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Differences in Abuse and Related Risk and Protective Factors by Runaway Status for Adolescents Seen at a U.S. Child Advocacy Centre

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Abstract:

Objective(s): This study examined the abuse prevalence and characteristics, and risk and protective factors, among both runaway and non-runaway adolescents evaluated at a Child Advocacy Center (CAC) in Minnesota, which had implemented a referral program to assess runaways for potential sexual assault or sexual exploitation. **Methods:** A cross-sectional analysis of self-report and chart data for the 489 adolescent girls who were evaluated between 2008 and 2010. Chi-square and t-tests by runaway status compared abuse experiences, trauma responses, health issues, and potential protective assets associated with resilience between runaways and non-runaways. Bivariate logistic regressions explored the relationship of these risk and protective factors to self-harm, suicide attempts, and problem substance use, separately for runaways and non-runaways who had experienced sexual abuse. **Results:** Runaways were significantly more likely than non-runaways to have experienced severe sexual abuse, to have used alcohol and drugs, and reported problem substance use behavior, higher levels of emotional distress, more sexual partners, and they were more likely to have a sexually transmitted infection (STI). Runaways had lower levels on average of social supports associated with resilience, such as connectedness to school, family or other adults. Yet higher levels of these assets were linked to lower odds of self-harm, suicide attempt and problem substance use for both groups. **Conclusions and Implications:** CACs should encourage referrals of runaway adolescents for routine assessment of sexual assault, and incorporate screening for protective factors in addition to trauma responses in their assessments of all adolescents evaluated for possible sexual abuse, to guide interventions.

Keywords:

Runaway, sexual abuse, adolescent, risk factor, protective factor, child advocacy center

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Introduction

Runaway adolescents are a group with elevated risks for sexual abuse, sexual assault or exploitation, either as a precipitating factor for leaving home, or experienced while they are "on the run" (Saewyc, MacKay, Anderson, & Drozda, 2008; Slesnick, Dashora, Letcher, Erdem, & Serovich, 2009; Sullivan & Knutson, 2000; Tyler & Cauce, 2002). A history of sexual abuse increases adolescents' vulnerability to being sexually re-victimized, including sexual exploitation (Wilson & Widom, 2010). Although the actual number of sexually exploited runaways is unknown, this type of abuse appears to occur at higher rates for runaway and street-involved adolescents than among other young people (Mitchell, Finkelhor & Wojak, 2010; Stransky & Finkelhor, 2008).

Beyond sexual assault and exploitation, runaway young are at higher risk for other health-compromising behaviors and related health problems (Slesnick & Prestopnik, 2005). More than two decades of research among runaway adolescents in North America has documented higher rates of suicide attempts and self-harm (see for example, Rotheram-Borus, 1993; Koopman, Rosario, & Rotheram-Borus, 1994; Saewyc, Wang, Chittenden & Murphy, 2006; Melzer, Ford, Bebbington & Vostanis, 2012). In some studies, this increased risk has been directly linked to sexual abuse: in a multi-city study of homeless and runaway youth in the U.S., sexual abuse was an independent predictor of suicide attempts, with girls who had been sexually abused before leaving home reporting 3.2 times the odds and boys 4.2 times the odds of attempted suicide than their runaway and homeless peers who had not been abused (Molnar, Shade, Kral, Booth & Watters, 1998).

Substance abuse is also common among runaway youth (Baer, Ginzler & Peterson, 2003; Koopman, et al., 1994; Rosenthal, Mallett, Milburn, & Rotheram-Borus, 2008), and can be severe enough to be diagnosed as problem substance use or dependence disorders. Kipke and colleagues found that two-thirds of runaway and homeless youth in Los Angeles met DSM-IV criteria for problem substance abuse (1997), and in a recent longitudinal study, Tyler & Bersani (2008) noted early substance use (i.e., before age 13) can be a precursor to running away. As with suicidality, sexual abuse may increase the risk of substance use among runaway and homeless youth. In a study of homeless youth in Texas, Rew and colleagues (2001) reported those with a history of sexual abuse were more likely to report recent alcohol and marijuana use, and to have attempted suicide in the past 12 months. In a study of adult women working in the sex trade, Martin, Hearst & Widome (2010) found that sexual exploitation had occurred before first substance use among those who first traded sex as adolescents rather than those who first traded sex as adults. In contrast, in a study of 762 street-involved adolescents age 12 to 18, Saewyc, MacKay, and colleagues (2008) found the majority of sexually exploited adolescents had first tried alcohol and marijuana before trading sex, but exploited youth were also more likely to have run away at an earlier age than first being exploited, to report sexual abuse by family members, and to report they were more likely to use other drugs, such as heroin or cocaine, than street-involved youth who were not sexually exploited; unfortunately, their study did not ask about the age of first sexual abuse, so it is unclear whether first substance use came before or after first sexual abuse.

Although most runaways return home within a short period of time (Milburn et al., 2007) trauma from the circumstances that led them to runaway or experiences they had while on the street are not necessarily easily resolved. Tucker, Orlando-Edelen, Ellickson, and Klein (2011) found that runaways had

higher rates of depressive symptoms and substance use four to five years later, and this was significant even after controlling for early substance use, depressive symptoms, lack of parental support, school disengagement and general delinquency. In their study, even a single act of running away was linked to subsequent health problems. However, this study did not include assessments for sexual or physical abuse, either at baseline or during the longitudinal study, so it is unclear how much of the increased risk of mental health and substance use issues among runaways may have been the sequelae of abuse.

There is a growing body of research and theoretical knowledge that explains how the timing of sexual abuse and other maltreatment during childhood and adolescence can affect developmental pathways, both physiologically and psychologically, and increase the risk of health compromising behaviors. Developmental traumatology as described by DeBellis (2001) is one theoretical model that can help explain the mechanisms behind this increased risk. A key element of this theory is a recognition that sexual abuse and other maltreatment can be a potent stressor, influencing neuroendocrine development, especially the stress responses (DeBellis, Spratt, and Hooper 2011). These studies describe changes in brain morphology and endocrine responses that have been linked to substance abuse and post-traumatic stress disorder, among other mental health outcomes (Cohen, Perel, DeBellis, Friedman, and Putman, 2002). This helps explain the large body of research among sexually abused adolescents that finds the degree of trauma experienced (i.e., frequency, severity, age of onset, relationship to abuser, abuse type) is associated with acute psychological and physiological stressors, which can result in depression, disassociation, hyper-sexuality, and low self-esteem (DeBellis et al., 2011). However, because abuse often occurs amid other life stressors, such as poverty, parental substance use, and lack of social support, the complex interaction of abuse with genetics, developmental timing and environmental factors makes it difficult to predict the specific pathways that influence each child's or adolescent's subsequent trauma responses (Watts-English, Fortson, Gibler, Hooper, & De Bellis, 2006).

At the same time, not all adolescents who have been sexually abused end up with severe trauma responses such as self-harm, suicide attempts, or substance abuse. Some studies suggest that psychobiological responses may be amenable to intervention (DeBellis, 2011). Resiliency theory (Resnick, 2000; Blum, McNeely, & Nonnemaker, 2002) describes the context of environmental and interpersonal protective factors that have been shown to buffer against negative social and health outcomes; resilience is defined as doing well in spite of negative exposures and risks that would normally lead to adverse outcomes, usually because of protective assets or life experiences (Resnick, 2000). These protective assets in young peoples' lives can include supportive relationships in family, schools, and among peers; spiritual or religious involvement; pro-social extracurricular activities and volunteering, which have been linked to reduced odds of a variety of risk behaviours in the general population, including sexual risk behaviours, suicide and problem substance use (Saewyc & Tonkin, 2008). Research has shown that even among sexually abused or runaway youth, the increased risks for health problems can be modified by protective factors such as family or peer support (Saewyc & Edinburgh, 2011;Trickett, Noll, & Putnam, 2011). In a population-based study of more than 30,000 adolescents in western Canada, for example, both sexually abused and runaway youth who reported high levels of caring relationships with non-offending caregivers and other family members, or who felt connected to school, or were engaged in the community, were significantly less likely to report self-harm, suicidality, and substance abuse (Saewyc, et al., 2006). Health care providers who assess sexually abused youth may not routinely ask about such protective factors, since much of the medical and mental health care related to abuse is problem-focused, yet knowledge of relevant supports that might reduce traumatic responses could be helpful for developing plans of care for abused youth.

Throughout the United States, Children's Advocacy Centers (CACs) are an integral community resource for assessing incidents of sexual abuse of children and adolescents, and they provide integrated care and advocacy for over 250,000 victims annually (personal communication, Troy Price, National Children's Alliance, February 3, 2010). The standards of care for

accredited CACs include facilitating access for victims of abuse to multi-disciplinary child-friendly health care services, mental health services, and coordinated case investigations (Jackson, 2004; National Children's Alliance, 2009). One of the benefits of Child Advocacy Centers is their ability to address both the physical and mental health sequelae of sexual abuse, and to help prevent the long-term negative outcomes of sexual violence during childhood and adolescence. This is especially relevant for adolescents, as the likelihood of sexual violence, sexual abuse and sexual exploitation increases during adolescence. According to the U.S. National Developmental Victimization Survey, the one-year incidence of any sexual victimization is 3 times higher among adolescents age 13 to 17 than among children 6 to 12 years old (Finkelhor, Ormrod, Turner & Hamby, 2005). Yet adolescents are currently underrepresented among those assessed at CACs; for example, in 2010, fewer than 70,000 13- to 17-year-olds received sexual abuse assessments at CACs compared with nearly 200,000 infants and children up to age12 (personal communication, Tony Price).

In recent years, a few CACs, such as the Midwest Children's Resource Center (MCRC) in St. Paul, Minnesota, have begun accepting referrals to routinely evaluate runaways for possible sexual abuse or assault, given the higher risk of sexual violence among runaways that has been documented in the literature, yet this is by no means a universally accepted practice. Our study offers an opportunity to examine the relevance of runaway status as a referral criterion to CACs for evaluation and treatment of possible sexual abuse. At the same time, MCRC incorporated questions about protective factors in their assessments of adolescents who are referred for evaluation. Drawing upon cases of all adolescent girls who had been evaluated at MCRC for possible sexual abuse from 2008 to 2011 (n = 489), we sought to answer two primary questions: 1) are there differences in severity of abuse experiences, presence of related risk factors or trauma responses, or levels of protective factors between runaways and non-runaways? and, 2) among sexually abused youth in either group, what readily assessed protective factors are associated with lower odds of common trauma responses to sexual abuse, i.e., self-harm behaviors, suicide attempts, and problem substance use? We hypothesized that runaway youth will report more severe forms of abuse and repeat victimizations, and will have higher rates of health-compromising behaviors or traumatic responses than non-runaway youth. We also expected that runaways would report lower levels of protective factors, but youth with higher levels of protective factors in either group would have lower odds of self-harm, suicide attempts, or problem substance use.

Methods

Procedures

MCRC is an urban hospital-based CAC that provides care routinely to children and adolescents. The clinic is staffed by a team of physicians, nurse practitioners, and clinic nurses who conduct comprehensive interviews about abuse, health assessments, immediate access to reproductive health care, and recommendations for on-going health and psychological care. The CAC accepts referrals from police, child protection, schools, parents, health care providers and advocates for adolescents who may have experienced abuse. These assessments are often precursor to child protection system (CPS) involvement; indeed our forensic team works closely with CPS and prosecutors on cases. Since 2006, they have also offered forensic examinations and sexual abuse assessments for runaways, and their Runaway Intervention Project has provided long-term intensive services for sexually assaulted and exploited young runaways (Edinburgh & Saewyc, 2009).

At the time of the initial CAC visit, all adolescents are asked to complete a self- assessment of risk and protective health behaviors and attitudes as part of their examination. This assessment has been clinic practice since 2006. The self-assessment was adapted from the Minnesota Student Survey, a school-based population survey administered to 6th, 9th, and 12th graders every three years throughout the state (Minnesota Student Survey, 2007). The adolescents also had health histories, forensic interviews, physical exams and appropriate laboratory data obtained by the CAC provider. For this secondary data analysis, we included all female adolescents who presented to the CAC for evaluation of possible sexual abuse/assault between January 1, 2008 and December 31, 2012 (n = 489). Institutional Review Board

approval to undertake this study was obtained from Children's Hospital of Minnesota and the University of Minnesota.

Variables

Case information was extracted by an advanced practice nurse from examination chart records and self-assessment data for each case. Data included demographic information, types and severity of sexual abuse, intra-familial physical abuse, runaway status, substance use and sexual risk behaviors. We also collected a measure of current emotional distress, based on a scale used in population health surveys involving 4 items assessing past month level of stress, anxiety, sadness, and hopelessness; however, this scale has not been directly linked to diagnostic criteria for PTSD or other mental health problems. The data from charts also included protective factors identified in existing literature, such as supportive relationships, school connectedness, and involvement in community activities. Biological data included results of sexually transmitted infection screening and pregnancy tests. Key variables and scale psychometrics are described in Table 1. The three scales in the data (emotional distress, school connectedness, and other adults care) were evaluated within this sample using internal consistency reliability (Cronbach's alpha) and principal components analyses to evaluate unidimensionality of the scale.

Outcome variables. To examine potential protective factors that may lower the odds of traumatic responses, three health-compromising behavior variables were chosen for age-adjusted logistic regressions: self-harm (cutting) behavior, suicide attempts, and problem substance use. Self-harm and suicide attempts are defined in Table 1. Problem substance abuse was a score created from a series of items asking about problems associated with drug or alcohol use, worded to allow for a cut-off score based on the DSM-IV diagnostic criteria; the scale was validated by Fulkerson, Harrison and Beebe (1999) using data from more than 70,000 youth participating in the 1995 Minnesota Student Survey. These three health-compromising behaviors were chosen because they are mental health sequelae that can be identified during clinical visits and referred for intervention.

Data Analyses

All analyses were performed using Stata 11.0 (Stata Corp, 2010). Univariate frequencies were first analyzed for all variables, with particular attention paid to addressing missing data; variables with more than 20% missing data were excluded from further analysis. Demographic characteristics, abuse type and other categorical variables were analyzed via cross-tab tables comparing runaways and non-runaways. Chi-square tests were performed with Fishers Exact Test to offer both parametric and nonparametric results when cell sizes were marginal; in all statistical tests, p-values were congruent for both tests. For continuous variables and scales, standard t-tests (with unequal variances assumed) were used to compare means by group. Given longstanding recommendations to include effect sizes along with significance testing (p-values) in reporting results (Kirk, 2001), we also included Cohen's d results for continuous measures, and Cramer's phi for categorical comparisons of percentages. Results of comparisons between runaways and non-runaways are displayed in Table 3.

Among adolescents who were diagnosed with sexual abuse (n = 394), age-adjusted logistic regression analyses, conducted separately for runaways and non-runaways, were used to determine if severity of abuse or recent emotional distress increased the odds of the three trauma responses (self-harm, suicide attempt, or problem substance use), and if any of the protective factors lowered the odds of these trauma responses. Results of logistic regressions are shown in Table 4.

Results

Demographics and abuse experiences between runaways and non-runaways

Demographic characteristics and the prevalence of different types of abuse experiences are compared between the runaway and non-runaway groups in Table 2. The sample of runway and non-runaway youth ranged in age from 9 to 17; the runaway group was slightly older on average compared to the non-runaways. There was a significantly greater percentage of Hmong (A Southeast Asian refugee population that is largely concentrated in California, Minnesota & North Carolina) girls who were runaways compared with

Table 1. Description of Measures

Measures	Example item content	Response options (score range)
Severe sexual assault	Three category codes: High severity = prostitution, gang rape, stranger rape, or multiple perpetrators (alone or in combination with any other SA) Medium severity = intra-familial SA + a single perpetrator (once or multiple occurrences) Low severity = intra-familial SA, a single perpetrator (once or multiple occurrences)	0-3 range
Emotional stress in past 30 days (composite of 4 items)	Ex During the past 30 days, have you felt ... *- sad?* *- under any stress or pressure?* *- discouraged or hopeless?* *- nervous, worried or upset?*	None of the time to all of the time, or 'Not at all' to 'Extremely so, to the point that I have almost given up' (0-4)
Suicidal thoughts (1 item)	*Have you ever thought of killing yourself?*	Yes/No
Tobacco use (1 item)	*During the last 30 days, how many days did you smoke a cigarette, cigar, or another tobacco product?*	Recoded as Never/Yes
Alcohol use (1 item)	*During the last 30 days, how many days did you drink even a sip of alcohol?*	Recoded as Never/Yes
Marijuana use (1 item)	*During the last 30 days, how many days did you smoke marijuana or hashish?*	Recoded as Never/Yes
Methamphetamine use (1 item)	*Have you ever used methamphetamine?*	Never/Yes
Ectasy use (1 item)	*Have you ever used Ecstasy?*	Never/Yes
Any illicit drug use (1 item)	*Have you ever used other illicit drugs, including prescription drugs to get high?*	Never/Yes
Problem substance use diagnosis	13 items based on DSM-IV criteria for a diagnosis of problem substance use: cut-off score dichotomized to yes/no	Yes/No
Self-harm/cutting behavior (1 item)	*Have you ever bruised, cut, or burned self?*	Never/Yes
Suicide attempt (1 item)	*Have you ever tried to kill yourself?*	Never/Yes
Condom use at last sex	[Clinical interview]	Yes/No
Biologically pregnant	[Clinical interview]	Yes/No
Chlamydia + screen	[Clinical interview]	Yes/No
Parent caring (1 item)	How much do your parents care about you?	'Very much' to 'not at all' (0-4)
Maternal communication (1 item)	Can you talk to mom about problems?	'Most of the time' to 'none of the time' (0-4)
Paternal communication (1 item)	Can you talk to dad about programs?	'Most of the time' to 'none of the time' (0-4)
Other adult caring (4 items)	How much do teachers or other adults at school care about you? ... other adult relatives? ... other adults in your community?	'Very much' to 'not at all' (0-4)
School connectedness (4 items)	Ex. How do you feel about going to school? How many of your teachers are interested in you as a person?	0 - 4 range
Likes school (1 item)	How much do you like school?	'Hate school' to 'like very much' (0-5)
School plans (1 item)	Which of these options best describes your school plans?	'Quit school as soon as I can" to "Attend graduate or professional school" (0-4)
Music lessons (1 item)	During the last 12 months, how often have you participated in private music lessons?	Recoded as One or more hours a week/Less
School sports (1 item)	During the last 12 months, how often have you participated in school sports teams?	"
School clubs (1 item)	During the last 12 months, how often have you participated in school sponsored activities or clubs?	"
Community clubs / program (1 item)	During the last 12 months, how often have you participated in community clubs or programs?	"
Mentoring programs (1 item)	During the last 12 months, how often have you participated in a mentoring program?	"
Religious attendance (1 item)	During the last 12 months, how often have you participated in church, synagogue, mosque or youth groups?	"

non-runaways, and a smaller proportion of Hispanic and White girls. Fewer runaways reported they had an individual education plan, which is an indirect measure of learning or other disabilities. Runaways were significantly more likely to report receiving free or reduced lunch at school. In general, living

Table 2. Characteristics of runaways and non-runaway girls (n = 489)

	Runaway n=269	Non-runaway n=220	t-test / x2 test
	Mean (SD) / %	Mean (SD) / %	
Age	14.6 (1.47)	13.8 (1.58)	4.98***
Grade	9.02 (1.46)	8.36 (1.61)	4.68***
Ethnicity:			
White	17.1%	29.1%	4.07
African American	25.0%	22.0%	0.25
Hmong/Asian	29.7%	5.9%	19.51***
Hispanic/Mexican	9.7%	17.3%	2.10
American Indian	1.5%	2.7%	0.21
Multi-ethnic	14.1%	17.7%	0.60
Do not know	3.0%	5.5%	1.05
Individual education plan	28.3%	39.4%	5.86***
Free / reduced lunch	77.7%	68.8%	4.62**
Living on the street	6%	4%	13.6***

* p < 0.05 ** p < 0.01 *** p < 0.001

Table 3: Abuse experiences of runaways and non-runaways adolescents screened at a Child Advocacy Centre

	Runaway, n=269	Non-runaway, n=220	X^2 test	Cramer's phi
	%	%		
Any type of sexual abuse	75.1%	78.2%	0.64	0.04
Intra-familial abuse	26.8%	50.0%	28.0***	0.24
Extra-familial abuse by one abuser, only once	23.1%	17.3%	2.48	0.07
Extra-familial abuse by one abuser, multiple times	18.2%	15.5%	0.65	0.04
Extra-familial abuse by multiple abusers	22.3%	6.0%	25.6***	0.23
Gang rape	3.7%	0.50%	5.86**	0.11
Stranger rape	0.74%	0.45%	0.17	0.02
Prostitution	5.20%	0.50%	9.18***	0.14
Intra-familial abuse + at least one other SA type	15.2%	11.8%	1.20	0.05
Intra-familial physical abuse	23.7%	16.4%	4.10*	0.09

* p < 0.05 ** p < 0.01 *** p < 0.001

situations did not differ by runaway status, except that a significantly higher percent of runaways indicated living on the street.

Youth differed significantly in the type and severity of abuse disclosed by runaway status (Table 2). Nearly one in three runaway youth experienced the most severe forms of sexual abuse, such as being sexually exploited or prostituted, gang raped, or assaulted multiple times by different non-family abusers over a period of time. A greater percent of runaway youth reported intra-familial sexual abuse plus an additional episode of extra-familial sexual abuse. Physical abuse was also more likely to be reported by runaway youth. Intra-familial sexual abuse without any other form of abuse was more prevalent among the non-runaway youth, perhaps because the community protocol is to refer all intra-familial sexual abuse cases to this CAC as soon as reported to child protection.

Comparison of health characteristics and protective factors by runaway status

The majority of sexually-abused youth in both groups exhibited relatively high levels of emotional distress within the previous month. Runaway teens, however, had higher levels of emotional distress than non-runaways, were more likely to indicate self-harm behaviors including cutting or burning themselves, and were more likely to report having made an actual suicide attempt in the past year.

There were significant differences between runaway and non-runaway teens in reported use of tobacco, alcohol, marijuana and other drugs (Table 3), with

Table 4. Comparisons of social assets and health or risk behaviours by runaway status

	Runaway Mean/%	Non-runaway Mean/%	t-test / X2 test	Cohen's d/Cramer's phi
Sexual assault severity (0-3)	1.43	1.01	-4.87***	0.42
Emotional distress in past 30 days (0-4)	2.19	1.86	-3.11***	0.29
Suicidal thoughts	51.2%	35.4%	11.4***	0.16
Smoking/tobacco use	43.4%	12.9%	45.21***	0.34
Drinking	49.3%	19.3%	39.5***	0.31
Marijuana use	40.9%	13.8%	36.7***	0.29
Methamphetamine use	16.1%	2.6%	17.3***	0.22
Ecstasy use	16.1%	2.6%	17.3***	0.22
Any illicit drug use	20.1%	3.9%	10.17***	0.23
Problems substance use diagnosis	23.0%	3.8%	33.9***	0.27
Self-harm/cutting behaviors	58.2%	41.6%	12.4***	0.16
Suicide attempt	24.7%	13.7%	8.48**	0.14
Condom use at last sex (% yes)	34.3%	43.0%	2.1	0.08
Pregnancy screen + (% yes)	5.6%	2.3%	3.26	0.08
Chlamydia + screen (% yes)	20.6%	3.2%	32.4***	0.26
Parent caring (0-4)	2.67	3.44	6.88***	0.60
Maternal communication (0-4)	2.07	2.48	4.17***	0.44
Paternal communication (0-4)	1.65	1.85	2.12*	0.20
Other adult caring (0-14)	1.94	2.61	7.07***	0.62
School connectedness (0-4)	2.28	2.63	4.21***	0.38
Likes school (0-4)	2.29	2.55	2.24*	0.21
School plans (0-4)	3.34	3.56	1.65	0.15
Self esteem	1.57	1.87	3.53***	0.39
Music lessons[a]	20.3%	37.2%	15.6***	0.19
School sports[a]	12.5%	23.3%	8.72***	0.14
School clubs[a]	5.8%	11.0%	3.92	0.10
Community clubs / programs[a]	7.9%	12.6%	2.56	0.08
Mentoring program[a]	9.2%	8.7%	0.03	0.01
Religious attendance[a]	13.2%	15.8%	0.57	0.04

* p < 0.05 ** p < 0.01 *** p < 0.001 [a] At least once a week v. monthly or less

runaways more likely to report a history of alcohol or illicit drug use. One in three runaways met the DSM IV diagnostic criteria for problem substance use, compared to less than one in ten non-runaways. Similarly, although the majority of both groups exhibited symptoms of emotional distress, runaway teens were more likely to have evidence of self-harm behaviors, including cutting or burning oneself, suicidal ideation, and actual suicide attempts. There were significant differences and effect sizes ranged from moderate to large.

Although there were no differences in self-reported condom use at last intercourse between the two groups, laboratory results for sexually transmitted infections but not for pregnancy were significantly different. Four times as many runaways had positive chlamydia tests as non-runaways. Overall few girls were found to be pregnant during their CAC health care assessment, and while a higher percent of runaways had positive pregnancy tests, it was not a statistically significant, and effect sizes were small.

In general, protective factors were less common among runaways; they were less likely than non-runaways to feel that their parents cared about them, or that they could talk to parents or other adults. Runaway youth were significantly less likely than non-runaways to report liking school, and they had lower levels of school connectedness. Runaways were less likely to be involved in extra-curricular activities such as sports, clubs or music lessons. However, there were no statistically significant differences in the educational aspirations between the two groups.

Risk or protective factors linked to self-harm, suicide attempts, problem substance use

For runaways who had been sexually abused,

Table 5. Risk and protective factors for trauma responses by runaway status (age-adjusted odds)

Protective and risk factors	Self harm/cutting behaviour AOR (95% CI)	Suicide attempt AOR (95% CI)	Problem substance use AOR (95% CI)
Runaway adolescents			
Severe sexual abuse	**1.55 (1.11-2.16)**	**1.45 (1.04-2.05)**	**1.43 (1.00-2.05)**
Emotional distress in last 30 days	**1.80 (1.33-2.43)**	**1.98 (1.39-2.82)**	**1.40 (1.00-1.95)**
Parent caring	**0.74 (0.58-0.93)**	**0.50 (0.38-0.65)**	0.89 (0.70-1.13)
Maternal communication	**0.65 (0.45-0.95)**	**0.43 (0.29-0.66)**	**0.55 (0.36-0.85)**
Paternal communication	0.86 (0.62-1.20)	**0.59 (0.39-0.90)**	1.06 (0.73-1.53)
Other adult caring	**0.67 (0.51-0.89)**	**0.43 (0.31-0.61)**	**0.77 (0.57-1.04)**
School connectedness	0.82 (0.59-1.15)	**0.52 (0.35-0.76)**	**0.51 (0.34-0.77)**
Likes school	0.90 (0.70-1.15)	**0.76 (0.58-0.99)**	**0.62 (0.46-0.83)**
School plans	0.86 (0.69-1.06)	**0.71 (0.57-0.88)**	**0.70 (0.56-0.88)**
Music lessons	1.68 (0.75-3.80)	1.18 (0.54-2.60)	0.34 (0.11-1.05)
School sports	0.51 (0.21-1.27)	2.21 (0.89-5.51)	0.57 (0.18-1.81)
School clubs	0.52 (0.14-1.86)	0.26 (0.03-2.09)	0.31 (0.04-2.53)
Community clubs/programs	0.67 (0.24-1.91)	0.34 (0.07-1.54)	1.01 (0.30-3.42)
Mentoring program	1.35 (0.49-3.70)	0.64 (0.20-2.01)	0.32 (0.07-1.49)
Religion attendance	1.52 (0.60-3.86)	0.74 (0.28-1.98)	0.96 (0.35-2.63)
Non-runaway adolescents			
Severe sexual abuse	1.35 (0.81-2.25)	1.26 (0.68-2.32)	2.06 (0.83-5.11)
Emotional distress in last 30 days	**2.00 (1.40-2.84)**	**2.26 (1.35-3.68)**	2.77 (0.99-7.81)
Parent caring	0.79 (0.57-1.09)	0.80 (0.54-1.19)	1.18 (0.47-2.97)
Maternal communication	0.89 (0.58-1.36)	0.76 (0.44-1.30)	0.53 (0.23-1.20)
Paternal communication	0.94 (0.69-1.28)	0.68 (0.41-1.11)	0.74 (0.31-1.73)
Other adult caring	**0.60 (0.41-0.89)**	0.75 (0.45-1.27)	0.65 (0.24-1.80)
School connectedness	0.74 (0.49-1.11)	1.00 (0.59-1.74)	0.67 (0.25-1.80)
Likes school	0.84 (0.64-1.09)	1.06 (0.73-1.54)	**0.38 (0.18-0.83)**
School plans	0.85 (0.67-1.08)	0.94 (0.68-1.31)	0.76 (0.46-1.28)
Music lessons	0.98 (0.49-1.95)	1.16 (0.45-2.96)	0.38 (0.04-3.40)
School sports	0.86 (0.37-1.99)	1.36 (0.43-4.28)	--
School clubs	0.99 (0.31-3.19)	0.91 (0.18-4.69)	--
Community clubs/programs	**0.33 (0.11-0.99)**	1.28 (0.37-4.41)	--
Mentoring program	**0.28 (0.07-1.09)**	0.82 (0.16-4.18)	--
Religion attendance	0.56 (0.22-1.44)	1.32 (0.42-4.21)	0.79 (0.08-7.37)

NOTE. Missing AORs indicate too few cases in predictor variable for calculation; statistically significant AORs in bold.

severity of abuse was linked to all three trauma responses; youth having the most severe abuse experiences were up to 1.55 times as likely to report self-harm, a suicide attempt, or to meet DSM-IV criteria for problem substance use. Likewise, recent emotional distress increased the odds of self-harm and suicide attempts by almost 2 times. However, among runaways, several of the connectedness factors significantly decreased the odds of these three health problems. For example, feeling cared for by parents or by other adults, and being able to talk to your mother about your problems, all decreased the odds of self-harm behavior, suicide attempt, and problem substance use, while being able to talk to your father about problems only reduced the odds of suicide attempts. School–related protective factors, such as liking school, school connectedness, and post-secondary educational were not linked to self-harm, but significantly lowered the odds of suicide attempts and problem substance use. None of the extracurricular activities were associated with lower odds of any of the three trauma responses for sexually abused runaways.

While non-runaway youth were less likely to exhibit self-harm, suicide attempts or problem substance use, high levels of emotional distress in the past 30 days still significantly predicted self-harm behaviors and suicide attempts (but not problem substance use). Severity of sexual abuse was not a significant risk factor for any of the three responses. In addition, far fewer protective factors were associated with reduced odds of any of the three trauma responses. The only potential protective factors associated with lowered odds of self-harm were high levels of feeling other adults cared, being involved in a mentoring program at least once a week, or being involved in a community organization or a club. Liking school was the only factor that significantly reduced the odds of problem substance use, and none of the potential protective

factors was linked to suicide attempts.

Discussion

In order to examine whether runaway status is a relevant and useful criterion for referral to CACs for evaluating possible sexual abuse, this study compared characteristics of runaway and non-runaway girls evaluated in an urban, hospital-based CAC, including abuse experiences, risk behaviors, and potential supportive assets or protective factors in their lives that might reduce traumatic responses. We found runaway girls referred to the program reported more severe types of abuse experiences, including gang rape, sexual exploitation, and repeated victimization by multiple perpetrators. They reported higher prevalence of risk behaviors associated with trauma, and fewer supportive resources, such as caring adults in their families, schools or other settings. Runaways were also more likely to have a sexually transmitted infection at their initial CAC assessment.

Although they may have had fewer supportive adults in their lives, consistent with a resiliency model, when they did have higher levels of these protective factors, those caring and connected relationships with family members and other adults appear to reduce the odds of self-harming behavior and suicide attempts among runaways, and in some cases, problem substance use. This suggests that even though runaways leave home, for some of them, their connections to caring adults in the family or beyond remain critically important protective factors that should be fostered. Our results are similar to those found in other studies in North America (Saewyc et al., 2006; Trickett et al., 2011). Intervention studies have further documented this relationship: one intervention program that is designed to reconnect runaways to family, school, and other adults, and foster improved relationships, has shown significant improvement over time in both these protective factors and in such traumatic responses as self-harm, suicidality, substance abuse, and risky sexual behaviors (Saewyc & Edinburgh, 2010).

Since most runaways return home on their own (Milburn, et al., 2007) and do not necessarily interact with police, child protection, CACs or health care providers, they are often not assessed for abuse that might have occurred while 'on the run', or prior to the runaway episode. For runaways who are reported to the police as missing, a standardized protocol of questions that asks about victimization experiences, substance use, family support and safety at home has demonstrated that teens will disclose abuse and sensitive information to law enforcement during routine screening (Edinburgh, Huemann, & Saewyc , 2012). A screening intervention with clear referral pathways for further evaluation at a CAC would offer distinct benefits in early identification and intervention for sexually abused adolescent runaways.

Current guidelines by the American Academy of Pediatrics recommend that youth experiencing sexual abuse receive a physical exam and appropriate testing and treatment for sexually transmitted infections (Kaufman & the Committee on Adolescence, 2009). A physical exam and access to health care provide opportunities to reduce the spread of STIs through testing and treatment, assess for other physical and psychological health problems, provide health education, and ensure access to reproductive health care. Hospital-based CAC's have demonstrated that youth treated in their facilities were more likely to receive health care than youth who have their sexual abuse disclosure investigated by the police outside a CAC. (Edinburgh,, Saewyc, & Levitt, 2008).

Limitations

One limitation that should be considered is that the data are from a single hospital-based CAC. In this CAC model, the forensic interviews are completed by nurses, advanced nurse practitioners and pediatricians and occur at the same time as the physical exam, and this may not be the process at other CACs. Another limitation is the source of data for this study, i.e., retrospective review of data from self-reports and laboratory tests for sexually transmitted infections and pregnancy; when the self-assessment screen was not completed by the teen, or the lab results or exam findings were not charted, the information was coded as missing. Because of the legal use of medical records from CACs in prosecutions, MCRC provides regular training updates and monitoring of charting to ensure quality, so this may be less of a concern than with retrospective medical chart reviews generally. It should also be noted that only physical and sexual

abuse were assessed in this study; therefore, the extent to which runaways also experience neglect or family violence and how these might influence their outcomes is unclear and an area for future study.

Implications

Given the high frequency and severity of abuse seen in runaways, the CAC is a logical site for providing assessment and care for adolescents who run away from home. CACs can be a resource in the community for forensic interviewing, providing medical care, assessing resiliency and providing follow-up psychological treatment for runaway adolescents who have been sexually abused, assaulted while on the run, or sexually exploited. Cases involving multiple perpetrators, multiple police jurisdictions, and occurring over different time periods require the multi-disciplinary team approach that CACs already provide to other maltreated child victims (Cross, Jones, Walsh, Simone, & Kolko, 2007). Additionally, a coordinated response using a model of care such as the Runaway Intervention Program where different systems come together to treat sexually exploited youth, many of whom are runaways, saves money (Martin, Lotspeich, & Stark, 2012). A focus on runaway status as a criterion for referral to a CAC is likely to increase the identification and treatment of sexually abused and a coordinated response to treatment would save money and potentially reduce the short and long-term harm to adolescents.

Similarly, incorporating routine screening of potential protective factors, especially supportive relationships at home and at school, may help providers identify possible resources to reduce trauma responses or recognize areas for further intervention. Providers within the CAC can provide education and support to parents who may be struggling to parent their adolescent runaway who has experienced sexual abuse. Meeting with parents in the CAC environment outside of the juvenile justice or child protection system can be beneficial to help frame the young person's risk and abuse experiences within the family, encourage an environment in which concerns can be voiced, and generate possible strategies, actions steps and follow-up for fostering protective factors and reducing traumatic responses.

Runaway adolescents are a group at high risk for sexual abuse and exploitation, and CAC's should consider including running away as a routine referral criterion for increasing identification and early treatment of sexual abuse among adolescents. Likewise, routinely assessing for positive supports or protective factors in addition to health problems as part of the comprehensive health exam for abused youth may provide cues for interventions to reduce traumatic responses.

References

Baer, J. S., Ginzler, J. A., & Peterson, P.L. (2003). DSM-IV alcohol and substance abuse and dependence in homeless youth. *Journal of Studies on Alcohol*, 64, 5-14.

Blum, R. W., McNeely, C., & Nonnemaker, J. (2002). Vulnerability, risk, and protection. *Journal of Adolescent Health*, 31S, 28-39.

Cohen, J. A., Perel, J. M., DeBellis, M. D., Friedman, M. J., & Putman, F. W. (2002). Treating Traumatized Children: Clinical Implications of the Psychobiology of Post-traumatic Stress Disorder. *Trauma, Violence & Abuse,* 3(2), 91-108. doi: 10.1177/15248380020032001.

Cross, T. P., Jones, L. M., Walsh, W., Simone, M., & Kolko, D. (2007) Child forensic interviewing in children's advocacy centers: Empirical data on a practice model. *Child Abuse and Neglect*, 31, 1031-1052.

DeBellis MD. (2001). Developmental traumatology: The psychobiological development of maltreated children and its implications for research, treatment, and policy. *Development and Psychopathology*, 13, 539–564.

DeBellis, M. D., Spratt, E. G., & Hooper, S. R. (2011). Neurodevelopmental biology associated with childhood sexual abuse. *Journal of Child Sexual Abuse* 20(5), 548-587.

Edinburgh, L., Saewyc, E., & Huemann, E. (2012). The 10-Question Tool for police officers: A novel health and psychosocial screening instrument for runaway youth. *OJJDP: Journal of Juvenile Justice*, 1(2), 80-94. Accessible at www.journalofjuvjustice.org.

Edinburgh, L., Saewyc, E., & Levitt, C. (2008). Caring for young adolescent sexual abuse victims in a hospital-based children's advocacy center. *Child abuse & Neglect*, 32, 1119-1126.

Edinburgh L. D. & Saewyc E. M. (2009). A novel, intensive home visiting intervention for runaway sexually exploited girls. *Journal of Pediatric Specialists in Nursing*, 14(1), 41-48. PMC2874576.

Finkelhor, D., Ormrod, R., Turner, H., & Hamby, S. L. (2005). The victimization of children and youth: A comprehensive, national survey. *Child Maltreatmen*t, 10, 5-25. DOI: 10.1177/1077559504271287.

Fulkerson, J. A., Harrison, P. A., & Beebe, T. J. (1999). DSM-IV substance abuse and dependence: are there really two dimensions of substance use disorders in adolescents? *Addiction*, 94(4), 495-506.

Jackson, S. L. (2004). A USA national survey of program services provided by child advocacy centers. *Child Abuse and Neglect*, 28(4), 411-421. DOI: 10.1016/j.chiabu.2003.09.020.

Kaufman, M., & the American Academy of Pediatrics Committee on Adolescence (2008). Care of the adolescent sexual assault victim: Clinical report. *Pediatrics*, 122, 462-470. DOI: 10.1542/peds.2008-1581.

Kipke, M. D., Montgomery, S. B., Simon, T. R., & Iverson, E. F. (1997). "Substance abuse" disorders among runaway and homeless youth. *Substance Use & Misuse*, 32, 969–986.

Kirk, R. E. (2001). Promoting good statistical practices: Some suggestions. *Educational and Psychological Measurement*, 61(2), 213-218.

Koopman, C., Rosario, M., & Rotheram-Borus, M. (1994). Alcohol and drug use and sexual behaviors placing runaways at risk for HIV infection. *Addictive Behavior*, 19, 95-103.

Martin, L., Hearst, M., & Widome, R. (2010). Meaningful differences: Comparison of adult women who first traded sex as a juvenile versus as an adult. *Journal of Violence Against Women*, 16(11), 1252-1269.

Martin, L., Lotspeich, R., & Stark L. (2012). *Early intervention to avoid sex trading and trafficking of Minnesota's female youth: A benefit-cost analysis*. Minneapolis: Minnesota Indian Woman's Resource Center. Available at http://www.miwrc.org/about-us-section-benefit-cost-study.

Meltzer, H., Ford, T., Bebbington, P., & Vostanis, P. (2012). Children who runaway from home: Risks for suicidal behavior and substance misuse. *Journal of Adolescent Health*, 51, 415-421. DOI 2012.04.002.

Milburn, N. G., Rosenthal, D., Rotheram-Borus, M. J., Mallett, S., Batterham, P., Rice, E., et. al. (2007). Newly homeless youth typically return home. *Journal of Adolescent Health*, 40(6), 574-576.

Minnesota Student Survey Data Tables. 2007. Accessed electronically at http://www.health.state.mn.us/divs/chs/mss/statewidetables/index.html.

Mitchell, K. J., Finkelhor, D., & Wolak, J. (2010). Conceptualizing juvenile prostitution as child maltreatment: Findings from the National Child Prostitution Study. *Child Maltreatment*, 15, 18 -36.

Molnar, B. E., Shade, S. B., Kral, A. H., Booth, R. E., & Watters, J. K. (1998). Suicidal behavior and sexual/physical abuse among street youth. *Child Abuse and Neglect*, 22, 213-222.

National Children's Alliance (2009). *Standards for Accredited Members—Revised 2008*. Accessed 22 December 2011 at www.nationalchildrensalliance.org/index.php?s=76.

Resnick, M.D. (2000). Resilience and protective factors in the lives of adolescents. *Journal of Adolescent Health*, 27, 1-2.

Rew L., Taylor-Seehafer, M., & Fitzgerald, M. L. (2001). Sexual abuse, alcohol and other drug use, and suicidal behavior among homeless adolescents. Issues in Comprehensive *Pediatric Nursing*, 24, 225-240.

Rotheram-Borus, M. J. (1993). Suicide behavior and risk factors among runaway youths. *American Journal of Psychiatry,* 150, 103-107.

Rosenthal, D., Mallett, S.. Milburn, N., & Rotheram-Borus, M. J. (2008). Drug use among homeless young people in Los Angeles and Melbourne. *Journal of Adolescent Health*, 43, 296–305.

Saewyc, E. & Edinburgh, L. (2010). Restoring healthy developmental trajectories for sexually exploited young runaway girls: Fostering protective factors and reducing risk behaviors. *Journal of Adolescent Health*, 46(2), 180-188.

Saewyc, E. M., MacKay, L., Anderson, J., & Drozda, C. (2008). *It's Not What You Think: Sexually Exploited Youth in British Columbia*. Monograph, Vancouver: University of British Columbia.

Saewyc, E. M., & Tonkin, R. (2008). Surveying adolescents: Focusing on positive development. *Paediatrics & Child Health*, 13(1), 43-47.

Saewyc, E., Wang, N., Chittenden, M., Murphy, A. & the McCreary Center Society. (2006). *Building Resiliency in Vulnerable Youth*. Vancouver, BC: McCreary Center Society. Accessed at www.mcs.bc.ca.

Slesnick, N. & Prestopnik, J. (2005). Dual and multiple diagnosis among substance using runaway youth. *American Journal of Drug and Alcohol Abuse*, 1, 179-201.

Slesnick, N., Dashora, P., Letcher, A., Erdem, G., & Serovich, J. M. (2009). A review of services and interventions for runaway and homeless youth: Moving forward. *Children and Youth Services Review*, 31, 732–742.

Stransky, M. & Finkelhor, D. (2008). *How many juveniles are involved in prostitution in the U.S.?* [fact sheet]. Crimes Against Children Research Center, University of New Hampshire. Accessed 28 May 2011 at www.unh.edu/ccrc/prostitution/juvenile_prostitution_factsheet.pdf

Sullivan, P. & Knutson, J. F. (2000). The prevalence of disabilities and maltreatment among runaway children. *Child Abuse & Neglect*, 24, 1275–1288

Trickett, P. K., Noll, J. G., &. Putnam, F. W. (2011). The impact of sexual abuse on female development: Lessons from a multi-generational, longitudinal research study. *Development & Psychopathology*, 23, 453-476. doi: 10.1017/S0954579491000174.

Tucker, J., Edelen, M., Ellickson, P., & Klein, D. J. (2011). Running away from home: A longitudinal study of adolescent risk factors and young adult outcomes. *The Journal of Youth and Adolescents*, 40(5), 507-518. doi: 10.1007/s10964-010-9571-0

Tyler, K. A. & Bersani, B. E. (2008). A longitudinal study of early adolescent precursors to running away. *Journal of Early Adolescence*, 28, 230–251.

Tyler, K. A. & Cauce, A, M. (2002). Perpetrators of early physical and sexual abuse among homeless and runaway adolescents. *Child Abuse and Neglec*t, 26, 261-1274.

Walsh, W. A. & Wolak, J. (2005). Non-forcible internet-related sex crimes with adolescent victims: Prosecution and outcomes. *Child Maltreatment*, 10(3), 260-271.

Wilson, H. W. & Widom, C. S. (2010). The role of youth problem behaviors in the path from child abuse and neglect to prostitution: A prospective examination. *Journal of Research on Adolescence*, 20(1), 210-236. doi: 10.1111/j.1532-7795.2009.00624.x