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REVIEW ARTICLE

Shedding Light on Child Physical Abuse and its Ramifications: A Review

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ABSTRACT

Physical child abuse has been practiced since the early days of humanity, but it is only in the past twenty years that it has been recognized that hitting or physically maltreating a child is actually abusing them. This article reviews the prevalence, symptoms, types and causes of child physical abuse, ending with examining what are the ramifications of such abuse.

Introduction

“Since the publication of ‘The Battered-Child Syndrome’ in 1962, which focused on the physical findings of child abuse, the concept of child maltreatment has expanded to include sexual abuse, emotional abuse, and neglect. Statistics on child maltreatment have been collected since 1988 as a result of an amendment to the Child Abuse Prevention and Treatment Act, which established the National Child Abuse and Neglect Data System. Although figures vary yearly, approximately 700,000 cases of child abuse and neglect are reported annually in the United States” [1].

Maltreatment is defined as acts committed by commission or omission by a caregiver which results in harm, potential for harm, or threat to harm of a child [2]. Acts of commission are deliberate actions which are commonly referred to as abuse and include three types: physical, psychological and sexual [2]. In comparison, acts of omission, or commonly referred to as neglect, have four subcategories of environmental, supervisory, medical neglect, or emotional [3].

We have seen a decline in neglect and maltreatment rates since the beginning of the 1990's [3,4]. Finkelhor, et al. [4] found that physical abuse has declined by 55%, sexual abuse by 64%, and neglect by 13%. Child neglect comprises most official Child Protective Services (CPS) cases (75%), making it the most prevalent form of child maltreatment [5]. The other two forms include physical abuse making up 17% of cases, and sexual abuse occupying 8.3% [5].

Child Abuse Defined

Child abuse, child neglect, child maltreatment, and child victimization are all interchangeable terms that may impact the way some children grow. Therefore, society needs to be mindful of their ramifications such as the diverse medical, psychosocial, and legal consequences.

Abuse is seen when a child's caregiver directly commits harm towards the child, or indirectly by failing to provide for their health and well-being. The extent of abuse can range in severity from a toddler who was tortured to death, to a child with

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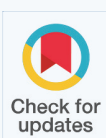
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a bruise as a result of being hit by a caregiver [6]. Physical abuse occurs when a child has suffered injury due to the actions of their caregiver. Neglect results when caregivers inadequately care for a child that may put the child into harm's way or are not meeting the child's basic needs. Neglect is considered present when children experience exposure to the elements, have inadequate supervision, poor hygiene, or malnutrition.

Child abuse and neglect are serious public health, human rights, and societal problems. The various consequences that abuse, and in particular physical abuse, has on individuals during their adult life contribute to major causes of death, injury, mental health problems, and suicide. Research studying the biology of violence finds that traumatic stress caused by violence may impair brain architecture, immune status, metabolic systems, and inflammatory responses. Consequences of violence can include lasting damage to the nervous, endocrine, and immune systems, and can even influence genetic alteration of DNA [7].

Child Physical Abuse

Crosson-Tower [8] argued that in order to fully understand the phenomenon of physical abuse of children, the social and cultural factors need to be assessed however they agree that "the physical abuse of children refers to nonaccidental injury inflicted by a caregiver". Although it is easier for the medical community to discern that child abuse took place by the evidence of the bruises, welts, broken bones, and burns when they present in hospitals, the legal community most commonly defines child abuse in terms of intent [9]. Since parents have particular legal and moral responsibilities which they are expected to fulfill, they are seen as the perpetrator or accomplice, resulting in an altered familial system.

Causes of Child Abuse

In the 1970s to 1990s, various models evolved related to child abuse and were organized into the following three categories [8]:

1. The psychodynamic or character-trait models, which argues that the characteristics of the abusive parent is the cause of the abuse.
2. The interactional models, which demonstrates the interaction between the abuser and the child contributes to the abuse.
3. The environmental/sociological/culturally based models, which zooms in on the environment and the stressors within it and how that impacts the abuse.

In today's society we see an agreement among experts that child abuse is caused by an interconnected group of characteristics and events such as the psychology of the

individual, family dynamics, and variables involving the cultural and society. A framework which was comprised of three categories that group these factors into:

1. The microsystem: describes the parent-child interactions.
2. The exosystems: the networks in which both the parent and child are involved.
3. The macrosystem: which is the social structure where which the two systems are situated.

The causes of abuse will now be examined from the perspective of interactional variables, environmental/life stress variables, and social/cultural/economic variables [10-14].

Interactional Variables

Interactional variables refer to the actions and events leading up to the maltreatment of the victim by the abuser. Some researchers argue that abuse is resulting from a cyclical pattern of parent and child interactions. For example, when a child is acting in a way that the parent feels is inappropriate and the parent punishes them for their behavior, the child in turn will enhance their difficult behavior commonly seen case would be a baby's cry which may be too much for a mother who is inexperienced and has no support systems. Due to the neglect of the baby's needs by the mother, the baby intensifies its demands [14-16]. This cyclical pattern for potentially abusive parents, tends to lead to a downward spiral. Additionally, it is believed that disabilities, such as attention-deficit hyperactivity disorder and oppositional defiant disorder increase a children's risk for abuse due to the interactional difficulties between the overstressed parents and their offspring [15-18]. This may be due the fact that many abusive parents have had their own abusive or dysfunctional childhoods, which resulted in their inability to appropriately cope with the demands of parenting [15,19].

Environmental/Life Stress Variables

A common theme between abusive parents includes environmental and/or life stressors. For example, poverty is associated with abuse due to the fact that it can arouse anger in parents which is most often directed at the children. Additionally, multiple moves and/or unsupportive neighborhoods, unemployment and stressful familial relationships can add to the parents' pressure resulting in an increased risk for child abuse [14,15].

Social/Cultural/Economic Variables

It is known that raising a child is different cross-culturally, and various behaviours that may be seen as 'normal,' or acceptable in one culture, may be seen as abusive in another culture. For example, value differences between

parents and children, reactions to psychiatric issues, and use of shame and corporal punishment differ depending on the culture of the family and their origin. A good example can be found in North America where the culture frowns on hitting children, however minority groups may practice it [20,21]. In addition, cupping or coin rubbing that is practiced by some Asian communities may be seen by others as evidence of intentional abuse, rather than a cultural remedy that is believed to help the child. Finally, the economic crisis and fears due to COVID-19 caused stress for families which when combined with individual parental characteristics, such as low frustration tolerance or poor self-concept, may result in child abuse.

The Risk for Physical Abuse

It has been established that an abundance of high or moderate risks across several categories puts the child at high risk of being abused. We can examine physical abuse in terms of risk for children to be abused, for the parents to be abusive, and for the family system to foster such behavior. Strengths that might be enhanced in treatment, are factors that contribute to the protection of the child, thus known as 'protective factors'[8].

Child Risk and Protective factors – It appears that the younger the child, the greater is their vulnerability to abuse. Inexperienced parents, who are riddled with premature infants which require extra care, face additional stresses. For instance, the baby may be particularly sensitive to stimuli, and may be generally quite difficult to handle. Parental expectations about the behavior that the infant is expected to show at specific ages may actually hide the required understanding that a premature infant is not as developmentally advanced as a full-term child. It may be hard to imagine, but 34 percent of the children between birth and 3 years are abused. Additional rates of physical abuse indicate that 23.4 percent of kids abused are between 4 and 7 years, 18.7 percent are between 8 and 11 years, 17.3 percent are between 12 to 15 years, and 6.2 percent are between 16 and 17 years old. That indicates that children under the age of 7 years represent 57.4 percent of those abused, and that what may be a protective factor is their growing up [22]. The kind of attachment which children may have to their caregivers may also put children in danger of being abused. Children who have not bonded well with their caretakers are at a higher risk of being abused [15,16,23]. Children who are perceived by their parents as difficult, those who cry incessantly, may be colicky, resist being held, or have a disability usually are more abused than healthier kids [10,24,25]. Another risk factor for childhood abuse are health problems such as allergic reactions, nutritional deficits, or in later years learning problems, or during the child's adolescence their attempts at autonomy and expressed rebelliousness [8,9,26,27]. The child's resiliency, healthy attachment, and ability to reach out and connect with adults may serve as their protective factors see [28].

The factors that increase, or protect parents – Coohy and Braun [29] suggested that parents who were exposed to caregivers' physical abuse in their childhood, exposure to environmental stressors, and not having at their disposal sufficient interpersonal resources. It appears that abusive parents may not have the appropriate coping mechanisms, or alternatively they may not have achieved the degree of social competence of non-abusive parents which could reduce the chance of them abusing their offspring. These parents are less flexible and more easily overwhelmed [8,16,30]. And have been subjected to dysfunctional childhoods [10,31]. Consequently, these parents use less appropriate disciplinary standards [24], or apply inconsistent approach to their children, and that may result in them becoming less effective, easily overwhelmed and consequently utilize aggressive disciplinary actions [14,25,32]. Abusive parents were shown to be depressed, to some degree, and some correlation was found between physical abuse of children and substance abuse of the parents [10,16]. A presence of a support system or adequate models of parenting coupled with the ability to channel anger in appropriate ways serve as protective factors of abusive parents [28].

Risk and protective factors in the family system – Physical abuse of children commonly occurs in families which are often isolated and have poor relationships with extended family or the greater community. Intra familial relationships are commonly strained in those families, filled with conflict or operating in an aggressive mode. Unemployment, illness and a variety of other stressors are also found [10,12,14,33].

Detecting Physical Child Abuse

According to the 4th National Incidence Study of Child Abuse and Neglect, a surveillance report published by the U.S. congress every ten years, nearly 1.3 million children are maltreated every year [34]. In the U.S. 35% of children presented with extremity fractures and 24% with skull fractures [35,36]. Children who suffered fractures caused by physical abuse have a significantly higher risk of mortality than those children whose fractures were caused by accidental or pathologic etiologies [37]. It is, therefore, imperative that we improve detection of fracture patterns, as some injuries [i.e., clavicular and long bone diaphyseal fractures] should raise a red flag regarding parental abuse [34]. Quiroz HJ, et al. [34] While multiple fractures in children often increase suspicion that child abuse was committed, it should also be known by healthcare professionals that underlying genetic conditions such as osteogenesis imperfecta and deficiencies in vitamin D and copper can also result in multiple fractures in children, and those would not be the result of child abuse [38]. Quiroz HJ, et al. [34], thus highlighted the need for careful determination of the mechanism of injury and using other screening tools when assessing a child with a potential for multiple fractures. Additionally, medical workup of potential pathologic causes for fractures in children is also

recommended [38]. A finding that a decreased bone density may have contributed to the fracture, does not exclude the possibility of child abuse [39]. It is noted that accidental skull fractures are common in children may commonly suffer from accidental fractures to their skulls, especially those less than one year old, who may fall on hard surfaces [39-41].

Rib fractures have the highest specificity of any fracture for abusive etiology and are often linked to infants who have Abusive Head Trauma (AHT) as well, suggesting the “shaking” mechanism of injury [42,43]. Quiroz HJ, et al. [34] found a statistically significant increase in rib fractures in infants when compared to any other age group, suggesting that shaking is a common physical abuse of infants [44]. Pierce MC, et al. [45] performed an analysis of young children with femur fractures and concluded that abusive injuries of the femur were more commonly transverse fractures, which correlate to a higher impact force, consistent with abusive trauma [46,47]. A meta-analysis of abusive fractures by Kemp AM, et al. [42] also demonstrated that the mean age of abusive femur fractures was significantly lower than the mean age of accidental fractures, which were also demonstrated. Additionally, Quiroz HJ, et al. [34] found an increased rate of humerus fractures with a higher rate in younger patients. While the age-related differences in abusive radial/ulnar fractures were not as pronounced, there was an age-dependent decrease in incidence with increasing age.

How to Medically Evaluate Child Abuse

Since the diagnosis of abusive injuries in children can be challenging [47,48], Hoehn EF, et al. [49] provided a brief overall view of what physicians need to attend to while examining infants and children with suspected child abuse. The detection of sentinel injuries in preventing further abuse was highlighted. Sentinel injuries are those relatively minor injuries that may point out to a definitive abusive injury [50]. It was, actually, found that around 25% of injuries that were diagnosed as child abuse followed prior injuries [51,52]. Research showed that those children who suffered fatal abusive injuries, research indicated that up to one-third of them saw a Health Care Provider (HCP) a year before they died [53,54]. Examining sentinel injuries in the abused infant, it was found that up to 80% are predominately bruising (80%) or intra oral injuries (11%). Discovering sentinel injuries as abusive injuries can lead to earlier intervention for these children [49].

Physical examination – Several “red flags” have been raised by the American Academy of Pediatrics (AAP). They include: “Any injury to a pre ambulatory infant, including bruises, mouth injury, fracture, and intracranial or abdominal injury, injuries to multiple organ systems, multiple injuries in different stages of healing, patterned injuries, injuries to nonbony locations, such as the torso,

ears, face, neck, or upper arms, significant injuries that are unexplained, additional evidence of child neglect or failure to thrive, and different forms of injury present (e.g. burns, fractures)” [49]. Frontal bruising is the most common sign of physical abuse in children. While it may be accidental if the infant already moves, it is probably not accidental if the infant does not yet move [54]. Abusive head trauma is the leading cause of child physical abuse fatality. And it may be asymptomatic, or alternatively may be related to vomiting, macrocephaly, seizures, scalp swelling, or palpable skull fractures [55]. Other major findings which can be seen in abused children include thoraco-abdominal injuries, which may be expressed as abnormal breathing patterns associated with rib fractures or pulmonary contusions, guarding or abdominal muscle rigidity, or thoraco-abdominal bruising. Abdominal injuries are the second leading cause of death amongst abused children [56].

Various Injuries of Abused Children

Poisoning the child

Research indicates that in the US, there are more than a million children who ingest potentially poisonous substances [57]. On the other hand, there are 250,000 unintentional prescription medicine errors annually; it was thus observed that one in six children will consume medication in error [58]. Child resistant containers have significantly lowered the number of accidental poisoning [59]. However, there is still some unclarity and thus non reporting of poisoning as child maltreatment [60-62]. The American Association of Poison Control Centers has reported that only 0.5% of reported cases of abuse are due to child abuse. It was found that accidental poisoning is actually less lethal than Intentional or abusive poisoning, which is often accompanied by delays in seeking medical care, which increases the harm caused to the child [63]. Most poisoning occurs at age two, but teenagers were also known to be subject to intentional poisoning [64,65]. Iron, alcohol, caffeine, benzodiazepines, glutethimide, insulin, ipecac, laxatives, oral hypoglycemics, pepper, salt, and a variety of illicit substances are usually used to poison children. It was also found that up to 20% of those poisoned have evidence of physical abuse [60,64].

Fischler RS [66] organized intentional poisoning into seven patterns: (a) stress related, impulsive, parental acts such as use of sedatives, alcohol, and antihistamines, which are administered with the goal of quieting the child); (b) neglect relating to not supervising a child who then consumes medications or alcohol; (c) bizarre parenting practices, such as those parents who administer toxic doses of vitamins, minerals, water, or salt causing intoxication; (d) punishment meted to control child behavior; (e) getting the child “high” as form of entertainment; (f) Attempting to ‘get rid’ of a child by premeditated act; and (g) Munchausen by proxy involving administration of medication or chemical

in to create a fictitious illness, which the parent joins physicians in an effort to alleviate the child's symptoms. Poisoning may bring about altered states of consciousness, cardiorespiratory depression or excitation, gastrointestinal symptoms, seizures, and other unexplained symptom complexes [67].

Oral and dental trauma

More than half of child abuse injuries are to the head and neck [68]. In a review of 300 records of non-accidental injuries to children, the head, face, neck, and mouth were found to be injured in 67% of the cases [68]. The face was most attacked (41%), and the cheeks were injured as a result. "Oro-facial injuries included fractures of the skull and facial bones, intracranial injuries, bruises, burns, and lacerations. Injuries to the mouth included fractured and avulsed teeth, lacerations to the frenum, tongue, and lips, and jaw fractures. The head and face are thought to be frequently attacked because they represent the sense of "self" of the child, the center of communication and nutrition" [69]. Bitemarks, if the child has them, can often be linked forensically to the alleged offender [70]. Facial fractures, which are not common abuse injuries, are found in less than 5% of facial injuries [71].

Dental neglect is the chronic failure of a caregiver to ensure that the child gets proper dental care. Parental ignorance, financial restraints, and generally not valuing oral health may be the causes of such neglect [57]. Most often we can find that physical and dental neglect occur simultaneously, and thus dentists must carefully examine the oral cavity of the neglected child.

When the abused child dies

Children die due to child abuse, though it is difficult to assess how many. The estimate is that two children per 100,000 perish because of child abuse. Palusci VJ, et al. [69] asserted that the number is even higher [72,73]. Consistent patterns emerge in child maltreatment deaths. Around three quarter of those children were four years old or under, and 44% were infants [74]. As is clearly obvious, younger children, due to their small size, their limited ability to communicate, and their almost total reliance on their adult caregivers, are more vulnerable to fatal maltreatment [57]. Of those abused children who die (43%) were White, but 29% were African American and 17% were Hispanic [75]. Interestingly, it was not actual abuse but rather neglect that was the leading reason (41%) for maltreatment deaths in the US, where abuse accounted for only 31.4% of the cases [74]. A 2005 review identified starvation and dehydration as the most common causes of death by neglect, followed by "accidental" ingestions, and drowning/aspiration [76]. Up to 76% of children's death are caused by both parents while 27% are caused by the mother [74].

Related illnesses

Child physical abuse is dangerous in more ways than one. Being the most common form of violence inflicted on children, it causes death and disability [77,78]. Physical punishment predisposes children to illnesses such as asthma, cardiovascular disease and arthritis [77,79,80]. In addition, upon reaching adulthood, those abused children were found to suffer -more than their nonabused counterparts - from metabolic diseases, obesity, high blood pressure, and high cholesterol levels, as well as chronic obstructive pulmonary disease, alcohol consumption, and liver diseases [81,82]. Those abused children become prone to learn to use violence when in conflict, they usually display aggressive behavior, and later become delinquent, engage in intimate partner violence, alcohol or drug abuse, depression and personality disorders [79,83]. It was found that corporal punishment has a negative effect on the internalization of moral values by the child, affects his relationship with his parents who abuse him, as well as negatively affecting academic performance [84-86].

Behavioral indications of abused children

The child's behavior is a good indicator of the home atmosphere. "Some of the first behavioral indicators of abuse are observed by physicians in hospital settings. Young children brought in with broken limbs, bruises, welts, and other suspect injuries appear different from the normal pediatric patient. The abused children cry little, on the whole, but cry hysterically when being examined.... These children show no expectations of being comforted by parents but constantly search for tangible comforts like food" [8]. These infants show slow motor and social development and their attempts to crawl, sit, or reach for toys develop later than children usually do. These children are commonly passive, and relate to the world in a much less active manner than their non-abused counterparts. As they grow, they are similarly passive regarding schoolwork, and can enjoy life in a limited capacity. Their attitudes demonstrate that life for them has been unrewarding and unsatisfactory [16]. They seem old for their age (pseudomature) and lack the ability to play. It is common to find abused children suffering from enuresis (inability to control bladder functions), encopresis (fecal soiling), temper tantrums, or even bizarre behaviors which may be diagnosed as psychiatric. They usually face learning problems in school. They withdraw and that is one of the characteristics that can be seen in every aspect of their lives [13,87,88].

Abused children are, often, angry about their lack of control over their lives, and as a result may display hostile behavior. They may act out their anger against their peers, are known to display cruelty towards animals, or be aggressive towards adults. On the other hand, they may turn their anger inward, show hypervigilant or compulsive behavior, as they attempt to gain some control over their

lives. Quite surprisingly, it was found that many abusive families have well cared for homes and their lives are very ordered, since they need to have control, for no control would be unwelcome by the family. Abused children are good, more than their counterparts, in adapting to people and situations, stemming from their need to avoid being abused, should they not do what is expected of them. "One particularly adaptive 5-year-old boy discovered that if his father had several beers when he got home, he would fall asleep and thus spare the family his tirades and possible abuse. The boy soon learned that greeting Dad with a beer, and following that by several more, was all that was needed to ensure the family a relatively peaceful evening" [8]. These children are particularly afraid of failure, or of displeasing adults during their childhood. Abused children often regress in their effort to find comfort, wanting to return to a time when they may have felt nurtured and loved. Consequently, abused children engage in baby talk, bed wetting, and finger sucking, as unconscious attempts to find comfort. Socially, their behaviors may not be tolerated by their peers, and they also are quite hesitant to make friends, and so they may remain socially isolated. Abusers are afraid that if their children make friends, they may confide in them and the secrets of what is happening at home, will flow outside. Consequently, abused children are often prohibited, by their parents, from making friends. We would think that due to their size and age, adolescents are not abused, though the data reveal that they are. The abuse may have been long term, and continuing into adolescence from childhood, and actually intensify in their adolescence period [89].

The adolescent may attempt to control the abuse by running away. Many of those who do not have a family or a friend to run to, are often picked up by pimps or drug dealers. The use of drugs or alcohol, is another form of escape, allowing the adolescents to dull the mind and distance themselves from the abuse. Needing to control their world, adolescents may resort not to escape, but alternatively to provoke abuse from others. And so, they may display aggressive behavior, and attempt to gain control by assaulting others. Both, parents and school may see them as incorrigible. They may display acute hostility or social withdrawal, reflecting their attempts to cope with growing up as well as with their need to be in control of their lives. Abused adolescents, like younger children, show low self-esteem, and the abuse may serve as a precursor of delinquent behavior [26,90].

About abusive parents

Although the abusive family is a complex system influenced by sociological, cultural, psychological, and interactional variables, abusive parents have some particular personality characteristics. Abusive parents are known to have low self-esteem as they themselves feel unloved and unworthy, because of experiencing much rejection and loss in their lives, and mostly loss of nurturing in their childhood years [15,91,92]. Alternatively, it is conceivable that these

parents grew up in normative homes, but who now face circumstances that they are unable to deal with, such as immigration or having a child with disabilities [93]. Those parents who did suffer abuse as children, end up being excessively dependant on others, and have a symbiotic attachment to their family of origin, and at times, to their spouse. They do not have, in general, an adequate support system and are thus isolated [8,94].

The tasks parents have not learned

There are five tasks abusive parents have not learned: (1) to get their needs met in appropriate ways (2) to separate emotions from behaviors; (3) to internalize the understanding that they are responsible only for their own, and not others' behavior (4) to make decisions, and (5) to learn to delay gratification [94,95]. Let's look at each of these tasks.

Getting needs met appropriately - In their own childhoods, these parents needed to express their needs in the extreme, in order to get them met. Becoming very ill or attempting suicide were also rewarded with attention. They, thus, learned that they need to display behaviors in a manner that will not allow them to be ignored, as they were unable to express their wishes more appropriately. Quite naturally, they direct these attitudes toward their children.

Separating emotions from behaviors - We have all learned it, but not the abused children who later become parents. Feeling angry may be one thing, but translating it to hitting the child clearly indicates an inability to separate the two. Anger immediately brings about aggression for these parents, who do not know how to express their emotions verbally.

Knowing where their responsibilities lie - Abusive parents, who have great difficulty being responsible for their own behaviors, blame others and especially their children for disruptions in their lives. A not uncommon sentence that parents may say is "If you hadn't done that, I wouldn't have beaten you" [8]. Consequently, the abused child gets the impression that they are responsible for the unpleasant happenings in their family. Such a child, upon growing up, feels responsible for the negative events that occur in life.

Making decisions - Children who grow up in healthy families learn how to make daily decisions, and it may start when they are really young. The abusive parents, fearing losing control, do not allow their child to make any decisions, be they even as small as the cereal for breakfast. As grown ups, these children have increased difficulty in making decisions. Since life calls on us to make many decisions, being unable to make them leaves the abused child, as an adult, feeling powerless and out of control.

Delaying gratification - Children who are brought up in a home characterized by consistency learn that life is predictable. Patience will allow one to attain pleasure if

one waits. Alas, abused children are not privileged to grow in home ruled by consistency. They experienced a loving parent one minute, and the next they were struck out of rage. Abusive parents are known for their great difficulty to delay gratification. They seek instant solutions to problems that arise and require immediate obedience from their children. When that does not happen, they feel powerless and react aggressively. Abusive parents expect their children to nurture them, excel in school and generally function as mini-adults. These parents are impulsive and have poor emotional and behavioral controls. The mates which they get together with will entangle with them in marital discord, but since the family is so fused, neither parent can leave. One parents may be the active abuser of the children, but the other will just stand by, unable to intervene and stop it [8]. Mothers are commonly the ones who engage in Munchausen Syndrome by Proxy (MSBP). As such, they may administer to their children large doses of vomiting inducing medication, intentionally cause them diarrhea, or dangerously affect their blood pressure. Sometimes, they may even smother their child. When the child is hospitalized, such mothers are known to be very attentive to the child, and quite demanding of the health caretakers, presenting a picture of a very carting parent who loves the child [96-99]. These mothers most probably suffered emotional abuse in childhood. Upon becoming a mother, such a woman feels enraged for not having her needs met, and is then using it to get attention from a figure who is related to life and death, namely a physician or another healthcare worker. Some researchers suggest that the mother is unable to differentiate herself from her child and she expresses her own pathology onto her child. It is found that it is uncommon to refer the child for a psychiatric assessment in order to explore such possible impact, as well as the need to administer medical treatment to reverse any physical harm caused by the mother's deeds [96,97,99,100].

Adolescents abused by parents

Adolescence is a difficult period, for any parent, and specifically for abusive parents. During that period the youngster blossoms, sexually and socially, and often is seeking their autonomy. Parents, commonly at that time, start to face middle age. As such they may now see their child flourishing and potentially realizing his or her dreams, while they may be frustrated that they were unable to reach theirs. Healthy parents may see that as a proof that their parenting was successful, while abusive parents experience frustration of losing control, and thus vent their frustration and aggression on the adolescent. Adding to the parents' anxiety is the pulling away from home that most adolescents go through, a move that heightens their insecurity, arouses anger, guilt, and fear that they are about to lose their child, and the result is further abuse of the growing child, now the adolescent [8].

The consequences in children of child physical abuse

About 18% of maltreated children have been physically abused. Children who have been abused are at increased risk for physical and mental health problems during childhood and later in life. Moreover, the chance that they will drop out of school is increased, and when they get romantically involved, they may victimize intimate partners and their own offspring when they have ones [101]. Adults who were abused during childhood, tend to experience more health problems during adulthood to a larger extent than adults who do not report having been abused during childhood [102,103]. In their study Lansford JE, et al. [101] found that experiencing physical abuse in the first five years of life predicted worse outcomes by increasing the likelihood of having received special education services, or having repeated a grade in school, exhibiting disorders that affect others as well as the child, suffering from internalizing disorders, or having antisocial personality and engaging in criminal behavior while most child abuse cases are not reported to authorities [104]. Lansford JE, et al. [101] found that even unreported physical abuse may have long-term, high-impact detrimental effects into adulthood.

The feelings of abused children

Children communicate to their caregivers via vocalizations, gestures, body movements, and facial expressions [105]. Consequently, correctly recognizing emotions is known to be a fundamental skill in the development of empathic responses and well adapted behavior [106,107]. Particularly for children, facial expressions not only inform about the child's emotional state, but they also serve to evoke behavioral motives in the caregivers [108-110]. For example, a child's cry serves as communication of his or her emotional state, and motivates even an adult who does not know the child, to comfort the crying infant [111]. It was found that the neurobiology of parental sensitivity suggests that specific brain regions implicated in emotion perception, response, and regulation are activated in response to children's visual stimuli [112]. Mothers who, for example, suffer from depression have been found to be impaired [113] or borderline personality disorder [114]. Mothers who suffer from posttraumatic stress disorder have greater difficulties in processing emotions with the specific type of trauma suffered by them, influencing the emotional perception of infant's signals [107]. Research found that abusive and neglectful parents are more likely to hold inaccurate and biased pre-existing cognitive schemata, such as an external locus of control [115] and higher negative affect towards children [116]. Additionally, they report great difficulty in perceiving children's emotions [117], and are thus liable to make more biased attributions about children's behavior, interpreting this behavior as more negative [118]. They also are known to experience difficulties in problem solving [119] as well as having in their repertoire limited

adequate parenting techniques, when they do perceive that the child is uncomfortable [120].

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