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Fetal alcohol syndrome in the United States corrections system

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Abstract

Prenatal alcohol exposure can result in fetal alcohol syndrome (FAS), which may increase the risk of confinement in the corrections system. In the United States each state and four major cities' corrections systems were asked to complete a questionnaire on the prevalence of FAS and alcohol-related neurodevelopmental disorder (ARND) in the offender population, the availability of screening and diagnostic services to identify offenders with FAS and staff training needs related to FAS. The total population in the 54 entities was 3 080 904 inmates. Completed questionnaires were obtained from 42 entities (78%). The mean rate of reported substance abuse in offenders was 60.1%. Specialized programs for persons with mental retardation were reported for 44.4% of corrections facilities and 25.9% of community corrections facilities. Programs for pregnant women were reported for 46.3% of corrections facilities and 29.6% of community facilities. One program (1.9%) reported having a screening program for FAS in the corrections system. Only four programs (7.4%) reported having access to diagnostic services for FAS in the corrections facilities. Of the 3 080 904 offenders, only one offender was reported to have a diagnosis of FAS. Reported staff training needs were very large. In conclusion, corrections systems have high unmet needs to screen, identify, and treat offenders with FAS and ARND. Staff training needs are substantial.

Introduction

Drinking during pregnancy has a wide range of consequences.[1–3] Most exposed pregnancies have low exposure levels and only brief periods of exposure.[4] In pregnancies with prolonged and/or high levels of exposure, the consequences can be severe, resulting in death, fetal alcohol syndrome (FAS) or an alcohol-related neurodevelopmental disorder (ARND).[1,3]

Current community-based prevalence estimates of FAS and ARND suggest a prevalence of 9.1 per 1000 population.[2,5] FAS is widely recognized as an important cause of mental retardation, learning disabilities and behavior disorders.[3,6–8] The mortality rate in diagnosed cases is about 6%.[9] Contact with criminal justice systems is thought to be common.[8,10,11] In a prospective cohort study of adolescents and adults with FAS and fetal alcohol effect, high rates of both substance abuse and contact with corrections systems have been reported.[8] These secondary disabilities are potentially preventable neuropsychiatric problems that occur in persons with FAS and ARND (Table 1).[8]

No published prevalence studies of FAS or ARND in adult corrections systems are available. As a result, it is unknown if rates of FAS or ARND are increased in corrections systems when compared with rates in community settings. The only published prevalence studies in corrections system populations are from the State of Washington[12] and from British Columbia, Canada.[11] In a population of incarcerated juvenile offenders, Fast *et al.*[11,13] reported that 23% of this

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population were affected by prenatal alcohol exposure. In a population of 81 emotionally disturbed and developmentally disabled offenders, Streissguth *et al.*[12] reported that 15% had a positive score on a tool to identify people at risk for FAS or fetal alcohol effect. Unfortunately, neither of these two reports provides data on a typical population of offenders. Other reports have also suggested that prevalence rates of FAS may be increased in corrections systems,[14] but no other prevalence data are available.

This study was developed to examine: the prevalence of diagnosed FAS or ARND in the corrections systems; current screening strategies; the availability of diagnostic resources and treatment resources; and staff training needs on FAS and ARND.

Methods

The study was approved by the Institutional Review Board from the University of North Dakota. The director of corrections for each state corrections facility and four large city-based systems was sent a letter and a questionnaire. The 34-item questionnaire included items examining a wide range of issues related to FAS and ARND, including information on the total number of persons enrolled in their systems, the use of screening methods for FAS and ARND, the availability of diagnostic resources, staff awareness, and the number of diagnosed cases. The questionnaire is available from the authors. We utilized information obtained from either the American Correctional Association Directory,[15] the website of the state or city Department of Corrections, or from the most recent annual or biennial report to complete the information for non-responding entities. Intense follow-up by telephone, e-mail, and mail over a period of 7 months was utilized to increase the response rate. Of the 54 entities, 10 declined to participate. The data were double entered to increase accuracy and then analyzed using Excel spreadsheets and SAS.

Results

We obtained responses from 39 states and three of four cities (78%). We were unable to ascertain any systematic differences between the entities which responded and those that did not. In Table 2, demographic information by state or city is listed at the time of completion of the questionnaire, October 2001 to April 2002. The combined population estimate including both prison systems and community corrections facilities was 3.08 million (Table 2). Of this population, 2.76 million were male (89.7%) and 317 000 were female (10.3%) (Table 2).

Rates of substance abuse reported by respondents were very high (range 57.5–62.6%) (Table 3). The total population with substance abuse problems was 1.3–1.5 million (Table 3). The population of women with substance abuse problems was 190 883 [range 182 786 (317 888 × 57.5%) to 198 998 (317 888 × 62.6%)]. The

Table 1. *Rates of secondary disabilities in 400 adolescents and adults with fetal alcohol syndrome and fetal alcohol effect*[8]

1. Mental health problems: 90%
2. Disrupted school experience (suspended or expelled from school or dropping out of school): 60%
3. Trouble with the law: 60%
4. Confinement (includes inpatient treatment for mental health problems, alcohol/drug problems, or incarcerated for a crime): 50%
5. Inappropriate sexual behavior: 50%
6. Alcohol/drug problems: 30%

Protective factors

1. Living in a stable and nurturant home for over 72% of life
2. Being diagnosed before the age of 6 years
3. Never having experienced violence against oneself
4. Staying in each living situation for an average of more than 2.8 years
5. Experiencing a good quality home from age 8 to 12 years
6. Having applied for and been found eligible for Division of Developmental Disabilities services
7. Having a diagnosis of fetal alcohol syndrome
8. Having basic needs met for at least 13% of life

Table 2. *Populations of offenders by state and city by gender in the US*

State	*n*	Male		Female	
		n	%	*n*	%
All	3 080 904	2 763 016	89.7	317 888	10.3
AK	7611	6457	84.8	1154	15.2
AL	30 697	28 592	93.1	2105	6.9
AR	13 336	12 330	92.5	1006	7.5
AZ	31 251	28 879	92.4	2372	7.6
CA	279 873	256 404	91.6	23 469	8.4
CO	16 493	15 201	92.2	1292	7.8
CT[a]	36 801	34 208	93.0	2593	7.0
COOK[b]	45 000				
DC	2820	2650	94.0	170	6.0
DE	27 699	25 500	92.1	2199	7.9
FL	274 696	226 999	82.6	47 697	17.4
GA	194 031	162 115	83.6	31 916	16.4
HI	23 552	20 691	87.9	2861	12.1
IA	34 322	27 673	80.6	6649	19.4
ID[a]	13 941	11 424	81.9	2517	18.1
IL[a]	73 200	68 808	94.0	4392	6.0
IN	31 803	29 581	93.0	2222	7.0
KS	11 779	10 668	90.6	1111	9.4
KY	34 560	32 101	92.9	2459	7.1
LA[a]	94 580	81 658	86.3	12 922	13.7
MA[a]	10 095	9545	94.6	550	5.4
MD	23 700	22 700	95.8	1000	4.2
ME	10 639	9206	86.5	1433	13.5
MI	46 901	44 957	95.9	1944	4.1
MN	23 709	19 913	84.0	3796	16.0
MO	88 895	82 244	92.5	6651	7.5
MS	38 008	32 698	86.0	5310	14.0
MT	9425	7800	82.8	1625	17.2
NC[a]	150 085	122 646	81.7	27 439	18.3
ND[c]	4512	3696	81.9	816	18.1
NE	3934	3613	91.8	321	8.2
NH	2431	2270	93.4	161	6.6
NJ	30 117	28 798	95.6	1319	4.4
NM[a]	16 753	15 338	91.6	1415	8.4
NV	26 653	24 578	92.2	2075	7.8
NY[b]	115 338	107 942	93.6	7396	6.4
NYC	14 064	12 710	90.4	1354	9.6
OH	74 930	70 361	93.9	4569	6.1
OK	22 292	20 118	90.2	2174	9.8
OR[a]	40 029	33 039	82.5	6990	17.5
PA	38188	36 586	95.8	1602	4.2
PHIL	6962	6183	88.8	779	11.2
RI	29 555	25 173	85.2	4382	14.8
SC	53 787	50 074	93.1	3713	6.9
SD	2893	2643	91.4	250	8.6
TN[a]	66 123	62 499	94.5	3624	5.5
TX	601 092	554 569	92.3	46 523	7.7
UT	5000	4500	90.0	500	10.0
VA	69 000	63 052	91.4	5948	8.6
VT	10 800	10 200	94.4	600	5.6
WA	72 480	58 080	80.1	14 400	19.9
WI[a]	86 915	81 549	93.8	5366	6.2
WV	5788	5222	90.2	566	9.8
WY	1766	1575	89.2	191	10.8

COOK, Cook County, Chicago, IL; NYC, New York City, NY; PHIL, Philadelphia, PA; DC, Washington DC. [a]Population information obtained from State Department of Corrections official website. [b]Population information obtained from American Correctional Association 2001 Directory.[15] [c]Population information obtained from the Biennial Report to the Governor of North Dakota for the period covering 1 July 1999 to 30 June 2001.

majority of these women were 15–45 years of age and would be at high risk of having affected children in the future. The number of pregnant women reported was small ($n = 838$). Specialized programs for pregnant women with substance abuse problems were reported by 25 respondents (46.3%) (Table 4).

Many women with FAS or ARND would have learning and behavior problems and would likely require modification of substance abuse treatment, vocational programs and most other interventions in order for the programs to be successful. Specialized programs for persons with mental retardation in the prison system were also reported by 24 states or cities (44.4%), and by 14 respondents (25.9%) in their community corrections systems (Table 4).

The community prevalence of FAS and ARND has been estimated to range from no change to 9.1[5] per 1000 population in the USA, France and Germany. Of the 3.08 million inmates in the US corrections system, only one inmate was reported to have a diagnosis of FAS. Table 5 estimates the number of offenders with FAS or ARND in state or city corrections systems in the USA, utilizing two published population-based estimates of FAS[1,5] and ARND.[5] These estimated numbers assume that the prevalence of FAS and ARND in the corrections system is similar to prevalence rates in community settings. This suggests that the US corrections system may have between 1540 and 28 036 undiagnosed cases of FAS and ARND. These data demonstrate the magnitude of the task of identifying offenders with FAS and ARND in corrections systems where far less than 1% of expected cases have been identified.

Table 3. *Rates of offenders with reported substance abuse by state or city*

State	Total	*n*	%
All	3 080 904	1 382 310 – 1 503 966	57.5 – 62.6
AK	7611	6469	85.0
AL	30 697	23 015 +	75.0 +
AR	13 336	10 669	80.0
AZ	31 251	26 491	84.8
CA	279 873	209 905	75.0
CO	16 493	12 699 – 13 195	77.0 – 80.0
CT	36 801		
COOK	45 000		
DC	2820		
DE	27 699	8310 – 15 788	30.0 – 57.0
FL	274 696	157 389 – 202 115	57.3 – 73.6
GA	194 031	116 444 – 126 120	60.0 – 65.0
HI	23 552	19 128	81.2
IA	34 322	23 120 – 26 127	67.4 – 76.1
ID	13 941		
IL	73 200	45 852	62.6
IN	31 803	16 447 +	51.7 +
KS	11 779	8081 – 8135	68.6 – 69.1
KY	34 560	20 736	60.0
LA	94 580		
MA	10 095		
MD	23 700	18 960	80.0
ME	10 639	9575	90.0
MI	46 901	28 335 – 29 548	60.4 – 63.0
MN	23 709	16 924 – 16 976	71.4 – 71.6
MO	88 895	71 116	80.0
MS	38 008	23 664 – 26 606	62.3 – 70.0
MT	9425	7540	80.0
NC	150 085		
ND	4512		
NE	3934	3147 – 3179	80.0 – 80.8
NH	2431	2120	87.2
NJ	30 117	24 094	80.0
NM	16 753	4615 +	27.5 +
NV	26 653	21 530	80.8
NY	115 338		
NYC	14 064	3084	21.9
OH	74 930	56 198	75.0
OK	22 292	10 812 – 11 363	48.5 – 51.0
OR	40 029		
PA	38 188	29 340 – 29 404	76.8 – 77.0
PHIL	6962	5336 – 5918	76.6 – 85.0
RI	29 555	21 575	73.0
SC	53 787	26 894	50.0
SD	2893		
TN	66 123		
TX	601 092	184 980 – 234 393	30.8 – 39.0
UT	5000	4000 – 4050	80.0 – 81.0
VA	69 000	45 600	66.1
VT	10 800	7380 – 8700	68.3 – 80.6
WA	72 480	50 736	70.0
WI	86 915		
WV	5788		
WY	1766		

COOK, Cook County, Chicago, IL; NYC, New York City, NY; PHIL, Philadelphia, PA; DC, Washington DC.

We requested information about training on FAS and ARND. One respondent (1.8%) reported having adequate staff training on the identification and management of FAS and ARND. Two respondents (3.7%) had a corrections system director who had received training in the past few years on FAS and ARND. However, an additional 19 respondents (35.2%) were willing to have training on FAS and ARND. Corrections systems in the USA have huge staffs and to provide even basic information on FAS and ARND would be a substantial endeavor. The preference of training strategies for corrections systems is listed in Table 6. Respondents did have opinions on the training method that would be most useful for the individual state. These data suggest that a range of training strategies should be considered.

Discussion

This survey of services for FAS and ARND in the corrections system suggests that far less than 1% of expected cases of FAS or ARND have been identified. The reported infrastructure capacity, staff awareness and access to screening and diagnostic services are vastly inadequate.

The identification of FAS and ARND in the corrections system is important. The disorder represents a substantial barrier to learning and would impact the affected person's ability to master essential programs (i.e. substance abuse treatment, anger management, and vocational training). The impairments may also impair the generalization of these skills from prison to non-prison community-based settings.

Corrections systems need to begin to systematically screen for FAS and ARND. Currently, only one state, Minnesota, reports a screening program. Several existing screening strategies could be utilized. An uncomplicated screening strategy utilizing administrative data could utilize routine information to exclude unlikely candidates and to identify a high-risk population in a corrections system. These data could include height, weight, head circumference, and analysis of facial photographs. The most important information would be exposure data, cognitive testing, educational assessments and behavioral data. Information on sensory impairments would also be useful. This screening process would exclude many offenders from further consideration. The addition of IQ or achievement testing

Table 4. *Programs with access to specialized services*

State	Program for offenders with mental retardation		Program for pregnant offenders with substance abuse	
	Correction facilities	Community corrections	Correction facilities	Community corrections
All	24 (44.4%)	14 (25.9%)	25 (46.3%)	16 (29.6%)
AK		Yes	Yes	Yes
AL	Yes	Yes	Yes	Yes
AR	Yes		Yes	Yes
AZ		Yes		
CA				
CO	Yes	Yes	Yes	Yes
CT				
COOK				
DC				
DE	Yes	Yes	Yes	Yes
FL	Yes		Yes	
GA	Yes	Yes	Yes	Yes
HI			Yes	
IA	Yes			
ID				
IL				
IN	Yes		Yes	Yes
KS				
KY			Yes	Yes
LA				
MA				
MD	Yes		Yes	
ME				
MI			Yes	
MN	Yes	Yes	Yes	Yes
MO	Yes	Yes	Yes	Yes
MS				
MT				
NC				
ND				
NE	Yes		Yes	Yes
NH				
NJ				
NM				
NV	Yes		Yes	
NY				
NYC			Yes	
OH	Yes	Yes		
OK	Yes		Yes	
OR				
PA	Yes	Yes	Yes	Yes
PHIL	Yes		Yes	
RI			Yes	
SC	Yes			
SD	Yes		Yes	
TN				
TX	Yes	Yes	Yes	Yes
UT	Yes	Yes	Yes	Yes
VA	Yes		Yes	Yes
VT	Yes	Yes	Yes	Yes
WA				
WI				
WV				
WY	Yes			

COOK, Cook County, Chicago, IL; NYC, New York City, NY; PHIL, Philadelphia, PA; DC, Washington DC.

Table 5. *Expected rates of fetal alcohol syndrome (FAS), using a rate of 0.50 per 1000.*[1] *The rates of FAS and alcohol-related neurodevelopmental disorder (ARND), and combined total by entity using data from Sampson et al.,*[5] *where the expected rate of FAS was 2.8 per 1000, the rate of FAS/ARND was 6.3 per 1000 and the total prevalence was 9.1 per 1000*

State	*n*	FAS FAS (0.50 per 1000)[1]	FAS (2.8 per 1000)[5]	FAS and ARND FAS (9.1 per 1000)
All	3 080 904	1540	8627	28 036
AK	7611	4	21	69
AL	30 697	15	86	279
AR	13 336	7	37	121
AZ	31 251	16	88	284
CA	279 873	140	784	2547
CO	16 493	8	46	150
CT	36 801	18	103	335
COOK	45 000	23	126	410
DC	2820	1	8	26
DE	27 699	14	78	252
FL	274 696	137	769	2500
GA	194 031	97	543	1766
HI	23 552	12	66	214
IA	34 322	17	96	312
ID	13 941	7	39	127
IL	73 200	37	205	666
IN	31 803	16	89	289
KS	11 779	6	33	107
KY	34 560	17	97	314
LA	94 580	47	265	861
MA	10 095	5	28	92
MD	23 700	12	66	216
ME	10 639	5	30	97
MI	46 901	23	131	427
MN	23 709	12	66	216
MO	88 895	44	249	809
MS	38 008	19	106	346
MT	9425	5	26	86
NC	150 085	75	420	1366
ND	4512	2	13	41
NE	3934	2	11	36
NH	2431	1	7	22
NJ	30 117	15	84	274
NM	16 753	8	47	152
NV	26 653	13	75	243
NY	115 338	58	323	1050
NYC	14 064	7	39	128
OH	74 930	38	210	682
OK	22 292	11	62	203
OR	40 029	20	112	364
PA	38 188	19	107	348
PHIL	6962	3	19	63
RI	29 555	15	83	269
SC	53 787	27	151	489
SD	2893	1	8	26
TN	66 123	33	185	602
TX	601 092	301	1683	5470
UT	5000	3	14	46
VA	69 000	35	193	628
VT	10 800	5	30	98
WA	72 480	36	203	660
WI	86 915	43	243	791
WV	5788	3	16	53

(*continued overleaf*)

Table 5. (*continued*)

State	*n*	FAS FAS (0.50 per 1000)[1]	FAS (2.8 per 1000)[5]	FAS and ARND FAS (9.1 per 1000)
WY	1766	1	5	16

COOK, Cook County, Chicago, IL; NYC, New York City, NY; PHIL, Philadelphia, PA; DC, Washington, DC.

Table 6. *Preference for fetal alcohol syndrome training in corrections systems by respondents in the USA*

	Training method preference					
Training method	1st *n* (%)	2nd *n* (%)	3rd *n* (%)	4th *n* (%)	5th *n* (%)	Missing *n* (%)
Manual and video	14 (25.9)	6 (11.1)	3 (5.6)	3 (5.6)	7 (13.0)	21 (38.9)
Workshop	9 (16.7)	9 (16.7)	3 (5.6)	5 (9.3)	6 (11.1)	22 (40.7)
Within-state conference	8 (14.8)	10 (18.5)	3 (5.6)	5 (9.3)	8 (14.8)	22 (40.7)
CD program	2 (3.7)	3 (5.6)	10 (18.5)	8 (14.8)	16 (16.7)	22 (40.7)
Interstate conference	4 (7.4)	1 (1.9)	7 (13.0)	8 (14.8)	12 (22.2)	22 (40.7)

would add additional sensitivity to a screening program. Only three states' corrections facilities and one city's corrections facility reported having access to diagnostic services for offenders who may have FAS or ARND. Only three states (5.6%) reported having access to diagnostic services in their community corrections systems. Development of systematic screening and diagnostic reviews for persons entering the corrections system would also be helpful in identifying persons who are likely to require specialized interventions during the course of their incarceration and follow-up. This may be especially relevant in the treatment of inmates with substance abuse problems.

Numerous opportunities and barriers are present in attempts to identify affected people in this system. For many offenders, a past history of exposure may be difficult to document. However, this would not be a problem for all offenders. Diagnostic criteria for adults are not well established.[3] However, diagnosis of the most typical or severe manifestations of the syndrome would be possible. In many cases, additional information would be required. This may include past medical records, pictures during childhood and past and current psycho-educational testing. The availability of this additional information may be limited but would be available for some offenders.

Corrections systems need to develop basic awareness programs for their staff to recognize the basic characteristics of FAS and ARND and basic management strategies. Nearly all corrections systems indicated a need for increased staff education about basic recognition and management of persons with FAS and ARND.

This study had several limitations. Reported rates of identified FAS and ARND may be inaccurate. It is possible that hundreds or thousands of diagnosed cases are not known to directors of corrections systems and have not been identified. Individual institutions may have access to screening and diagnostic clinics unknown to directors of corrections and their administrative staff. Finally, it is possible that considerable staff awareness about FAS and ARND exists and is unknown to directors of corrections systems. However, either of these findings would be at odds with reported concerns about the lack of data on FAS and ARND in the corrections system. It seems unlikely that many reported cases of FAS or ARND have gone unnoticed by corrections staff who completed these surveys, as in several cases portions of the questionnaire were sent by the directors of corrections to various staff in specialized areas, alcohol and drug abuse staff or medical staff for completion, specifically to include these data.

The completion of prevalence studies of FAS and ARND in the corrections system is essential. Data on prevalence are urgently needed to help determine the magnitude of this problem in the corrections system and to determine necessary resource allocation to deal with the problem. Funding additional studies of the impact of FAS and ARND on the effectiveness of substance abuse treatment, the treatment of anger management, the impact of FAS and ARND on recidivism and employment should also be priorities.

FAS and ARND may be a highly prevalent developmental disability in the corrections system. Substantial federal and state initiatives are required to offer even minimal diagnostic and intervention services. These services may have an important impact in these populations of people affected by prenatal exposure to this teratogen.

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