

Parasomnias and Childhood Adversity in an Adult Psychiatric Population

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Abstract

Background: A wide evidence suggest that sleep disorders and psychopathology could be related each other, as well as, that childhood adversities (CAs) may be associated with both. However, the relationship between CA and sleep disorders in psychiatric patients is still unclear. This study aims to explore the hypothesis that CA could be associated with sleep impairments in a sample of psychiatric patients.

Method: 351 psychiatric patients and 177 controls draw from the general population were recruited. Sleep symptoms were assessed by FPI. CAs were evaluated by FPI and CECA-Q. Chi-square, Fisher's test, Odds Ratios, Binary Logistic Regression were performed.

Results: Patients with childhood sexual abuse (CSA) showed higher rate of nightmares, bruxism, somnambulism and pavor nocturns than those without CSA. Cases with negligence of father or mother reported higher rate of terminal insomnia and nightmares than patients without neglect. Controls with childhood physical abuse (CPA) showed higher rate of pavor nocturns.

Conclusion: CA could be related with sleep impairments in adulthood, moreover, seems to be a specific relationship between childhood sexual abuse and parasomnia. The association CAs-parasomnia seems to be more relevant among psychiatric cases than in the general population.

Keywords: Childhood adversity; Insomnia; Parasomnia; Psychopathology

Introduction

Descriptive and cross-sectional studies provide a robust evidence of a possible connection between sleep disturbances and psychopathology, showing an excess of sleep impairments in a wide array of psychiatric disorders as well as a psychiatric comorbidity among patients with insomnia and parasomnia [1-9].

Current evidence suggests that childhood adversities (CAs) might be linked with both psychopathology and sleep disorders [10-12]. CAs are commonly defined as life events that may occur during childhood and/or adolescence, such as childhood abuse (emotional, physical, or sexual), neglect, and loss event (parental loss and/or divorce) [10].

Substantial evidence from both cross-sectional and prospective studies indicates that childhood abuse and neglect are strongly associated with the development, persistence, and severity of adult psychopathology such as anxiety, PTSD [10,11], depression [13], psychosis [14], eating disorder, and personality disorder [10]. On the other hand, controversial findings have been reported about the role of early loss events [10,13,14].

Although a recent review by Kajeepeta et al. [12] suggested that sleep problems could be related with exposure to adversity during childhood, the relationship between CAs and sleep disorders in psychiatric patients remains still unclear. Indeed, we do not own a very robust amount of data confirming the role of early stress on sleep problems in psychiatric patients, as only two studies [15,16] have

extensively evaluated this possible association. In this regard, Schafer and Bade [15] showed that high stress load in childhood was associated with prolonged sleep onset latency, decreased sleep efficiency and increased number of body movements during sleep. Faravelli et al. [16] showed that childhood abuse (physical and/or sexual) seems to increase by nearly 3 times the risk of recurrent nightmares.

Moreover, the research has largely focused on the relationship between CAs and insomnia [12], in part neglecting the role of parasomnia. Parasomnia is defined as an arousal disorder, characterized by unusual behaviours during sleep, such as nightmares, bruxism, sleep terrors, and somnambulism [2]. CAs seem to be associated with both nightmare and bruxism [16-20], while on the basis of our knowledge, any study has evaluated the relationship between CAs and experience of pavor and somnambulism in adulthood yet. In order to provide additional evidences to previous studies [12,15-20] the current research aims: (a) to evaluate the relationship between CA and sleep impairments in a representative sample of psychiatric patients, exploring the hypothesis that CAs could be associated with a cluster of sleep impairments; (b) to explore the association between CA and sleep disorders also in a control group of subjects drawn from a general population, in order to evaluate if the relationship CA-sleep disorders is present only in the psychiatric patients.

Methods

This research is part of the PSI-FIELDS (Factors in Early Life, Diagnoses, and Symptoms) project, an observational,

multidisciplinary, and trans-nosological study. During a two-month period it was possible to contact and interview 351 consecutive patients admitted, within one week of the interview, to all the psychiatric in- and outpatient facilities of Tuscany.

Exclusion criteria were: age >75 years, neurological and/or neurocognitive impairment, disorders that might compromise the ability to give informed consent, pregnant or breast-feeding, substance abuse and/or addiction. A group of 177 people randomly drawn from the general population living in the same catchment area and matched with the psychiatric cases for age, gender and education made up the controls. The study protocol was approved by the local ethics committee and participants provided written informed consent.

Measure

DSM-IV diagnoses were made using the Structured Clinical Interview for DSM-IV Axis I Disorders [21]. Sleep impairments, insomnia and parasomnia symptoms were assessed by the Florence Psychiatric Interview (FPI) [22]. Each symptom is scored on a 5-point severity scale (0=absent, 1=dubious, 2=mild, 3=moderate and 4=severe). A score of at least 2 was considered for a symptom to be present. Sleep disorders were assessed referring to the last month. The FPI [22], a semi structured interview for evaluating the psychopathology in the community, is basically made up of the items from several well established rating scale combined in a single instrument. 121 symptoms are systematically explored, independent of the subject's diagnosis. As the interview uses a typically bottom up method, diagnoses may be obtained by specific algorithms: the correspondence with the Structured Clinical Interview for DSM-IV Axis I Disorders [21] is almost complete [22]. Moreover, sociodemographic information, life events, treatments received are also recorded. The FPI has shown good reliability [22].

The presence of childhood adversity was investigated by means of the Childhood Experience of Care and Abuse Questionnaire (CECA-Q) [23] and through a structured interview for early trauma included in the FPI [22]. CA was evaluated as follows: (a) presence of loss events whenever a death or separation (for 1 year or more) from parents was reported; (b) presence of sexual or physical abuse events when the CECA-Q or the interview revealed the presence of physical and/or sexual abuse; (c) presence of neglect was based on the CECA-Q scores in the scales "Mother's Neglect" and "Father's Neglect" using the proposed cut-off [23]. Insofar as the CECA-Q responses were concerned, we did not consider events that occurred after the age of 15. Life events were evaluated by experts who were not involved in the interview and who were blind to the patient or control status of the subjects.

According to previous studies [16,24], we have avoided using operational diagnoses due their high rate of comorbidity and lack of specificity. The lack of diagnostic specificity seems to be common in psychiatry, indeed, having one single diagnosis is unusual in psychiatry with the comorbidity being the rule, rather than the exception [25]. Furthermore, it has been shown that early adversities seem to influence differentially specific symptom profiles rather than specific diagnoses [16].

It is conceivable that CAs might produce sleep symptom patterns that range transdiagnostically. Thus, we have assessed the relationship between CAs and sleep impairments in a representative sample of psychiatric patients according to a transnosographic perspective.

Statistics

Chi-square (Fisher's test when needed) and Odds Ratios were performed. Moreover, as childhood adversities were not independent of each other, we adopted the stepwise forward conditional method of binary logistic regression for controlling the multicollinearity.

Thus, binary logistic regression analyses, with each sleep symptoms (absence vs presence), as dependent variable, and CAs (sexual abuse, physical abuse, loss of mother, loss of father, mother neglect, father neglect) as independent variables were performed. Separate binary logistic regression analyses were performed for each sleep symptoms.

The statistical analyses were performed using SPSS for Windows 20.0 [26].

Results

Patients and controls resulted comparable for gender (females: 64.1% vs 61%, $\chi^2=0.48$, $df=1$, $p=0.48$) age (44.03 ± 13.22 vs 42.48 ± 12.82 , $t(df)=-1.28$ (526), $p=0.19$) and educational level (mean education years: 11.23 ± 4.02 vs 11.53 ± 3.57 $t(df)=0.83$ (526), $p=0.40$).

Patients were more frequently single than those in the control group (54.4% vs 19.2%, $\chi^2=59.64$, $df=1$, $p<0.001$).

As regards the clinical sample the most represented diagnostic category was the major depression ($n=139$; female: 74.1%), followed by panic disorder ($n=113$; female: 69.9%), psychosis ($n=87$; female: 52.9%), bipolar disorder ($n=71$; female: 56.3%), obsessive-compulsive disorder ($n=71$; female: 62%), eating disorder ($n=57$; female: 73.7%) and social phobia ($n=53$; female: 64.2%). No significant associations were found between drug use-treatments received and sleep impairments.

CA and sleep impairments in adult psychiatric population

Cases with childhood sexual abuse (CSA) compared with those without CSA were characterized by an excess of nightmare (20.1% vs 12.2%, $\chi^2=4.13$, $df=1$, $p=0.04$), somnambulism (42.9% vs 14.5%, $\chi^2=8.15$, $df=1$, fisher exact test $p=0.01$) bruxism (23.4% vs 13.5%, $\chi^2=4.43$, $df=1$, $p=0.03$) and pavor nocturnus (23.6% vs 13.6%, $\chi^2=4.32$, $df=1$, $p=0.03$).

Moreover, compared with cases without neglect, patients with early experience of father neglect showed a higher prevalence of nightmares (12.3% vs 6.1%, $\chi^2=4.18$, $df=1$, $p=0.04$), while cases with mother neglect shower a higher rate of terminal insomnia (13.3% vs 22.6%, $\chi^2=5.01$, $df=1$, $p=0.02$).

Binary logistic regression analyses, adjusted for CAs co-occurrence, confirmed that: sexual abuse was associated with somnambulism ($\beta=1.48$, $p=0.008$, $OR=4.41$, 95% $CI=1.46-13.25$), bruxism ($\beta=0.67$, $p=0.03$, $OR=1.95$, 95% $CI=1.03-3.67$), and pavor nocturnus ($\beta=0.67$, $p=0.04$, $OR=1.96$; 95% $CI=1.03-3.72$); father neglect was associated with nightmares ($\beta=0.77$; $p=0.04$, $OR=2.17$, 95% $CI=1.01-4.62$); mother neglect was associated with terminal insomnia ($\beta=0.64$, $p=0.02$, $OR=1.89$, 95% $CI=1.07-3.33$).

Dividing patients according to their DSM-IV diagnoses, similar patterns of results were found across different diagnostic categories: the association between CA and sleep impairments is not diagnosis-specific (Table 1).

		Initial insomnia	Middle insomnia	Terminal Insomnia	Somnambulism	Nightmares	Bruxism	Pavor nocturnus	Altered sleep-wake cycles
	% Cases with CA	ORa [95% CI]	ORa [95% CI]	ORa [95% CI]	ORa [95% CI]	ORa [95% CI]	ORa [95% CI]	ORa [95% CI]	ORa [95% CI]
At least one CA	53.80%	0.91 [0.58-1.41]	1.22 [0.79-1.88]	1.43 [0.94-2.18]	2.20 [0.67-7.17]	1.26 [0.82-1.93]	1.10 [0.66-1.84]	1.56 [0.91-2.65]	1.42 [0.89-2.27]
Physical abuse	23.40%	1.17 [0.69-1.99]	1.30 [0.77-2.19]	1.52 [0.92-2.52]	0.89 [0.24-3.72]	1.56[0.95-2.57]	1.20 [0.67-2.14]	1.34 [0.74-2.42]	1.11 [0.65-1.90]
Sexual abuse	15.70%	1.34 [0.71-2.51]	1.17 [0.64-2.13]	1.28 [0.71-2.29]	4.40 [1.46-13.25]	1.81 [1.01-3.24]	1.95 [1.03-3.67]	1.96 [1.03-3.72]	1.16 [0.63-2.16]
Loss of mother	13.40%	1.14 [0.59-2.20]	1.35 [0.69-2.57]	1.23 [0.66-2.29]	1.08 [0.23-4.99]	0.76 [0.40-1.44]	0.82 [0.37-1.78]	1.05 [0.49-2.23]	1.11 [0.57-2.15]
Loss of father	18.20%	0.92 [0.52-1.62]	1.06 [0.57-1.76]	1.08 [0.63-1.87]	1.84 [0.56-6.08]	0.91 [0.53-1.59]	1.11 [0.58-2.11]	1.37 [0.72-2.59]	1.65 [0.94-2.91]
Mother Neglect	18.20%	1.73 [0.93-3.20]	1.68 [0.93-3.05]	1.89 [1.07-3.33]	1.84 [0.56-6.06]	1.16 [0.67-1.98]	1.23 [0.65-2.32]	1.10 [0.57-2.13]	1.28 [0.72-2.28]
Father Neglect	8.80%	1.31 [0.58-2.95]	1.52 [0.68-3.42]	1.25 [0.59-2.62]	0.78 [0.10-6.22]	2.17 [1.01-4.62]	1.79 [0.80-4.01]	1.14 [0.47-2.77]	0.95 [0.42-2.14]

Table 1: Association of childhood adversity and sleep impairments in adult psychiatric cases (n=351). CA=childhood adversity; a=adjusted for age and gender; Significant findings are marked in bold.

CA and sleep impairments in adult controls draw from the general population

Subjects with childhood physical abuse (CPA) showed higher rate of pavor nocturnus (40% vs 11.4%, $\chi^2=6.83$, $df=1$, p value Fisher's exact test=0.02, OR=5.2, 95% CI=1.34-20.07) than those without CPA. None other significant associations were found between CAs and sleep impairments in control group.

Discussion

The current study highlighted that among adult psychiatric patients CSA was associated with nightmares, bruxism, pavor and somnambulism, as well as, that father and mother neglect were related with nightmares and terminal insomnia respectively. On the other hand, no significant association was found between childhood loss events and sleep impairments. Moreover, among subjects draw from the general population, except for the association CPA-pavor, none significant relationships were found between CAs and sleep impairments.

Our findings are consistent with previous studies showing that nightmares are significantly associated with both child abuse and neglect [16-18]. Dreaming is considered as being a relevant process for emotional adaptation to emotionally salient and traumatic events [17,18,27]. It might be that disturbed dreaming may arise and persist when dreaming fails to accomplish its putative function of emotional regulation during sleep [18]. Furthermore, as suggested by Duval et al. [18], the exposure to stressful events in traumatized individuals, implies an increased risk of activation of memories and schemas related to CA, with nightmares possibly resulting from this mental activity.

Our study may support previous evidence [19,20] about the association between CSA and bruxism. Furthermore, the experience of

CSA seems to increase the risk of pavor and somnambulism in adulthood. Unfortunately, no data from the literature evaluated the role of CA on pavor and/or sleep walking in adulthood, thus comparisons on this issue are not possible.

Moreover, we found that insomnia might be related with mother neglect, but we could not prove its association with child abuse as reported by previous studies [12]. This result is only apparently inconsistent with the literature [12], since previous studies were conducted on patients with primary insomnia [28] and alcohol-dependent patients [29], while we focused on a sample of merely psychiatric patients. It is therefore conceivable that the clinical nature of our sample contributed to this contradictory finding. Finally, in agreement with Agargun et al. [17], our results highlight that childhood loss events seem not to be associated with sleep impairments in adulthood.

Summing up, our findings suggest that could be a specific relationship between CSA and parasomnia, since no other form of CA appears to be strongly related with it, and no other sleep problems seem to be related with CSA. Thus, the relationship between CA and sleep impairments in adult psychiatric patients seems to be specific according to the type of CA and pattern of sleep symptoms. The underlying mechanism linking CA to sleep disorders in adulthood is still unclear. On the one hand the increased corticotropin-releasing hormone (CRH) and the hypothalamic-pituitary-adrenal (HPA) axis hyperactivity, induced by CA, may act as a pathway to sleep disorders in adulthood [12]. Furthermore, from a social perspective it could be argued that children exposed to CA, grow up in disorganized families and thus never learn good sleeping habits: this has a negative impact on sleep pattern that can persist into adulthood [12].

Moreover it should be considered that the relationship between CA and sleep disorders could be biased by current psychopathology, since CA may induce psychiatric diseases that in turn could be related to

sleep disorders. Indeed, our findings showed that the relationship CA-sleep disorders seems more relevant in psychiatric patients rather than in a control group of subjects drawn from the general population. Further investigation of the underlying pathways linking CA to sleep diseases will be an important issue for subsequent research.

Some methodological issues should be considered when interpreting the results of this study: (a) CAs were assessed by subjective retrospective reports, thus recall bias (memory distortions, search for meanings) may have influenced these results, although research suggests good reliability of retrospective assessment of CA [30]; (b) CA and sleep symptoms are based on subjective data therefore they should be overestimated; (c) the cross-sectional data precludes conclusions regarding causal relationships; (d) since that our research did not primarily plan to assess sleep disorders, the sleep symptoms were evaluated only by the FPI rather than by specific instruments focused on sleep parameters. Strengths of the study were: (a) a large sample size; (b) a wide range of CA were evaluated.

Conclusion

CA may be related with sleep problems in adulthood, but probably it exists a specific relationship between CSA and parasomnia. Moreover the effect of CAs on sleep impairments in adulthood seems more specific in the psychiatric population rather than in the general population. However, the cross-sectional design of this study does not allow us to make further speculation on this issue, thus longitudinal studies will be necessary to confirm the findings of the present study, as well as to clarify the underlying pathways on the relationship between CA, psychopathology, and sleep impairments in adulthood.

On the clinical ground, in order to facilitate meaningful formulations and treatment plans, the assessment of CA should not be overlooked in anamnesis and treatment of sleep impairments.

Conflict of Interest

Authors declared no conflict of interest.

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