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Orphaned and abused youth are vulnerable to pregnancy and suicide risk☆, ,☆☆

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Abstract

Objective—Little is known about the magnitude and consequences of violence against children for those living outside family care. We sought to estimate the frequency of childhood abuse and examine its association with lifetime pregnancy involvement (LPI) and past year suicide ideation among orphaned youth.

Methods—We analyzed data collected via cross-sectional interviewer-administered surveys completed by 293 orphaned youth aged 16–23 years living outside of family care in St. Petersburg, Russia. We used multivariable logistic regression to estimate adjusted odds ratios (AORs) of LPI and past year suicide ideation associated with childhood physical and sexual abuse. Other risk factors were also examined (e.g., social vulnerability, sexual and substance use behaviors), and characteristics of orphaned youth with LPI and past year suicide ideation were described.

Results—The prevalence of childhood abuse was higher among females than among males (23.3% versus 15.6% for physical abuse, and 20.3% versus 5.6% for sexual abuse), as was the prevalence of LPI and past year suicide ideation among those with histories of abuse. Experiences of childhood abuse were strong risk factors for both LPI and past year suicide ideation, with significant variation by gender. While both types of abuse were significantly associated with LPI and past year suicide ideation among females, physical abuse was significantly associated with LPI and sexual abuse was associated with suicide ideation for males. Of the other characteristics examined, strong modifiable risk factors included having no one to turn to for help and no involvement in activities outside of class. Among those with LPI (n = 36), nearly 20% had been pregnant or gotten someone pregnant ≥2 times, most (61.8%) reported at least one induced

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abortion, and current use of effective contraception was nearly non-existent. Among those with past year suicide ideation (*n* = 30), nearly half (44.8%) reported attempting suicide.

Conclusions—There is an urgent need for interventions to prevent and mitigate the negative influence of childhood abuse experiences. Programs providing services to orphaned youth should increase access to sexual education, effective contraceptives, and mental health counseling.

Keywords

Orphans; Abuse; Pregnancy; Suicide ideation; Risk factors; Protective factors

Introduction

Recent reports documenting high prevalence of violence against children have attracted worldwide attention (Brown et al., 2009; Reza et al, 2009). The consequences of child abuse are vast, particularly when such abuse is prolonged and repeated, including acute and severe outcomes such as death, injury, traumatic brain injury, as well as long-term developmental outcomes such as substance abuse, risky sexual behaviors, depression, and youth violence (Leeb, Paulozz, Melanson, Simon, & Arias, 2008; Skaperdas, Soares, Willman, & Miller, 2009). Two types of violence against children with potential for severe consequences include physical and sexual abuse. Reports of physical abuse consistently outnumber those of sexual abuse, and sexual abuse is more often reported among females than males (Skaperdas et al, 2009; Wurtele, 1993). Although estimates of childhood abuse vary considerably across populations, little is known about the magnitude and consequences of violence against children for one particularly vulnerable population–those living outside family care.

Orphaned youth, defined here as those who have lost one or both parents, are highly vulnerable, particularly those living outside of family care. In 2009, there were 163 million orphaned youth worldwide (USAID, 2010), and the number continues to increase due to global crises such as poverty, natural disasters, armed conflicts, and HIV/AIDS (UNICEF, 2009, 2011). Orphaned youth often engage in high risk behaviors, have limited access to material and social resources, and lack adult support (Schenk, Michaelis, Sapiano, Brown, & Weiss, 2010). Because a child's emotional connection or attachment to an adult caregiver is critical for helping children cope with difficult circumstances and promoting long-term health, well-being, and resiliency (Betancourt & Khan, 2008; Bowlby, 1988; Cicchetti & Rogosch, 2009) orphaned youth who lack a consistent adult caregiver will likely face developmental challenges. Compared with orphaned youth in family-based or foster care, this maybe even more difficult for orphaned youth in residential institutions with small numbers of staff and high staff turnover that limit opportunities to form relationships to caregivers (Johnson, Browne, & Hamilton-Giachritsis, 2006). It is also likely that orphaned youth have high rates of childhood abuse and neglect experiences. One study that sought to characterize former Soviet Union orphans aged 6–9 years adopted into U.S. families found that among those who lived with their families before entering Soviet orphanages, nearly three-quarters had documented histories of abandonment, neglect, physical abuse or witnessing domestic violence (McGuinness, McGuinness, & Dyer, 2000). Given their deprived social circumstances and the unlikely possession of many protective factors to

promote resiliency, the negative influence of childhood physical and sexual abuse may be heightened among those who have been orphaned.

Studies in the general population have described the frequency of child abuse and have linked such abuse to pregnancy (Brown et al., 2009; Haynie, Petts, Maimon, & Piquero, 2009; Hillis et al., 2004; Mullen, Martin, Anderson, Romans, & Herbison, 1996; Reza et al, 2009) and suicide risks (Duke, Pettingell, McMorris, & Borowsky, 2010; Fergusson, Boden, & Horwood, 2008; Haynie et al., 2009; Johnson et al., 2002; Kukoyi, Shuaib, Campbell-Forrester, Crossman, & Jolly, 2010; Mullen et al, 1996; Reza et al., 2009; Salzinger, Rosario, Feldman, & Ng-Mak, 2007). In contrast, little is known about the frequency of child abuse among orphaned populations (Pascoe et al., 2010; Thurman, Brown, Richter, Maharaj, & Magnani, 2006; UNICEF Tanzania, Centers for Disease Control and Prevention, & Muhimbili University of Health and Allied Sciences, 2011) and its influence on subsequent pregnancy and suicide risks. Therefore, we aimed to estimate the frequency of childhood abuse and examine its association with lifetime pregnancy involvement (LPI) and past year suicide ideation, among a sample of orphaned youth living outside of family care in St. Petersburg, Russia.

Methods

Context

After the collapse of Soviet rule in 1991, the numbers of abandoned children and youth living in institutions increased dramatically, although official estimates are contradictory and unconfirmed (Human Rights Watch, 1998). Nevertheless, it is estimated that 770,000 orphans are living in Russia, with 100,000 new orphans added to the child protection system annually (Endicott, 2006). Children may enter the system if they are abandoned at birth or born in prison, if they are found living on the streets, or if an investigation of neglect and abuse deems that parental rights should be deprived. Children remain in orphanages, unless adopted, until they complete the ninth grade. At this time they are eligible for training in a technical school, or government-funded vocational education facility, to learn trades such as metalworking, auto mechanics, sewing, or baking. It has been suggested that within one year of leaving a Russian orphanage or technical school, 40% of youth are involved in drugs and 10% have committed suicide (Endicott, 2006).

Study overview

Data from this report were collected from October 2007 to April 2008 as part of a larger study to assess the prevalence of human immunodeficiency virus (HIV), sexually transmitted infections (STIs), pregnancy, as well as behavioral risk factors, childhood adversity, violence, mental health, and resilience factors, among orphaned youth living outside of family care and attending technical schools in St. Petersburg, Russia. The study consisted of: (1) completion of an interviewer-administered survey; (2) participation in psychosocial sessions, delivered by experienced psychologists, to reduce risk behaviors; (3) opportunity to receive confidential or anonymous HIV testing; and (4) opportunity to receive private counseling. This report describes survey findings regarding LPI and past year suicide ideation. Informed consent was obtained from all participants. The study was

approved by an institutional review board at the Centers for Disease Control and Prevention, Atlanta, Georgia and the Botkin Hospital, St. Petersburg, Russia.

Sample

The study was implemented at three technical schools in St. Petersburg, Russia that served social orphans (those with parental rights terminated or relinquished), legal orphans (those with one or two deceased parents), and other high risk youth. All residential or orphaned students were eligible to participate. Students who were not currently attending the technical schools for various reasons (e.g., maternity leave (n = 21), apprenticeship, hospitalized, etc.) were excluded. Participation rates for interviews were 78% in School A (60/77), 93% in School B (84/90), and 88% in School C (154/176); overall participation was 87% (298/343). Given our focus on orphaned youth, students had to be aged 16-24 years and either report having one or two deceased parents (legal orphan), or having ever lived in an orphanage (social orphan) to be included in this analysis; our final analytic sample included 293 orphaned youth.

Measures

The survey was administered by trained local interviewers during the first week of implementation at each school. LPI was assessed for males and females using the question “How many times have you ever been pregnant or gotten someone pregnant?” and was defined as ≥1 time. Past year suicide ideation was asked by the question “During the past 12 months, did you ever seriously consider attempting suicide?” and was coded yes/no. Both items have been validated and used on the World Health Organization's Global School-based Student Health Survey (World Health Organization, 2011). Histories of childhood abuse were assessed via questions adapted from the Adverse Childhood Experiences study (Felitti et al, 1998; Hillis et al., 2004). Childhood physical abuse was assessed by the question “During your childhood, before you entered the technical school, how often did a parent or primary caretaker living with you actually push, grab, shove, slap, or throw something at you, OR hit you so hard that you had marks or were injured?” Youth who responded sometimes, often, or very often were considered to have experienced physical abuse. Childhood sexual abuse was assessed by two questions: (1) “During your childhood, before you entered the technical school, did an adult, relative, family friend, or stranger ever do any of the following against your will: touch or fondle your body in a sexual way, have you touch their body in a sexual way, attempt to have any type of sexual intercourse with you, or actually have any type of sexual intercourse with you?” and (2) “Have you ever been forced to have sex?” Youth were considered to have experienced childhood sexual abuse if they responded 1 or 2 times, sometimes, often, or very often to the first question, or yes to the second question, or reported first being forced to have sex prior to coming to the technical school.

Data analysis

Data analyses involved computing chi-square tests to compare distributions of LPI and past year suicide ideation by childhood abuse, demographic, social vulnerability, sexual/reproductive health, and substance use risk factors. For ordinal level covariates, Mantel-

Haenszel trend tests were examined. We used multivariable logistic regression to estimate the adjusted odds ratios (AORs) and 95% confidence intervals (CIs) of LPI and past year suicide ideation for childhood abuse, adjusting for covariates. AORs and CIs were also estimated for the other potential correlates. Due to small numbers and concerns about collinearity among several risk characteristics within a given block of interest (e.g., sexual/reproductive health risk factors), only select variables were chosen to be included in modeling. For each outcome, to select variable(s) from a given block to adjust for in models, the significance, magnitude of effect, and presumed unique contribution of each variable were considered; age, gender and school were determined a priori as important confounders. For example, when determining which social vulnerability risk factors to adjust for when examining associations between LPI and the other block risk factors assessed (e.g., substance use), we chose to adjust for ever lived on the streets and having no one to turn to for help, as both of these variables were significantly associated with LPI in bivariate analyses; we did not adjust for ever lived alone or with friends, despite its significance, given that it was highly correlated with having ever lived on the streets. We also examined whether associations between each childhood abuse variable and both outcomes were modified by gender by examining the significance of interaction terms added to full models. When significant effect modification was detected, gender-specific point estimates were calculated in a single model using the entire sample of orphaned youth using contrast statements; this approach allowed us to preserve power while examining gender differences in effect. All analyses were conducted using SUDAAN software to account for clustering of students within schools.

Results

Among the 293 orphaned participants, the majority were male and aged 16–19 years (Table 1). Childhood abuse was common, with 19.1% of orphaned youth reporting physical abuse and 12.3% reporting sexual abuse. Gender differences were also evident, with more females (23.3%) than males (15.6%) reporting physical abuse, and significantly more females (20.3%) than males (5.6%) reporting sexual abuse. Other characteristics examined included social vulnerability risk factors: having ever lived alone/with friends (43.0%), having ever lived on the streets (11.0%), having no one to turn to for help (8.5%), and no involvement in activities outside of class (33.8%). Most youth reported having had sex, with one-third being aged ≤15 years at first sex. Although nearly half of orphaned youth reported lifetime use of drugs, only 3.1% had ever used injection drugs. Having ever lived on the streets and lifetime use of drugs were significantly more common among males than among females; and older age and no involvement in activities outside of class were significantly more common among females than males.

Overall, 12.9% of orphaned youth reported LPI and 10.8% reported past year suicide ideation (Table 2). For males, the prevalence of LPI was significantly elevated for those who had experienced physical abuse compared to those who did not (26.1% versus 3.1%). For females, prevalences of LPI and past year suicide ideation were significantly elevated for those who had experienced childhood sexual abuse compared to those who did not (47.8% versus 14.6% and 38.5% versus 8.9%, respectively), and prevalence of past year suicide ideation was significantly elevated for those who had experienced childhood physical abuse

compared to those who did not (30.0% versus 10.3%). Additionally, the prevalences of LPI and past year suicide ideation among those with past histories of abuse were higher for females than males (33.3% of physically abused females reported LPI versus 26.1% of males, 30.0% of physically abused females reported past year suicide ideation versus 8.0% of males, 47.8% of sexually abused females reported LPI versus 11.1% of males, and 38.5% of sexually abused females reported past year suicide ideation versus 25.0% of males). Of the other characteristics examined, having no one to turn to for help was significantly elevated and had rates for both outcomes exceeding 20%.

After adjustment for covariates, experiences of childhood abuse remained strong risk factors for both LPI and past year suicide ideation, although there was variation in effect by gender (Table 3). For females, both physical and sexual abuse were significantly associated with increased odds of LPI and past year suicide ideation. Past physical abuse increased the odds of both outcomes by roughly two-fold, and past sexual abuse increased the odds of both outcomes by roughly four-fold. In contrast, for males, only past physical abuse was associated with increased odds of LPI (AOR = 9.8, CI = 5.7,16.6), and only sexual abuse was associated with increased odds of suicide ideation (AOR=8.1, CI = 3.8,17.4).

In addition to childhood abuse risk factors, a host of other characteristics examined were significantly associated with increased odds of LPI and past year suicide ideation. Factors independently associated with LPI with AORs ≥3.0 included female gender, having ever lived on the streets, having no one to turn to for help, initiating sexual activity at ≤15 years, and lifetime oral or anal sex. For past year suicide ideation, characteristics independently associated with AORs ≥3.0 included having no one to turn to for help, no involvement in activities outside of class, and lifetime anal sex or injection drug use.

Among male and female orphaned youth with LPI (*n* = 36), nearly one in five had been pregnant or gotten someone pregnant ≥2 times, and the most recent pregnancy was reported to be unintended by more than half of youth (Table 4). Although 38.7% of those with LPI reported ≥1 pregnancy that resulted in the delivery of alive infant, induced abortions were common, with 61.8% of youth reporting at least one procedure. Related to current contraceptive use practices, although more than half of orphaned youth with past LPI reported using a condom at last sex, only 5.6% reported using birth control pills, and one-third reported using no method at all. Among orphaned youth with past year suicide ideation (*n* = 30), more than half reported living with someone during their childhood who was depressed, mentally ill or attempted suicide. Additionally, 41.4% of orphaned youth with past year suicide ideation made a plan about how to attempt suicide and 44.8% reported actually attempting suicide.

Discussion

We found that abuse was more commonly reported by females than males, with one in six orphaned females reporting physical and sexual abuse, and roughly one in six and 1 in 20 males reporting physical and sexual abuse, respectively. The prevalences of LPI and suicide ideation among abused orphans were also more pronounced in females. After adjustment for covariates, childhood abuse experiences were strong independent risk factors for both LPI

and past year suicide ideation. Childhood sexual abuse was the strongest abuse risk factor for past year suicide ideation among both females and males (i.e., associated with four- and eight-fold increased odds, respectively) and for LPI among females (i.e., associated with four-fold increased odds). In contrast, childhood physical abuse was the strongest abuse risk factor for LPI among males (i.e., associated with ten-fold increased odds). Many orphaned youth with LPI reported ≥2 pregnancies, more than half reported at least one induced abortion, and use of highly effective contraception (i.e., birth control pills) was nearly non-existent. Among orphaned youth reporting past year suicide ideation, nearly half actually attempted suicide.

For other risk factors examined, LPI was highest for those initiating sexual activity at younger ages (i.e., ≤13 years) and for those with histories of oral or anal sex. Nearly half of orphaned youth who had injected drugs reported past year suicide ideation. After adjustment for covariates, strong modifiable risk factors for past year suicide ideation included having no one to turn to for help and no involvement in activities outside of class. There was a trend effect for total involvement in activities outside of class with odds of past year suicide ideation decreasing as number of activities per week increased.

To put our findings into context with previous work, we searched for relevant articles indexed in PubMed. Few studies have described LPI (Birdthistle et al., 2008; Gregson et al., 2005; Palermo & Peterman, 2009) or suicide ideation (Makame, Ani, & Grantham-McGregor, 2002) among orphaned youth. Studies that have examined pregnancy among orphaned females reported rates ranging from 8 to 29% (Birdthistle et al., 2008; Gregson et al., 2005; Palermo & Peterman, 2009); our LPI rate among orphaned females of 21% falls within this range. One study assessed suicide risk among orphans and reported that 34% of AIDS orphans aged 10–14 years from three marginalized suburbs in Tanzania contemplated suicide in the past year (Makame et al., 2002), which is strikingly higher than the 10.8% found in our assessment. Differences may be attributable to small sample size in the Tanzania report, and to extreme poverty among those youth, as suicide ideation was also high among non-orphans (12%), and other predictors of suicidal tendencies for orphans and non-orphans included going to bed hungry and not attending school.

Our findings that childhood physical and sexual abuse experiences were strong and robust independent risk factors for LPI and suicide risk are largely consistent with previous studies examining pregnancy among females in non-orphaned populations (Hillis et al., 2004; Mullen et al., 1996), or suicide risk among males and females (Duke et al., 2010; Fergusson et al., 2008; Haynie et al., 2009; Johnson et al., 2002; Kukoyi et al., 2010; Salzinger et al., 2007). Two studies found sexual but not physical abuse to be significantly associated with lifetime attempted suicide (Kukoyi et al., 2010) or suicide ideation (Fergusson et al., 2008) among male and female adolescents and young adults from Western Jamaica or New Zealand. In our assessment, physical abuse was significantly associated with past year suicide ideation among females only. In other reports, gender effects either were not tested, there was no evidence of differential gender effects, or greater odds of lifetime suicide ideation was observed among females who had been physically abused, and among males who had been sexually abused (Duke et al., 2010); we found greater odds of past year

suicide ideation among both males and females who had experienced childhood sexual abuse.

Limitations of our analysis included our inability to establish temporal order between childhood abuse and LPI, given that our data were cross-sectional and timing of LPI was not assessed. In the event that LPI preceded abuse occurring during childhood (i.e., before youth entered the technical school), we may have overestimated the odds associated with childhood abuse. Furthermore, data were based on youth self-report and, therefore, subject to recall and social desirability bias. In the event that sensitive physical and sexual abuse experiences were under-reported, we may have underestimated the odds associated with these risk factors. In addition, misclassification in our LPI variable may have occurred, particularly for males, who may not have known if they impregnated a partner. It is also important to note that our estimates of LPI and past year suicide ideation may be underreported as students on maternity leave or those who had committed suicide were not included in our assessment. Despite these limitations, our study contributes to the literature by examining associations between childhood abuse and pregnancy and suicide risk among orphaned youth. By using highly trained interviewers, we were able to document exposures that are often hidden. Our outcome variables and main exposures were assessed using validated questions. Our study was also implemented in each technical school in St. Petersburg with residential orphans and had high participation rates, thus enhancing the validity and generalizability of findings. Nevertheless, future prospective studies conducted with larger samples of orphaned youth living outside of family care from multiple cities from different regions of the world would strengthen the evidence base.

There are several important implications of these findings. The high prevalence of childhood physical and sexual abuse among orphaned youth living outside family care, particularly among females, underscores the urgent need for interventions to prevent and mitigate the negative influence of childhood abuse experiences. Several intervention models to reduce psychological harm from exposure to abuse have been evaluated, with individual and group cognitive-behavioral therapy having the strongest evidence of success (Macdonald et al, 2012; Wethington et al., 2008). Cognitive-behavioral therapy usually combines exposure techniques (e.g., direct discussions of the traumatic event), stress management or relaxation techniques, and cognitive exploration to correct inaccurate cognitions and reframe counterproductive cognitions regarding the trauma; it is often administered by a doctoral-level professional or other clinician, and delivered in 8–12 sessions (Wethington et al., 2008). Other intervention models that currently lack sufficient evidence of effectiveness, but that are promising, include play therapy, art therapy, pharmacologic therapy, psychodynamic therapy, and psychological debriefing (Wethington et al., 2008). Although these intervention models have yet to be tested specifically for orphaned youth, it is not expected that they would differentially be implemented or succeed for orphaned versus non-orphaned youth with past experiences of abuse. As findings from a survey of homeless youth with histories of childhood abuse reported that most youth were still affected by their childhood abuse, and more than half were interested in treatment (Keeshin & Campbell, 2011), it is likely that orphaned technical school students with past histories of abuse would participate in treatment opportunities. Incorporating such interventions into the care and services offered by technical schools would likely promote mental health, personal

wellbeing, and future productivity of participating students. Furthermore, given the high rates of abuse reported by orphans during childhood, prior to residing in the technical schools, comprehensive screening for abuse upon school entry, and treatment as appropriate, might be warranted. Instituting systematic screening for child abuse in other settings (i.e., emergency departments) has been found to be both feasible and successful at increasing child abuse detection rates (Louwers et al., 2012). In addition, programs providing services to orphans should incorporate reproductive and mental health components, including access to sexual education, effective contraceptives, and mental health counseling. Efforts to enhance protective factors, for example, promoting mentorship relationships or encouraging engagement in activities outside of class, may bolster resiliency and reduce the likelihood of negative outcomes (Ahrens, DuBois, Richardson, Fan, & Lozano, 2008; Hillis et al., 2010; Onuoha & Munakata, 2010). Offering these enhanced services to orphaned youth living outside family care and ensuring their timely implementation and standardization into schools and other settings serving these youth is of upmost importance for their current and future protection. Although suggested for orphaned youth living outside of family care in St. Petersburg, Russia, these public health implications have relevance to other orphaned youth globally given their shared life experiences of vulnerability, high risk experiences, and deficient physical and emotional resources.

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Table 1

Characteristics of orphaned youth living in residential school settings, by gender—St. Petersburg, Russia, 2007–2008.

Characteristics	*n* (%)			*P*[a]
	Total (*N* = 293)	Males (*N* = 160)	Females (*N* = 133)	
Childhood abuse risk factors				
Experienced physical abuse				
No	237 (80.89)	135 (84.38)	102 (76.69)	*ns*
Yes	56 (19.11)	25 (15.63)	31 (23.31)	
Experienced sexual abuse				
No	257 (87.71)	151 (94.38)	106 (79.70)	< 0.05
Yes	36 (12.29)	9 (5.63)	27 (20.30)	
Demographic and social vulnerability risk factors				
Age				
16–19	225 (77.05)	131 (81.88)	94 (71.21)	< 0.05
20–23	67 (22.95)	29 (18.13)	38 (28.79)	
Ever lived alone/with friends				
No	166 (57.04)	95 (59.75)	71 (53.79)	*ns*
Yes	125 (42.96)	64 (40.25)	61 (46.21)	
Ever lived on the streets				
No	260 (89.04)	134 (83.75)	126 (95.45)	< 0.05
Yes	32 (10.96)	26 (16.25)	6 (4.55)	
No one to turn to for help				
No	268 (91.47)	144 (90.00)	124 (93.23)	*ns*
Yes	25 (8.53)	16 (10.00)	9 (6.77)	
Total involvement in activities outside of class				
4+ times/week	105 (35.84)	72 (45.00)	33 (24.81)	< 0.05
1–3 times/week	89 (30.38)	46 (28.75)	43 (32.33)	
0 times/week	99 (33.79)	42 (26.25)	57 (42.86)	
Sexual/reproductive health risk factors				
Age at first sex				
9–13 years	32 (10.96)	20 (12.58)	12 (9.02)	*ns*
14–15 years	66 (22.60)	37 (23.27)	29 (21.80)	
16–17 years	66 (22.60)	36 (22.64)	30 (22.56)	
18–21 years	36 (12.33)	13 (8.18)	23 (17.29)	
Never had sex	92 (31.51)	53 (33.33)	39 (29.32)	
Lifetime oral sex				
No	251 (85.67)	136 (85.00)	115 (86.47)	
Yes	42 (14.33)	24 (15.00)	18 (13.53)	*ns*
Lifetime anal sex				
No	264 (90.10)	144 (90.00)	120 (90.23)	*ns*
Yes	29 (9.90)	16 (10.00)	13 (9.77)	

Characteristics	***n* (%)**			***p*[a]**
	Total (*N* = 293)	**Males (*N* = 160)**	**Females (*N* = 133)**	
Substance use risk factors				
Lifetime use of any drug				
No	162 (55.86)	79 (49.69)	83 (63.36)	< 0.05
Yes	128 (44.14)	80 (50.31)	48 (36.64)	
Lifetime injection drug use				
No	283 (96.92)	155 (97.48)	128 (96.24)	*ns*
Yes	9 (3.08)	4 (2.52)	5 (3.76)	

[a]Chi-square test comparing the distribution of characteristics among males and females (Fisher's exact test where cell counts <5).

Table 2

Prevalence of lifetime pregnancy involvement and past year suicide ideation, orphaned youth living in residential school settings—St. Petersburg, Russia, 2007–2008 (*N*= 293).

Characteristics	***n* (%)**	
	Lifetime pregnancy involvement	**Past year suicide ideation**
Total	36 (12.90)	30 (10.79)
Childhood abuse risk factors		
Experienced physical abuse		
Male		
No	4 (3.08)	9 (7.14)
Yes	6 (26.09)*	2 (8.00)
Female		
No	17 (17.17)	10 (10.31)
Yes	9 (33.33)	9 (30.00)*
Experienced sexual abuse		
Male		
No	9 (6.25)	9 (6.29)
Yes	1 (11.11)	2 (25.00)
Female		
No	15 (14.56)	9 (8.91)
Yes	11 (47.83)*	10 (38.46)*
Demographic/social vulnerability risk factors		
Gender		
Male	10 (6.54)	11 (7.28)
Female	26 (20.63)*	19 (14.96)*
Age		
16–19	24 (11.27)	24 (11.27)
20–23	11 (16.92)	6 (9.23)
Ever lived alone/with friends		
No	14 (8.86)	10 (6.29)
Yes	21 (17.65)*	20 (17.09)*
Ever lived on the streets		
No	28 (11.29)	24 (9.64)
Yes	8 (26.67)*	6 (20.69)
No one to turn to for help		
No	30 (11.81)	22 (8.70)
Yes	6 (24.00)*	8 (32.00)*
Total involvement in activities outside of class		
4+ times/week	8 (8.08)	4 (4.08)
1–3 times/week	13 (15.29)	10 (11.90)

Characteristics	*n* (%)	
	Lifetime pregnancy involvement	Past year suicide ideation
0 times/week	15 (15.79)	16 (16.67)**
Sexual/reproductive health risk factors		
Age at first sex		
9–13 years	9 (32.14)	8 (8.99)
14–15 years	12 (19.35)	4 (13.33)
16–17 years	10 (16.39)	11 (17.46)
18–21 years or never had sex	5 (3.94)**	7 (7.37)
Lifetime oral sex		
No	22 (9.17)	23 (9.50)
Yes	14 (35.90)*	7 (19.44)
Lifetime anal sex		
No	27 (10.67)	25 (9.84)
Yes	9 (34.62)*	5 (20.83)
Lifetime pregnancy involvement		
No	-	20 (8.73)
Yes	-	8 (22.86)*
Substance use risk factors		
Lifetime use of any drug		
No	17 (10.63)	14 (9.21)
Yes	19 (16.38)	16 (13.01)
Lifetime injection drug use		
No	33 (12.22)	26 (9.70)
Yes	3 (37.50)	4 (44.44)*

* $p < 0.05$.

** p for trend < 0.05.

Table 3

Adjusted odds of lifetime pregnancy involvement and past year suicide ideation, orphaned youth living in residential school settings—St. Petersburg, Russia, 2007–2008 (*N*= 293).

Characteristics	Lifetime pregnancy involvement		Past year suicide ideation	
	Odds ratio (95% CI)	Adjusted odds ratio[a] (95% CI)	Odds ratio (95% CI)	Adjusted odds ratio[b] (95% CI)
Childhood abuse risk factors				
Experienced physical abuse				
Male				
No	Referent	Referent	Referent	Referent
Yes	11.12 (6.75,18.32)*	9.76 (5.74,16.58)*	1.13 (0.58, 2.21)	1.83 (0.88, 3.80)
Female				
No	Referent	Referent	Referent	Referent
Yes	2.41 (1.62,3.59)*	1.76 (1.13, 2.74)*	3.73 (2.50, 5.57)*	2.17 (1.32, 3.59)*
Experienced sexual abuse				
Male				
No	Referent	Referent	Referent	Referent
Yes	1.88 (0.88,3.99)	1.09 (0.54, 2.16)	4.96 (2.28, 10.78)*	8.12 (3.80, 17.38)*
Female				
No	Referent	Referent	Referent	Referent
Yes	5.38 (3.57, 8.11*)	3.81 (2.41, 6.02)*	6.39 (4.22, 9.67)*	3.59 (2.08, 6.21)*
Demographic risk factors				
Gender				
Male	Referent	Referent		Referent
Female	3.72 (2.79, 4.96)*	8.02 (4.75, 13.56)*	2.24 (1.62, 3.09)*	0.70 (0.46, 1.08)
Age				
16–19	Referent	Referent	Referent	Referent
20–23	1.60 (1.19, 2.17)*	2.51 (1.70, 3.69)*	0.80 (0.54, 1.18))	1.42 (0.90, 2.25)
Social vulnerability risk factors				
Ever lived alone/with friends				
No	Referent	Referent	Referent	Referent
Yes	2.20 (1.65, 2.94)*	1.47 (1.05, 2.05)*	3.07 (2.25, 4.19)*	1.80 (1.30, 2.49)*
Ever lived on the streets				
No	Referent	Referent	Referent	Referent
Yes	2.86 (2.00, 4.08)*	3.82 (2.44, 5.99)*	2.45 (1.61, 3.71)*	1.55 (0.87, 2.73)
No one to turn to for help				
No	Referent	Referent	Referent	Referent
Yes	2.36 (1.58,3.53)*	3.03 (2.02, 4.54)*	4.94 (3.36, 7.27)*	5.62 (3.59, 8.81)*
Total involvement in activities outside of class				
4+/week	Referent	Referent	Referent	Referent

Characteristics	Lifetime pregnancy involvement		Past year suicide ideation	
	Odds ratio (95% CI)	Adjusted odds ratio[a] (95% CI)	Odds ratio (95% CI)	Adjusted odds ratio[b] (95% CI)
1–3/week	2.05 (1.40,3.01)*	1.74 (1.13, 2.68)*	3.18 (1.90, 5.30)*	2.46 (1.45, 4.17)*
0 times/week	2.13 (1.48,3.08)*	1.69 (1.11, 2.57)*	4.70 (2.94, 7.50)*	4.37 (2.62, 7.28)*
Sexual/reproductive health risk factors				
Age at first sex				
≤15 years	3.51 (2.64, 4.67)*	3.05 (2.08, 4.46)*	2.17 (1.59, 2.96)*	1.83 (1.21, 2.76)*
16+ years or never had sex	Referent	Referent	Referent	Referent
Lifetime oral sex				
No	Referent	Referent	Referent	Referent
Yes	5.55 (4.07, 7.57)*	8.28 (5.58,12.28)*	2.30 (1.56, 3.38)*	2.13 (1.34, 3.39)*
Lifetime anal sex				
No	Referent	Referent	Referent	Referent
Yes	4.43 (3.15, 6.24)*	6.30 (3.91,10.13)*	2.41 (1.55, 3.76)*	3.15 (1.84, 5.38)*
Lifetime pregnancy involvement				
No	-	-	Referent	Referent
Yes	-	-	3.10 (2.11, 4.53)*	1.45 (0.89, 2.37)
Substance use risk factors				
Lifetime use of any drug				
No	Referent	Referent	Referent	Referent
Yes	1.65 (1.25, 2.18)*	1.05 (0.69,1.62)	1.47 (1.08, 2.01)*	1.01 (0.68, 1.51)
Lifetime injection drug use				
No	Referent	Referent	Referent	Referent
Yes	4.31 (2.33, 7.97)*	0.80 (0.44, 1.46)	7.45 (4.28, 12.96)	3.52 (1.49, 8.30)*

[a] *Childhood abuse risk factor estimates* adjusted for: gender, age, ever lived on the streets, no one to turn to for help, age at first sex (dichotomized), lifetime use of any drug, and school; *Demographic risk factor estimates* adjusted for: experienced any abuse (physical or sexual), gender (for age), age (for gender), ever lived on the streets, no one to turn to for help, age at first sex (dichotomized), lifetime use of any drug, and school; *Social vulnerability risk factor estimates* adjusted for: experienced any abuse (physical or sexual), gender, age, age at first sex (dichotomized), lifetime use of any drug, and school; *Sexual and reproductive health risk factor estimates* adjusted for: experienced any abuse (physical or sexual), gender, age, ever lived on the streets, no one to turn to for help, lifetime use of any drug, and school; *Substance use risk factor estimates* adjusted for: experienced any abuse (physical or sexual), gender, age, ever lived on the streets, no one to turn to for help, age at first sex (dichotomized), and school.

[b] Childhood abuse risk factor estimates adjusted for: gender, age, ever lived alone or with friends, no one to turn to for help, total involvement in activities outside of class, lifetime pregnancy involvement, injection drug use, and school; *Demographic risk factor estimates* adjusted for: experienced any abuse (physical or sexual), gender (for age), age (for gender), ever lived alone or with friends, no one to turn to for help, total involvement in activities outside of class, lifetime pregnancy involvement, lifetime injection drug use, and school; *Social vulnerability risk factor estimates* adjusted for: experienced any abuse (physical or sexual), gender, age, lifetime pregnancy involvement, lifetime injection drug use, and school; *Sexual and reproductive health risk factor estimates* adjusted for: experienced any abuse (physical or sexual), gender, age, ever lived along or with friends, no one to turn to for help, total involvement in activities outside of class, lifetime injection drug use, and school; *Substance use risk factor estimates* adjusted for: experienced any abuse (physical or sexual), gender, age, ever lived alone or with friends, no one to turn to for help, total involvement in activities outside of class, lifetime pregnancy involvement, and school.

* $p < 0.05$.

Table 4

Characteristics of orphaned youth[a] living in residential school settings with lifetime pregnancy involvement and past year suicide ideation—St. Petersburg, Russia, 2007–2008.

	n **(%)**
Orphaned youth with lifetime pregnancy involvement (N=36)	
Lifetime number of pregnancies	
1	29(80.56)
2+	7(19.44)
Most recent pregnancy unintended	21 (61.76)
≥1 pregnancy resulted in delivery of live infant	12(38.71)
≥1 pregnancy resulted in induced abortion	21 (61.76)
Contraceptive use at last sex	
No method	12(33.33)
Condoms	20(55.56)
Withdrawal or natural method	3(8.33)
Birth control pills	2(5.56)
Orphaned youth with past year suicide ideation (*N*=30)	
Lived with someone who was depressed/mentally ill or attempted suicide during childhood	16(53.33)
Made a plan about how to attempt suicide	12(41.38)
Attempted suicide	13(44.83)

[a]Males and females included.