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Brief Communication

Sleep problems and interpersonal violence in youth in care under the Quebec Child Welfare Society☆

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ABSTRACT

Objective: The objective this study was to investigate the relative contributions of gender, common mental health symptoms, and experiences of interpersonal violence to the presence of sleep disturbances in Youth in Care under Child Welfare Society admitted to residential facilities.
Methods: A sample of 315 teenagers (14–18 years old) completed a self-reported questionnaire upon admission, followed by a medical consultation with a nurse and a physician. Information regarding experiences of interpersonal violence, mental health symptoms, and sleep disturbances was collected using a standardized questionnaire.
Results: Anxiety, ADHD symptoms, and sexual abuse were associated with sleep disturbances, $F(10, 264) = 5.95$, $p < 0.001$. Results from hierarchical regression analyses revealed that experiences of interpersonal violence, more specifically sexual abuse, were associated with sleep disturbances over and beyond gender and the presence of mental health symptoms.
Conclusions: These results highlight practical implications for health professionals in terms of assessment and intervention for vulnerable youth exposed to interpersonal violence. Implications for research and practice are discussed.
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Recent studies show that a high proportion of children and adolescents is exposed to interpersonal violence (IV) [1], with 12.1% of minors reporting at least one experience of maltreatment in the past year and 23% reporting polyvictimization [2]. These numbers are even higher in vulnerable populations such as Youth in Care in Child Welfare, with up to 93% of them reporting more than one form of victimization in the past year, and more than 50% reporting at least four during this period [3].

IV has been associated with mental and physical health problems, including sleep disturbances [4–7]. Results from a population study showed that IV was more strongly related to insomnia in adolescents than several other adverse events, and that exposure to a greater number of adverse events was associated with higher risk of insomnia [6].

Common mental health problems, such as anxiety, depression, and attention-deficit/hyperactivity disorder (ADHD), are associated with experiences of IV [5,8], but also with sleep problems [9,10]. Further studies are needed to better understand the links between IV, mental health, and sleep disturbances in adolescents [11], to specify the predictive value of each variable. The aim of this study is to explore the relative contribution of common mental health symptoms and various experiences of IV to sleep problems in Youth in Care, while controlling for the potential impact of gender. Gender differences have been identified in prevalence rates of different maltreatment types and of specific mental health symptoms [9,12]. We hypothesize that IV will be associated with sleep disturbances over and beyond the effect of mental health symptoms and gender.

☆ This research originated from the CHU Ste-Justine. It was approved by the Ethic Review Boards and directors of the regional Youth Protection Agencies involved. The authors declare no conflict of interest.

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Given their confirmed history of IV and high rates of polyvictimization [3], Youth in Care represent an especially vulnerable population. Higher prevalence rates of sleep difficulties and mental health problems are expected within this population. Hence, it is of particular relevance to explore the relative contribution of various risk factors to their levels of sleep disturbances. This could have undeniable practical implications for health practitioners working with these youths.

1. Methods

1.1. Participants and procedure

Participants are Youth in Care admitted to residential facilities after being reported to the Quebec Child Welfare Society for situations compromising their development, mainly behavioral problems, maltreatment, and neglect. Between February 2012 and June 2013, most adolescents admitted to 13 facilities from seven regional Youth Protection Agencies were invited to participate to this study. All invited youths accepted. The final sample consisted of 315 adolescents aged 14–18 years old (57.5% boys). Sociodemographic information and descriptive information on study variables are presented in Table 1.

After signing a consent form, youths were invited to complete a self-reported questionnaire. Within four weeks, they received a medical consultation with a nurse and a physician. The Ethic Review Boards and directors of facilities involved approved this study.

1.2. Measures

Data were collected using a pilot tested standardized questionnaire elaborated by health practitioners. It was designed for use by medical personnel working in Youth Centers to assess incoming adolescents' health thoroughly. Appendix A presents detailed information about relevant items and ratings of this questionnaire.

1.2.1. Interpersonal violence

Nurses assessed experiences of IV, asking whether the adolescent suffered from extrafamilial or intrafamilial physical abuse, and sexual abuse. Possible answers were “yes” or “no”. If the reason for admission was maltreatment or neglect on the admission file, it was entered in the analyses. Variables were dummy coded (0 = *absence*, 1 = *presence*).

1.2.2. Mental health

Nurses collected data on mental health. Adolescents were asked to rate their anxiety, mood, and self-esteem on a scale ranging from 1 to 5. Anxiety (0 = *absence*, 1 = *presence*) and self-esteem (0 = *high*, 1 = *low*) were dummy coded. Mood was recoded on a three-point scale (0 = *happy*, 1 = *neutral*, 2 = *sad*). Adolescents were asked if they had attention problems, hyperactivity, and impulsivity. The presence of at least one symptom of ADHD was given a score of 1.

1.2.3. Sleep disturbances

A continuous score of sleep disturbances (0–4) was derived from adolescents' answers to four items ($\alpha = 0.65$): poor sleep quality, difficulty falling asleep, frequent awakenings, and frequent nightmares.

1.3. Statistical plan

Adolescents with missing data were excluded from the analyses, leaving 265 participants. Chi-square and *t*-tests were performed to assess gender differences in study variables. Then, hierarchical regression analyses were performed to assess the relative contributions of gender, mental health variables, and IV to the level of sleep disturbances (Step 1 = gender; Step 2 = mental health variables; Step 3 = interpersonal violence experiences).

2. Results

Descriptive information and results from the bivariate analyses of gender differences are presented in Table 1. Gender differences were identified with girls presenting a higher prevalence of anxiety, low or neutral mood, low self-esteem, sexual abuse, and higher levels of sleep problems. Boys were more likely to have at least one ADHD symptom. Small, but significant positive correlations were found between mental health symptoms and sleep disturbances ($r = 0.17–0.25$). Regarding experiences of abuse, only extrafamilial physical abuse and sexual abuse were correlated with sleep disturbances (small and positive correlations; $r = 0.19$ and $r = 0.25$ respectively).

Results of the hierarchical regression analyses are summarized in Table 2. At Step 1, gender was significantly associated with levels of sleep disturbances and explained 5% of the variance. Girls presented higher scores than boys. At Step 2, gender, anxiety, mood, low self-esteem, and ADHD symptoms taken together were found to be significantly associated with levels of sleep disturbances and explained 14% of the variance, $F_{\text{change}}(4, 260) = 8.74$, $p < 0.001$. However, mood and self-esteem alone were not significant contributors. At Step 3, all study variables taken together were found to be significantly associated with sleep disturbances, explaining 19% of the variance. The addition of interpersonal violence significantly increased the explained variance of sleep disturbance, $F_{\text{change}}(4, 255) = 4.06$, $p = 0.001$. Gender became non-significantly associated with the dependent variable. Anxiety and ADHD remained significantly associated with sleep disturbances. The only specific type of interpersonal violence significantly associated with sleep disturbances was sexual abuse.

3. Discussion

The aim of the present study was to assess the relative contributions of gender, common mental health symptoms, and various IV experiences to sleep disturbances in a sample of Youth in Care from the Province of Quebec. Results indicate that IV, especially sexual abuse, is associated with sleep disturbances over and beyond gender and common mental health symptoms. Results are consistent with previous studies indicating that sexual abuse is more consistently associated with sleep disturbances than other adverse experiences [11]. While some studies identified psychological distress or psychopathology as a mediator between maltreatment and sleep problems, our results indicate that these variables might only partially explain this association, at least in Youth in Care [11,13]. Other potential mediators could be: perceived safety of the sleep location [7], physical health issues [14], and/or conditioned negative associations with the sleep environment [15]. Indeed, according to learning theories, negative associations with the sleep environment could result from sexual abuse and their physiological and cognitive component might affect sleep quality [15].

Another explanation pertains to the high levels of posttraumatic stress symptoms presented by victims of sexual abuse [9]. Several posttraumatic stress symptoms are directly related to poor sleep quality [9]. While experiences of physical abuse can also lead to posttraumatic stress symptoms, comparative studies tend to indicate higher prevalence in sexual abuse victims [16]. This might explain why, in the present sample, when all variables were entered in the analyses, physical abuse was not associated with sleep disturbances even though it was the case with bivariate correlation.

Table 1
Sociodemographic information and descriptive information on study variables.

Variables	*n* (yes)/*M*	% (yes)/SD	Statistical test for gender differences
Gender (boys)	181	57.5	
Age	15.51	1.04	t (279) = 0.90, ns
Anxiety	107	35.5	χ^2 (1, n = 301) = 21.99, p < 0.001
Boys	43	24.6	
Girls	64	50.8	
Mood	0.75	0.71	t (299) = 2.55, p = 0.010
Boys	0.66	0.72	
Girls	0.87	0.67	
Low self-esteem	140	45.9	χ^2 (1, n = 306) = 27.34, p < 0.001
Boys	58	33	
Girls	82	63.1	
ADHD symptoms	218	71.2	χ^2 (1, n = 306) = 6.41, p = 0.011
Boys	136	76.8	
Girls	82	63.6	
Extrafamilial physical abuse	139	45.7	χ^2 (1, n = 304) = 0.02, ns
Boys	81	46	
Girls	58	45.3	
Intrafamilial physical abuse	135	44.9	χ^2 (1, n = 301) = 3.56, p = 0.059
Boys	70	40.2	
Girls	65	51.2	
Sexual abuse	70	23.1	χ^2 (1, n = 303) = 64.78, p < 0.001
Boys	11	6.3	
Girls	59	45.7	
Admitted for negligence	33	10.6	χ^2 (1, n = 311) = 1.17, ns
Boys	22	12.2	
Girls	11	8.4	
Admitted for maltreatment	15	4.8	χ^2 (1, n = 311) = 2.07, ns
Boys	6	3.3	
Girls	9	6.9	
Sleep problems	1.64	1.28	t (310) = 3.80, p < 0.001
Boys	1.41	1.2	
Girls	1.95	1.31	

Note. ADHD = attention deficit hyperactivity disorder.
Admitted for negligence/maltreatment: these adolescents were admitted to the residential settings because of substantiated negligence or maltreatment. This information was taken directly from the Child Protective Services' youth file.

Table 2
Regression analysis summary for the sleep disturbances (n = 265).

Step and independent variables	*B*	SE *B*	*b*	*p*	R^2	ΔR^2	*p*
Step 1					0.05	0.05	<0.001
Gender	−0.56	0.15	−0.22	0.000			
Step 2					0.14	0.09	<0.001
Gender	−0.42	0.16	−0.16	0.009			
Anxiety	0.38	0.17	0.14	0.027			
Mood	0.16	0.11	0.09	0.143			
Low self-esteem	0.23	0.16	0.09	0.148			
ADHD symptoms	0.52	0.16	0.19	0.002			
Step 3					0.19	0.05	0.011
Gender	−0.25	0.18	−0.10	0.164			
Anxiety	0.35	0.17	0.13	0.039			
Mood	0.14	0.11	0.08	0.217			
Low self-esteem	0.23	0.15	0.09	0.135			
ADHD symptoms	0.45	0.17	0.16	0.007			
Extrafamilial physical abuse	0.24	0.15	0.09	0.120			
Intrafamilial physical abuse	0.07	0.15	0.03	0.668			
Sexual abuse	0.51	0.21	0.17	0.014			
Admitted for neglect	0.37	0.24	0.09	0.126			
Admitted for maltreatment	−0.49	0.34	−0.08	0.154			

Note. ADHD = attention deficit hyperactivity disorder.

In the last step of the analysis, anxiety was also related to sleep disturbances. The association between sleep and anxiety is well-documented [17]. A vicious sleep–stress cycle has been identified, where stress is found to predict poor sleep quality, and poor sleep quality predicts higher stress levels in return [17]. Furthermore, the physiology of anxiety results in an activation of the nervous system that is incompatible with sleep [18]. It is also worth noting that a constellation of anxiety symptoms is frequently encountered in sexual abuse victims [19].

This study has limitations. The measures used were brief clinical indicators in the context of a medical evaluation, which however reflects the clinical reality in settings such as those under study. Posttraumatic stress symptoms were not measured directly even though they are associated with interpersonal violence and sleep, and can easily be confused with ADHD symptoms. The degree of polyvictimization was not considered, while higher numbers of experiences of interpersonal violence are associated with more severe difficulties. Still, it is reasonable to believe that almost all

participating adolescents experienced multiple types of IV given the nature of the sampled population.

4. Conclusion

Future studies should replicate our findings with longitudinal designs and more comprehensive measures while also considering other potential mediators and moderators (eg, dissociation symptoms, posttraumatic stress symptoms, health issues) impacting the association between IV and sleep problems. However, the results of this study emphasize the need to screen for sleep problems in vulnerable youth, especially those sexually abused, and to offer specialized treatment, including the management of sleep problems with efficient treatments that are available (eg, sleep hygiene interventions, cognitive-behavioral therapy). A better understanding of the associations among IV, mental health, and sleep could ultimately foster a healthier development in victimized youth.

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Conflicts of interest

The ICMJE uniform disclosure form for potential conflicts of interest associated with this article can be viewed by clicking on the following link: https://doi.org/10.1016/j.sleep.2018.11.003.

Appendix A

Variable	Question label	Ratings
Extrafamilial physical abuse	"Have you ever been physically abused by someone outside your family, such as another youth or members of a gang? Examples of abuses are being hit, beaten, or assaulted."	Yes or no
Intrafamilial physical abuse	"Have you ever been physically abused by one of your family or enlarged family members, or someone who had a parental role upon you, such as a step-parent, a foster parent, or your boyfriend/girlfriend's parents? Examples of abuses are being hit, beaten, or assaulted."	Yes or no
Sexual abuse	"Have you ever been sexually abused or assaulted by a youth or an adult? Examples of sexual abuse are showing to you or asking of you to show sexual parts, kissing or caressing you sexually, or doing other sexual activities when you didn't want to."	Yes or no
Anxiety	"Do you feel stressed out, nervous, or anxious?"	1 = never to 5 = often; *Dummy coded as present = 1 or absent = 0*
Mood	"You are feeling …"	1 = sad to 5 = happy; *Recoded as 0 = happy, 1 = neutral, 2 = sad*
Self-esteem	"Your self-esteem is …"	1 = low to 5 = high; *Dummy coded as high = 0 or low = 1*
Sleep problems	"How would you describe the quality of your sleep before your arrived at the center?"	1 = bad to 3 = good; *Dummy coded as 1 = poor quality or 0 = good quality*
	"Did you have problems falling asleep?"	Yes or no
	"Did you wake up often at night?"	Yes or no
	"How often do you have nightmares?"	0 = never to 2 = often; *Dummy recoded as 0 = no frequent nightmares or 1 = frequent nightmares Final score: summation (0–4)*

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