Risk Variables and Percent of Women in Case Management Responding

Variable	Percent (%) responding		
Frequency of church attendance	"Never" or "Not Very Often" = 52.6	"Often" or "Very Often" = 47.3	
Do you work for money? Occupation	Yes = 26.8 Farm Worker = 42.5	No = 73.2 Other occupation =32.5	Not working = 25.0
Do you think you are pregnant now?[a]	Yes = 87.8	No = 12.2	
How stressful is your life?	"Not at all", "Somewhat", or "Medium" = 50.0	"Very" or "Extremely" = 50.0	
How many of your current friends drink alcohol?	"None", "Some", or "Half" = 37.5	"Most" or "All" = 57.5	"Does not have any friends" = 5.0
	Standard drinks consumed per occasion over the past 30 days		
		Mean (*SD*)	
Job status:	Employed	Unemployed	
	4.4 (4.2)	3.9 (4.2)	

[a] Most females recruited in antenatal clinics.

Table 4

Standard drinks consumed before and during pregnancy.

Variable of Interest	Mean (SD)	*t*	*p*
Number of drinks consumed per week prior to pregnancy	20.0 (17.1)		
Number of drinks consumed per week in the first trimester	19.3 (17.4)	0.96	0.342
Number of drinks consumed per week in the second trimester	10.4 (16.1)	4.81	0.000
Number of drinks consumed per week in the third trimester	3.7 (14.1)	7.46	0.000
Number of drinks consumed, per week, overall during pregnancy	11.1 (14.1)	6.68	0.000

Note. Paired samples t-test score: comparing ‘number of drinks consumed per week prior to pregnancy’ versus the other variables of interest, by row