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Heal Thy Self: A Literature Review on Self-Injurious Behavior

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***Abstract*---**Self-injurious Behavior (SIB) is a behavior in which an individual inflicts harm to himself/herself. The COVID-19 pandemic has led to an unparallel change that has impacted the psychology of the population greatly. This can be considered as a major factor influencing self-harm & about a one fourth of all adolescents and children may be seen displaying this sort of this behavior. The exact prevalence of SIB is unknown & widely underestimated. These

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behaviors are usually hidden and considered to be socially unacceptable. In this current pandemic situation, there has been a upward trend of such behaviors and hence an active collaborative effort should be taken to raise awareness about self-injurious behavior amongst schools, colleges, community and social welfare groups by and large. This article is a small attempt from author's side to raise awareness which will aid in early diagnosis and timely intervention, thereby improve quality of life of such individuals. A thorough literature search of articles through PubMed, EBSCO, Google Scholar, Inside Dentistry and medRxiv electronic Databases published in English language from year 1974 to year 2021was done. Articles providing information regarding self-injurious behavior were selected.

***Keywords*---**dentists, masochistic behaviour, self-injurious behavior.

Introduction

Masochistic behavior is a terminology used to describe any behavior where in a person causes harm to themselves, usually as a way of coping with overwhelming situations or feelings. These behavior's can be highly destructive, potentially lethal, and are commonly seen in children and adolescents (Favazza et al., 1989). The nature and meaning of self-harm vary from person to person. During acts of self-harm, it is common for people to feel separated or disconnected from their emotions and pain. For a behavior to be called as a SIB, it must satisfy the following features (Limeres et al., 2013)**:**

- Cause a mild or moderate tissue damage
- Repetitive
- Must be socially unacceptable

It is important for all health professionals to be aware of these behaviors. As Paediatric Dentists, we should be aware that SIB may occur in children. It should be considered as a differential diagnosis of lesions involving soft tissues of the oral cavity (Ayer & Levin, 1974; Groves, 1979). As the oral cavity is the focus of concentration for dentists, general physical lesions associated with SIB may get neglected (Hibbard & Sanders, 2010; Neeraja, 2016).

The current pandemic has brought down lockdown restrictions due to which we are facing problems like isolation, loneliness, reduced social interactions, disturbance of the daily routine, and a sense of entrapment (Romer et al., 1998). The lockdown has impacted the psychology of the population greatly and Holmes has considered this to be a major factor influencing self-harm.

A thorough understanding of the bio-behavioural factors that may be responsible for development of SIB may help us in determining children who possess greater risk. This will aid in early detection and intervention thereby enhancing the patient's quality of life. Hence, our article aims to shed light on SIB and make the clinicians aware of the potential manifestations of SIB in children. Based on the

Literature search we found that SIB has been described as following Terms (Limeres et al., 2013):

- Man against himself
- Self-harm
- Non-suicidal self-injury (NSSI) (Nock & Favazza, 2009)
- Self-mutilation
- Parasuicidal behavior
- Self-battery
- Deliberate self-harm (DSH)
- Self-destructive behavior
- Masochistic habits
- Focal suicide
- Self-cutting
- Repetitive self-mutilation syndrome (RSM)
- Risk taking behavior
- Sado-masochistic behavior
- Self-inflicted violence
- Self-wounding

Self-Harm Cycle

Self-harm cycle (Hawton & James, 2005), (Figure I) is a series of events that leads to self-harm behavior. Initially, it starts as a way to relieve pressure from disturbing thoughts and feelings. The person is seen indulging in self-harm as a way of seeking relief from unnerving situations. This may help to alleviate pressure up to some extent. However, the underlying problems may persist and the cycle may continue and self-harm becomes a normal way to cope up with the difficulties of life. The cycle of self-harm can only break if one finds the courage to learn new strategies to face difficulties.

Literature search

A Review of pertinent literature based on articles searched through PubMed, EBSCO, Google Scholar, Inside Dentistry and medRxiv electronic Databases published in English language from year 1974 to year 2021 was done using mesh terms and free text terms to gather up-dated Information required for research. Randomised control trials, reviews, Observational studies, Surveys and Clinical Case reports were included which provided Information regarding SIB in the children before and during current COVID-19 pandemic. Grey Literature comments, editorials, short communication and letters were excluded from this review. Initial search using terms gave total number of articles 60-70 among which 25 were included in the review.

The better understanding of SIB over the last two decades has resulted in the evolution of its definitions

Author and Year	Definition
Tate and Baroff (1966)[11,12]	Behavior which produces physical injury to the individual's own body, i.e., relatively repetitive self-hitting; series of responses that are repetitive and sometimes rhythmical
Bachman (1972) [11,12]	Beh.avior of individuals who inflict physical damage and, perhaps, pain upon themselves
Carr (1977) [11,12]	Behavior that involves any of a number of behaviors by which the individual produces physical damage to his or her own body
Solnick et al. (1977) [11,12]	Any repetitive making and breaking of contact between one part of the body and another.
Mizuno et al. (1979) [11,12]	Aggressiveness toward oneself
Pace et al. (1986) [11,12]	Behavior that results in physical injury to the individual's own body; in general, it is chronic and repetitious, occurring at frequencies ranging from several times per week to hundreds of times per hour over a sustained period of time
Oliver (1988) [11,12]	Non-accidental behavior initiated by an individual which directly results in physical harm; it can lead to sensory impairments, brain damage and other disability
Favazza and Rosenthal (1990) [11,12]	An impulse control disorder: the repetitive self-mutilation syndrome.
Winchel and Stanley (1991)[13]	The commission of deliberate harm to one's own body. The injury is done to oneself, without the aid of another person, and the injury is severe enough for tissue damage (such as scarring)
Baumeister et al. (1993) [11,12]	SIB usually refers to acts that are repetitive, rhythmic and likely to produce immediate pain due to absence of some sensory impairment and in certain clinical populations with diminished intelligence
Favazza, (1996) [11,12]	As the direct and deliberate destruction of one's own bodily tissue in the absence of lethal intent and for reasons not socially sanctioned
Saemundsson SR, Roberts MW (1997)[14]	The deliberate destruction or alteration of body tissue without conscious suicidal intent and occurs in conjunction with a variety of psychotic disorders as well as various developmental anomalies and some syndromes.
Favazza, 1998 [11,12]	Refers to the deliberate, direct destruction or

	alternation of body tissue without conscious suicidal intent"
Saloviita (2000) [12]	A large group of differing behaviors which are usually highly repetitive, and which result in direct physical harm or tissue damage to the person himself.
Schroeder et al. (2001) [11,12]	Acts directed toward one's self that result in tissue damage
Ross Collins and Cornish (2002) [11,12]	Behavior that causes demonstrable damage to one's own body, including hitting the head with a hand or other body part; self-biting; hitting the head with or against objects; and hair pulling
Wisely et al. (2002) [11,12]	Any behavior, initiated by the individual, which directly results in physical harm to that individual, including bruising, lacerations, bleeding, bone fractures and breakages, and other tissue damage
Kahng et al. (2002) [12]	A response that produces physical injury to the individual's own body
Baghdadli (2003) [11,12]	Aggressive behaviors directed towards one's self but they can have varying onset &duration
Skegg (2005) [11,12]	Self-Harm as a broad scale of behavior and intentions including attempted hanging, surface self-cutting or impulsive self-poisoning carried out in response to an unmanageable burden.
Moss et al. (2005)/ Hall (2008) [11,12]	Non-accidental behaviors which produce temporary marks or reddening of the skin or cause bruising, bleeding or tissue damage
Oliver et al. (2006) [11,12]	Non-accidental body-to- body contact behaviors that may have resulted in tissue damage, such as hand-biting, face-hitting, and body-picking
Hawton & Harris (2007) [11,12]	It is an act with non-fatal consequences in the form of behavior causing damage (cutting oneself, jumping from high places), use of a drug which exceeds the prescribed limit, eating non-edible matter or an object, or taking illegal or recreational drugs with the intention to harm oneself.
Lloyd et al. (2007) [11,12]	NSSI is perceived as intentional behavior which results in mutilation or alternation of body tissue without a conscious suicidal intention.
Janis & Nock; Hicks & Hinck, (2008) [11,12]	It is a deliberate act of destructing of one's own tissue with the aim of shifting unbearable emotional pain to physical pain, which is more manageable for the individual.

Staley et al. (2008) [11,12]	Behavior that results in physical injury to one's own body
Danquah et al. (2008)[12]	Any behavior, initiated by the individual, which directly results in physical harm to that individual.
Richman (2008) [11,12]	An act directed towards oneself that results in tissue damage
Langthorne and McGill [11,12]	Behaviors, such as head-hitting or scratching, that people direct towards themselves and that results in tissue damage
Nock, (2010)[15]	Behavioral disturbance that consists of deliberate destruction of or damage to body tissues that is not associated with a conscious intent to commit suicide.
Buono et al. (2010) [16]	Behavior that produces immediate and cumulative tissue damage to one's own body
Wachtel and Dhosshe (2010) [11,12]	Any self-directed action resulting in bodily harm such as head banging, hitting. etc.
Taylor et al. (2011) [11,12]	Repeated, self-inflicted, non- accidental injury producing bruising, bleeding, or other temporary or permanent tissue damage, and repetitive behaviors that had the potential to do so if
Hawton et al, (2003), National Institute for Clinical Excellence (2011) [11,12]	Intentional non-fatal acts of self-poisoning or self-injury, irrespective of the type of motivation, including degree of suicidal intent
Limeres et al. (2013) [11,12]	Behavioral disturbance consisting of deliberate destruction of or damage to body tissues, not associated with a conscious intent to commit suicide.
Medeiros et al. (2013) [11,12]	Self-directed behavior that causes or has the potential to cause physical damage, occurs repeatedly in idiosyncratic form, including banging head or body with other body parts or objects, self-biting, self-scratching, self-pinching, gouging body cavities with fingers, and self-hair pulling
Tureck et al. (2013) [11,12]	Behavior or set of behaviors that can result in injury to the person's body and that occurs repetitively
Wolff et al. (2013) [11,12]	Particularly troubling form of repetitive motor behavior that involves purposeful and repeated patterns of self-inflicted bodily injury without intent of suicide

Differentiation among commonly used terms for SIB

Various terms can be used interchangeably to explain SIB and may get confusing for practioners so the following chart differentiates amongst terms used by

authors which can help in better understanding. (Power & Brown, 2010) (Figure II).

Classification

A useful system of classification (Burešová, 2016; Limeres et al., 2013), allows for the development of strategies for prevention, interception and treatment. The Table I describes various classification systems and their limitation.

Principal syndromes, conditions and Risk factors that favour the appearance of self-Injurious Habit

The background of SIB is psychological in nature. Self-harm is a result of mental battles and emotions of hate, jealousy, frustration and inferiority. Certain biological conditions and syndromes that favour the appearance of SIB are (Sæmundsson & Roberts, 1997; Klonsky & Muehlenkamp, 2007):

• Lesch–Nyhan syndrome • Moebius syndrome • Mental retardation • Riga–Fede disease • Munchausen syndrome • Gilles de la Tourette syndrome • Cornelia de Lange syndrome • Prader-Willi syndrome • XXY syndrome • XXXXXY syndrome • Cerebral palsy • Autism Epilepsy • Rett syndrome • Smith-Magenis syndrome	• Congenital insensitivity to pain with anhidrosis (CIPA) • Mental disorders (depression, obsessive compulsive disorder) • Borderline Personality Disorder BPD • Trauma and posttraumatic stress disorder (PTSD) • Impulsivity, Anger and aggression • Depression and Anxiety • Underlying Psychological disorder • Infectious diseases (encephalitis) • Abuse and Dysfunctional Family Environment

Sæmundsson, S. R., & Roberts, M. W. (1997). Oral self-injurious behavior in the developmentally disabled: review and a case. *ASDC journal of dentistry for children*, *64*(3), 205-9.
Klonsky, E. D., & Muehlenkamp, J. J. (2007). Self-injury: A research review for the practitioner. *Journal of clinical psychology*, *63*(11), 1045-1056.

Prevalence

A search through the literature showed us that SIB is more prevalent in children and adolescents. It is estimated that SIB could affect 2% of population about 750 out of every one million individuals (Limeres et al., 2013). Most recent studies have indicated higher figures depending on different groups analysed.
15%- Normal developing infants (Sæmundsson & Roberts, 1997).
10% - 17% Intellectual and/or developmental disabilities (idds) (Rojahn J and Esbencen 2002).
17%-38% - University students (Gratz KL 2002, Whitlock J2006)

7.7% - 22.8% - Institutionalized patients with mental retardation (Saemundsson SR 1997)
4% - adults (Briere J, Gil E 1998)
69% - High risk young people (Whitbeck LB 2004)
21% - 82% - Psychiatric patients (Briere J, Gil E 1998, Nock MK 2004) (Klonsky & Muehlenkamp, 2007).

The association between SIB and few syndromes is as follows:

autism spectrum disorders and SIB [21,22]	42%-70% (Eden et al.2014). (Buono et al.2010) 4.9% stated by Cooper SA 2009, More than 30% Gnakub N Soke.et.al 2016
Lesch-Nyhan Syndrome and SIB [21,22]	100% (Anderson & Ernst, 1994)
Cornelia De Lange and SIB[23]	55.3% (Huisman S, Mulder.et.al 2017)
Gilles De La Tourette and SIB [21,22]	39.4% (Natalia Szejko, Andrzej Jakubczyk and Piotr Janik 2019)
Munchhausen Syndrome and SIB[23]	Rare cases of SIB
Eating Disorders and SIB[24]	38% - 79% (Favazza & Conterio 1988)
Depression and SIB[25]	72.5%-79.5% (AlbonT, RufC.et.al.2013, Gratz KL, Dixon-GordonKL.et.al.2015)
PTSD (Post-traumatic stress disorder) and SIB [25,26]	25-28.2% (AlbonT, RufC.et.al.2013, Gratz KL, Dixon-GordonKL.et.al.2015)
BPD (borderline personality disorder) and SIB[27]	52% (Glenn CR, Klonsky ED.et.al.2013)
Abuse and SIB [21,22]	69% (Kunic & Grant, 2006).
Prader-Willi syndrome [21,22]	60-80% (Symons, Butler, Sanders, Feurer, Thompson, 1999)
Smith-Magenis syndrome [23]	50%-70% (Smith, Dykens, Greenberg, 1998) 94.8% (Huisman S, Mulder.et.al 2017)
Rett syndrome [21,22]	30% to 40% (Sansom, Krishnan, & Corbett, 1993)
Fragile-X Syndrome[23]	54.8% (Huisman S, Mulder.et.al 2017)
Cr du Chat Syndrome[23]	73.9% (Huisman S, Mulder.et.al 2017)
Lowe Syndrome[23]	64% (Huisman S, Mulder.et.al 2017, Arron K, Oliver C. et.al 2011)
Angelman Syndrome[23]	45% (Huisman S, Mulder.et.al 2017, Arron K, Oliver C. et.al 2011)

Etiology and pathogenesis

Various pathological and etiological dimensions have been put forward to describe SIB.In the case of children, the reason behind this behavior is to interrupt negative thoughts/stress, to avoid school work/unwanted task or situation, to

seek attention, to gain control over the situation, to pass the time or due to fear of things when they are alone (In-Albon et al., 2013). These behavior's may be a result of the following dimensions which are described in Figure III. Few of the domains from these dimensions have been described below (Power & Brown, 2010; Burešová, 2016; Klonsky & Muehlenkamp, 2007):

Negative emotionality:
Self-injurers experience intense, frequent bouts of depressed emotions in their regular lives than others. They have been found to mark highly on measures of depression, negative temperament, anxiety and emotional impairment. This may be the principal reason for self-harm as it may temporarily relieve emotional stress.

Deficits in emotion skills:
Individuals who display difficulties in the expression of emotions are more prone to SIB.

Self-derogation:
Individuals with low self-esteem have a greater potential for self-harm. They may find this behavior pacifying in the face of distress.

Childhood Abuse:
History of child abuse and SIB may be interrelated. Self-Harm in abused children may stem from feelings of anger and worthlessness.

Interpersonal Influence:
Individuals with self-injury may bond with friends who self-injure in some cases. These individuals indulge in this to elicit affection and attention from peers and loved ones.

Interpersonal Boundaries:
Many individuals use self-harm to affirm the boundaries of his/her self. This type of behavior may help one to feel more autonomous, independent and distinct from others.

Anti-dissociation:
Few individuals display masochistic habits as they feel unreal. They are devoid of emotions like fear, anger anxiety. In order to interrupt these dissociative behavior they resort to such acts.

Conclusion

Injuries caused by SIB may present as a diagnostic challenge overall when they are the first or unique sign of an underlying disease. The exact prevalence of SIB is unknown & widely underestimated. These behaviors are usually hidden and considered to be socially unacceptable. However, due to changing world dynamics SIB appears to be growing markedly in the last 20 years.

The COVID-19 pandemic has led to an unparalleled changes that has impacted the psychology of the population greatly. This can be considered as a major factor

influencing self-harm. The easy access to newspaper, countless social media sites, electronic devices facilitates the easy dissemination of COVID-19 related information and fear related to the disease has affected the psychology of the individuals.

There is a drastic modification in the daily routine of the child. Schools and classes are being conducted online. Physical exercise has been reduced. The child is in a persistent and prolonged state of physical isolation from their friends, classmates, teachers, and extended family. All of this could lead to increased agitation, frustration, aggression, loneliness and boredom. As children and adolescents are in a period of cognitive and physical growth & development, they may be more susceptible to these behaviors.

SIB should be taken seriously as it is an emerging public health issue and can have serious repercussions on the quality of life of the child. Owing to the current pandemic the authors feel that collaborative effort should be taken to raise awareness regarding SIB or self-harm amongst schools, colleges, community and social welfare groups. This article is a small attempt from author's side to not only raise awareness about SIB but also to improve quality of life of such individuals by early diagnosis and timely intervention if such a global situation were to reoccur. The sequel of this article will elaborate further on the oral manifestations, different diagnostic methods and individual treatment planning of SIB.

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