Childhood Adverse Experiences and Personality Disorders in Outpatients with Addiction

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Received: 20 April 2020; **Accepted**: 12 May 2020

ABSTRACT

Introduction: *This study aims to disentangle the relationship between childhood adverse experiences (CAE), personality disorders (PDs) and substance use disorders (SUDs), in patients attending an Italian addiction service.*

Materials and Methods: *A cross-sectional naturalistic study of 320 consecutive outpatients. Participants were evaluated by a semi-structured interview including the SCID-II (Structured Clinical Interview for DSM-IV Axis II PD), and the CECA-Q (Childhood Experience of Care and Abuse - questionnaire). Multivariate Logistic Regression analyses were used to estimate Odds Ratio (OR) and 95% Confidence Intervals (95%CI).*

Results: *65.5% of the sample experienced some kind of CAE (living in an institution before age 17; suffering of physical punishment; being separated from parents) and the prevalence rate of PDs was 62.2%. PDs were associated with a history of physical punishment in childhood: OR (95% CI)=1.82 (1.05-3.16), p=0.034, and with childhood institutionalization: OR (95% CI)=2.15 (1.02-4.54), p=0.041. Three adverse events together increase the probability of Cluster B PD: OR (95% CI)=5.92 (2.21-15.92), p=0.001.*

Conclusion: *In outpatients with SUDs, PDs are related to CAE. Regardless of drugs use, CAE have substantial effects on personality development and occupational functioning.*

Keywords
Addiction, Childhood, Personality.

Introduction

Child maltreatment, sometimes referred to as child abuse and neglect, includes all forms of physical and emotional ill-treatment, sexual abuse, neglect, and exploitation that results in actual or potential harm to the child's health, development or dignity [1].

Around 4–16% of children every year are physically abused, 10% are neglected or psychologically abused, and between 15% and 30% of teen are exposed to any type of sexual abuse [2]. Maltreatment during childhood increases the risk of poor physical health outcomes, including immune dysfunction, obesity, fibromyalgia, inflammation, and diabetes with life-long serious consequences [3]. Adverse experiences during childhood, both physical and psychological, are especially harmful since they are known to damage brain development which may result in an increased lifetime risk of psychiatric disorders [4].

Relationship between adverse childhood experience (CAE)and mental health has been largely investigated [5,6]. For example, subjects abused during childhood have about twice the risk of developing depression, anxiety and substance related disorders, and fourfold the risk of incurring in post-traumatic stress disorder later in life. It has been also estimated that more than 30% of patients with psychotic disorders had childhood experiences of sexual abuse or physical violence [7,8]. In a study involving 600 patients

affected by personality disorders (PDs), abuse and physical neglect frequencies were 73% and 83% respectively [7]. A systematic review of international studies, involving 145.407 participants, showed how sexual or physical abuse and abandonment were associated with anxiety and mood disorders. Furthermore, emotional neglect was related with PDs and psychosis whereas physical violence was specifically associated with PDs [6]. A tight relationship between Substance Use Disorders (SUDs) and CAE has also been proved [9]. Many retrospective studies have shown family history of addiction [10] or perception of distant, little understanding or claiming and intrusive family members [11] behind narcotic addiction disorders. Furthermore, among women, emotional neglect has also been associated with a more frequent substance abuse [12].

Several studies show a high prevalence of PDs in people affected by SUDs [13-18] with a high representation of Antisocial, Borderline and Avoidant PD. Overall, PD prevalence among inpatients with SUDs is about 50-60%, almost four times higher than the general population [19-21] suggesting the hypothesis that PD and SUD share a common etiology.

To our knowledge so far, no studies have investigated by means of standardized tools the mutual relationships between CAE, PD and SUD within an outpatient population who uses public addiction services and are affected by SUDs.

Objectives
The primary objective of this study was to investigate the association between a history of CAE and PDs and SUD diagnosis. The secondary aim was to evaluate the socio-demographic features of participants analyzing the possible association between such features, CAE, PDs and SUD in a multi-adjusted logistic regression model.

Materials and Methods
Data were collected at the Outpatients Addiction Service (OAS) of Faenza, a wealthy urban area in Romagna (Northern Italy), during a 12 months period. The OAS team consists of psychiatrists, psychiatric nurses, psychologists and social workers specifically trained for the medical and psychological treatment of addictions. The service has a strong attention on the management of alcohol and opiate dependence that constitute the most common reason for referring. People with cannabinoids and novel psychoactive drugs abuse or addiction are not routinely treated in such service [21].

According to the Italian law, all participants signed a written consent to personal data handling and an informed consent to study's participation. Furthermore, this cross-sectional naturalistic study was approved by CEAVR (Ethics Committee of the Area Vasta Romagna) and IRST (Scientific Institute of Romagna for Cancer Therapy and study).

Sample
During the recruitment phase, all consecutive patients referred to the addiction service were asked to participate in the study.

A detailed description of the objective of the study and personal data handling was provided by a key worker chosen among the team members. All participants were clinically assessed by two consultant psychiatrists and two psychologists and semi-structured questionnaires were administered.

Inclusion criteria were: age between 15 and 65 years, good understanding of Italian language, at least one-month duration of referring at the Faenza OAS. Exclusion criteria were: seriously impaired cognition, disabling physical illness such as to compromise the quality of the interview, condition of temporary incarceration or placement in a community outside of the Faenza area, presence of a psychotic disorder in active phase and abandonment of the treatment program during the assessment phase. Specific details of this phase are described elsewhere [21].

Out of the 436 patients referred and invited to participate, 23 (5.3%) refused and 93 (21.3%) were excluded due to the following reasons: age older than 65 years (N=11), premature discharged or treatment abandoned treatment (N=34), placement outside Faenza area (N=11), cognitive impairment (N=7), active psychosis (N=9), language difficulties (N=8), serious physical pathologies (N=4) and 9 died leaving a study sample of 320 participants.

PDs diagnoses – based on DSMIV-TR criteria – [22] were achieved both on the bases of a detailed clinical evaluation and with the provision of the SCID-II (Structured Clinical Interview for DSM IV-TR Axis II Disorders) [23]. In case of co-occurrence of two or more PDs, the PD with the highest number of positive items was considered as "primary".

Assessment
The sociodemographic and clinical questionnaires used for the present study were extracted from EuropASI. EuropASI is an adaptation of the European Addiction Severity Index, a multidimensional semi-structured tool faced to assess difficulties of patients with SUDs in seven areas: medical, employment, alcohol use, drug use, legal, family / social, and psychological. Beside collecting a wide range of socio-demographic data, the questionnaire investigated the characteristics of drug addiction (kind of substances used, mode of use, drug treatment and psychotherapy applied) and the physical and psychological conditions of the patient [24].

CECA-Q is a self-report questionnaire on adverse childhood experiences adapted from the Childhood Experience of Care and Abuse [25]. It concerns several childhood adverse experiences. We assessed physical abuse by main care-giver (Pun), sexual harassment by an individual at least 5 years older than the recipient (Har), separation from a parent or death of a parent (Sep), institutional care (Ins), all before 17 years of age. This questionnaire, translated and validated in Italian language [26] has been shown to have good internal consistency [25,27] and satisfactory levels of test-retest reliability over 7 years in a similar psychosis sample [28].

Structured Clinical Interview for DSM IV-TR Axis II (SCID-II) consists of 120 items rated on a scale of 4 levels (from 0 = insufficient information 3 = clinically relevant or true); it is divided into 11 sections, one for each Personality Disorder so as to facilitate the diagnosis of each disorder. The interviewer formulates additional questions in order to deepen unclear aspects of the patients' responses; particularly the interviewer should re-asses the items that the patient evaluated as "3", or as affirmative, in order to avoid "false positives". In other cases, it must also re-evaluate some of the negative item, for example if there is reason to think that they are "false negative" depending on the context, or if the items do not reach the positive enough to make a diagnosis.

Data analysis

Data analysis was carried out in three phases. First the relationships between sociodemographic characteristics, PDs, SUDs and CECA-Q variables were investigated by the Chi square test. Then, all statistically significant relationships were again tested using Logistic Regression Analysis that allowed us to estimate the Odds Ratio and the 95% Confidence Intervals (CI). Last, all possible confounding factors were included stepwise in a multivariate Logistic Regression model. Data were processed with SPSS version 17th.

Results

Out of 320 participants in the study, 236 (73.7%) were male. Average age was 39.9 years (SD ± 10.8). The 63.1% were employed at the time of data collection. In the 60.6% of cases (N=194), the primary addiction was to opiates, followed by alcohol (27.8%), gambling (6.9%), and cocaine (4,1%). The 62.2% (N=199) of the study population satisfied criteria for PDs distributed as follows: 13.1% (N=26) Cluster A PD, 52.8% (N=105) Cluster B PD, 22.6% (N=45) Cluster C PD and 11.6% (N = 23) Not Otherwise Specified PDs. Within Cluster B PD the most represented were Borderline (45.7%) and Antisocial (58.1 %) (Table 1).

Table 1: Sociodemographic features of the study population by gender (p from Chi Squares).

		Men	Women	Total	p
		236 (73.7)	84 (26.3)	320	
Age groups (years)	<18	4 (1.7)	3 (3.6)	7 (2.2)	
	18-24	27 (11.4)	8 (9.5)	35 (10.9)	
	25-34	55 (23.3)	14 (16.7)	69 (21.6)	0.572
	35-44	90 (38.1)	36 (42.9)	126 (39.4)	
	≥45	60 (25.4)	23 (27.4)	83 (25.9)	
Education	None	1 (0.4)	1 (1.2)	2 (0.6)	
	Primary School Diploma	25 (10.6)	1 (1.2)	26 (8.1)	
	Secondary School	125 (53.1)	37 (44.0)	162 (50.6)	
	Professional qualification	44 (18.6)	18 (21.4)	62 (19.4)	0.004
	High School Diploma	31 (13.1)	24 (28.6)	55 (17.2)	
	Graduation	10 (4.2)	3 (3.6)	13 (4.1)	

Marital Status	Single	112 (47.5)	29 (34.5)	141 (44.1)	
	In a stable relationship	36 (15.3)	12 (14.3)	48 (15.0)	
	Married	43 (18.2)	16 (19.0)	59 (18.4)	0.02
	Separated or Divorced	42 (17.8)	21 (25.0)	63 (19.7)	
	Widowed	3 (1.3)	6 (7.1)	9 (2.8)	
Employ-ment	Occupied	153 (64.8)	49 (58.3)	202 (63.1)	0.289
	Unoccupied	83 (35.2)	35 (41.7)	118 (36.9)	
Personality Disorder	Cluster A	22 (9.3)	4 (4.8)	26 (8.1)	
	Cluster B	70 (29.7)	35 (41.7)	105 (32.8)	
	Cluster C	29 (12.3)	16 (19)	45 (14.1)	0.056
	Others	19 (8.1)	4 (4.8)	23 (7.2)	
	None	96 (40.7)	25 (29.8)	121 (37.8)	

Out of 320 participants, 36 individuals who initially accepted to join the study, did not complete the CECA-Q. The remaining 284 subject with complete data constitutes the population for the present study. Out of 284 patients, 186 (65.5%) have experienced some kind of childhood adverse events, 36 lived in an institution before age 17; 127 suffered of physical punishment; 111 had lost or were separated from parents and 44 underwent to sexual harassment. 24.6% of these patients were subjected to two or more of the above mentioned conditions.

Among participants who have had at least one CAE, 72.1% had a PD while, among participants who did not experienced any CAE, 47.5% had no PD (p < 0.001).

In table 2 are shown correlations between PDs, drugs used and childhood adverse events. Borderline PD was associated with growing-up in an institution and having had physical punishment. Being in an institution before age 17 and being separated from parents was associated with Antisocial PD. Alcohol and heroin use were related to institutionalization and physical punishment.

Table 2: Personality disorders (PD), drugs, occupation and Childhood Adverse Events at a glance (p from two by two Chi Squares).

χ^2	Childhood Adverse Events			
	Institutional-ization	Physical Punishment	Separation from parents	Sexual harassment
Cluster A PD	p= 0.166	p= 1.00	p= 0.488	p= 0.217
Cluster B PD	p= 0.008	p= 0.005	p=0.005	p= 0.229
Cluster C PD	p= 0.322	p= 0.133	p= 0.304	p=0.010
Borderline PD	p= 0.053	p= 0.001	p= 0.318	p= 0.116
Antisocial PD	p= 0.049	p= 0.882	p=0.023	p= 0.309
Alcool Addiction	p= 0.050	p= 0.761	p= 0.544	p= 0.968
Heroin Addiction	p= 0.631	p= 0.033	p= 0.277	p= 0.786
Being Employed	p= 0.017	p=0.051	p=0.018	p= 0.867

In the multivariate logistic regression analysis, physical punishment and being in an institute increase the odd of Cluster B PD: OR (95% CI) = 1.82 (1.05-3.16), p=0.034 and 2.15 (1.02-4.54), p=0.041 respectively. Similarly, both current and previous

heroin abuse increase the probability of Cluster B PD: OR (95% CI) = 4.34 (1.97-11.8), p=0.004 and OR (95% CI) = 2.93 (1.49-5.75), p=0.002 respectively. In the multivariate logistic regression model having an occupation halved the probability of Cluster B PD: OR (CI 95%) = 0.54 (0.31-0.93), p=0.027.

A stratified analysis by occupational status demonstrated a statistically significant association between physical punishment and Borderline/Antisocial PD only among unemployed participants (p<0.05). (Data not shown).
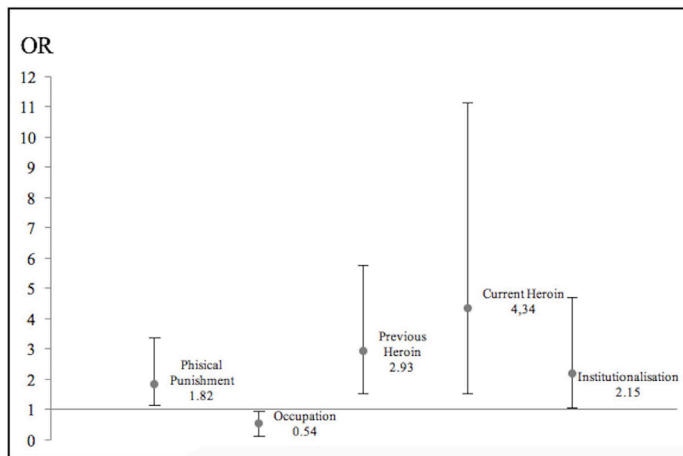

Figure 1: Childhood Adverse Experiences and Personality Disorders in Outpatients with Addiction.

In Table 3 is shown the association between different possible combination of adverse events and Cluster B PD. The worst childhood scenario (co-occurrence of Ins, Pun, Sep) versus the best (no adverse event) is associated to an increased odd of Cluster B PD: OR (95% CI) = 5.92 (2.21 -15.9), p<0.001.

Table 3: Childhood Adverse Events and Borderline and Antisocial Personality Disorder (Odds Ratio and 95% Confidence Intervals by Binary Logistic Regression Analyses).

No adverse experience	p	OR (95%CI)
	-	Rif.
Pun	0.011	2.58 (1.24-5.39)
Sep	0.007	3.00 (1.35-6.65)
Ins	0.123	4.94 (0.65-37.55)
Pun + Sep	0.099	2.09 (0.87-5.02)
Ins + Pun	0.123	4.94 (0.65-37.55)
Ins + Sep	0.438	1.98 (0.35-11.01)
Ins + Pun + Sep	<0.001	5.92 (2.21-15.92)

Pun = Physical Punishment, Sep = Loss or separation from parents, Ins = Institutionalization.

Discussion

In our naturalistic study embedded in an outpatient's addiction service in Northern Italy childhood adverse experiences occur in the 64.4% of participants. Among patients who experienced at least one CAE, 72.1% developed a PD.

Such estimate is slightly lower than the one measured in the Collaborative Longitudinal Personality Disorders Study. In such population-based cohort study, participants reported childhood mistreatment in 73% and abandonment in 83% [7].

Our findings are in line with previous studies demonstrating that individuals abused during childhood are more likely to develop many different mental disorders in adulthood including PDs [6,29,30]. In our peculiar sample constituted of people searching help for addiction problems, we were able to confirm the strong link between childhood adverse experiences and PDs.

In addition, an association between specific types of child maltreatment and personality disorders has more recently been demonstrated: sexual abuse, emotional and physical abuses are associated with Borderline Personality disorder and Antisocial Personality Disorder [31].

The hypotheses behind this strong association are interlinked. First, CAE might have an effect on the developmental cascade. Indeed, the first step of the developmental process is the creation of a secure attachment with the child's caregiver during the first year of life. This primary task provides the surrounding for a correct bio-behavioral organization that addresses and makes easier the following tasks, helping to create stable internal working models which will be then used during the entire lifetime. CAE during early life operates a fracture that affects this pattern and contribute to damage the correct developing of mental functions, such as emotion regulation, the formation of attachment relationship and the creation of an autonomous self. It is clear that all of this function contributes to create a balanced personality and that their alterations represent the structural defect that subtend personality disorder [3].

The second possible causative hypothesis is related to biological effects of child maltreatment on brain development on structural and functional aspects of encephalon. Structures especially affected are prefrontal cortex, orbitofrontal cortex, hippocampus and amygdala [32–35]. Changing in these structures can affect mind functions and ultimately affect personality [36]. In fact, altered functioning in these brain areas can disturb mental operations like response inhibition, working memory and emotion processing [37]. Moreover, child maltreatment is associated with altered white matter organisation in prefrontal cortex and this is associated with impaired cognitive control and behavioural regulation [38].

Nevertheless, it is necessary to underline that such unfavorable outcome is not obliged for people which had CAE: healthy adaptation is an alternative outcome too. There must be a research effort focused on protective factors, in order to find interventions that could prevent psychopathology development [4].

CAE have been shown to be associated with SUDs, too. A study on 339 patients affected with addiction, comparable to ours for age, PDs rate, and lifetime prevalence of substance abuse demonstrated that physical punishment and abandonment were closely related

to Antisocial PD with sadistic traits whereas emotional violence were closely related to Borderline PD, suggesting that child maltreatment contributes to the co-morbidity of personality disorders in people with problems of addictions [39]. A correlation between disinhibition, behavioral dyscontrol and SUD's has been shown [40]. This kind of relation has been recently confirmed: in particular neuroticism, behavior disinhibition and SUD's were shown as associated [41].

As we said above child maltreatment can lead to altered functioning of specific brain circuits that are related with altered behavior regulation, disinhibition and defective emotion processing. According to these data and to the ones from our study, it is possible to hypothesize a psychopathological arc that moves from child maltreatments, passing through altered personality traits or PD's, leading to SUD's.

For these reasons, it is essential to plan prevention programs for early intervention - such as training project for teachers and school assistants - in order to stop the process that leads from CAE to PDs. Goal of these preventive programs could be the detection of prodromal phenomena, in order to operate an effective early intervention.

Finally, in our sample, being employed is inversely related to the CECA-Q score and PDs. Many studies validate our hypothesis that having an occupation within a structured treatment program may have a greater therapeutic effect than the pharmacological treatment in itself [42]. An interesting work conducted by Becker [43] attempted to investigate the therapeutic value of job satisfaction on PD. Study participants who had obtained the desired work were much more satisfied and stayed about twice as much loyal to it if compared to those who did not get their favorite occupation. Results regarding employment in our population appear to be consistent with the hypothesis that occupation could exert a protective role. Accurate studies with longitudinal design are needed to finally verify this hypothesis.

Limitations
Our study acknowledges some advantages as well as some limitations that need to be considered. The main restraint to our findings is the retrospective self-report of CAE. Indeed, unfortunately we missed the opportunity of having the self-reports corroborated from family members or from registry data. We acknowledge that a recall bias might have occurred thus resulting both in an under- as well as an over-reporting of CAE. Although we share this important limitation with most of the other studies on this issue [7], we tried to overcome the problem using a questionnaire that has been demonstrated to be valid and reliable [24,25] and we spent many efforts in explaining to patients the relevance of filling the questionnaire at their best. A further severe concern raises from the gap between the subjective experience of having been damaged and the objective maltreatment received which remains an unsolved problem. A second concern raises from the retrospective nature of our study that limits the possibility of identifying causal inference. Future longitudinal studies are needed to make stronger causal attributions about the effects of childhood trauma on personality disorders. In addition, our findings are generalizable only to treatment seekers SUD patients and replications in community-dwelling population are needed to further generalize these findings.

Finally, prior research has suggested that a range of other factors may also influence the nature of the impact of the maltreatment, including perpetrator's characteristics, duration and chronicity of maltreatment and its timing [44,45]. We did not assess any relationship between these factors and their impact on PDs and SUD.

Conclusion
In summary, our findings support the view that CAE contribute to the high prevalence of personality disorders in persons suffering of addiction. Although there is still more to discover about PDs etiology, our findings support the view that all adverse events occurred in childhood could play a central role in pathological personality development and addictive behaviors. Future studies with longitudinal designs will allow to enlighten this complex phenomenon.

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