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External Pressure, Motivation, and Treatment Outcome among Pregnant Substance-Using Women

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Abstract

The weight of evidence suggests that legal pressure to enter treatment facilitates retention. However, the extent to which such mandates (a) influence actual levels of substance use, or (b) also facilitate retention among pregnant women, is unclear. Associations between external pressure—defined as self-reported pressure to attend treatment under threat of incarceration, loss of child custody, and/or loss of subsidized housing—and the key outcomes of retention and substance use were therefore examined in a sample of 200 pregnant women receiving community-based substance abuse treatment. The role of external pressure was examined in a series of Cox and GEE regressions, which suggested that external pressure as measured at baseline was associated with decreased risk of dropout (Hazard Ratio = .47, $p = .001$) and fewer drug-positive urine tests throughout treatment and 12-week follow-up (OR = 0.48, $p = .03$). These differences did not appear to be the result of baseline differences between coerced and non-coerced participants in education, legal history, presence or absence of a substance use disorder, employment, or motivation. The present findings extend the larger literature on external pressure by demonstrating effects on drug use as well as on retention, and among pregnant women.

Keywords

Pregnant; substance abuse; coercion; substance abuse treatment; treatment adherence

1.0 Introduction

Between 25% and 50% of individuals receiving substance abuse treatment report some form of formal pressure to do so (Brecht et al., 2005; Perron and Bright, 2008). There is now a substantial literature on the effects of such pressure (e.g., McSweeney et al., 2007; Perron and Bright, 2008; Seddon, 2007), much of which suggests that outcomes for legally coerced persons

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are equivalent to (Brecht et al., 1993; McSweeney et al., 2007) or better than (Burke and Gregoire, 2007; Kelly et al., 2005; Perron and Bright, 2008) those for persons who are not the focus of legal pressure to obtain treatment. Although none of these studies have randomized participants to level or type of coercion, they have provided support for the use of legal pressure to promote receipt of substance abuse treatment.

However, there is considerable debate regarding the use of coercive techniques for promoting substance abuse treatment. Klag, O'Callaghan, & Creed (2005) question the strength and consistency of findings supporting the use of legal and other pressure, particularly given the failure of many studies to control for differences between coerced and non-coerced groups on important factors such as criminal history, substance abuse severity, employment, and socio-economic status. Klag et al., as well as Wild (2006), also question whether the form of motivation provided by external pressure might be inferior to, or even inhibit, the development of internal motivation. Further, of studies showing advantages for coerced individuals, most focus on retention in treatment rather than actual substance abuse outcomes, or rely on self-report of substance use—which may be suspect given the clear consequences of substance use for coerced individuals. Finally, ethicists have argued that coerced substance abuse treatment must contend with the tremendous weight placed on autonomy in other areas of medicine, and in health law in general (Caplan, 2006).

All of these issues are magnified in the case of substance abuse during pregnancy. The social and health-related effects of substance use are greater among pregnant women, given the effects on the fetus as well as the pregnant woman, lending additional urgency to efforts to address those effects. At the same time, the consequences of coercive involvement—in terms of reproductive rights and the importance of preventing avoidance of healthcare settings during this crucial period—are also greater during pregnancy (e.g., Chavkin et al., 1991; Lester et al., 2004; Ondersma et al., 2000). Despite this, we could find no studies examining the use of external pressure with women abusing drugs or alcohol during pregnancy. One study examined coercion with post-partum women and found that it did in fact lead to greater retention in treatment, but primarily with women who were allowed to retain custody of their infant, and who were enrolled in a woman- and infant-centered day treatment program (Nishimoto and Roberts, 2001).

We therefore examined associations between external pressure and outcomes in a sample of 200 pregnant women receiving substance abuse treatment in the community within the context of a clinical trial. In doing so, we sought to advance the literature in this area by (a) assessing equivalence between coerced and non-coerced groups in terms of employment, criminal history, age, and motivation; and (b) by measuring self-reported as well as biochemically-validated substance use, in addition to the more common outcome of treatment retention. Given issues regarding the effect of external pressure on motivation (e.g., Klag et al., 2005), secondary analyses also evaluated the effect of pressure on post-treatment motivation to change. Given the weight of evidence in prior research with non-pregnant persons, we predicted that external pressure would be associated with greater retention in treatment and less substance use among pregnant women.

Data for this analysis were taken from an existing National Institute on Drug Abuse (NIDA) Clinical Trials Network study, which randomly assigned pregnant substance users to either three individual sessions of Motivational Enhancement Therapy (MET) or to the first three individual sessions normally provided by the program (TAU), with all participants encouraged to engage in the other treatments offered by the program. See Winhusen et al. (2008) for a full description of this study and its findings.

2.0 Method

2.1 Participants

Participants were 200 women recruited during the intake process at substance abuse treatment agencies collaborating with the NIDA Clinical Trials Network on a clinical trial comparing MET to TAU. All participants provided written informed consent.

To be eligible, women had to be (a) at least 18 years of age, (b) pregnant (as confirmed by a pregnancy test) and not planning to terminate the pregnancy, and (c) identified as needing substance abuse treatment via the treatment agency's usual screening procedure. Exclusion criteria included (a) being more than 32 weeks pregnant, (b) requiring residential or inpatient treatment (other than detoxification), (c) planning to move out of the area within 4 months, (d) being at imminent risk of incarceration, or (e) being a clear risk to self or others.

2.2 Measures

External pressure was measured with three questions asking participants to indicate whether they (a) have been formally notified that they will go to jail if they do not attend treatment; (b) have been formally notified that a child will be removed from them if they fail to attend treatment; or (c) are living in housing that will be taken away if they fail to attend treatment. Participants could indicate more than one source of pressure. Treatment utilization was defined as the ratio of the number of outpatient (including intensive outpatient) treatment hours attended to the number of hours scheduled. Treatment retention was assessed by the number of weeks until treatment drop-out, defined as failure to attend any treatment provided by the Community Treatment Program for 3 consecutive weeks, while the participant was still pregnant; the 3-week time-frame was selected a-priori based on a consensus among the substance abuse treatment providers on the study design team regarding how they would define a "drop out" in their treatment programs. The treatment utilization and retention measures were based on clinic records of treatment attendance. The measures of substance use included self-report of substance use (i.e., alcohol and illicit drugs) and qualitative urine toxicology results. Urine samples were collected and tested for opiates, cocaine, methamphetamines, benzodiazepines, and marijuana at screening, weekly during the active study phase, and at the 2 follow-up visits using the OnTrak TesTcup[®]. Estimated blood alcohol content was also measured by breathalyzer weekly during the active study phase and at each follow-up visit, but only 2 of 1,133 total administrations were positive, so results of this testing are not included in these analyses. The Substance Use Calendar, a self-report assessment of the participant's use of substances for each day of the study, was completed at each research visit using the Timeline Follow-Back procedure (Fals-Stewart et al., 2000; Sobell et al., 2001; Sobell and Sobell, 1996).

The University of Rhode Island Change Assessment (URICA) (DiClemente and Hughes, 1990; Pantalon et al., 2002), completed at baseline and the end of the active study phase, was used to assess the participants' motivation to change their substance use behavior. Four scales are derived from the URICA: Pre-contemplation, Contemplation, Action and Maintenance; an overall motivation score which combines these scales (Pantalon et al., 2002) was used for the present study. The ASI-Lite, a structured clinical interview derived from the Fifth Edition of the Addiction Severity Index (ASI), and that yields scores for seven areas of functioning (McLellan et al., 1992), was completed during baseline.

2.3 Procedure

See Winhusen et al. (2008) for a full description of study procedures. Briefly, the study from which these data were derived involved recruitment of pregnant women from pregnant woman-specific programs within community substance abuse treatment agencies in North Carolina,

New Mexico, Indiana, and Kentucky. Women meeting key eligibility criteria were introduced to a research assistant by agency intake staff; those who met full study eligibility criteria and provided written informed consent then completed the baseline research assessment, and were randomized into 3-session MET or TAU conditions. These 3-session conditions took place in the initial phase of treatment, and in the context of a range of other therapeutic activities.

2.4 Data analysis

We initially considered whether groups that differed in pressure to attend treatment also differed in potential alternate explanatory variables, including age, race, education, employment, mental health, legal history, motivation, and presence/absence of a substance use disorder. Further, along with external pressure to attend treatment, all analyses initially had as covariates: treatment condition, time (when appropriate), and related 2-way interactions. These additional covariates were retained in the final regression where they showed sufficient contribution to the model (i.e., $p \leq .10$). The effect of external pressure status on the ratio of attended to scheduled treatment hours was analyzed using a Cox proportional hazards model with the log of the number of scheduled hours as a covariate. To evaluate the impact of pressure status on time to drop out, a Cox proportional hazards model was utilized in which data points with a value of 106 or more days were censored as were the data from 6 participants who withdrew consent. Measures of substance use over time were analyzed using GEE regressions; where the customary pressure by time interaction failed to sufficiently demonstrate impact, it was dropped, and interest shifted to the pressure effect itself. The end-of-treatment URICA scores were analyzed using a normal regression which included baseline URICA scores as one covariate. Only non-missing data were included in all analyses.

3.0 Results

3.1 Sample Characteristics

The sample characteristics by external pressure status are provided in Table 1. The participants were, on average, 26 years of age at the time of randomization. The majority of study participants were unemployed and had, on average, a high school education. The source of external pressure reported by the coerced participants was 44.4% from legal, 16.7% from housing, 2.8% from both legal and housing, and 36.1% from child protection sources. Baseline equivalence between the coerced and non-coerced groups was evaluated using the Kruskal-Wallis procedure for all variables except for the URICA score, race (minority vs. non-minority), employment (yes vs. no), and current DSM-IV abuse/dependence diagnosis (yes vs. no). The URICA score was tested using a *t*-test instead of Kruskal-Wallis because the coerced and non-coerced groups had significantly different estimated variances while the race, employment, and DSM-IV diagnosis variables, which were binomial, were assessed with a chi-square test.

3.2 Treatment Utilization and Retention

Analysis of the proportion of treatment hours attended revealed a significant effect for external pressure status ($X^2=4.26$, $df=1$, $p < .05$), with the coerced group attending approximately 66% of scheduled hours and the non-coerced group attending 62% of scheduled hours. The analysis of the number of days until treatment dropout also revealed a significant pressure status effect (Hazard Ratio = .47, $X^2 = 10.33$, $df = 1$, $p < .01$), which reflected the significantly shorter time until drop out in the non-coerced participants (46.2 days [$SD = 33.8$]) than in the coerced group (70.5 days [$SD = 39.2$]). This greater retention in the pressured group was evident regardless of the particular source of pressure to attend treatment (i.e., legal, housing, or child protection).

Given the marked difference between external pressure status groups in number of scheduled treatment hours (22.9 hours of treatment during the active phase for participants reporting

external pressure, vs. only 10.2 hours of scheduled treatment for those who did not; $p < .001$; see Table 1), the days until treatment dropout analysis above was repeated, adding scheduled hours as a covariate. External pressure remained a significant predictor (Hazard Ratio = .58, $X^2 = 4.8$, $df = 1$, $p < .05$). Note that one would expect the effect of external pressure to be understated in this analysis due to the confounding effect of including two highly correlated covariates (coercion and hours scheduled) in the same model.

3.3 Substance Use

Data regarding substance use as a function of study phase and external pressure status are provided in Table 2. Analysis of urine toxicology results revealed a significant pressure status effect (OR = .48, $X^2 = 4.74$, $df = 1$, $p = .03$). As can be seen in Table 2, this reflects significantly fewer drug-positive urine tests throughout the study (baseline, active treatment phase, and 3-month follow-up) in the coerced, relative to the non-coerced, participants. Analysis of self-report of substance use revealed similar findings, with the coerced participants reporting significantly fewer days of substance use than the non-coerced participants (OR = .31, $X^2 = 19.40$, $df = 1$, $p < .001$).

3.4 Motivation to Change

Analysis of the URICA-derived combined score revealed no significant effect of pressure status on internal motivation ($X^2 = 0.92$, $df = 1$, $p > .05$).

4.0 Discussion

In the present analysis, women reporting external pressure from legal, housing, or child protection sources: (a) were more likely to remain in treatment; (b) attended a significantly higher proportion of scheduled treatment sessions, despite being scheduled for more than twice as many total hours; (c) were less likely to test positive for illicit drug use; and (d) reported fewer days of drug/alcohol use. These findings are consistent with most prior studies on this topic, but represent an extension of that literature in two ways. First, these results show an association between external pressure and biochemically-verified substance use, and do so in the context of equivalence between coerced and non-coerced participants on key baseline measures such as education, employment, presence of a substance use disorder, motivation, legal history, and mental health. This adds to this line of research by suggesting that differences between coerced and non-coerced groups are not restricted to retention only, or to predictable differences in willingness to disclose drug use.

Second, the present findings extend prior research to pregnant women, a unique and important subgroup in which issues of social risk, coercion, and autonomy are magnified. Coerced participants remained in treatment an average of 24 days (33%) longer than non-coerced participants, and had approximately twice the odds of being drug-free. Clearly, the effects of drug use during pregnancy make treatment during this period particularly important. Evidence such as this, although correlational, suggests that pressure to attend treatment may be helpful in mitigating those effects.

In addition, we found no association between pressure to attend treatment and self-reported motivation at the end of the active treatment phase. This finding is inconsistent with concerns regarding the effects of external pressure on internal motivation (e.g., Klag et al., 2005; Wild, 2006), and is consistent with findings that internal motivation and perceived coercion are not strongly related (Prendergast et al., 2008).

4.1 Ethical considerations

Despite the present findings, it may be useful to consider evidence of the efficacy of external pressure to be a necessary but not sufficient condition of ethicality. To meet this more stringent criterion, evidence regarding the teratogenic effects of drug use during pregnancy must be carefully evaluated. Certainly, the use of drugs during pregnancy has been shown in many studies to be associated with negative child outcomes (e.g., Delaney-Black et al., 2004; Singer et al., 2008). However, such effects (a) are present for some but not all tested outcomes (e.g., Lester et al., 2002); (b) when present are subtle rather than devastating (e.g., Lester et al., 1998); (c) are not found in many studies (Frank et al., 2001); (d) when present are often moderated by factors such as age or gender (e.g., Beeghly et al., 2006); and (e) when present often show a dose-response relationship such that only the most highly exposed infants exhibit negative effects (Bada et al., 2007). Such factors should be considered in decisions regarding whether to implement external pressure for drug use during pregnancy.

Further, and perhaps more importantly, a number of other prenatal risks (most notably tobacco and alcohol use) present equivalent or greater risks for adverse child outcomes (e.g., Bada et al., 2007). The fact that alcohol and tobacco use are respectively approximately two and three times as prevalent during pregnancy than illicit drug use (Office of Applied Studies, 2005) means that their overall impact on negative child outcomes is likely to be far greater. Thus, although our findings suggest that external pressure is associated with better outcomes among pregnant women, these practices need to contend with the inconsistency of forcing treatment for the use of some classes of substances but not others (Ondersma et al., 2000).

The potential efficacy of external pressure in facilitating receipt of substance abuse treatment must also be balanced against the possibility of unintended side effects (Wild, 2006). Most notably, the use of external pressure could lead to avoidance of health care settings or could inhibit disclosure of substance use among those who do seek care (Poland et al., 1993). This is an important consideration that is particularly salient in the perinatal period. Alternate, less coercive methods of promoting receipt of needed services should be carefully considered, including motivational approaches (Handmaker and Wilbourne, 2001; Jones et al., 2004) and contingency management (Brigham et al., in press; Jones et al., 2001; Jones et al., 2000). The extent to which existing treatment programs can be made more relevant and attractive to women using substances during pregnancy should also be considered.

4.2 Limitations

The above implications must be considered in light of several limitations. Most notably, the number of coerced individuals (36, or 18% of the total sample) and participants overall (200) was small, limiting the stability and generalizability of these findings. Sample size issues also prevented subgroup analyses examining the contribution of pressure type. This is unfortunate, as many investigators have emphasized the importance of type of pressure, noting that such pressure can come from many different sources and with many different levels of threat (Klag et al., 2005; Perron and Bright, 2008). For example, pressure to attend treatment can include confinement to a locked treatment facility, a clear mandate, or merely a mild suggestion, and the penalty for failing to comply with such pressure can range from substantial time in jail or prison, to loss of custody of a child, to a rebuke from a probation officer that may or may not lead to other consequences. As noted in the results section, examination of results as a function of pressure type suggests that all three types contributed to the pressure-related differences in retention; findings were similar with respect to other outcomes included in this analysis. Further research is needed to examine this question more closely. On this issue, our results are consistent with those of Brecht and colleagues (2005), who found that outcomes related to pressure via Child Protective Services did not differ from those related to other forms of legal pressure.

Second, as noted earlier, the data for this secondary analysis were collected as part of a larger clinical trial and not specifically to address the issue of external pressure. A number of measurement or other decisions may have been made differently if this study were designed with external pressure in mind, and the findings reported here are correlational only. For example, legal and other pressure to attend treatment was measured dichotomously rather than as a continuous variable, which would have made possible an analysis of “dose” of coercion; extent of coercion could very well be a crucial variable, and one that might explain much of the inconsistency noted in this area. Further, external pressure in this sample was assessed via self-report rather than by more objective means. Given evidence that actual external pressure and perceived coercion may not be strongly related (Maxwell, 2000; Wild et al., 1998), it is possible that some participants did not report the presence of legal pressure even though it was present. As noted by a number of other investigators in this area (Maxwell, 2000; Prendergast et al., 2008), the objective presence of legal pressure and perceptions of coercion should both be carefully evaluated.

Third, a number of variables with potential importance in terms of evaluating the equivalence of the pressured vs. not pressured groups were not available. For example, we did not collect data regarding number of children belonging to each participant, loss of child custody to child protective services, or medication intake. However, the similarity of the pressured and not pressured groups in the many variables available (and listed in Table 1) is encouraging regarding overall group equivalence on potentially confounding variables.

Finally, given (a) the small size of the pressured group, and (b) our desire to limit the total number of comparisons, we chose to evaluate external pressure-related outcomes on all forms of substance use together rather than considering outcomes for specific subtypes (e.g., alcohol use only, cocaine use only). Future research should consider the extent to which the effects of external pressure may be stronger for some substances (for example, perhaps pressure effects will prove to be greater for more strongly prohibited substances such as cocaine or heroin).

4.3 Conclusions

The results of this study suggest that external pressure to attend treatment is associated with greater retention in treatment as well as lower drug use, and is not associated with decreases in internal motivation. This suggests that external pressure may facilitate positive maternal and child outcomes among at-risk pregnant women. However, a number of complex ethical issues regarding the use of external pressure in pregnancy must also be considered.

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Table 1

Demographic and Baseline Characteristics as a Function of External Pressure Status

	Pressured (<i>N</i> =36)	Not Pressured (<i>N</i> =164)	χ^2 or <i>t</i>
Age in years (SD)	25.86 (5.17)	26.31 (5.47)	0.24
Education in years (SD)	11.19 (1.47)	11.52 (1.77)	1.39
Weeks pregnant (SD)	20.08 (6.97)	20.84 (10.10)	.54
URICA Motivation Score (SD)	79.91 (21.40)	82.74 (14.15)	− 0.66
Legal Composite Score (SD)	0.125 (0.18)	0.099 (0.19)	2.71
Psychiatric Composite Score (SD)	0.236 (0.22)	0.238 (0.22)	0.00
Scheduled treatment hours (SD)	22.91 (25.55)	10.19 (11.14)	11.08*
Employed Full/Part time (%)	12 (33.33)	37 (22.56)	1.85
Minority Race (%)	18 (50.00)	100 (60.98)	1.47
DSM-IV Abuse/Dependence (%)	11 (32.35)	60 (40.00)	0.68

Note. Total *N* = 200, except for DSM-IV Abuse/Dependence, for which data were not available for 16 participants (*n* = 34 for pressured group, and 150 for not pressured group).

*
p < .001

Table 2

Substance Use at Baseline, During Treatment, and at Follow-Up as a Function of External Pressure Status

	Pressured		Not Pressured	
	<i>n</i>	% or <i>X</i> (SD)	<i>n</i>	% or <i>X</i> (SD)
Positive Urine Toxicology % ^a				
Baseline	34	29.4%	157	39.5%
Active treatment phase	32	14.7%	140	29.4%
Three month follow-up	30	17.6%	129	26.6%
Days of use: Alcohol/Drug+ ^b				
Baseline	36	4.17 (7.53)	164	10.82 (11.57)
Active treatment phase	34	0.85 (1.86)	149	5.47 (9.41)
Three month follow-up	33	5.18 (13.36)	140	15.41 (28.23)

Note. Where not specifically indicated, numbers represent means (standard deviations). +Average monthly days of use.

^aBaseline differences tested using Chi Square test ($X^2 = 1.21$, $df = 1$, $p = .27$). Combined active-phase and follow-up differences tested using GEE ($X^2 = 4.74$, $df = 1$, $p < .05$).

^bBaseline differences tested using t test ($t = -4.74$, $df = 76.2$, $p < .01$). Combined active phase and follow-up differences tested using GEE ($X^2 = 7.08$, $df = 1$, $p < .01$).