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Adolescent Onset of Maternal Substance Abuse: Descriptive Findings from a Feasibility Trial

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Abstract

Although maternal substance abuse in child welfare populations is a well-documented occurrence, little is known about the onset of these behaviors or the substance abuse histories of these mothers. Descriptive data from a small feasibility trial of mothers referred for substance abuse and child neglect suggest adolescent onset of hard substance use. Age of onset was associated with family history of use. The majority of mothers reported polysubstance abuse starting at an early age and quickly escalating patterns of behavior including IV drug use. Implications for prevention efforts for children of families identified with substance abuse problems are discussed.

Keywords

child welfare; methamphetamine; early onset

It is well documented in the literature that there is a high percentage of maternal substance abuse found in child welfare populations (Choi & Ryan, 2007; National Center on Addiction and Substance Abuse at Columbia University [NCASA], 2005; National Center on Child Abuse Prevention Research, 2001; U.S. Department of Health and Human Services [USDHHS], 2003). What is less well understood is the etiology of this phenomenon or the initiation of substance use in mothers involved in the child welfare system. Although the transgenerational nature of child welfare involvement and substance use (Marshall, Huang, & Ryan, 2011; Thornberry et al., 2006) has been repeatedly cited in the literature, and many of the mothers reported to child welfare are young (USDHHS, 2010), surprisingly little is known about when these mothers initiated their substance use. The current article describes the child and adolescent onset of substance abuse in a sample of mothers referred to a feasibility trial for substance abuse and child neglect. For this paper, adolescence is defined as 10 to 20 years old, as defined by the Maternal and Child Health Bureau (US Department of Health and Human Services, 2011).

Initiation of Substance Use

Adolescents who use substances at an earlier age are more likely to develop addictions than are others (SAMSHA, 2008). This might be due to a more rapid progression from onset of use to abuse or dependence in adolescents than adults (Bruner & Fishman, 1998). Not surprisingly, early onset of drug use is a significant predictor of long-term substance abuse (Weinberg et al., 1998) and severe substance use behaviors such as IV drug injection (Corsi, Winch, Kwiatkowski, and Booth, 2007; Pugatch et al., 2001). Fortunately, large population based studies indicate that the number of adolescents who develop dependence or abuse on illicit drugs is relatively low. The most recent report of the National Survey on Drug Use

and Health (SAMSHA, 2010) indicated that approximately 10% of adolescents use illicit drugs, and that marijuana continues to be the most frequently used illicit substance. Adolescents relatively infrequently use harder substances such as methamphetamine, cocaine, and heroin and males are significantly more likely to engage in substance use than females (SAMSHA, 2010). In a sample of young adult heroin users, the average age of onset for heroin was slightly over 18 years, with alcohol being the primary substance of first use. Females were significantly more likely than males to report parental substance abuse, with mothers' use but not fathers' predicting earlier age of onset (Pugatch et al., 2001).

Similarly, another large prospective population based study of over 7,000 individuals followed from birth in Australia indicated that for those who reported having used substances at their 21-year follow-up, the average age of onset was just under 16 years of age for alcohol and marijuana (Hayatbakhsh, Mamun, Najman, O'Callaghan, Bor, & Alati, 2008). This same study found that of a sub-sample who was interviewed about methamphetamine use, 20% reported having tried amphetamines before the age of 21 years, with 4% developing dependence. Of these, the majority of users were male and adolescent delinquency, sexual abuse, and early onset alcohol use (before the age of 14 years) were strong predictors of methamphetamine use (Hayatbakhsh, Najman, Bor, & Williams, 2009).

Child Welfare Involvement and Substance Use

As previously noted, maternal substance abuse in child welfare populations has been well-documented as has the transgenerational nature of child welfare involvement. Accordingly, maternal substance abuse has been correlated with child maltreatment in epidemiological studies (Chaffin, Kelleher, & Hollenberg, 1996; Walsh, MacMillan, & Jamieson, 2003). One small qualitative study suggested that women involved in child welfare for methamphetamine abuse were first involved with other illicit drugs prior to their introduction to methamphetamine. All described family or peer contexts of exposure to illicit substances, traumatic experiences, and onset of use in adulthood (Haight, Carter-Black, & Sheridan, 2008).

Although history of parental substance abuse is a risk factor for adolescent substance abuse (Hayatbakhsh et al., 2008; Thornberry et al., 2006), not all children involved in the child welfare system appear to fall victim to this pattern of behavior. Recently, a national sample of child welfare involved adolescents indicated that females were less likely to use hard drugs than their male counterparts and those who reported feeling close to a parent were significantly less likely to report involvement in hard drug use than others (Cheng & Lo, 2010). On the other hand, others have found that the rate of substance use in adolescents involved in the child welfare system is greater than community populations (Aaron et al., 2008). And a recent prospective study of at-risk children in Chicago indicated that although females were less likely to use than males, that age of first substance use was predicted by involvement in child protective services, school mobility, and family risk as measured by economic variables (Arteaga, Chen, & Reynolds, 2010). Other studies have found that females were more influenced by their familial substance use than males, and that in particular they were influenced by their mothers' use; father's substance use was not related to early onset of substance use and some have argued that ongoing contact with a substance using parent was necessary for intergenerational transmission (Thornberry et al., 2006).

Current Paper

Taken together these findings suggest that early onset substance abuse is most likely in family contexts in which substance abuse is normative, that males are more likely than females to engage in substance use, and that early onset use is predictive of ongoing severe use. This paper examines the onset of substance use in mothers who are referred to child

welfare for substance use and child neglect. Their children have therefore been exposed to environments in which substances or substance using behaviors are present. As mothers, this population is female, and therefore the lesser likely population of substance abusers. Although it is known that this particular subpopulation is at high risk for child welfare involvement, little is known about the initiation of substance use for these women. The goal of this evaluation was to determine what the onset of substance use looked like in this sample in order to help identify the trajectory and severity of substance use that lead to a new referral to child welfare and to determine what the environments of the target children might be like in order to inform prevention efforts for their own potential substance use.

Current Study

Data for this paper are part of a larger ongoing feasibility trial. Given the unmet needs of families involved in child welfare for substance abuse and child neglect (Choi & Ryan, 2007; Marsh, Ryan, Choi, & Testa, 2006; Smith & Marsh, 2002; Staudt & Cherry, 2009), the overarching focus of the project is to determine the feasibility of an integrated intervention that targets both substance use treatment and parenting needs for families. Mothers with substance abuse who are involved in the child welfare system demonstrate low rates of substance abuse treatment completion. Only 10–22% have been found to successfully complete treatment (Choi & Ryan, 2006; U.S. General Accounting Office, 1998), compared to 46 to 62% of women in general (Brady & Ashley, 2005). Thus, the aim of this project is to examine the feasibility of a novel approach to treatment for these families. The approach is an intensive community based ecological intervention that uses components of reinforcement-based treatment (RBT; Jones, Wong, Tuten, & Stitzer, 2005) that relies heavily on contingency management, and behavioral treatment strategies to increase positive parenting. Role stratification and skills training, as used in Multidimensional Treatment Foster Care (MTFC; Chamberlain, 2003) are strategically utilized and interventions span the families' ecology including child welfare, school, employment, extended family, and living environment. The goal of the feasibility trial is to determine if mothers and families who are deeply embedded in the system will engage in such services, be retained in services, and show treatment gains. Descriptive data for this current paper are limited to baseline assessment of maternal substance use and related variables in effort to help define the needs of this population and their families. Specifically, age of substance use initiation, type of substances used initially, previous response to treatment, and familial variables related to age of onset are considered.

Method

Participants

Sixteen mothers participated in this feasibility trial. Eligibility criteria included involvement with child welfare for child neglect, reported use of substances (other than alcohol or marijuana alone), and child either remaining in the home or reunification plan in place. Although the average age of mothers was 29.63 years ($SD = 7.31$) the range was from 21 to 48-years-old, with 75% of women falling below the mean age. Of these mothers, 75% were White, 12.5 % Black, 6.3 % Pacific Islander, and 6.3% Native American. Forty-four percent had never been married, 19% indicated being separated and 6% were divorced. Only 13% indicated being married to the biological father of the identified youth, and 19% reported being married to a non-biological parent. A large percentage described their living arrangement as being with a sexual partner and their children (44%) with others dispersed amongst a range of living situations from living with a sexual partner only, living alone, to no stable living arrangement. Only 30% reported living with someone who has a problem with alcohol and 30% reported living with someone who has a problem with drugs; only 19% reported living with someone with a problem with both. The majority of mothers

indicated that they had other children who had been removed from their care or were living outside of their homes (63%). Over half of the sample reported having some college or higher level of education (63%), and 31% reported terminating their education with a high school diploma or GED; 6% indicated less than a 7th grade education. Most women described themselves as being “unemployed and not looking” (38%) or a “homemaker” (31%), whereas 19% reported being “unemployed and looking.” Only 13% reported being employed part-time and no women reported full-time employment.

Recruitment

Efforts for recruitment were multi-faceted. Initially recruitment only was attempted directly through child welfare. Several engagement meetings were held with child welfare caseworkers and supervisors and eligibility criteria were defined. Regular calls and emails were sent to supervisors overseeing drug and alcohol cases requesting referrals of new cases. Due to frequent turn-over and child welfare case workers self reporting preference for existing service providers in the community, recruitment then was open for self-referrals. Advertisements were placed on free electronic message boards under “volunteer opportunities” and under “local services.” For those mothers who were self-referred, their participation in the project was cleared by their child welfare caseworker to ensure that participation would not interfere with their child welfare treatment plan. All referrals, regardless of method, were screened by an assessor who determined if the referral met eligibility criteria. In the case of child welfare screening, identifying information was not revealed unless the potential client signed a release of information that was faxed to the screener. Once this release was signed and the screening was completed, the assessor met with the target client as quickly as possible to sign Institutional Review Board approved consent forms. This quick response time was emphasized in the screening protocol during weekly research meetings.

Measures

Demographics—Demographics information was collected using an unpublished, self-report measure focusing on basic demographics including age, ethnicity, living arrangement, and employment.

The Addiction Severity Index (ASI; McLellan, Luborsky, O'Brien, & Woody, 1980). is a well-standardized tool for evaluating days, amount, and kind of substance use, as well as psychosocial correlates of use. The assessment instrument was designed to be administered as a semi-structured interview and to gather information about current and past substance use. Now in its fifth version, the ASI has demonstrated sound test-retest reliability and concurrent, predictive, and discriminate validity (McLellan, Cacciola, Alterman, Rikoon, & Carise, 2006).

The Trauma Symptom Inventory (TSI; Briere, J., 1995) is a 100-item questionnaire designed to assess for traumatic stress symptomatology. Items are rated by the respondent on a 3-point scale (*never to often*), and is intended to assess level of symptom severity rather than provide a diagnosis. The TSI has been normed separately for male and female adults over the age of 18 years. Scales of the TSI have demonstrated strong internal consistency (range .84–.87) and demonstrated adequate convergent and predictive validity, accurately predicting PTSD status in 90% of cases. For this paper, only the total symptom index was utilized.

Results

Earliest Age of Substance Use

The substance use of this sample was severe with multiple indicators of early onset of use. All women reported that their first age of substance use was during childhood or adolescence (range 8 to 21 years), with the average age of first use being 16.1 years. As shown in Table 1, alcohol was the most frequently reported first substance used (56%), followed by methamphetamine (31%) and marijuana (25%). On the other hand, the lowest average age of use was for marijuana (12.5 years).

All women reported use of methamphetamine at some point in their history and the majority reported using alcohol to intoxication (94%). A large number also reported using non-heroin opiates (81%) and marijuana (81%). Although fewer women reported using cocaine (69%), recreational methadone (56%), or heroin (50%) these numbers still met or exceeded half of the sample. Additionally, 44% of women reported using sedatives recreationally. Notably, all but one woman reported polysubstance use (94%).

It also is notable that no substance appeared to be limited from adolescent use. Although the mean age for alcohol onset of use across the entire sample clearly was the lowest (18.6 years) of all substances, with marijuana also averaging onset use during adolescence (20.3 years), the minimum age that anyone in the sample started using a particular substance was much lower than the mean; all but sedatives (20 years) ranged from 8 to 17 years old. To examine this age of onset difference between substances further, pair t-tests were conducted within participant (Table 2). As can be seen, both alcohol and methamphetamine tended to be used at an earlier age than other substances. However, for the majority of substances, age of onset was positively correlated suggesting that as the age of onset increased for one substance the age of onset increased for others.

Severity of Substance Use

In addition to early onset of substance use, women in this sample described severe histories of use. The average length of abstinence since beginning use was 12.67 months ($SD = 14.77$; range = 1 to 48 months). Sixty-three percent reported never having undergone alcohol treatment, whereas only 13% reported never having undergone drug abuse treatment. Of those who did attempt drug abuse treatment prior to recruitment for the experimental intervention, the average number of prior treatment attempts was 6.5 (range 1 to 15 treatment episodes). Forty-four percent of the sample reported at least one period of medical detoxification. Similarly 44% reported IV-drug use and 38% reported having experienced an overdose.

Mental Health History

All women reported a history of depression and 94% reported a history of anxiety. A large majority acknowledged difficulty with cognitive functioning (88%), rage (88%), and suicidality (56%) at some point in their lifetime. Exactly half of the sample endorsed a prior suicide attempt and 94% reported a history of being prescribed psychotropic medications for their mental health concerns. The entire sample endorsed having experienced emotional abuse during their lifetimes. No women reported not experiencing at least one form of abuse in addition to emotional abuse. Eighty-eight percent endorsed having experienced sexual abuse, and 88% endorsed having experienced physical abuse during their lifetimes. The combined incidence of trauma history (i.e., emotional + physical + sexual) was not significantly related to age of onset ($r = 0.09$, $p = .74$). Similarly, age of onset was not associated with current levels of trauma symptoms as reported by the Trauma Symptoms Inventory ($r = -.27$, $p = ns$).

Family History

Women in this sample reported significant family histories of substance abuse. All but one woman (who had no contact with her biological family), reported at least one family member who had a problem with substance abuse. Fifty-six percent reported that their fathers had a problem with alcohol, and 44% reported paternal problems with drugs. Sixty-three percent reported maternal problems with alcohol and 56% reported maternal drug abuse problems. Siblings also appeared to be highly involved in substance use with 69% of women reporting that their brothers had alcohol problems and drug problems; 38% reported sisters with alcohol problems and drug problems. Additional maternal extended family members were identified as having alcohol (grandmother 25%; grandfather 38%; aunt 31%; uncle 44%) or drug abuse problems (grandmother 13%; grandfather 19%; aunt 31%; uncle 25%). Notably, the majority of women (63%) were unable to report on the alcohol or drug abuse histories of their paternal relatives due to a lack of contact or information. Consistently, only 19% endorsed having a close relationship with their fathers whereas 63% reported having a close relationship with their mothers; 56% endorsed feeling close to their siblings. Relationship of family history of substance use then was correlated with age of onset of use. Parental history of substance abuse problems and a total family history (total number of family members endorsed as having problems) were correlated with age of onset. Both paternal drug abuse ($r = -0.66$, $p = .05$) and total family history drug use ($r = -0.62$, $p = .05$) were negatively related to age of onset. Maternal drug abuse was not significantly related to age of onset ($r = -0.32$, $p = ns$).

Discussion

Descriptive data from this small feasibility sample suggest that many women, who are referred to the child welfare system and are involved in substance use likely, have significant histories of substance abuse that began in early adolescence. Although it was not surprising that drinking alcohol was the substance of initiation for over half of the sample, the high percentage of women who reported that methamphetamine was the first substance they used was noteworthy. Similarly, the fact that all women acknowledged methamphetamine use during their histories, with a large percentage acknowledging IV drug use, suggest that this particular sample engaged in particularly risky substance use.

Consistent with previous research (Pugatch et al., 2001), family involvement in substance use was significantly related to age of onset. It was striking, however, that the level of familial involvement with drug and alcohol use that this sample experienced and the positive relationship and the combined influence of all family use with the age of onset. Both parental and sibling substance use suggests extremely vulnerable environments where there is likely relatively easy access to substances as well as an acceptance of this behavior. It is noteworthy that paternal, but not maternal drug use was correlated with a younger age of onset of use, particularly given that the majority of women indicated that they were not familiar with their fathers' immediate families suggesting less contact or familiarity with their fathers than their mothers. It is impossible to determine if this lack of paternal relationship is influencing this relationship. However, the finding that the number of family members who use drugs was significantly related to age of onset suggests that exposure to the entire maternal system significantly impacted their early substance use (i.e., because paternal family members tended to not be included in the calculation of this family member figure).

The severity of substance use that began so early in life, also was striking for this sample. The majority of women acknowledged early polysubstance abuse, with the age of onset being similar for many of the substances aside from alcohol and methamphetamine, which were used earlier than other substances. The range of hard substances that these women had

access to and used during adolescence was extensive; all but one reported that methamphetamine was their most problematic substance (this exclusionary case indicated methamphetamine use, but the strongest addiction to heroin). The average length of abstinence was slightly over a year, and previous treatment attempts had obviously been unsuccessful given that this sample averaged six and a half prior treatment episodes.

The age of the women at the time of their previous treatment attempts is unknown, or what type of treatment programs they utilized. However, all women had engaged in previous treatment for their self-identified most problematic substance. The age of mothers involved in child welfare typically tends to be within the age range of this sample (USDHHS, 2010), but the report that the majority of these women had experienced the prior removal of another child from their home suggests that this particular sample involved mothers who had repeated referrals to the child welfare system. Furthermore, the multiple previous treatment attempts suggest that this sample is different than many of the first time child welfare offenders in that they have been well known to the system for years and their needs have not been addressed successfully. In addition, all of the women reported a history of abuse in their own past. The lack of a significant relationship found between abuse history and age of onset was likely due to the lack of variability in the sample for this item. Moreover, the assessment of abuse was crude and there was no way of determining if the abuse occurred before or after substance abuse initiation. Similarly, all mothers endorsed a high level of current trauma symptoms that were not related to age of onset of use. It might be the case, however, that current trauma symptoms will be related to severity of current substance use; this analysis will be examined with future follow-up data. In combination with the finding of the positive relationship between family member substance use and age of onset, these outcomes do not bode well for the children of this sample. That is, the children of this sample have long standing exposure to their mothers' substance use, and they share another generation of family member use. They also have histories of maltreatment as indicated by their child welfare involvement. Not surprisingly, of the women from this sample who have children in the adolescent range, self-report indicates that these youth already are displaying substance use behaviors.

These descriptive outcomes have several important implications for adolescent substance abuse. First, the trajectories for adolescent females with early onset substance use might be particularly dire. Because of the retrospective nature of this study it cannot be conclusively stated that adolescent early onset substance use is a significant predictor of later child welfare involvement, but it is a strong risk factor. Similarly, although the retrospective nature of this study prevents conclusions regarding early onset substance use and high risk for unemployment, these data are highly suggestive of patterns of behavior that impede successful employment histories. This might be particularly true for adolescents who engage in significant polysubstance use. Second, these outcomes suggest that adolescents who engage in significant hard drug use during adolescence might be particularly challenging to treat and might require multiple treatment attempts in order to remain abstinent. Although it is unknown what the nature of the previous treatment was, these findings suggest a strong need for treatments that target adolescents who have significant family histories and who have an early age of onset. Third, although alcohol abuse does not necessarily suggest drug use, early onset alcohol abuse appears to be a risk factor for significant drug abuse. Although alcohol abuse alone was an exclusionary criterion for this project, it is interesting to note that none of the women in this sample reported that alcohol was a significant problem for them. That is, starting the substance use path with alcohol does not suggest a preference for alcohol, whereas those women who initiated their paths with methamphetamine continued to struggle with methamphetamine addiction years later.

Limitations

Given the very small sample of this study, drawing definitive conclusions with regard to generalizability is not possible. This is particularly true for the paired analyses that necessitated use of both substances; the sample sizes for these analyses were even further reduced. Moreover, it might be that the types of cases that child welfare workers were willing to refer to the project were particularly challenging, or those that were considered to be “lost causes” due to multiple previous treatment failures. Thus, this sample might represent the deepest end cases that still have reunification plans in place. Due to the self-report, retrospective nature of data, it is possible that these reports are not entirely reliable. However, women did describe in some degree of detail their initial experience with substances suggesting that their reports are reliable. Of importance is the selective sample from which these data are drawn. Indeed, participation in this study required involvement in the child protective system. Thus, it is impossible to know if these reported patterns of adolescent substance use lead to child welfare involvement. However, results of this preliminary study suggest an open child welfare case for drug use likely indicates adolescent onset of substance use.

Conclusions

This small feasibility study identified an adolescent age of onset for substance use in a group of women who are deeply embedded in the child welfare system. Significant family histories of substance use were strongly inversely related to age of onset. Although it is well documented that there is a strong association between maternal substance abuse and child welfare involvement, there is little research on the initiation of drug use by child welfare-involved women. Those with adolescent onset of hard drug use might have unique and challenging treatment needs that are particularly critical to address.

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Table 1
Initiation of Substance Use in a Sample of Child Welfare Involved Mothers (n = 16)

Substance	n Reported First Substance Used*	Mean Age (SD) For Onset	n Reported Using at Any Age	Min Age Of Use by Anyone in Sample	Mean Age (SD) Across Entire Sample
Alcohol**	9	16.0	15	8	18.60 (5.41)
Methamphetamine	5	16.8	16	13	22.94 (7.30)
Marijuana	4	12.5	13	9	20.31 (10.48)
Non-Heroin Opiates	0		13	13	26.38 (7.98)
Cocaine	0		11	17	27.55 (8.93)
Recreational Methadone	0		9	15	28.56 (8.79)
Heroin	0		8	16	28.88 (9.42)
Sedatives	0		7	20	29.14 (7.78)

Note:

* total equals greater than total sample due to 2 reports of using alcohol with another substance at onset.

** indicates alcohol use to the point of intoxication.

Table 2

Relationship of Age of Onset of Substances, Paired Within Participant.

Substance Pair	Correlation	n	Paired t (df)	p
Alcohol Age and Marijuana Age	.27	12	−0.35 (11)	.73
and Methamphetamine Age	.24	15	−2.13 (14)	.05
and Non-Heroin Opiates Age	.64 *	12	−4.31 (11)	.001
and Cocaine Age	.53 ◆	11	−3.94 (10)	.003
and Recreational Methadone Age	.48	8	−2.86 (7)	.03
and Heroin Age	.36	8	−2.86 (7)	.02
and Sedatives Age	.65	6	−3.94 (5)	.01
Marijuana Age and Methamphetamine Age	.61 *	13	1.04 (12)	.32
and Non-Heroin Opiates Age	.61 ◆	10	1.62 (9)	.14
and Cocaine Age	.73 *	10	3.33 (9)	.009
and Recreational Methadone Age	.73 *	7	1.12 (6)	.311
and Heroin Age	.78 *	8	2.54 (7)	.04
and Sedatives Age	.65	6	1.56 (5)	.18
Methamphetamine Age and NH Opiates Age	.74 **	13	2.38 (12)	.04
and Cocaine Age	.90 **	11	3.09 (10)	.01
and Recreational Methadone Age	.86 **	9	2.67 (8)	.03
and Heroin Age	.95 **	8	3.63 (7)	.008
and Sedatives Age	.90 **	7	1.39 (6)	.21
NH Opiates Age and Cocaine Age	.96 **	8	−1.38 (7)	.21
and Recreational Methadone Age	.98 **	8	1.07 (7)	.32
and Heroin Age	.90 *	6	0.87 (5)	.42
and Sedatives Age	.98 **	6	−1.27 (5)	.26
Cocaine Age and Recreational Methadone Age	.99 **	7	−1.72 (6)	.14
and Heroin Age	.97 **	8	−1.08 (7)	.32
and Sedatives Age	.99 **	5	−1.06 (4)	.35
Recreational Methadone Age and Heroin Age	.96 **	6	0.27 (5)	.80
and Sedatives Age	.99 **	5	−0.33 (4)	.76
Heroin Age and Sedatives Age	.95 *	5	0.20 (4)	.85

Note: Only participants who engaged in use of both substances are counted in relationship.

** indicates $p < .001$;* indicates $p < .05$;◆ indicates $p < .10$.