

# Child and Adolescent Sexual Abuse and its Relationship with Eating Disorders

Rosa Behar<sup>1</sup>, Flora de la Barra<sup>2</sup>

**Background:** A history of childhood sexual abuse (SA) or adolescence in eating disorders (ED) is documented in clinical experience and in the literature. However, the complex relationships between both conditions have not been systemized. **Objective:** To describe the clinical and neurobiological correlation between SA and ED. **Method:** The specialized literature in texts and articles included in Medline/PubMed, SciELO was thoroughly analysed. Central concepts were outlined and information was written seeking didactic cohesion, including an illustrative clinical case. **Results:** Although SA is a nonspecific factor for the development of mental disorders, it constitutes a significant predisposing, triggering and perpetuating phenomenon for the emergence of ED, mainly bulimia nervosa. Risk, mediator, predictor, protective and resilience factors are described. Both specific conditions show analogous neurobiological and clinical correlates (core symptoms and adaptive functions). Similar dysfunctions exist in reward and emotional regulation circuits, with limited structural disturbances in prefrontal areas. **Conclusions:** There is strong evidence of the coexistence of SA in ED. However, it is necessary to develop research models that truly integrate genetic, hormonal, neurotransmitter, personality and sociocultural risk processes.

**Key Words:** Child Abuse, Adolescent, Sexual, Feeding and Eating Disorders

## INTRODUCTION

Research aimed to understand the etiology and comorbidities of eating disorders (ED) identifies sexual trauma as a potential way for the irruption and subsistence of these pathologies<sup>(1)</sup>. The evidence suggests that sexual trauma precedes and contributes to its development<sup>(2)</sup>. Literature describes that perceptual characteristics may favor ED onset, by means of body dissatisfaction, shame, sexual dysfunctions and fear to future sexual traumas.

In children and adolescents abuse background has been reported to increase 3.7 times the risk of any psychiatric disorder; and sexual child abuse (SCA) in 2.54 times<sup>(3)</sup>. SA is the most powerful adversity associated to complex adult psychopathologies, especially in women<sup>(4)</sup>.

Among adolescent SA victims<sup>(5)</sup> this condition was reported to be very repeated, in all the social/economic levels. It is mainly committed by adult males within the victim's family, who have a high risk to suffer shocking subsequent consequences, among others: sexual

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<sup>1</sup> Psychiatrist Physician, Full Professor, Psychiatry Department, Faculty of Medicine, Universidad de Valparaíso, Valparaíso, Chile.

<sup>2</sup> Physician and Child & Adolescent Psychiatrist, Assistant Teacher, Departamento de Salud Mental Oriente, Faculty of Medicine, Universidad de Chile, Santiago, Chile.

promiscuity, sexual/physical abuse, anxiety, depression, low self-esteem, alcohol and drugs abuse/dependence, sleep/dissociative disorders, ED, emotional weakness, guilt, shame, suicidal ideation. Although superficially it may seem possible to get recovery from these damages, the follow-up reports often describe a permanent disability long time after abuse is over.

The objective of this work is to perform an interpretive descriptive analysis integrating the evidence about various aspects of the correlation between SA and ED, emphasizing on the following analysis: SA role as a risk mediator/predictor factor for ED, clinical and neurobiological similarities.

## **METHOD**

Between January and April, 2020, in order to define the complex correlation between SA and ED, trying to find correlated phenomena, a critical and comprehensive analysis was made on papers found in specialized literature, both regarding research and update of the topics (61, in total), plus three reference books, including those related with Adolescent/Child SA, with EDs and its subtypes. In order to do so, data bases Medline/PubMed, SciELO, were searched from 1991 to date (2020). For search, key words, such as eating disorders, anorexia nervosa, bulimia nervosa, child sexual abuse, maltreatment, neurobiology, were used with Boolean operators, y/o (and/or). An illustrative case is described (Table 1).

### **Risk factors**

Abuse is studied as one of ED risk factors, along with other cultural influences, personality factors, disturbance of neuro-cognitive/brain processes<sup>(6,7)</sup>.

### **Neurobiological Correlation on Mistreatment/Sexual Abuse and Eating Disorders**

The concept “latent vulnerability” has been usually used to describe cognitive and biological processes that are affected by exposure to mistreatment/abuse, before developing psychopathologies. Early exposure to stressors leads to disturbances in the activity of the hypothalamus-hypofysis-suprarrenal axis, in the factor to release corticotrophin, monoamines and P

substance, from a series of neurotransmitters systems and an increase of inflammation markers (interleukins-6, C-reactive protein)<sup>(8-10)</sup>.

On the other hand, abuse records empowers EDs risks in women with a short allele of 5-HTTLPR, which also interacts with the parental style. No specific genes have been identified for EDs. The most powerful candidates are polymorphism of serotonin receptors for anorexia nervosa. Epi-genetic disturbances in the D2 receptor gene of dopamine in women with anorexia and bulimia have been more significant in the subgroup with an abuse record or with personality disorder<sup>(10)</sup>.

In abused subjects, augmented bilateral reactivity of the tonsil, before threatening faces is reported, thus reflecting hypervigilance before environmental threats, related with disturbances of basal cortisol levels. Its persistence during adulthood, reflects molecular effects of stress on biochemical composition of the deoxyribonucleic acid and epigenetic changes altering the expression of regulating genes. Abuse suffered at an early age would have more deleterious and cumulative effects. In turn, abuse background and basal tonsil reactivity are predictors of higher further exposure to traumatic events and internalizing symptoms. Tonsil sensitization would be short-term adaptation, but with a high maladaptation cost in the long term, interacting with other risk factors, from a resilient condition to psychiatric diagnoses, such as EDs. Some phenotypes arising from mistreatment/abuse are: increasing emotional reactivity and tonsil hyperactivity during anxiety and post-traumatic stress situations, sexual disinhibition and flat tonsil reactivity before stress in behavioral disorders<sup>(11)</sup>. A prospective SA study made in patients younger than 10 years old, reported maturity retardation of response inhibition, during adolescence and young adulthood, increased impulsiveness associated to emotional/affective problems and alcohol abuse. Cortical maturation and neuronal pruning are deemed as indicators of maturity retardation affecting top-down control of neural processing<sup>(12)</sup>.

Structural brain disturbances found in abused adolescents report a lower thickness in the ventro medial prefrontal cortex, orbital-frontal right cortex, frontal right inferior gyrus, parahi-

**Table 1. Clinical case**

(Adapted from: Behar R. Sexual Abuse and Eating Disorders. Folia Psychiatrica 1998; 4: 69-76.) (65)

This is an anorectic patient, subtype with binge eating and/or purges. She is 21 years old, single, and has no children, college student. She reported to have previous overweight. Later after she broke with her fiancé, she started to have a restrictive period, for two years suffering amenorrhea. Later she started with binge eating and self-induced vomiting for up to three times per week. That is why she had this current consultation. After one year of regular controls in this specialty, she confessed she was sexually abused by her aunt's couple, with whom she shared the housing. This traumatic situation was clearly remembered with help of hypnosis sessions. Some self-aggressive behavior (cutting) and suicidal ideation arise. However, due to drug therapy treatment (Fluoxetine, up to 80 mg/per day and Clonazepam up to 3 mg/per day) and the possibility to express cathartically her experience by means of integral/cognitive-behavioral psychotherapy and support psychodynamically oriented, she experienced an improvement in her anxiety/depressive symptoms and her pathological feeding habits. She continuously claims for justice and demand her parents to sue her perpetrator. Her witness about the foregoing episode is the following:

*"I was only 4 years old. He always invited me to his room, telling me he had a surprise for me, presents or treats. I had never accepted such invitation, and I did not realize about it. He insisted so much that one day I came into his bedroom. He locked the door. At the beginning I trusted in him, but then he took off his clothes in front of me. He lay on the bed, by my side. Initially, he was only "groping". He touched me all over my body, even my genitals. He was very rude, and I felt much pain. He asked me to take off my clothes and later he penetrated my vagina and anus with his fingers. I was fighting against him, but he was much stronger than me. From that day on he started to threaten me with a rifle and threatened me with telling everyone about the bad things I was doing. All this situation took nearly five months. As he was not satisfied with all the foregoing situation, once he was fully naked and showing me his genitals. He took off my clothes and I felt something inside my vagina and it was very painful. When I left his bedroom I was shocked, as my underwear was blood stained. I cried a lot, because I did not know what had happened. The next week, that situation was repeated. The next time I did not bleed that much, as the first time, but I also felt a horrible pain and I started to cry. That was the last time I went into his bedroom. I remember I listened to him coming in and I was hiding under the table, in the kitchen or sometimes I cried in a corner in the dining room or the living room. I covered myself with a towel for him not to see me. All this nightmare took about six months. After several years, and even today I can easily remember what happened. Even during the last few months, he kept harassing me. He got closer to say "hello" in the following way: He held me tight, and tried to touch my breasts, my butt and my legs. He tried to kiss me and looked at my entire body, saying I was very beautiful. I still feel guilty, as I was not strong or brave enough to tell him he did not have to do that with me, but even today I still remember his threats when I was a little girl. However, I feel pain and cry a lot, because I cannot forget anything. Every time I remember such situation, with more details. That is why I live with a constant fear, and even more for all what my parents suffer, as all of me means only trouble, my whole life. Everything makes me feel "dull, lazy, bored. I go out into the street and I feel afraid of everything around me. I cannot enjoy anything. Sometimes I smile, but most of the time I just pretend".*

All the time she has been controlled, she has kept a significant and persistent distortion of her body image, which has been never modified. Her bulimic conduct has been on and off. She has remained some time with neither binge eating nor purges, for two months at most. Such situation has remained so far. Despite the patient has experienced a torpid evolution regarding her eating behavior, which fluctuates between restrictive and bulimic periods, along with depressive/anxious manifestations, such as phobia and obsessions, along with compulsions. Currently these symptoms basically have hindered her productivity at her college (she had to ceased her studies) Her integrity remains acceptably stable from an organic perspective and social relationships. She has never had any sexual intercourse voluntarily; however, she has plans to get married and have children. She denies to drink alcohol or illegal drugs. The patient considers herself as an indulgent person with other people. She is tolerant and self-demanding. She is not sociable, she is shy and has a low self-esteem. It called my attention her naïve, but manipulative attitude. She is mournful and self-compassionate, with permanent guilty feelings her sick condition, that she is not capable to feel better quickly and because of all the sacrifice she feels she is subject to by her parents.

ppocampal bilateral gyrus, left temporal pole, temporal bilateral inferior/median right/superior right gyrus<sup>(13)</sup>. In anorectic adolescents, increased volumes of grey matter in the orbital-frontal/insular cortex have been reported, and low integrity of the white matter of the fornix. These findings are similar to those found in adults. This suggests that neuro-development factors, could contribute to brain disturbances<sup>(14)</sup>. In sexually abused girls, a decrease of genital representation in the somatosensory cortex has been reported. This would involve an “adaptive” function. SA in women is correlated with reduction of the corpus callosum<sup>(15)</sup> and an inverse correlation between the grey matter volume in the lingual gyrus and the intracalcarine cortex.

Anatomical/functional disturbances in the orbital-frontal cortex are a biological base for deficits in cognitive/social functioning. Early adverse events have been reported to predict a reduced connectivity of the frontal inferior right/left gyrus, as this region plays a significant role in controlling impulses and emotional regulation<sup>(16)</sup>.

Child abuse is correlated with malfunctioning of several neuro-cognitive systems, such as threats/reward processing, emotional regulation and executive control. These changes predict vulnerability before psychiatric disorders<sup>(9, 17)</sup>. Idle mode connectivity in the left temporal fusiform cortex is inversely correlated with intrusive symptoms and peri-traumatic dissociation<sup>(18)</sup>. In abused teenagers, a significant decrease in positive thoughts, plus increase of negative thoughts, and reduced connectivity has been reported between the cingulated anterior sub-genua cortex and the fronto-parietal region<sup>(19)</sup>.

In anorexia nervosa, severe food intake restriction is correlated with hyperactive inhibitory control, combined with a decreased reward circuit. In contrast, deregulation of inhibitory/reward motivations accounts for alternance of excessive food intake and restriction, which is a feature of bulimia. Bulimic adolescents have reported increased connectivity of the ventral attention/default networks, associated to bulimic severity and concerns about their body/weight image<sup>(20)</sup>. Additionally, in bulimia nervosa, thickness of the frontal inferior gyrus de-

creases, which is persistent, despite symptoms remission. That is correlated with the frequency of episodes, thus becoming specific markers of bulimic symptoms<sup>(21)</sup>. Likewise, dysfunction of auto regulatory control in bulimic patients has been proved, with reduced frontal striatal/cingulo-opercular activation, during the response to conflictive incongruent stimuli<sup>(22)</sup>. Before a cognitive conflict task, normal female controls decreased activation in time, while female patients with remitted bulimia nervosa, had an increased rate. As symptoms decreased, activation increased. This is deemed as a compensation resilience mechanism which allows self-regulation learning of eating behavior during development<sup>(23)</sup>. Purge is estimated to reduce intensity of the correlation between sexual/physical abuse and self-harm/non suicidal conducts<sup>(24)</sup>.

Binge eating is associated to altered sensitivity of the ventral reward regions, associated to temper traits, such as anxiety and damage avoidance<sup>(25)</sup>.

### **Family Influence in Eating Disorders**

There are family interaction patterns that differentiate EDs subtypes, which allow to split them into diagnosis groups when defining SA role<sup>(26)</sup>. Additionally, incestuous abuse, cannot be separated from the context where such situation occurs, according to sociocultural values and ethical codes; therefore, its impact in development and mental health would be quite significant and distinctive. In a survey applied to students who reported SA, these students reported a higher risk to suffer EDS, regardless of sociodemographic/family/psychosocial variables<sup>(27)</sup>. Permanent negative family relationships, specially dealing with physical abuse experiences may increase EDS risks. In a study made among college male students, 4% of them had suffered some SA; 3.6% of them had been a victim of physical abuse; 26.2% reported adverse family background; and 4.6% had a higher risk to develop EDs<sup>(28)</sup>. Among SA adolescents, protecting factors included a higher emotional attachment to the family, to be a religious/spiritual person, the presence of both parents at home and perception of having general good health<sup>(29)</sup>. Among parameters increasing adverse correlations, a stressing school environment due to substances abuse, the shock caused by

SA, maternal alcohol consumption and physical abuse were reported. For male adolescents, maternal education and parents' devotion seemed to be protecting factors. Women with background of assaults within the family had more chances to suffer severe EDs<sup>(30)</sup>. Additionally, mothers' SA has been correlated with life-long EDs, use of laxatives, vomiting and severe body dissatisfaction during pregnancy<sup>(31)</sup>.

### Others Predisposing Factors

**Ethnicity.** 10% of Latin participants who had suffered SA, had EDs (12.2% women and 7.3% men)<sup>(32)</sup>. For women, both physical/sexual child abuse contributed to EDs onset, but in men only SA favored its occurrence. Ethnic minorities population had relatively high EDs rates and SA background is a significant risk factor for eating disorders. In Mexican high school students, EDs probability was 7 times higher when SA experiences were reported, and 36 times when it happened before 14 years old<sup>(33)</sup>.

**Gender/Sexuality.** The homosexual and bisexual men with SA background are significantly more keen to suffer subclinical bulimia nervosa or any type of EDs; therefore, it is recommended to evaluate, on a regular basis, eating disorders as a potential mechanism for facing the emotional sequelae associated to abuse<sup>(34)</sup>. In Icelandic adolescents, women reported three times more probabilities than men to suffer SA associated with depression/anxiety moods<sup>(35)</sup>.

### EDs Psychopathologies and their Correlation with SA Life Background

Usually in EDs, nuclear symptoms have been reported, similar to psychological manifestations, typically deemed as SA consequences; these are: preoccupation intensification and body shyness, generation of reasons to be purified, poorness in interpersonal relationships (human closeness is deemed as a risk). In both cases the foregoing situation becomes a shameful secret, susceptibility, low self-esteem, guilt, anxiety, hostility, depression, self-destructive conduct, distortion of body image, interpersonal suspicion, sexual maladaptation and feelings of loneliness<sup>(36, 37)</sup>.

Some adaptive functions of EDs symptoms within an SA context have been described, such

as: comfort, nourishment, distraction, sedation, energizing, attention (for instance, shouting for help), rebelliousness, rage rush, identity and self-esteem, chronic helplessness, control and power, predictability and structuration, generation of psychological room, abuse reactivation (compulsive repetition), self-punishment or body punishment, fragmentation containment, dissociation of thoughts, intrusive feelings and images, cleaning or purification of his/her self, trying to disappear (anorexia nervosa), generation of a big body aimed for protection (overweight or obesity), intimacy avoidance, accumulated stress release due to hypervigilance, symptoms reporting that "I am a bad person", instead of blaming the perpetrators<sup>(38)</sup>.

Some authors have proposed that SA could cause mainly coping dissociative behavior, thus causing low self-esteem, poor emotions regulation and loss of control feelings, to be compensated by means of pathological eating behavior, such as the self-starvation<sup>(39)</sup>.

### Protective Factors and Resilience

The way how mistreatment/abuse affects development of children and adolescents reports significant variations. Some suffer life-long devastating and long-lasting consequences, while others are slightly affected. Some get recovered and adapt themselves quite easily, and even become stronger, against all odds, thus turning adversity into an advantage. Resilience studies consider various factors and motor/protective processes, both child inherent, and also family/social factors, used as a base to develop programs with a high preventive potential<sup>(40)</sup>. Some protective factors are found in the family and in schools<sup>(41)</sup>, in individual qualities, such as temper, personality and cognition. Some contextual dimensions are protective: the strategic use of available resources, positive reinforcement provided by significant others, environmental adaptive capacity, plus temporal/cultural factors<sup>(40)</sup>. In adolescents with positive adaptation to adversity, two areas with more grey matter in the frontal superior/medial gyrus<sup>(42)</sup> were identified. Another analysis reported that adolescents' higher cognitive capacity/function have protective function<sup>(43)</sup>. In asymptomatic resilient patients and normal controls, it was proved that the right tonsil had a lower connective

efficiency<sup>(44)</sup>, thus allowing to isolate the impact of damages in the neuronal network as well as protecting the subject from psychopathologies.

### **Mediating & Predicting Factors**

Sexual/physical abuse usually predict higher feeding concerns. In this sense, self-destructive conduct of anorexic and bulimic patients, would be one of the most important predictors in physical and/or sexual abuse background. In restrictive anorexia nervosa with a prior background of bulimia nervosa, an older starting age of EDs, more psychiatric symptoms, more family psychiatric morbidity and a higher SA rate<sup>(45)</sup> are reported. In bulimia nervosa, SA has been associated, both with daily purge frequency and also with self-destructive conduct<sup>(46)</sup>. It has been proved that 55.7% of SA victims reported self-damaging conducts, versus 15.5% in healthy adolescents<sup>(47)</sup>. SA victims with/with no post-traumatic stress disorder had a positive correlation between emotional deregulation and eating behavior. A study of non suicidal self-harm predictors in women with EDs reported that early feeding problems onset, lower body mass index, feeling fat, plus a background of physical/sexual abuse increased self-harm risks. The study states that, the latter as well as purging behavior may have an emotional regulation function in women with EDs<sup>(48)</sup>.

EDs are deemed as a way to face the failure of not having an expected environment, presence of psychological symptoms, self-control need and affective regulation<sup>(2, 49)</sup>. This is done by way of body perception, by body dissatisfaction, shame, sexual dysfunctions, dysfunctional beliefs, impaired autonomy and fear to future sexual traumas.

Both, deregulation/dissociation of emotions would be significant mediators between SA and EDs<sup>(50)</sup>. Mental dissociation mental (for instance, amnesia, identity disturbances, derealisation and depersonalization), caused by SA involves loss of control experiences, which seem to characterize some EDs. The most severe are those reporting physical/sexual abuse<sup>(51)</sup>.

EDs patients report increasing impulsiveness and affective instability, mainly in those who have suffered SA<sup>(52)</sup>. Behavioral impulsiveness has been proved to provide a more significant mediating effect between SA record, purging

conduct and a restrictive diet<sup>(53)</sup>.

### **Anorexia nervosa**

A systemic review and a meta-analysis reported that correlation between EDs and SA was 1.92, 2.31 and 2.73 for anorexia nervosa, binge eating and bulimia nervosa, respectively. SA and anorexia nervosa estimations are deemed as non-significant<sup>(54)</sup>.

### **Bulimia nervosa**

It has been stated that both, sexual as well as physical abuse are risk factors. Although these are not specific factors for bulimia nervosa onset, especially when there is psychiatric co-morbidity. 35% of all cases reported SA, including a severe/repeater category<sup>(55)</sup>. One study made with adolescents concluded that bulimic syndrome incidence was 2.5 times higher among those who reported an SA episode; and 4.9 among those who reported two or more SA episodes<sup>(56)</sup>, thus supporting the correlation between purging conduct and severity of sexual violence and also the correlation between and inaccurate perception of body weight and low weight.

Commonly, feelings causing binge eating are those related with abuse or violence, leading to an abnormal conduct associated with guilt and shame. One research confirmed that 30% of bulimic patients had an SA background<sup>(57)</sup>. It has been emphasized that the correlation among development adversities (for instance, physical/sexual abuse) and bulimic syndromes may be attributed to a pathology of co-morbid personality, which could be a better predictor of disturbances in objectal relationships, primitive defenses and hostility<sup>(58)</sup>. On the other hand, dissociation and submission have been correlated with more severe forms of abuse in bulimic patients. In its occurrence in adult people, SA has always been present.

### **Binge eating**

A total of 83% of the patients with binge eating disorders reported some type of child abuse: emotional abuse (59%), physical abuse (36%), SA (30%), emotional negligence (69%) and physical negligence (49%), with no differences in the type of child abuse, due to gender or obesity (59). Emotional abuse was correlated with

higher body dissatisfaction, depression, and lower self-esteem in men and women, and SA with higher body dissatisfaction in men. Additionally, 30% patients met the criteria for --at least-- one personality disorder. Emotional abuse was significantly associated with personality disorder belonging to group C. Generally, and specifically with the avoidant subtype<sup>(60)</sup>. Additionally, SA rates have been significantly higher in black women suffering binge eating disorders than in groups of psychiatric comparison<sup>(61)</sup>.

## DISCUSSION

Evidence obtained from various studies reviewed in this paper, state that SA victims have an increased risk to develop obesity or EDs in various forms and intensities<sup>(62)</sup>. Juvenile traumatic experiences and emotional deregulation turn out to be significantly higher in people suffering EDs versus healthy controls<sup>(63)</sup>. People exposed to various types of child abuse may be specially in high risk to develop EDs<sup>(64)</sup>.

Mistreated children<sup>(53)</sup> have been reported to have a higher degree of dissatisfaction with their weight, compulsiveness due to slimness, purge, diets and impulsive-self-destructive conduct, which are similar findings to those observed in adults with SA.

Both, in EDs and in survivors of mistreatment/abuse, we can observe neurobiological disturbances as a response to stress, immune system and in the structure and brain functionality. The risk is higher during adolescence, as the huge normative changes of brain neurobiological development --inherent at this vital stage-- are disturbed. Brain functional disturbances, both in abuse sequelae, SA as well as in EDs, have in common, functional impairment on cognitive flexibility, emotional regulation, reward processing, and are located in the brain circuits involved in these functions.

Child abuse, SA and parental raising factors are deemed as environmental moderators. Occurrence of abuse --prior to EDs-- and its prospective predicting power<sup>(6)</sup> has been documented.

Complexity of psychopathology processes, inherent to EDs, the influence of massive risk/protecting/moderating factors, plus comorbidity make it even more difficult to draw definite

conclusions regarding the correlation between EDs and SA. Apart from the foregoing, SA seems to be a risk factor for multiple psychopathologies, regarding which we could add specific elements for EDs. This issue has not been yet elucidated. It is necessary to implement research models aimed to integrate genetic, hormonal processes, neurotransmitters, personality/sociocultural risk factors.

On the other hand, health professionals must be especially conscious about the huge impact of SA and must recognize the need for these patients to obtain specialized psychological/medical services<sup>(5)</sup>.

As most sexually abused children do not have any immediate physical evidence and abuse consequences are much more long lasting than abuse itself, special attention must be paid to silent warning symptoms, inherent to AS, mainly as conduct changes to their own body and feeding habits.

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Correspondence to:

Rosa Behar A.

Psychiatry Department, Faculty of Medicine,  
Universidad de Valparaíso, Valparaíso, Chile.

P.O. Box 92-V, Valparaíso, Chile,

Phone number: +56944968834,

e-mail: [rositabehara@gmail.com](mailto:rositabehara@gmail.com)