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## CHILD SEXUAL ABUSE DIAGNOSIS FROM MEDICO-LEGAL POINT OF VIEW AND THE CONTRIBUTING ROLE OF CLINICAL PARASITOLOGY

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### ABSTRACT

Child sexual abuse (CSA) has a profound impact on physical and mental health. As well as causing physical injury, it is associated with an increased risk of a range of sexual and reproductive health problems, with both immediate and long-term consequences. Some children may display signs, symptoms or clues raising the suspicious that sexual abuse has occurred. The role of a comprehensive forensic medical examination is of major importance in the full investigation of such cases and the building of an effective prosecution in the court. Parasitic infestation may be associated with CSA and the medicolegal investigation help to discover such abuse. Thus, there is a need for protective service and child abuse law enforcement investigators to work together to establish a safe panel of routine investigations to cases of child abuse.

**Keywords:**CSA-Forensic medicine- Clinical parasitology

**Definition:** When a person wields authority over a child or adolescent and engages the youngster in any sexual behavior, this is known as child sexual abuse. Age disparities differences in physical and/or intellectual development, a relationship of authority over the child, and/or the child's dependence on the abuser can all contribute to their dominance. A child can be sexually assaulted in a variety of ways, including “touching”, fondling, oral sex, genital stimulation using the fingers, penis, or the use of objects for anal or vaginal penetration, sexual language, sexual harassment, voyeurism, mutual masturbation exhibitionism and exposing a child to or involving a child in pornography (**Jackson, 2007**). Paedophilia has become an increasing prominent issue in recent years. There are different laws in different countries to govern or prohibit such behavior and protect the vulnerable. These rules rely on the ability to detect the prevalence of such behaviors, which has become increasingly notable in recent years via the rise of social media. Social media has provided a new setting for an old crime, posing a challenge to authorities in terms of both the applicability of laws and the ability to detect perpetrators (**Seto, 2008**).

**The perpetrators.** Men form most sexual abusers around the world. However, women make up a significant number of (CSA) perpetrators, and their contribution should not be overlooked. Besides gender, the perpetrator's relationship with the victim tends to span a wide range of possible relationships. Birth parents (about 25%) and those other than parents or those functioning in their duties are among the perpetrators of CSA regarding the therapeutic settings (**John et al, 2002**). If we look back at the early 1990s, predators who were unknown to their victims had to approach them in real-life situations, with the risk of being identified and prevented by eyewitnesses. Now, 30

years later, social media can provide considerably more immediate access with a much lower risk of eyewitnesses. Predators can get to know their victim before having to physically allowing the predator to manage the environment either by limiting the probability of eyewitnesses or by making the event appear completely normal (**Vartapetian and Gillam 2014**).

**Prevalence of CSA.** According to an analysis of data from high- and middle-income countries, 7%-36% of girls and 3%-9% percent of boys have been sexually abused as children (**Singh et al, 2014**). According to the National Child Abuse and Neglect Data System, 8.8% of children in the United States were sexually assaulted in 2006 (**Miller et al 2007**). In a report by Advocates for Youth, CSA affects 1%-3% of youth in the United States each year (**Conklin et al 2000**). CSA is a severe problem that affects more than one out of every five girls and one out of every ten boys worldwide (**Collin-Vézina et al 2013**). A study performed in Brazil, showed that the incidence of CSA was 5.6 % in girls and 1.6 % in boys. In addition, it was claimed that boys were sexually molested at an earlier age than girls. The assault occurred before the age of 12 in more than half (60%) of the sexual abuse (**Bassani et al 2009**). At both younger and older ages, CSA has been linked to physical abuse. Another study conducted in Mexico found that 18.7% of people suffered from CSA (58 % in girls and 42 % in boys). In 75% of the cases, physical abuse was also reported (**Pineda-Lucatero et al 2009**). Moreover, in a survey conducted in Croatia, 10.8% of children said they had experienced some type of CSA in childhood (**Ajdukovic et al 2013**). **Martin and Silverstone 2013** also reported that roughly 4% of girls and 2% of boys exposed to CSA each year. Furthermore, about 15% of girls and 6% of boys in the age group of 2–17 years suffered serious results of CSA. In a study conducted in China by

**Song et al. 2014**, it was discovered that approximately 33% of the participants had experienced sexual violence. Girls had a lifetime rate of 41%, while boys had one of 29.5 %. In addition, the incidence of CSA before the age of 14 years was 4.2 % in a study of urban Chinese people (males: 5 percent, females: 3.3 percent) (**Luo et al 2008**). In Boston research, the prevalence of CSA was found to be 26.7 percent in girls and 16.7 percent in boys (**Chiu et al 2013**). According to review conducted by **Townsend and Rheingold 2013**, the burden of CSA was 7.5%–11.7% (girls: 10.7%–17.4%, boys: 3.8–4.6%). **Verelst et al 2014**, observed that more than a third of the individuals had been subjected to sexual violence. Another study showed that most CSA cases occurred in schools (28%) and welfare facilities (16%), with the family home accounting for the smallest percentage (2 %). Children can be sexually assaulted in school by both college graduates and high school dropouts (**Krishan et al,2017**). In Egypt, a 2014 UNICEF study was conducted on violence committed against children in Alexandria, Cairo, and Assiut and detected that two-thirds of youngsters within these areas had been physically abused, and 78% had been subjected to emotional violence (**AboKresha,2021**). Another study in Egypt was performed in 2018 showed that sexual abuse represented 24%, with most assaults occurring indoors (60%) (**Abouhatab,2021**), **a study done by EL-Gendy et al 2015 stated that there were under referral and reporting of family violence cases to medicolegal regions of great cairo with a total percent about 1.6% of total cases**

**Role of forensic medicine in sexual child abuse:**

**Behavioural history of the child:** This allows youngsters to provide details about their maltreatment. Because other evidence is typically inadequate in CSA cases, the prosecution is often restricted to or entirely

focused on the evidence produced from such interviews (**Peterson and Biggs 1997 and Walsh et al, 2010**). For criminal proceedings, a forensic interview should be consistent, and detailed (**Stromwall, 2010**), with skillful interviews supporting conviction of perpetrators (**Cronch et al, 2006**). A forensic interview elicits specifics about what happened, reflecting both the child's awareness of the substance of sexual assault (**Lamb et al, 2007 and Orbach and Lamb, 2000**). All essential aspects of the patient's physical, emotional, and social situation should be covered in the general and pediatric-gynecological histories. Knowing what happened is necessary to appropriately analyze the physical findings. If possible, information should also be collected from a second source. The trust-based doctor patient relationship trusting character often allows the child to reveal something that would otherwise be kept hidden: "I can tell only you, as you are a doctor" (**Schaeffer et al,2011 and Hornor et al,2009**). Only after a comprehensive explanation and with the child parent's permission can a physical examination be undertaken (**Herrmann et al,2014**).

**Signs suggestive of child sexual abuse:** signs suggestive of CSA include regressive actions (behavior exhibited when the child was younger, e.g., thumb-sucking, bed wetting (forceful or secretive sexual behavior with other minors. Adult sexual acts are being copied. Sleep disruptions e.g. abuse-related writing or artwork, nightmares and unexplained mood swings such as becoming withdrawn or aggressive as well as an unusual aversion to intimacy or proximit with an exceptional aversion to specific people and the fear of returning to a familiar location (**Beniuk and Rimer 2006**). The interval between the abusive occurrence of abuse and the physical assessment is crucial information. Because the examination is frequently delayed, most injuries that were

present when the patient was abused have healed by the time the patient is seen by medical professional. Children who may have been abused should see a doctor almost once immediately for forensic causes (abuse in the previous 24 h if before puberty, within the past 72 h in pubertal girls and medical causes (if there is any bleeding). If the abuse has been going on for several days, the youngster should see a doctor as soon as possible, but not as an emergency. If there is severe bleeding, sedation or general anesthesia should be used; otherwise, the kid should be given the opportunity. Palpation of the anal or vaginal canals is not recommended but examination of possible injuries as anal fissure or anal incompetence is very important (Herrmann et al, 2014). In terms of the presented finding, utero-vaginal prolapse, especially in children under the age of 5. Violent sexual assault or repeated sexual abuse might result in it occurring (Helen et al, 2021). Because toddlers are unable to express that they have been abused, clinical signs in the genital area that are suggestive of abuse are monitored. Most findings in this context are made in the hymen's posterior portion. The disruption of the hymen's peripheral border between 3 and 9 o'clock positions (Kaplan et al 2011). Only stated pain, vaginal bleeding, and elapsed time since traumatic occurrence are consistent with findings of sexual abuse in research publications analyzed (McCann et al 2007). Medical findings in pediatric-gynecological exams are uncommon after an alleged sexual abuse, and proof is often difficult to obtain. Even if the victim is examined immediately after the alleged assault, injuries are known to be uncommon (Gallion et al 2016). Contrary to these findings, unexplained anogenital symptoms and illnesses in children frequently suspicious of sexual assault and concern among parents and other caregivers. The physician who performs the subsequent gynecological examination is

typically in charge of deciding whether or not a police investigation should be opened (Aprile et al 2011 and Adams et al 2018). We report two cases of unusual gynecological disorders in children that prompted an investigation by the authorities. The illustration of typical findings in the corresponding cases should raise awareness of these illnesses and improve early recognition in order to provide sufficient care and avoid unnecessary testing, parental suspicion, and police operations. (Schaul and Schwark 2021). Regarding short-term sequelae, study have found that CSA often results in a wide range of consequences, but with few exceptions, boys and girls appear to be affected in the same manner (David 1990 and Perry and DiLillo, 2007). According to Wolfe and Birt's review 1997, CSA is related to increased internalizing and externalizing difficulties, a range of behavioral and emotional problems, the risk of PTSD symptomatology and sexuality-related difficulties. And mental health and interpersonal sequelae. Findings that victims suffer from depression (Swanston et al, 2003), anxiety, and personality disorders (Mark et al, 2005 and Josie et al, 2004). In addition to short-term consequences such as trauma, researchers have discovered a range of adverse mental health, behavioral, social, and physical effect of CSA in adulthood (NC-CAN 2005c). CSA victims have been reported to have higher healthcare costs and lower self-perceptions of good health on a society level (Ileana, 2004) Elevated levels rates of psychopathological symptomatology, such as depression (Denov, 2004 and Ron et al, 2004), are among these long-term mental health sequelae. Anxiety, obsessive compulsive disorder), and personality disorder concerns or diagnoses, including antisocial and borderline personality disorders (Jennifer et al, 2004). According to Paolucci et al. 2001 and Jackson, 2007, CSA survivors are

at risk of suicide, sexual promiscuity, the victim-perpetrator cycle, and low academic performance to *various* degrees.

**Physical evidence:** In CSA, Forensic science techniques provide confirmatory evidence when, for example, pubic hair is found between the buttocks of a pre-pubertal child. In such condition, the presence of hair in a scotch adhesive tape swab obtained from a prepubertal child should arouse suspicions of a medical practitioner, with subsequent confidential steps taken to reveal the matter to the parents of child or healthcare provider. A complete forensic analysis encompasses the collection of clothing, as well as any other materials that stick to the skin, such as fibres and vegetation. If the abuse has taken place within the last 72 h, the existence of sperm should be investigated. For the assailant identification, various characteristics of head and pubic hair can be investigated to help restrict the pool of possible perpetrators. Previous studies suggested that a Wood's lamp may help in identifying semen on the cloths or skin. But semen is not the only substance that fluoresces under a Wood's lamp, so this is not a specific technique and should be used with caution (**Santucci et al 1998**).

**laboratory evidence:** Identification of genetic markers in blood, saliva and serum should be done within 72 h of acute sexual assault or sexual abuse. (**Papadodima et al 2007**). In cases where a swab reveals the presence of semen, it should be noted that the survival period of spermatozoa is shorter in prepubertal girls due to deficiency of cervical mucus (**Santucci et al 1998**). Acid phosphatase detection is another technique used to confirm the existence of semen. Because acid phosphatase is normally found in extremely low quantities in the adult female vagina, measurement of the enzyme level is necessary to verify ejaculation. The p30 protein is a semen glycoprotein

originating from the prostate. This protein is semen-specific and is not present in vaginal fluids. Testing for it is thus a sensitive and specific method for semen detection (**Stefanidou et al 2005**). When swabs of the mouth, anus, or vagina are collected, they should be allowed to air-dry before being sealed. Cotton wool should be used for the swabs themselves. Albumin-treated fibers should be avoided as they interfere with serological investigations. Samples of semen or salivary stains present on the skin are taken using a lightly moistened swab and treating it in similar way. Obviously the most important identifying element for the examiner and the pathologist is the documented presence of an ejaculate, so that the retrieval of spermatozoa is particularly critical (**Sakelliadis et al 2009**). Toxicological analysis of blood and urine should also be done if the victim has been raped while under the effect of drugs, and pregnancy test should be carried out for girls of reproductive age (**Rey-Salmon and Pépin 2007**). The diagnosis of sexually transmitted disease (STD) is very important not only to the sake of the victim but also to detect the fact of sexual contact. Transmission of STD outside the perinatal period by nonsexual means is rare (**Kawsar et al 2007**). In this context, since the 1970s, there have been going efforts to establish laboratory tests that can boost the evaluation of cases of suspected CSA due to increased awareness and support for this medical subspecialty; hence there would be better enrollment of laws (**Matthews et al., 2016**). The collection of evidence to document physical findings of sexual abuse of children requires various investigations. For example, vaginal (Helms et al, 2008) and urethral swabs (**Van et al,2021**), first and midstream urine samples (**El Saftawy et al,2021**), and the self-collection of rectal swabs (**Chitnis et al,2020**). These are characterized as confidential, simple, and noninvasive procedures which can enhance

the recognition of cases of CSA (Gitta and Kilian2020). In addition, the expanding range of disease endemicity in regard to several factors such as the climatic changes (Short et al 2017), poverty (Hotez, 2017), wars and immigration (Mitchell et al,2019) making the routine cheap procedures the most feasible and cost-effective.

#### **Role of applied parasitology in the collection of evidence**

##### **Behavioral history of the child:**

Encopresis is used to describe a pattern of retaining stool and ignoring the stimulus to defecate, leading to leakage of stools around the impaction and soiling of underwear. The child initially ignores the stimulus to defecate, and eventually loses the ability to recognize the need to defecate or to feel the leakage around the impaction (Coehlo 2011). Encopresis is atypical sexual behavior that has been reported in children. The majority of sexually abused children do not show signs of penetrative trauma upon anogenital examination, probably making similar to intestinal parasitic infection which may have an influence on their mental and physical growth. (Taylor and Higginbotham 2020)

**Physical evidence: (Mucous):** Mucus is also considered as one of the predictors Entamoeba histolytica infection in cases of unclear Entamoeba histolytica /dispar infections (Van Den Broucke et al 2018). Schistosomiasis due to Schistosoma mansoni is a water-related parasitic disease (Sow et al 2002), which is mostly encountered with tenesmus and mucoid stools during the active stage (Elbaz and Esmat 2013). **\*Blood:** Dysenteric syndrome in children involves parasites that reside in the large intestine e.g., acute Entamoeba histolytica, active Schistosoma mansoni, and heavy Trichuris trichiura. Notably, *these parasites are* the leading causes of dysenteric syndrome in the developing world, predominantly in peri-urban and rural regions (Stephenson et al 2000 ,Khan and Jahan

2017 and Sassa et al 2020). Anal fissures and laceration of the anal mucosa are the main bleeding lesions in such cases, which are usually accompanied by bruises and anal dilatation (Borg, et al 2014 ,Bang et al 2020 and Taylor and Higginbotham 2020). Fissures were reported in the form of breaks in the anal mucosa that may extend to the perianal skin (Modelli and Galvão 2012). Additionally, lesions including condylomas, ulcers, fistulas, abscesses, and neoplasms are common among HIV-positive children with prior history of anal penetration. These features can explain the presence of a mass, and blood in fecal samples (Welles et al 2009 and Jenny et al 2013).

**Laboratory evidences.** Studies have determined the presence of several enteric helminthic and protozoan infections due to anal sex. Among 163 men, the frequency of infection with Entamoeba histolytica or Giardia lamblia (or both) was 21.5%. The rate of hyperendemic enteric protozoan infection in upon anal sex to three factors: pattern of endemicity of parasitic disease in the whole population; the existence of sexual behaviors that accelerate spread of infection; and the rate of contact with the infected partner (Phillips et al 1981). Hence, it is essential to get the sexual history and treat the partners to stop recurrent infection (Schmerin et al 1978). Ashraf and Beg (2009) speculated that perianal sex is one of the main factors promoting for the transmission of HIV. HIV infection was recognized to be related to enteric parasitic infections involving Strongyloides stercoralis, Ascaris lumbricoides, hookworms, Trichuris trichiura, Hymenolepis nana, Giardia lamblia, Entamoeba histolytica, Isospora belli, Cryptosporidium spp., and other commensal protozoa (Cimerman et al 1999 and Bachur et al 2008).

In addition, Robinson and Ridgway

(1994) considered also, the transmission of *Trichomonas vaginalis*, scabies, bacterial vaginosis, *Gardnerella vaginalis*, mycoplasmas, and *Candida albicans* could occur due to child abuse. **HPV (2010)** highlighted the role of sex the transmission of viral infections in children. Even though, in children, the medical assessment of whether rape has occurred, especially through genital examination, is difficult. For instance, enterobiasis is associated with reddening and scratching of the perianal area, which mimics the findings in sexual abuse. The same authors determined there was a low rate of enterobiasis infections among the sexually abused children (**Kilic and Bostanci 2021**).

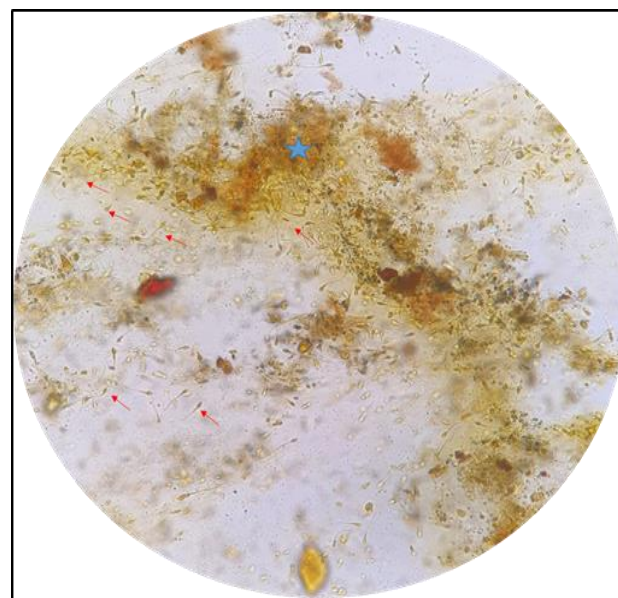
Recurrent abdominal pain in children might be attributed to urinary tract or gastrointestinal infections (**Regidi 2019**). However, a study conducted by **Reust and Williams (2018)** determined that sexual abuse, pregnancy and STD are the issues that should be investigated in children complaining of unresolving recurrent abdominal pain. Investigating sexually transmitted infections in children is also a challenging issue for the physician being of serious legal claims for sexual abuse. In this concern, **Hammerschlag (2011)** suggested the nucleic acid amplification tests (NAAT) could replace culture and sensitivity tests, given their higher sensitivity and specificity. The study claimed that NAAT would be accepted by the medico-legal system and courts for sexual abuse cases. In the same context, **Abdolrasouli et al. (2009)** speculated the sexual transmission of enteric parasites occurs in men who have perianal sex and determined molecular methods for the accurate diagnosis and treatment of these cases.

**Perianal swab:** Besides enterobiasis, taeniasis, and *Hymelopiasis nana* infection (**el-Shazly et al 2006**), perianal swab it is used to diagnose several infectious diseases involving streptococcal perianal cellulitis

(**Lawrence 2000**).

**Urogenital swabs:** It is mandatory to diagnose trichomoniasis vaginalis infections and it is done for cases of vulvar itching, yellow vaginal discharge, vaginal and vulvar erythema in females (**Helms et al 2008**). Being sexually transmitted, in men trichomoniasis is usually manifested in the form of urethritis (**Johnston and Mabey 2008**). However, a study from South Africa demonstrated proctitis due to rectal *Trichomonas vaginalis* infection among men who anal penetration. Simultaneous urethral coinfections were also reported in these patients (**Hoffman et al 2018**).

**Stool with reducing sugar:** Reducing sugars involve glucose, fructose, and sucrose (**Chengzhou et al 2010**). However Interestingly, it has been assumed that semen possesses extremely high concentrations of fructose in semen (**Jacklyn et al 2020**). Also, there may be whole sperms found in stool (fig. 1)



**Figure (1):** Fecal specimen, wet mount (high powered field, 40X) infused with spermatozoa. Note the spermatozoa (red arrows) and fecal debris (blue asterisk)

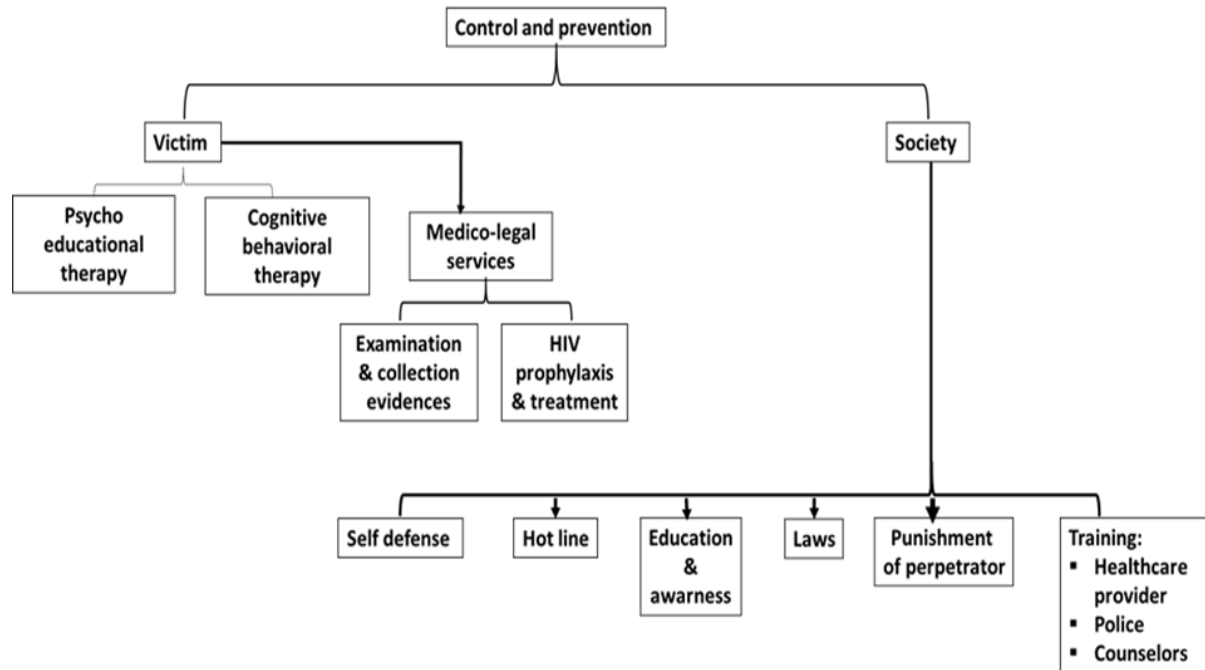
**Urine examination:** Nevertheless, sexually transmitted parasite such as *Trichomonas vaginalis* (Harp and Chowdhury 2011) have been shown to be sexually transmitted in cases of child abuse (Hammerschlag 2011, Williams et al 2016 and Girardet et al 2009) especially in the rural areas (Warraitch et al 2021, Fattah and Kabir 2013, Abeid et al 2014, Kenyon-George 2016 and Wang et al 2020). In such condition, forensic examination is accomplished through investigating the actions of the victim following the assault, such as changing clothes or had a bath, the presence of vaginal or rectal burning pain, and abnormal genital discharge, itching and dysuria (Johnston and Mabey 2008 and Taylor and Higginbotham 2020).

**The feasibility of using applied parasitology to diagnose CSA.** A study from rural Pakistan showed that rectal swabs were detrimental in the screening of CSA in females with a mild intellectual disability (Warraitch et al 2021). Similarly, in west Alabama the United States, rectal and vaginal swabs were shown to be feasible screening tools for sexual abuse through studying the prevalence of the sexually transmitted diseases. Xavier et al., in 2021, determined the severity of assaults on homosexual men in a study employing rectal swabs.

**Protection:** many systems are involved after exposure a child to sexual abuse, which may include Child Protective Services (CPS), police, legal teams, medical teams, other child protection agencies, foster care and child welfare agencies, and/or residential treatment facilities When the perpetrator is in a caretaking capacity for the victimised kid, CPS is normally responsible for investigating and intervening in situations of suspected

sexual child abuse. Cases involving offenders who are not in caretaking roles are being investigated by law enforcement agencies. However, CPS are often involved in situations where the offender is not the caregiver, but the child's caretaker are not able to protect their child. CPS investigates a report within a specific time frame (usually 24 to 48 hours or up to 5 days) to determine whether or not abuse has happened. Typically, the child is interviewed by either CPS alone or CPS in conjunction with law police. A child who has been sexually abused also usually receives a medical examination, usually by a physician who is a specialist in CSA examinations. In the case of recent abuse or concern of injury, this examination must be done as soon as possible, and in associations with established forensic practice. There are also interviews with caregivers and family members. These findings are shared with Child Protective Services, law enforcement, and, in certain cases, a legal team (Murray et al 2014). Community-based awareness programmes should also be implemented to teach parents how to properly teach and enlighten their children, as well as how to do so if the mother is a victim of child sexual abuse. Parents should know how to talk to their children about appropriate and inappropriate touching as young as two or three years of age. This will teach them the appropriate words to use if someone is hurting them, as well as ensuring that the person who is being notified understands what is going on. Government should implement training programs for health care providers and police personal about how to deal with a case of sexual child abuse. Also, they must increase the punishment of such assault to the maximum punishment. Fig.2





**Figure (2):** Paradigm of the broad lines regarding control and prevention of child sexual abuse

### **RECOMMENDATIONS**

- Sexual child abuse seems to be related to the poor income and education among parents; in addition to the incidence of moderate-to-severe psychological problems (consistent with PTSD). This social climate is often inappropriate for parental counselling about the possible associating CSA. Therefore, the regular screening for child abuse is highly recommended in these communities.

- All schools should introduce programs that aim to teach the children how to protect themselves from sexual abuse, and schools' efforts to meet this need should be done with great attention to the qualifications and experience of those conducting such programmes.

- Sexual education that is culturally relevant and topic-specific should begin in schools, and because the age of puberty for girls is decreasing globally, this teaching should begin with younger age groups.

- Results of well rubricated tests in applied parasitology may aid expertise forensic interviewer in the collection of

evidence of sexual assault in front of the courts.

- The time interval between the sexual assault, the collection of the forensic evidence, the used parasitological tests; besides the fine examination of the whole sample to avoid the false negative results might be challenging factors.

### **CONCLUSION**

There is a ringing bell to give an attention to the possibility of having source monitoring mistakes which may be due to the wrong way of introduction of sexual education. Actions should be conducted to increase the awareness about that there is a serious problem of receiving education about protection from sexual abuse from persons who have no background about such a problem. Meticulous forensic examination and investigations of any suspected case should be done as soon as possible. Applied parasitology despite being feasible and cheap it may help in the diagnosis. Further studies that link applied parasitology with forensic medicine is required. Well-rubricated applied

parasitological tests may introduce this subspecialty to cooperate with forensic examination for better discovery of sexual assaults against children.

▪ **Conflicts of interests**

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**REFERENCES:**

- Abdolrasouli, A., McMillan, A., & Ackers, J. P. (2009).** Sexual transmission of intestinal parasites in men who have sex with men. *Sexual health*, 6(3), 185-194.
- Abeid, M., Muganyizi, P., Olsson, P., Darj, E., & Axemo, P. (2014).** Community perceptions of rape and child sexual abuse: a qualitative study in rural Tanzania. *BMC international health and human rights*, 14(1), 1-13.
- AboKresha S A, Abdelkreem E and Ali R A (2021):** Impact of COVID-19 pandemic and related isolation measures on violence against children in Egypt. *Journal of the Egyptian Public Health Association*, 96:1-10.
- Abouhatab H , Elseidy A , Girgis N , Badawy S and El Agamy S (2021):** Violence against children in menoufia university hospitals: prevalence, risk factors, and socio-demographic correlates. *Egypt J. Forensic Sci. Appli. Toxicol.* (21) 3:19-29.
- Adams JA, Farst KJ, Kellogg ND (2018)** Interpretation of medi-cal findings in suspected child sexual abuse: an update for 2018. *J Pediatr Adolesc Gynecol* 31:225–231.
- Ajdukovic M, Susac N, Rajter M.(2013):** Gender and age differences in prevalence and incidence of child sexual abuse in Croatia. *Croat Med J.*54:469–79.
- Aprile A, Ranzato C, Rizzotto MR, Arseni A, Da Dalt L, Facchin P (2011)** ‘Vaginal’ bleeding in prepubertal age: a rare scaring riddle, a case of the urethral prolapse and review of the literature. *Forensic Sci Int* 210:16-20.
- Ashraf, M., & Beg, M. M. (2009).** Homosexuality and aids: a threat to human civilization. *Vidhigya: The Journal of Legal Awareness*, 4(1).
- Bachur, T. P. R., Vale, J. M., Coêlho, I. C. B., Queiroz, T. R. B. S. D., & Chaves, C. D. S. (2008).** Enteric parasitic infections in HIV/AIDS patients before and after the highly active antiretroviral therapy. *Brazilian Journal of Infectious Diseases*, 12, 115-122.
- Bang, G. A., Tolefac, P., Savom, E. P., Moto, G. B., & Sosso, M. A. (2020).** Anal/anogenital lesion revealing child sexual abuse: A case series of an unusual situation in a black African setting. *International Journal of Surgery Case Reports*, 76 :341-344 .
- Bassani DG, Palazzo LS, Beria JU, Gigante LP, Figueiredo AC, Aerts DR, et al.(2009):** Child sexual abuse in southern Brazil and associated factors: A population based study. *BMC Public Health*. 9:133.
- Beniuk .L & Rimer.P (2006):** understanding child sexual abuse A Guide for Parents & Caregivers , Published by:Central Agencies Sexual Abuse Treatment (CASAT) Toronto, Ontario CANADA 0-9681323-7-5 © CASAT.
- Borg, K; Snowdon, C and Hodes, D. (2014):** Child sexual abuse: recognition and response when there is a suspicion or allegation. *Paediatrics and Child Health*, 24.12: 536-543.
- Chengzhou.Z., et al.(2010):** Reducing sugar: new functional molecules for the green synthesis of graphene nanosheets. *ACS nano*, 4.4: 2429-2437.

- Chitnis, A., Azimi, D. Y., Sabri, S., & Dhebri, A. (2020):** Enterobius Vermicularis: A Parasitic Cause of Appendicular Colic. *Cureus*, 12.(6):
- Chiu GR, Lutfey KE, Litman HJ, Link CL, Hall SA, McKinlay JB.(2013):** Prevalence and overlap of childhood and adult physical, sexual and emotional abuse: A descriptive analysis of results from the Boston area community health (BACH) Survey. *Violence Vict.* 28:381–402
- Cimerman, S., Cimerman, B., & Lewi, D. S. (1999).** Prevalence of intestinal parasitic infections in patients with acquired immunodeficiency syndrome in Brazil. *International Journal of Infectious Diseases*, 3(4), 203-206.
- Coehlo, D P (2011):** Encopresis: A medical and family approach. *Pediatric Nursing*, 37.3: 107.
- Collin-Vézina D, Daigneault I, Hébert M.(2013):** Lessons learnt from child sexual abuse research: Prevalence, outcomes and preventive strategies. *Child Adolesc Psychiatry Mental Health*: 7-22.
- Conklin K. Washington DC (2000):** Advocates for Youth. Child sexual abuse I. An overview of statistics, adverse effects and prevention strategies.
- Cronch, L. E., Viljoen, J. L., & Hansen, D. J. (2006).** Forensic interviewing in child sexual abuse cases: Current techniques and future directions. *Aggression & Violent Behavior*, 11(3), 195–207.
- David. F(1990):** “Early and Long-Term Effects of Child Sexual Abuse: An Update.” *Professional Psychology: Research and Practice*, 5: 325–330
- Denov, M. S. (2004):** e Long-Term Effects of Child Sexual Abuse by Female Perpetrators: A Qualitative Study of Male and Female Victims.” *Journal of Interpersonal Violence* 19, (10): 1137–1156.
- El Saftawy, Enas A. (2021).** Validity of urine-CCA cassette test and indirect haem-agglutination assay (IHA) in the detection of schistosomiasis-mansoni infection relative to microscopic examination. *Journal of Parasitic Diseases*, 45.1: 285-292.
- Elbaz, T., & Esmat, G. (2013).** Hepatic and intestinal schistosomiasis. *Journal of advanced research*, 4(5), 445-452.
- El-Shazly, A. M., el-Nahas, H. A., Soliman, M., Sultan, D. M., AH, A. T., & Morsy, T. A. (2006).** The reflection of control programs of parasitic diseases upon gastrointestinal helminthiasis in Dakahlia Governorate, Egypt. *Journal of the Egyptian Society of Parasitology*, 36(2), 467-480.
- Fattah, K. N., & Kabir, Z. N. (2013).** No place is safe: Sexual abuse of children in rural Bangladesh. *Journal of child sexual abuse*, 22(8), 901-914.
- Gallion HR, Milam LJ, Littrell LL (2016)** Genital findings in cases of child sexual abuse: genital vs vaginal penetration. *J Pediatr Adolesc Gynecol* 29:604–611
- Girardet, R. G., Lahoti, S., Howard, L. A., Fajman, N. N., Sawyer, M. K., Driebe, E. M., ... & Black, C. M. (2009).** Epidemiology of sexually transmitted infections in suspected child victims of sexual assault. *Pediatrics*, 124(1), 79-86.
- Gitta, B., & Kilian, N. (2020).** Diagnosis of malaria parasites Plasmodium spp. in endemic areas: current strategies for an ancient disease. *BioEssays*, 42(1);1900138.
- Hammerschlag, M. R. (2011).** Sexual assault and abuse of children. *Clinical infectious diseases*, 53(suppl\_3), S103-S109.
- Harp D. F. and Chowdhury, I.(2011):** Trichomoniasis: evaluation to execution. *Eur J Obstet Gynecol Reprod Biol.*, 157(1):3–9.
- Helen, K., Iru, N.M., Akpofure., E.P., and**

- Akhato, A (2021):** Uterovaginal prolapse following suspected sexual abuse to a child: a case. *Annals of Pediatric Surgery*; 17:48.
- Helms, D. J., Mosure, D. J., Secor, W. E., & Workowski, K. A. (2008).** Management of *Trichomonas vaginalis* in women with suspected metronidazole hypersensitivity. *American journal of obstetrics and gynecology*, 198(4): 370.
- Herrmann.B., Banaschak.S., Csorba.S., Navratil.F., and Dettmeyer.R, (2014):** Physical Examination in Child Sexual Abuse. *Approaches and Current Evidence*; 111(41): 692–703.
- Hoffman, C. M., et al.(2018):** Rectal *Trichomonas vaginalis* infection in South African men who have sex with men. *International journal of STD & AIDS*, 29.14: 1444-1447.
- Hornor G, Scribano P, Curran S, Stevens J.(2009):** Emotional response to the anogenital examination of suspected sexual abuse. *J Forensic Nurs.* ;5 :124–130.
- Hotez, P. J. (2017).** The poverty-related neglected diseases: Why basic research matters. *PLoS biology*, 15(11):186
- HPV, H. P. (2010).** Viral and parasitic sexually transmitted infections in children. *Child Abuse and Neglect E-Book: Diagnosis, Treatment and Evidence*, 179.
- Ibrahim Sadek EL-Gendy,Shereen M.S.EL-Kholy,EslamS.Metwally, Omima Refaat Mohamed(2016):** medicolegal pattern of family violence problem in Cairo and Giza governorates, Egypt: a four-year retrospective comparative study. *The Egyptian journal of forensic sciences and applied toxicology* 16 (1): 115-121.
- Ileana .A (2004):** Legacy of Child Maltreatment: Long-Term Health Consequences for Women.” *Journal of Women’s Health* 13, (5): 468–473.
- Jacklyn,J., et al.(2020):** The high content of fructose in human semen competitively inhibits broad and potent antivirals that target high-mannose glycans. *Journal of virology*, 94.9: e01749-19.
- Jackson N.A. (2007):** *Encyclopedia of Domestic Violence*. New York & London: Routledge. Copyright © 2007 Taylor & Francis Group LLC. Used by permission child sexual abuse. Pages 147–156
- Jennifer s, Sanna. L, Hammond. B., Whipple. J, and Cross.H.(2004):** “Psychological Sequelae of Childhood Sexual Abuse: Abuse-Related Characteristics, Coping Strategies, and Attributional Style.” *Child Abuse and Neglect* 28, (7): 785–801
- Jenny, C., Crawford-Jakubiak, J. E., & Committee on Child Abuse and Neglect. (2013).** The evaluation of children in the primary care setting when sexual abuse is suspected. *Pediatrics*, 132(2): e558-e567.
- John B, Terry H.C, Jenny.C, and Reid A,E (2002):** Sexual Abuse of Children.” In *Hand book on Child Maltreatment*, 2nd ed., edited by John E. B. Myers, Lucy Berliner,. ousand Oaks, CA: Sage Publications, 2002, pp. 55–78
- Johnston, V. J., & Mabey, D. C. (2008).** Global epidemiology and control of *Trichomonas vaginalis*. *Current opinion in infectious diseases*, 21(1), 56-64.
- Josie.S., Mullen P.E, Burgess.P.M et al (2004):** “Impact of Child Sexual Abuse on Mental Health: Prospective Study in Males and Females.” *British Journal of Psychiatry* 184, (5): 416–421
- Kaplan R, Adams JA, Starling SP, et al.(2011):** Medical response to child sexual abuse a resource for professionals working with children and families. St.Louis: STM Learning;
- Kawsar M., Long S. and Srivastava O. P. (2008):** Child sexual abuse and sexually transmitted infections: review of joint

- genitourinary medicine and paediatric examination practice. *Int J STD AIDS* ; 19: 349-350
- Kenyon-George, L. G. (2016).** Treating child sexual abuse in rural communities. In *Identifying, treating, and preventing childhood trauma in rural communities* (pp. 58-77). IGI Global.
- Khan, N. T., & Jahan, N. (2017):** Prevalence of *E. histolytica* associated dysentery in children in Satellite Town, Quetta. *Epidemiology* (Sunnyvale), 7(290) :2161-1165.
- Kilic, S., & Bostanci, M. (2021).** Should enterobiasis be considered during the examination of sexually abused children?. *Medicine*, 10(2), 317-20.
- Krishnan S, Syahirah N F, Syahirah N, Amira N (2017):** Study on Child Sexual Abuse. *Human Resource Management Research*, 7(1): 38-42.
- Lamb, M. E., Orbach, Y., Hershkowitz, I., Horowitz, D., & Abbott, C. B. (2007):** Does the type of prompt affect the accuracy of information provided by alleged victims of abuse in forensic interviews? *Applied Cognitive Psychology*, 21(9): 1117–1130.
- Lawrence B. C.(2000):** Perianal streptococcal dermatitis. *American family physician*, 61.2: 391-393.
- Lina,M.; and Alexandra, S.,(2020):** What to do when a child reports sexual harassment and sexual assault to a medical professional. *International journal of impotence research*, 1-10.
- Luo Y, Parish WL, Laumann EO. (2008):** A population based study of childhood sexual contact in China: Prevalence and Long term consequences.*Child Abuse Negl.* 32:721–31.
- Mark, C.N, Silovsky, J.F, and Christy Vaughn. (2005):**“Tem poral Concordance of Anxiety Disorders and Child Sexual Abuse: Implcations for Direct Versus Artifactual Effects of Sexual Abuse”.*Journal of Clinical Child and Adolescent Psychology* 34, (2): 210–222.
- Martin EK, Silverstone PH. (2013):**How much child sexual abuse is “below the surface,” and can we help adults identify it early? *Front Psychiatry.* 4:58.
- McCann J, Miyamoto S, Boyle C, et al. (2007):**Healing of hymenal injuries in prepubertal and adolescent girls: a descriptive study. *Pediatrics.*;119:1094–106
- Mitchell, T., Weinberg, M., Posey, D. L., & Cetron, M. (2019).** Immigrant and refugee health: a center for disease control and prevention perspective on protecting the health and health security of individuals and communities during planned migrations. *Pediatric clinics of North America*, 66(3),:549.
- Miller KL, Dove MK, Miller SM. (2007):** A counselor's guide to child sexual abuse: Prevention, reporting and treatment strategies.
- Modelli, ES; Galvão, M F (2012):** Child sexual abuse. *Forensic science international*, 217.1-3: 1-4.
- Murray L K, Nguyen A and Cohen J A(2014):** Child Sexual Abuse. *Child Adolesc Psychiatr Clin N Am.* 23(2): 321–337.
- Orbach, Y., & Lamb, M. E. (2000):** Enhancing children's narratives in investigative interviews. *Child Abuse & Neglect*, 24(12): 1631–1648.
- Paolucci, E.O., Genuis M.L., and late.C.V.. (2001):**A Meta-Analysis of the Published Research on the Effects of Child Sexual Abuse.” *Journal of Psychology* 135, (1): 17–36
- Papadodima SA, Athanaselis SA and Spiliopoulou C (2007):** Toxicological investigation of drug-facilitated sexual assaults. *Int J Clin Pract* ; 61: 259-264.
- Perry, A.R, and DiLillo , D.K(2007):** Child

- Sexual Abuse. In: Encyclopedia of Domestic Violence, Nicky Ali Jackson, editor. New York & London: Routledge. Pages : 147–156.
- Peterson, C., & Biggs, M. (1997).** Interviewing children about trauma: Problems with "Specific" questions. *Journal of Traumatic Stress*, 10(2): 279–290.
- Phillips, S. C., Mildvan, D., William, D. C., Gelb, A. M., & White, M. C. (1981).** Sexual transmission of enteric protozoa and helminths in a venereal-disease-clinic population. *New England Journal of Medicine*, 305(11), 603-606.
- Pineda-Lucatero AG, Trujillo-Hernández B, Millán-Guerrero RO, Vásquez C.(2009):** Prevalence of childhood sexual abuse among Mexican adolescents. *Child Care Health* 35:184–9.
- Putnam, F. W. (2003):** “Ten-Year Research Update Review: Child Sexual Abuse.” *Journal of the American Academy of Child and Adolescent Psychiatry* 42, (3): 269–278.
- Regidi, S. (2019).** Study of Recurrent Abdominal Pain in Children of Telangana. *Indian Journal of Public Health Research & Development*, 10(12).
- Reust, C. E., & Williams, A. (2018).** Recurrent abdominal pain in children. *American family physician*, 97(12), 785-793.
- Rey-Salmon C and Pépin G (2007):** Drug-facilitated crime and sexual abuse: a pediatric observation. *Arch Pediatr* ; 14: 1318-1320.
- Robinson, A. J., & Ridgway, G. L. (1994).** Sexually transmitted diseases in children: non viral including bacterial vaginosis, Gardnerella vaginalis, mycoplasmas, Trichomonas vaginalis, Candida albicans, scabies and pubic lice. *Genitourinary medicine*, 70(3), 208.
- Robinson, D. L.(2017):** Child sexual abuse. In: *Pediatric Forensic Evidence*. Springer, Cham, p. 187-205.
- Ron R, O’Connor.T, Dunn. J.,et al (2004):** Effects of Child Sexual Abuse in Later Family Life; Mental Health, Parenting and Adjustment of Off spring.” *Child Abuse and Neglect* 28, (5): 525–545.
- Sakelliadis E, Spiliopoulou C. A. and Papadodima S. A. (2009):** Forensic Investigation of Child Victim with Sexual Abuse. *Indian Pediatrics* ,46:144-151.
- Santucci KA, Kennedy KM and Duffy SJ (1998):** Wood’s lamp utilization and the differentiation between semen and commonly applied medicaments. *Pediatrics* 102: 718.
- Sassa, M., Chadeka, E. A., Cheruiyot, N. B., Tanaka, M., Moriyasu, T., Kaneko, S. & Hamano, S. (2020):** Prevalence and risk factors of Schistosoma mansoni infection among children under two years of age in Mbita, Western Kenya. *PLoS neglected tropical diseases*, 14(8):8473.
- Schaeffer P, Leventhal JM, Asnes AG. (2011):** Children’s disclosures of sexual abuse: Learning from direct inquiry. *Child Abuse Negl.*;35:343–352..
- Schaul .M and Schwark, T (2021):** Rare urogenital pathologies in young girls mimicking sexual .*International Journal of Legal Medicine*
- Schmerin, M. J., Jones, T. C., & Klein, H. (1978).** Giardiasis: association with homosexuality. *Annals of internal medicine*, 88(6), 801-803
- Seto, M.S, (2008):** Pedophilia and Sexual Offending Against Children: Theory,Assessment, and Intervention (American Psychological Association, Washington, DC, US,
- Short, E. E., Caminade, C., & Thomas, B. N. (2017).** Climate change contribution

- to the emergence or re-emergence of parasitic diseases. *Infectious Diseases: Research and Treatment*, 10: 11786336 - 17732296.
- Singh M M, Parsekar S S and Nair S N (2014):** An Epidemiological Overview of Child Sexual Abuse. *J Family Med Prim Care*,3(4): 430–435.
- Sow, S., De Vlas, S. J., Engels, D., & Gryseels, B. (2002).** Water-related disease patterns before and after the construction of the Diama dam in northern Senegal. *Annals of Tropical Medicine & Parasitology*, 96(6), 575-586
- Stefanidou M, Mourtzinis D and Spiliopoulou C (2005):** Forensic identification of semen-a short communication. *Jura Medica* ,2: 357-365.
- Stephenson, L. S., Holland, C. V., & Cooper, E. S. (2000).** The public health significance of *Trichuris trichiura*. *Parasitology*, 121(S1): S73-S95.
- Stromwall, L. A. (2010).** Assessing reliability by analyzing the verbal content: The case of Sweden. In :Forensic psychology in context: Nordic and international approaches Granhag P.A. (Ed.). Cullompton: Willan Publishing :264–280
- Swanston, H. Y, Plunkett A. P, Brian I. , et al.,(2003):** Nine Years after Child Sexual Abuse.” *Child Abuse and Neglect* 27, (8) : 967–984.
- Taylor, M. A., & Higginbotham, J. C. (2020).** Child sexual abuse exam results in West Alabama. *Journal of child sexual abuse*, 29(1), 90-111.
- Townsend C, Rheingold AA. (2013):** Estimating a child a sexual abuse prevalence rate for practioners: A review of child sexual abuse prevalence studies. *Charleston, S.C., Darkness to light*.
- Van Den Broucke, S., Verschueren, J., Van Esbroeck, M., Bottieau, E., & Van den Ende, J. (2018).** Clinical and microscopic predictors of *Entamoeba histolytica* intestinal infection in travelers and migrants diagnosed with *Entamoeba histolytica/dispar* infection. *PLoS neglected tropical diseases*, 12(10):6892.
- Van G, O. T., Camino, A. F., Sharma, J., Kissinger, P. J., & Muzny, C. A. (2021).** Epidemiology, natural history, diagnosis, and treatment of *Trichomonas vaginalis* in men. *Clinical Infectious Diseases*.
- Vartapetian, A. and Gillam, L. (2014):** “Our Little Secret”: pinpointing potential predators. *Security informatics*,3 (3):1-19.
- Verelst A, De Schryver M, Broekaert E, Derluyn I.(2014):** Mental health of victims of sexual violence in eastern Congo: Associations with daily stressors, stigma and labelling. *BMC Women's health*. 14:106.
- Walsh, W. A., Jones, L. M., Cross, T. P., & Lippert, T. (2010):** Prosecuting child sexual abuse: The importance of evidence types. *Crime & Delinquency*, 56(3):436–454.
- Wang, C., Tang, J., & Liu, T. (2020).** The sexual abuse and neglect of “left-behind” children in rural China. *Journal of child sexual abuse*, 29(5), 586-605.
- Warratich, A., Amin, R., and Rashid, A. (2021).** Evaluation of a school-based sexual abuse prevention program for female children with intellectual disabilities in rural Pakistan-a feasibility study. *Applied nursing research*, 57, 151391.
- Welles, S. L., Baker, A. C., Miner, M. H., Brennan, D. J., Jacoby, S., & Rosser, B. S. (2009).** History of childhood sexual abuse and unsafe anal intercourse in a 6-city study of HIV-positive men who have sex with men. *American journal of*

public health, 99(6): 1079-1086.

**Williams, H. N., Letson, M. M., and Tscholl, J. J. (2016):** Sexually Transmitted Infections in Child Abuse. *Clinical Pediatric Emergency Medicine*, 17(4), 264-273.

**Wolfe, VV., and Birt J. (1997):** "Child Sexual Abuse." In Assessment of Childhood Disorders, 3rd ed., edited by

Eric J. Mash and Leif G. Terdal. New York: Guilford, pp. 569–623.

**Xavier H.C. D., Moran, K., Newcomb, M. E., & Mustanski, B. (2021):** Age of occurrence and severity of childhood sexual abuse: impacts on health outcomes in men who have sex with men and transgender women. *The Journal of Sex Research*, 58(6), 763-774.



## الإعتداء الجنسي على الأطفال في الطب الشرعي و دور علم الطفيليات التطبيقى فى التشخيص

يُعرّف الاعتداء الجنسي على الأطفال على أنه إجبار الطفل أو إقناعه بالانخراط في أي نوع من الأفعال الجنسية وهي مسألة مهمة للغاية يجب مناقشتها. لها تأثير عميق على الصحة الجسدية والعقلية الطفل . بالإضافة إلى التسبب في إصابة جسدية ، فإنه يرتبط بزيادة مخاطر مجموعة من مشاكل الصحة الجنسية والإنجابية ، مع عواقب فورية وطويلة الأجل. قد يظهر على بعض الأطفال علامات أو أعراض أو أدلة تشير الشك في حدوث اعتداء جنسي. في مجال علم الطفيليات التطبيقى، هناك العديد من الإجراءات المتعلقة بالمنطقه التشريحيه نفسها حيث حدث الاعتداء الجنسي. بالإضافة إلى ذلك، قد ترتبط العدوى الطفيلية ب الاعتداء الجنسي على الاطفال و يساعد التحقيق الطبي في اكتشاف مثل هذه الإساءات ، وبالتالي هناك حاجة إلى خدمة الحماية ومحققون القانونيون للعمل جنباً إلى جنب لإنشاء لجنة أمانة للتحقيقات الروتينية لحالات إساءة معاملة الأطفال.