

Nursing Management of School Age Children with Nail Biting and their Mothers: A Review Article

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Abstract: Background: Nail biting is a pathological oral habit and grooming disorder characterized by chronic, seemingly uncontrollable nail-biting that is destructive to fingernails and the surrounding tissue. Nail-biting can be a temporary, relatively non-destructive behavior that is merely a cosmetic concern, but it can also develop into a severe, long-term problem. It is classified as body focused repetitive behavior disordered along with some other related behaviors such as lip biting or cheek chewing. School nurses, pediatric nurse practitioners, and public health nurses have distinct chances to spot students with nail-biting habits early on through various activities. These include health screenings and enrollment examinations. A visual check of the hands can reveal potential signs of nail damage associated with biting. with onset usually occurring in childhood and adolescence.

Keywords: Nail biting, children, Nursing management, School age children.

1. Introduction

Definition of nail biting

Nail biting (NB) is the act or practice of biting one's fingernails, especially as the result of anxiety or nervousness. It is a common stress-related or nervous habit in children nail bed and the cuticle as well (Sacchi et al., 2023). Nail biting is a persistent condition that is repetitive and compulsive in nature, and generally seen in children and young adults. Multiple factors play a role in the development of nail biting, ranging from genetic components to underlying psychiatric conditions. Complications of chronic, compulsive nail biting range from obvious distortion of the nail bed unit to ungual and oral infection (Baghchechi et al., 2021).

Siddiqui, & Qureshi (2020), reported that onychophagia (NB) is a self-grooming behavior, and a chronic habit of nail biting also called body focused repetitive behaviors (BFRBs). It is disorders in which the children damages his or her appearance or causes physical injury. It may lead to significant physical and psychosocial problems, also having a negative impact on quality of life. It is commonly seen in children and young adult. Beyond its functional significance, the nail can mirror one's social status, health, and underlying mental well-being.

The incidence of nail biting

The incidence of oral habits in primary school students have been reported to be 30%. Also, Halteh et al., (2017) and Pohan et al., (2014) reported that the worldwide prevalence of nail biting at 20% to 30% of the general population. Nail biting is more prevalent in children with study noting 37% prevalence among age 3 to 21 years Winebrake et al., (2018). Nail-biting usually begins in childhood, typically after age 3 or 4. It is less common for children younger than 3 to bite their nails persistently. Nail-biting may also begin in adolescence; in very rare

cases, an adult may start to bite their nails suddenly. Nail-biting is one of the most common oral habits. Nail-biting can develop as a modified oral habit if thumb sucking begins later in childhood. Another oral habit seen in infants as a pacifier to cope with an increasingly stressful existence is lip biting (Yasir et al., 2021).

Nail biting Etiology

Basic etiology of NB is difficult to determine, it is a learned behavior from family members. There are lot of controversies about the causes of NB so it is debatable regarding a habit and the psychodynamics of the same. Causes Both physiological and environmental factors play a role in the development and maintenance of repeated behaviors. Anxiety and Stress When a child is worried, anxious, or stressed, he or she may bite his or her nails for temporary relief (Sultonova, 2023).

Also, frustration, impatience, and boredom, when a child is bored or impatient, he or she bites their nails to keep selves engaged. concentration The child may be distracted and unaware that he or she is biting the nail. Emotional or psychological issues nail biting linked to mental health issues such Obsessive-Compulsive Disorder, oppositional defiant, attention deficit hyperactivity disorder, major depressive disorder, separation anxiety disorder, and others (Hsieh, & Chen, (2022).

Risk factors

Child is Over-stimulation, stress and excitement, under stimulation or inactivity and boredom often act as triggers to this compulsive behavior. While some studies said it is due to behavioral problems, other theories propose NB as a symptom of anxiety or a nervous habit. Some other causes are a divorce in the family, a new school and psychosocial causes. Whereas in some conditions, NB is induced by low self-esteem, high anxiety, stress, loneliness, nervousness, or boredom and imitation of other family member; some condition like emotional and psychological issues also lead to NB (Lee, & Lipner, 2022).

Classification of nail biting

Classification of Nail Biters, there are different references to nail biting and they are classified as nail biters that bite without realizing, nail biters that bite to control anxiety, attention seeking nail biters, nail biter to control aggression by self-injurious gesture, as well as nail biting that is a part of Obsessive-compulsive disorder. As well as other specified behavioral and emotional disorders with onset usually occurring in childhood and adolescence, In addition to nail biters who are also classified as Pathological and Non-pathological NB (Mansoori et al., 2023).

Nail-biting Side effects

Nail biting consequences are not limited to the afflicted individuals, and usually have impact on members of the family. Sometimes, the parents or other family members feel shame from the behavior of their children or siblings. The children or adults with NB might be laughed at or stigmatized by others. If oral habits are not broken, they are known to create orthodontic problems later in life. Bacterial infection and alveolar damage, intestinal infections, malocclusion, and attrition of the anterior teeth are some of the effects of nail-biting. Nail-biting can also create a change in the appearance of the nails (Amin, 2022).

Dhingra et al., (2022), reported that changes in the oral enterobacteria can also be mediated by nail-biting. Temporomandibular pain and dysfunction, as well as the exhaustion of the masticatory muscles, are more immediate consequences of nail-biting. Possible physical side effects of nail-biting include damaged or disfigured nails and skin, skin infections, fungal infections, and mouth pain or tooth damage. Individuals who swallow the bitten nails may be at risk for stomach or intestinal infections as well. Because nails and fingers often carry bacteria or viruses, biting them may transmit pathogens into the body, potentially increasing the risk of internal infections or gastrointestinal problems.

Serious or long-term damage from nail-biting is rare but possible. Fingernails are resilient, and biting found to have little long-term effect on growth once the behavior stopped. Infections to the skin, stomach, or intestines pose the greatest long-term risk but are usually treatable. In

some cases, nail-biting may lead to tooth damage (such as chipped teeth) that will require corrective care. Nail biting may cause restriction in social behaviors, or behaviors that should be done in the presence of others using hands such as writing, drawing, or playing. Children with NB are frequently attacked by others (Hamm, & Stolze, 2022).

Treatment of nail biting

Nail biting is a habit that cannot be managed without considering some related factors such as co-morbidities, precedent and consequences of the behavior. Some studies did not recommend the treatment of children with mild NB. Any treatment should be accompanied by educating the afflicted children as well as their parents, siblings and teachers. They should be taught about what to do and what not to do about it. For example, they should know that punishment, threat or laugh at the children with NB can increase this behavior, because they try to catch others' attention by NB (Kashetsky et al., 2023). Parents may try to stop their children from biting their nails by force, but this may only be a temporary solution. The long-term benefits of forcing oral habits to stop are negligible. Individuals may experience social and emotional insecurity as a result of it. After consulting with a dentist, a careful and gradual quitting plan must be devised. Chewing gums are an appropriate alternative to nail-biting (Amin Bhat, 2022).

Sometimes, the parents feel guilty for their children NB habits. These feelings should be detected and managed. Siblings may feel shame for to their brothers' or sisters' NB behavior. So, they need to be included and educated in the process of management as well. Coating nails with unpleasant materials or covering them is tried by many parents, but it is usually ineffective. Others should not blame children with NB habit and increase their disappointments, instead they should encourage them, and give them support and confidence. The management and treatment of child with NB behavior will not happen in a few sessions, it is a long process (Mann et al., 2020).

In most of the cases of NB, it looks like a cosmetic issue, so no treatment is required. But, severe cases of NB need pharmacological treatment associated with non-pharmacology treatment such as psychotherapy. Anti-depressant is commonly used for treatment of NB such as fluoxetine and clomipramine but is limited in use. Best way to manage a nail biter is to educate them, to develop good habits, develop conscious awareness for effective results. Emotional support and encouragement are the one of the best methods and should be supplemented during treatment. Avoid nagging and punishing to nail biter, it is not always useful (Siddiqui, & Qureshi, 2020).

Non pharmacological treatment



Fig. 1 Management of nail biting

There are different modalities of non-pharmacologic treatment of NB. Always focus on efforts to build up the child's self confidence and self-esteem. In some cases nail biter needs cognitive behavioral techniques for their behaviors; these are habit reversal techniques and stress-

management techniques. Nail biters bite the nail because they are anxious or stressed. Educate the affected children along with parents, siblings, and teachers as a part of the treatment (Abd-ElSabour et al., 2023).

In children, an assessment of disease severity is important before proceeding to formal intervention because the disease process of nail biting has a heavy psychosocial component. Children with mild nail-biting behavior typically outgrow the activity, seeing peers with healthier nail hygiene and wanting to fit in. Rushing to treat younger children can cause them to increase the behavior to seek more attention. Dermatologists may recommend a form of aversive therapy to patients by applying a distasteful coating over the nail to discourage patients from biting. This method shown improvement in reducing impulsive nail-biting behavior; however, the method should be avoided for patients suffering from an underlying compulsive disorder (Aslışen, 2020).

In addition, olive oil shown to decrease biting behavior by making the nail feel softer without causing distress to the child. Alternative topical products include 1% clindamycin, quaternary ammonium compounds, and 4% quinine suspended in petroleum. For patients suffering from severe nail dystrophy, using an adhesive bandage to cover the injured fingers and nail can help prevent further damage. Prevention through nail hygiene remains key in avoiding nail infections and their sequel. Nail grooming with trimmed nails and frequent manicures protect the nail and reduce satisfaction from nail biting (Özbay et al., 2023).

The exact mechanism is unknown, but researchers speculate that a reduction of glutamate synaptic release may play a role in decreased nail biting. Multidisciplinary care team Annual follow-up visits with primary care physicians and dentists are recommended to identify early infection and allow for proper treatment. Annual dentist visits are also encouraged to evaluate for gingival and dental pathologies and initiate early intervention. Dermatologists should remain involved in the care of patients suffering from persistent periungual infections and nail dystrophy (Sancili, & Tugluk, 2021).

The Health Promotion Model (HPM) pinpoints elements that affect health behaviors. Pender's Health Promotion Model is extensively utilized to detect and modify unhealthy habits while encouraging health. The model predicts and explains health behaviors through factors like perceived benefits, barriers, self-efficacy, behavioral emotions, and both interpersonal and situational influences. Recent studies have highlighted these constructs as the most significant predictors of nutritional and self-care behaviors (Gomez, 2024) & (Jalali et al., 2023).

Behavioral modification techniques, positive reinforcements, and regular follow-ups are important key factors for the treatment of nail biting. The punishment, ridicule, nagging, threats, and application of bitter-tasting are not appropriate approaches to manage the patient. The key to success is the nail biter's consent and cooperation. Placebo effect is always better than the punishment in nail biter (Okawara et al., 2022).

Behavioral Therapy, Practice Reversal Training (HRT) is the initial element of nail biting therapy, and it aims to "unlearn" the habit of nail biting and maybe replace it with a more constructive habit. Avoid pressurizing the child to stop nail biting. Behavioral therapy is the first line gold standard treatment. In the behavioral therapy, various techniques can be used such as non removable reminders for NB. Cognitive behavioral therapy (CBT): It is a common type of psychotherapy, based on cognitive, behavioral, and on learning principles. It is beneficial when simpler measures are not effective. It helps patients to understand that their belief about the behavior might be incorrect (Amin et al., 2022).

Later they become aware of negative emotions and related habits so that they can be handle with more effective ways. It is associated with the competing response. Competing response is a method in which a person is provided with an alternative to nail biting options such as chewing gum to satisfy orally-motivated urges. Interpersonal psychotherapy (IPT): This psychotherapy based on interpersonal issues so in such type of psychotherapy aim is to improve interpersonal communication and increased social support (Lesinskiene et al., 2021). Dialectic behavior

therapy (DBT): This psychotherapy is conducted with patients with personality disturbances. It is specially made in such a way that to change one's patterns of behavior that is harmful. Habit reversal therapy (HRT): This psychotherapy is based on to chase the habit of nail biting and possibly replaced into more productive habit. It works when the automatic response is weak. It is four-step process teaches a person how to breathe and feel grounded, achieve relaxation, and to complete muscle-response exercises. In this therapy self-control intervention should build self-confidence and self-esteem (Chanda et al., 2024).

Further, this psychotherapy consists of many components such as awareness training; bringing the habit into consciousness, relaxation training, competent response training; engaging in an opposing behavior that makes it physically impossible to pick or bite until the urge subsides, social support and contingency management. Maintaining Proper Nail Hygiene, nail hygiene is vital, which includes trim and file nails on regular bases. Allowing girls to have professionally trimmed nails, for example, may deter adolescents from chewing their nails due to the favorable visual appeal (Nanda et al., 2022).

In addition, some people get NB due to environmental influences. However, various people's environmental determinants of NB may differ. As a result, NB functional analysis is a way of determining the nature of precedent and its repercussions. It works well and maintains its effects over time. Punishment In the therapy of NB, punishment is ineffective. Punishment has no more than a placebo effect. Chewing Gum, when other coping methods are unavailable, gum chewing sometimes is an excellent option to control the urge to bite nails in socially uncomfortable settings for an older youngster. This leads to improved oral hygiene (Erhard et al., 2022).

Moreover, Caries can be prevented by using sorbitol-based gum rather than sugared gum. Social Media and Books, can provide support and strategies. 'What to Do When Bad Habits Take Hold' by Dr. Huebner, is a fantastic resource for addressing with a child's nail-biting. This book provides a unique and interesting look into diagnosing detrimental behaviors, such as nail-biting, in order to develop self-awareness, as well as suggestions and techniques for stopping the habit. A complimentary edition of the Bernstein Bears discusses nail-biting in a fun and instructive episode for kids who prefer a more visual approach (Moritz et al., 2023).

Positive Reinforcement, to avoid nail-biting, parents can use the reward and compensation strategy. Designing a poster plan for children and attaching a star every day the child keeps their nails free of biting damage keeps them motivated since they know there will be a prize after a string of good days (e.g., two weeks at first). Meditation and Relaxation Exercises Bringing the behavior to light can help with self-awareness and the search for socially acceptable methods to deal with stressful situations. To improve confidence, focus, and reduce discomfort, cognitive therapy proposes that clients participate in other activities to divert themselves from repeated impulsions, such as artworks, games, and musical equipment (De Oliveira et al., 2022).

A behavior to prohibit or resist raising upper limbs towards the face or lips, for example, or behavior to stop or prohibit putting fingers into the mouth is used. It has been proven that employing this strategy is much more efficient than not using it. Aversive Stimulus, unpleasant stimuli is a treatment for NB that involves painting an undesired behavior or an unpleasant material into the individual nails. Although aversive stimulus therapy improves NB, it is not as effective as the competitive response technique. Emotional Freedom Technique (EFT). This type of psychotherapy is powerful (Holmes, & Brown, 2022). Self-help technique and an energy therapy are also used to prevent from NB. It used and highly effective in addictive habitual behavioral actions and it overcomes unwanted habitual patterns. EFT can help to stop biting nails by working on the underlying triggers such as stress and others. EFT can be used to install new behavior as a response to stress, strain or boredom. It works quickly and effectively without any side effects. EFT is commonly used in sports psychology (Siddiqui, & Qureshi, 2022).

Aversion stimulus: In this psychotherapy, irritant is used over the finger. This type of psychotherapy is based on reinforcement learning. An aversive stimulus such as a bitter

substance on the nail biter's nail so nail biter thinks twice to put nail in mouth. Stimulus control: The main principle of this psychotherapy is to identify and then eliminate the stimulus; because it always triggers biting urges. This therapy helps to identify, to get rid from environment and situation or emotions that trigger nail biting. The main goal of this therapy is to control triggers through conscious behavior modification (Martin, 2023). Other psychotherapies such as acceptance commitment therapy (ACT) and self- help group are also helpful. Nail cosmetics: Different types of cosmetic used to prevent from nail biting. It helps to enhance nail biting social effects. Reward system Parents also can apply token economy to curb nail biting behavior. Creating a sticker chart for children and adding a sticker each day the child keeps nails free from biting damage keeps children motivated, knowing that a prize is available after multiple good days in a row (Schelling, 2019).

Pharmacological treatment

Pharmacotherapy is a second-line treatment for nail biting in children and adolescents. Fluoxetine, a selective serotonin reuptake inhibitor (SSRI), has been shown in several cases to treat onychophagia. On the basis that chronic nail biting is within the obsessive compulsive disorder(OCD) umbrella and specifically body-focused repetitive behavior, SSRIs have been proven to attenuate compulsions. Clinicians should be careful with prescribing other drugs within the SSRI family because studies show that this class of drugs can exacerbate impulse-related disorders (Mosca et al., 2022).

If psychotherapy is does not work, particularly in severe cases, selective serotonin reuptake inhibitors like fluoxetine and tricyclic such as clomipramine are the most commonly recommended medications in the management of NB. Lithium is also effective medication resolving nail biting in individuals with a history of bipolar disorder and depressed patient with nail biting. One more drug such as Nacetylcysteine used to treat NB but it is with limited efficacy. N Acetyl Cysteine NAC, a drug usually used to treat paracetamol toxicity and as a mucolytic, is one of the safest drugs used to treat onychophagia. It proved effective in many clinical trials targeting the treatment of addictive diseases (Braun et al., 2019).

Preventing nail biting is important because the behavior may precipitate acute paronychia. Dermatologists involved in the care of the nail-biting patient should immediately treat acute paronychia with appropriate antibiotic drugs or warm compresses to halt disease progression and prevent abscess formation or osteomyelitis. However, acute paronychia may be secondary to viral and fungal infections as well. Cytology is a useful technique to determine the causative agent and appropriate management (Chelak, & Chakole, 2024). Infectious disease specialists may need to be consulted for antibiotic resistant infections. Patients with comorbid psychiatric illnesses may benefit from psychiatric visits with a mental health provider to explore therapeutic techniques. Practical intervention pearls Proper nail hygiene Proper nail hygiene is essential and includes keeping the nails trimmed and filed. Interestingly, allowing girls to have professionally manicured nails may keep adolescents engaged in not biting their nails secondary to positive cosmetic appeal (Bailey, 2022).

Tricyclic antidepressant drugs, such as clomipramine, are also noted in several cases to provide relief. The antioxidant and glutamate modulator N-acetylcysteine shown positive outcomes in the treatment of repetitive disorders, including onychophagia. It is also important to mention that neurotransmitter dysregulation, especially glutamate, is a trigger for the development of impulsivity disorders (such as onychophagia) and other mental disorders. Therefore, maintaining a basal level of glutamate is crucial. This level is maintained by the presence of the cystine-glutamate exchange system (Sani et al., 2019). Cysteine is an essential rate-limiting factor for the formation of glutathione, and any reduction in the latter (i.e., increased oxidative stress) leads to defects in the exchange system contributing to pathological signaling. NAC, being a potent antioxidant and increasing glutathione (by providing cysteine) as well as regulating glutamate levels, interrupts the signal. Selective Serotonin Reuptake Inhibitors SSRIs, used to treat various psychiatric conditions, revealed contradicting results in treating

onychophagia. SSRIs, especially fluoxetine, can be efficient in the treatment of nail biting (Shenoi et al., 2020).

However, attention should be given when prescribing other medications within the SSRIs family since some may lead to exacerbation of impulse-related disorders. Also the mix between behavioral therapy and SSRIs is better than using the latter solely. Tricyclic Antidepressants (TCAs) showed improvement of onychophagia in many clinical trials and cases. They act on multiple neurotransmitter pathways. TCAs cause an increase in the concentration of serotonin and norepinephrine in the synaptic cleft by blocking reuptake at the presynaptic terminal. The increase in serotonin and norepinephrine concentration contributes to the antidepressant effect (Alshehri, & Mudawi, 2020).

Prevention of nail biting

Prevention and treatment of nail biting involves a multidisciplinary team that provides psychosocial, psychiatric, dermatologic, and dental care. Initial care involves engaging the patient and parents. Subsequently, teachers and close acquaintances may be called upon to reinforce supportive behavior modification. The home atmosphere should be a sympathetic and loving environment for the child or adolescent, with continuous words of encouragement to boost self-confidence. Any siblings should be on board with the treatment plan and avoid laughing at the behavior (Jafferany, 2021).

Nail biters can avoid biting nail need by focusing on strategy and some effort. Anxiety reduction techniques or routine preventive strategies are helpful to prevent yourself from nail biting. There are some measures that may be helpful, these are: Always keep hand and mouth busy: to keep the hands busy doing something else, such as playing music, practicing sport activities, or spend more time with your friends. During the stressful situation or whenever alone chew the gum and stay active so biter will not put attention to put his finger in mouth (Phillips et al., 2023).

Follow the replacement habit

Nail biter should replace their habit with something more effective, for that reason biter must find fidgeting tools like spinner and drawing or writing or squeezing a stress ball or Silly Putty, when find self-biting nails. Tell people to point it out: request close, near and dear and those understand instead laughing or criticizing. Tell people to point it out whenever put to finger in mouth. Set up alarm reminder: If biter will bite nails at particular times of a day or places, they can set up an alarm that sends off reminder to the biter not to bite. Put something on hands or on finger: If put irritant over fingers to avoid it from biting can prevent bite (Lublin, 2023).

Relieve stress

In addition, stress management can help to deal with Nail-Biting episodes and reduce its frequency so try stress-management techniques if one bites their nails when anxious or stressed. Stress is one of the factors behind the urge to bite nails. Incorporating activities such as meditation, yoga, or other forms of relaxation are good examples to relieve stress. Follow Support groups: Support groups play an important role and it can be established to help to cope with the symptoms and improve the quality of one's life. Support and encouragement from loved one: Family members, loved one and close friends can provide non-judgmental support and encourage their loved ones to seek early treatment for this potentially serious condition (Zagami et al., 2023).

Lifestyle change

Lifestyle is one of the most important factors affecting health. Quality of life and health depends on health-promoting behaviors and lifestyles. Health-promoting behaviors are any action that is taken to boost the level of health and self-fulfillment of an individual or a group. In order to plan for health behaviors and health promotion, used Pender health promotion model. This model is one of the general and predictive models of health-promoting behaviors which includes personal experiences and characteristics, feelings, and cognitions related to behavior (Sadeghi et al., 2022).

Role of the nurse

The first and most important principle in dealing with children with nail biting is determine the situations or emotions that lead to nail biting(e.g., stress, anxiety, boredom). The nurse's responsibility is to be evaluate severity, assess the frequency and intensity of nail biting including any physical damage to the nails and surrounding skin (Mckinley,2020).School nurses, mothers have unique opportunities to identify students with repetitive oral habits by health screening, enrolling examination and conducting several interventions . Interventions can be based on behavioral change models by preparing a plan that provides education and counseling to students and their families, conducting motivational interviews, providing nail care and performing case management with necessary referrals Children's mothers are playing major role in management in nail biting as caregivers(Richert & Andre, 2020).

Nurses play an important role in recognizing the signs and symptoms of nail biting, educating families on potential sources of nail biting, and advocating for preventive measures to reduce risks. Nursing care also includes reducing the child's and the family's fear and anxiety. positive reinforcement encourage and reward the child for not biting their nails use praise, stickers or small treats as incentives(Bahar & Acil, 2019).

Medical care is necessary if symptoms are severe or persistent, especially in children and older adults. The main goal of management of NB is to motivate the children provide emotional support and to relieve stress that may help to defeat the nail biting. In mild cases, nail biting is not a distressing condition and always improve on its own, even though it needs more attention, love, affection, and comprehension; these are suitable to stop the bad habit. The best way to manage a nail biting is to make good habits, educate them, to develop awareness, to give emotional support and encouragement. Detailed history including psychosocial aspects and a thorough physical examination are important, if it is associated with other comorbid disorders (Madan et al., 2023).

Substitution techniques: suggest alternative activities to keep the child's hands occupied such as drawing, playing with stress balls and engaging in sports. Teach the child to recognize the urge to bite their nails replace it with a different behavior. Use of physical barriers. recommend the use of gloves, adhesive bandages or colored stickers on the nails to serve as reminders not to bite. Create a stress free environment. help the child find ways to manage stress such as through physical activity, relaxation technique or engaging in hobbies(Marriner &Raile,2020).

Follow up care

Regular monitoring, schedule regular follow up appointments to monitor progress and adjust the management plan as needed. support and encouragement, continuously provide emotional support and encouragement to the child and their family (Kumar&Kopuri,2020).

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