

Prevalence of nail-biting in children and its association with mental health in Karachi, Pakistan

Original Article

Yamna Waseem,¹ Muhammad Wahdan Naseeb,¹ Muhammad Osama Farooqui,¹ Muhammad Anzal Imran,¹ Hafsa Zarnab,² Ibtehaj ul Haque,¹ Imran Mansoor Raza,¹ Zoobia Ramzan.²

1. **Students**, MBBS, Dow Medical College, Dow University of Health Sciences, Karachi, Pakistan.
2. **Student**, MBBS, Jinnah Sindh Medical University, Karachi, Pakistan
3. **Assistant Professor**, Institute of Behavioral Sciences, Dow University of Health Sciences, Karachi, Pakistan



ABSTRACT

Introduction: The crossing of digit from an individual's mouth known as onychophagia or nail biting. Nail-biting is not a life-threatening condition. However, the border between its healthy and unhealthy associations still need conclusive establishment. **Objectives:** To determine the prevalence of nail-biting among children in Karachi, Pakistan and its association with pediatric mental health and behavioral disorders. **Methodology:** Sample size was parents of 171 children between the ages 4-10 was selected by convenience sampling. Data collection was conducted with a use of questionnaire in two hospitals of Karachi, Pakistan. All participants of the study were explained the purpose of the study and written consent was obtained. **Results:** The overall prevalence of nail-biting in the sample was 39.2%. The prevalence in boys and girls was not statistically significant ($P = 0.06$). The mean total SDQ score was 15.3 ($SD = 5.3$) and the mean prosocial score was 6.8 ($SD = 2.2$). The comparison of the effect of a child's schooling neither showed any significant effect on nail-biting frequency ($P = 0.093$) nor on SDQ score ($P = 0.845$). **Conclusion:** To conclude more research should be done on the importance of nail biting in children, parents and pediatricians alike should pay special attention to children that bite their nails.

Keywords:

nail biting; onychophagia; children, behavioral disorders, psychiatry, pediatrics

INTRODUCTION

The crossing of digit from an individual's mouth is called nail-biting and is also referred to as onychophagia.[1] Nail-biting is not a life-threatening condition. However, the border between its healthy and unhealthy associations still need conclusive establishment. When this habit becomes problematic, they interfere with the person's wellbeing. As onychophagia crosses this line, it is then classified as Impulse Disorder which is defined by International classification of diseases 10th revision (ICD-10) as a

mental disorder characterized by an intense need to gratify one's immediate desires and failure to resist the impulse or temptation.

[1]

The fundamental factor underlying nail-biting is the difficulty resisting the compulsion to perform certain conduct that causes a degree of liberation.[2] This behavioral aspect has been observed both in adults and in children. It is a common behavior in both sexes.[3] Nail-biting often does not begin until the age of three or four years.[4]

A study from Wroclaw, Poland suggested onychophagia to be present in 46.9% of its citizens (27.7% past nail biters and 19.2% active).[5] Another study from Mangalore, India concluded the habit to be present in 12.7% of its school-going population.[6] Very limited literature and no prevalence estimates regarding onychophagia in children below the age of 10 could be found from Pakistan. While Onychophagia is more common in adolescents, it has been suggested that the habit actually begins in childhood and increases as they reach adolescence.[4,7-8]

RATIONALE

Since limited literature from Karachi and the other cities is available on nail-biting and its effects on children under the age of 10, it is important to determine the frequency of the said habit among the highlighted population. Due to the fact that the habit of onychophagia starts during the childhood period, the frequency will aid



CORRESPONDING AUTHOR
Yamna Waseem,
Final Year MBBS, Dow
Medical College, Baba-e-Urdu
Road, Karachi-74200 Pakistan
Author Email:
yamna_wr@hotmail.com
ORCID:
<https://orcid.org/0000-0002-2995-7944>



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in determining the causes, effects, prevention and treatment of the behavioral aspect in question. By determining factors influencing this habit in a younger population which correlate to behavioral disorders, new therapeutic strategies can be planned targeted specifically towards younger patients.

METHODOLOGY

We conducted this study to determine the prevalence of nail biting among a community sample of children from Karachi, Pakistan and its association with pediatric mental health and behavioral disorders. The study made use of participants who were parents of 171 children between the ages 4-10, selected by convenience sampling. The sample size was calculated using OpenEpi version 3. The calculated sample size was 171 with a 95% confidence interval and 80% power. Since young children couldn't adequately describe their habits, as well as older children, can, hence parents were inquired on their habits for standardization purposes. An ethical approval was acquired from the Institutional Review Board of Dow University of Health Sciences. The parents were selected from waiting areas of outpatient pediatric departments of Civil Hospital Karachi and The National Institute of Child Health (NICH). The parents filled out a questionnaire after an informed consent of their voluntary participation in the study to objectively describe their children's emotional-behavioral problems and their nail-biting habits. Research design was a Cross-sectional study. The inclusion criteria was both gender children coming to the outpatient pediatric department with parents, having children with ages between 4-10 year of age, while Parents of chronically ill, mentally retarded and children younger than 4 years or older than 10 years of age, and children visiting OPD without parents were excluded.

A structured and standardized questionnaire was used to collect the data. The questionnaire consisted of two parts; the first part asked about the regularity of nail-biting in their children which was recorded in days per week. Parents were asked if there is anyone else in their family with nail-biting comporment.

The sociodemographic characteristics of the family were considered such as the parent's employment status, education level and whether their child went to a private school or community school. The second part of the questionnaire consisted of the Strengths and Difficulties (SDQ) questionnaire. The Strengths and Difficulties Questionnaire (SDQ) is a valid and reliable tool that can be used for research. It was comprised of 25 attributes separated into five medical scales:

hyperactivity/inattention, peer relationship problems, conduct problems, emotional symptoms and prosocial behavior. Each clinical scale consisted of 5 items. The range of each response was recorded between 0 and 2. Zero corresponded to "not true", 1 and 2 corresponded to "partially true" and "certainly true" respectively. All positive items except for prosocial were reverse coded. Each clinical scale had a score that ranges between 0 and 10. Tallying the scores from each of the 5 scales yielded a total difficulties score. Hence, the final score could be anywhere between 0 and 40. Hence, in order to obtain a total score, the prosocial scale was excluded. This study used the original version of SDQ as well as an Urdu translated version was distributed when necessary as Urdu was the national language. Completion of SDQ took around 10 minutes and its scoring system was easy to comprehend. The SDQ and its scoring figures, Urdu translation, and publications list could be obtained from the Web site of <http://www.sdqinfo.com>. This was a baseline determination of the prevalence of nail-biting in a community sample of children. Therefore, no predictors could be displayed. We have estimated the prevalence of nail-biting along with a few associations with mental health. However, the diagnosis of mental health disorders presenting with nail-biting as a chief symptom should be confirmed by an interdisciplinary team involving pediatricians and psychiatrists. Since the questionnaire and SDQ form required parental reporting, some bias is possible as some parents are more aware of their children's habits compared to others. It is also possible that due to a lack of understanding some parents could have reported their child's nail-biting habits inaccurately.

All participants of the study were explained the purpose of the study and written consent was obtained. In order to reduce bias and ensure complete privacy of participant data, parents were given time to fill out the questionnaire privately. The questionnaire was available in both English and Urdu so parents could answer in their preferred language.

Furthermore, data collectors were present on-site to answer any queries that the parents might have had and also to provide them with assistance in case of problems pertaining to the questionnaire. They were assured that their participation being voluntary and were given the option of early withdrawal. They were also given an affirmation of confidentiality.

Statistical Analysis

IBM SPSS Statistics v.23.0 was used for statistical analysis. The prevalence of nail-biting by children was

evaluated for both genders. Mean and Standard deviation were calculated for all quantitative variables while frequency was calculated for all qualitative variables. Statistical tests including t-test was used to calculate the mean SDQ score. Continuous variables were analyzed using non-parametric tests while Chi-squared analysis was used for categorical data. P-value of less than 0.05 was considered significant for all cases.

RESULTS

The mean age of the children under observation was 6.4 (SD = 2.1) years old. No difference was observed in the mean age among boys and girls ($t = -0.62$, $df = 169$ $P = 0.37$). Majority of the sample were males which accounted for 58.5% where as females accounted for 41.5% of the sample. In the sample, 83.6% of the children were enrolled in a school while 16.4% were not being schooled.

The overall prevalence of nail-biting in the sample was 39.2%. The prevalence in boys and girls was 45% and 31% respectively which was not statistically significant ($P = 0.06$). 9.4% of parents reported that their child bites his/her nails more than 6 times per day [Table 1], 18.7% of children in the sample bit their nails once or twice per day while the percentage of children biting their nails 3-6 times per day was 11.1%. No significant difference was observed in the frequency of nail biting per day among girls and boys ($P = 0.47$). Majority of family members did not have a habit of nail biting and 1/3rd of the families had at least 1 child in the habit of nail biting [Table 2].

The mean total SDQ score was 15.3 (SD = 5.3) which was slightly higher than the normal expected value among children aged between 4-10. The mean prosocial score was 6.8 (SD = 2.2). 45.1% of children had a total SDQ score of ≥ 17 which fell in the "high" category. However, no significant difference was observed in the total SDQ score of children who bit their nails with the children who did not ($P = 0.9$). The level of education of parents was checked against the other variables and it was found out that mother education had a significant impact on child's nail-biting with a lower frequency ($P = 0.028$) and nailbiting habit per day ($P = 0.045$) with no effect on SDQ status ($P = 0.057$) [Table 3]. However, father's better education had a significant impact decreasing the number of children nail-biting in the family ($P = 0.032$) and giving a significant difference in SDQ scores measured ($P = 0.032$) but no significant effect on the nailbiting frequency of the child under observation ($P = 0.366$).

In a comparison of parent's job to nail biting habits, it was found that there was a significant reduction in nail biting habits in a family where a mother had a job ($P = 0.02$) whereas no significant difference was seen with father's job ($P = 0.289$). In the case where both parents had a job, a significant difference of ($P = 0.003$) was seen with reduction in nail biting habits in the family. The job of both or either of the parents had no significant effect on the SDQ score and nail biting frequency.

The comparison of the effect of a child's schooling neither showed any significant effect on nail-biting frequency ($P = 0.093$) nor on SDQ score ($P = 0.845$). The comparison of the effect of a child's schooling neither showed any significant effect on nail-biting frequency ($P = 0.093$) nor on SDQ score ($P = 0.845$).

DISCUSSION

Nail biting is a simple tension-reducing mechanism, particularly under conditions of situational stress. Our study tried to assess this activity in the pediatric population of Pakistan.

There was no difference in the mean age between boys and girls, and there was a lower prevalence of nail-biting in girls compared to boys however, not statistically significant. The present study supports the findings of previous studies that the prevalence of parent-reported NB is not gender-associated.[12]

The mean total SDQ score was higher than expected for the age group of 4-10.

The mother's education had a significant impact on the child's nail-biting frequency, and if a father was more educated there was a decreased number of children nail-biting in the family giving a significant difference in the SDQ scores. A mother's employment status also had a positive impact on the child resulting in decreased frequency of nail biting. This relationship was not analyzed in any other studies according to our literature search making this the first study to provide these statistics.

By biting their nails, children can alleviate feelings of stress, anxiety, loneliness and lack of affection and safety.[12] However, the association between nail-biting and anxiety has remained controversial.[12,13] Furthermore, possible cause and effect of anxiety and nail-biting have not yet been reported. Moreover, many psychiatric disorders feature nail-biting as a common concurrent problem.[14-16] The presence of such conditions might account for the increased presence of emotional issues in children who bite their nails.

There are several modalities that may help in the cessation of nail-biting. Some of these rely on making behavioral changes while others aim to introduce physical barriers to nail-biting including, but not limited to Habit Reversal Training (HRT) and Object

Manipulation Training (OMT).[17] Another possible option in the treatment of nail-biting is the use of fixed intra-oral devices which have shown improvement in the few cases they have been used in.[18,19]

Patient motivation is an important factor that can determine success in controlling or correcting the habit. The patient should be aware of the need to quit the habit and here the role of a professional can be important through helpful advice in overcoming the habit. The cessation of the habit should be gradual as abrupt suppression can cause alterations in personality. In some cases patients quit their habit spontaneously because they desire attractive nails, others quit because they fear of getting infective illnesses.[20]

There are a number of clinical and research connotations for these findings. While the literature on the aetiology and associations of nail-biting have become increasingly more available, our findings suggest that the behavior of nail-biting should be studied in depth. A clinical implication of our results is that nail-biting commonly occurs within a family so questioning regarding nail-biting can be contemplated as a potential screening question. A positive response might serve as an indicator of nail-biting possibly being present in other members of the family. Therefore, child psychiatric nurses and especially school nurses should be very careful. Children who bite their nails should be evaluated for the presence of emotional problems and under-developed prosocial behaviors. In addition to that, other members of the family should also be screened and assessed for nail-biting and psychological evaluations should not be limited to the children. Nail-biting hence, should not be thought of as a simple habit and there are many ramifications for nail-biting that should be considered. For example, these children may require dental referral for assessment of oral hygiene. Our finding has a significant clinical implication for management of these children. In many cases, it has been seen that habit reversal, which remains the management of choice, is not an effective long term therapy.

An explanation for this failure can be attributed to a lack of consideration of concurrent emotional and behavioral problems.

CONCLUSION

In conclusion, nail-biting is a very common, age-dependent, but not gender-related behavior in school-going children. NB is associated with lower pro-social skills, parent’s education and the mental status in the community sample of children.

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Nailbiting times per day	Frequency	Percentage
0	101	59.1
1-2	35	20.5
3-4	11	6.4
5-6	8	4.7
>6	16	9.4

Table 1: Frequency of nail biting per day

Family members	Frequency	percentage
1 member	53	31
More than 1 member	6	3.5
None	112	65.5

Table 2: Prevalence of nail biting habit in other family members

Level of Education	Frequency		Percentage ¹	
	Mother	Father	Mother	Father
Uneducated	81	71	47.4	41.5
Primary education	72	76	42.1	44.4
Secondary education	8	13	4.7	7.6
Undergraduate	3	7	1.8	4.1
Graduate	7	4	4.1	2.3
Total	171	171	100	100

Table 3: Level of education of parents

		significance
Mother’s education	Nail-biting Frequency	0.028
	Nail-biting per day	0.045
	Nail-biting in family	0.170
	SDQ status	0.057
Father’s education	Nail-biting Frequency	0.366
	Nail-biting per day	0.414
	Nail-biting in family	0.032
	SDQ status	0.032

Table 4: Effect of parent’s education on nailbiting and SDQ score

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AUTHOR CRediT

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CONFLICT OF INTEREST

The author declared no conflict of interest

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