Original Article

DOI: 10.7860/JCDR/2023/65280.18462

Dentistry Section

Mothers' Knowledge, Attitudes and Practices Regarding Antibiotic Use in Paediatric Dentistry: A Cross-sectional Survey

MAINAK DAS[1], NUPUR SAHA[2], DIPANJAN DEBNATH[3], PIYALI DATTA[4], SHABNAM ZAHIR[5]

ABSTRACT

Introduction: Odontogenic infections in children are commonly addressed through prescriptions that frequently include antibiotics for both preventive and therapeutic purposes. Mothers, being the primary caregivers, play a vital role in ensuring their children receive antibiotics as prescribed. Insufficient awareness among mothers regarding the prudent utilisation of antibiotics can contribute to misuse and the development of antibiotic resistance.

Aim: To explore the Knowledge, Attitudes, and Practices (KAP) of mothers regarding the use of antibiotics in children for the management of odontogenic infections in the city of Kolkata, West Bengal.

Materials and Methods: A cross-sectional survey was conducted using a multi-lingual, close-ended, knowledge-attitudes-practices-based offline questionnaire with 23 questions. The survey included 203 mothers with children between six months and 13 years old, attending the Outpatient Department (OPD) of Paediatric and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Panihati, between October 2022 and January 2023, in the city of Kolkata, India. The data collected were subjected to statistical analysis.

Results: A majority of mothers, 104 (51.2%) belonged to group ≤35 in the present study. A total of 85.7% of the mothers had knowledge that antibiotics are used against bacterial infections leading to toothache or facial swelling. Approximately 44.9% of the mothers demonstrated a lack of awareness regarding the global issue of antibiotic resistance, while 89.6% of mothers believed that antibiotics should be continued until the full course of prescribed antibiotics is completed. A total of 63.1% of mothers have administered antibiotics prescribed by pharmacists or medical shopkeepers to their children. The study revealed a significant association between the educational level of mothers and their awareness regarding the issue of antibiotic resistance, as well as between the parents' monthly income and their attitude towards the use of expensive antibiotics ($p<0.05$).

Conclusion: The present study highlights that in the city of Kolkata, the education level of mothers significantly affects their knowledge of antibiotic use in paediatric dentistry.

Keywords: Antimicrobial resistance, Mother's education, Questionnaire

INTRODUCTION

Dentists commonly prescribe antibiotics for the prevention and treatment of odontogenic infections. However, the use of antibiotics in dentistry should be carefully considered due to the potential for misuse and the emergence of antibiotic resistance. Antibiotics should only be used as adjuncts when necessary, yet dentists often prescribe multiple antibiotics for short durations [1]. In paediatric dentistry, antibiotics are frequently prescribed for infection treatment, but their appropriate use is crucial to prevent the development of antibiotic-resistant bacteria.

Antibiotic resistance poses a critical global challenge, rendering antibiotics less effective and potentially unsafe [2]. The prevalence of self-medication, fuelled by factors such as low socio-economic status, time constraints, insufficient awareness about antibiotic resistance, lack of knowledge, and a desire for self-care, significantly contributes to the rise of antibiotic resistance and over time, there has been a gradual increase in the adoption of self-medication within communities [3]. Furthermore, the improper choice of medications and inconsistent adherence to treatment regimens has also played a significant role in fostering antibiotic resistance across the global population [4]. In 2011, the World Health Organisation (WHO) designated World Health Day with the theme "Combat Antimicrobial Resistance: No Action Today, No Cure Tomorrow" [5]. Swift action is needed to devise prevention strategies against bacterial resistance to antibiotics. Researchers have increasingly focused on investigating antibiotic misuse, particularly in assessing the public's Knowledge, Attitudes, and Practices (KAP) regarding antibiotic usage [6].

Mothers play a vital role in administering food and medicines to their children. Insufficient parental awareness regarding the prudent use of antibiotics in managing common childhood illnesses can lead to their misuse [7]. Insufficient health education is a significant contributing factor to antibiotic misuse [8]. Antibiotic misuse not only affects individual patients but also impacts the entire community through escalating antibiotic resistance in bacteria. As a consequence, complications increase the burden of chronic illnesses and escalate healthcare expenses. From 2000 to 2010, worldwide antibiotic consumption increased by 40%, with Brazil, Russia, India, China, South Africa (BRICS) countries accounting for approximately three-quarters of total usage [9]. In India, antibiotic resistance at the community level poses a significant challenge due to widespread self-medication practices and the availability of over-the-counter antibiotics [10].

Prior studies conducted in India have revealed diverse patterns of inappropriate dispensing and usage of antibiotics [11,12]. However, few studies have focussed on the inappropriate use of antibiotics in paediatric dentistry for combating odontogenic infections [12,13].

Therefore, the present cross-sectional study aimed to evaluate the knowledge, attitudes, and practices of antibiotic usage in paediatric dentistry among mothers residing in the city of Kolkata, West Bengal. The findings of the present study could contribute to the development of effective intervention programs in Kolkata, aimed at enhancing parental understanding of antibiotics and addressing the issue of antibiotic resistance.

MATERIALS AND METHODS

This cross-sectional survey was conducted at the Outpatient Department (OPD) clinic of the Department of Paediatric and

Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Panihati, Kolkata, West Bengal, India, between October 2022 and January 2023. Permission to conduct the study was obtained from the Institutional Ethical Committee (IEC) of the Institution (IRC No: GNIDSR/IEC/21-24/21). Before inclusion, all participants were provided with a comprehensive explanation of the study's nature and objectives, and informed consent was obtained from each of them. Data collection was carried out anonymously to ensure confidentiality and was upheld throughout the study.

Inclusion criteria: The target population of the present study included all mothers attending the OPD clinic of the Department of Paediatric and Preventive Dentistry, belonging to different age groups and diverse socio-demographic backgrounds. The eligibility criteria was being a mother with atleast one child between six months and 13 years old attending the OPD clinic.

Exclusion criteria: Mothers who expressed unwillingness to participate were excluded from the study.

Sample size calculation: A convenience sample of 203 mothers of children aged six months to 13 years old, attending the OPD clinic, was obtained. The sample size was determined using the appropriate formula for cross-sectional analysis ($N=Zpq/d^2$) based on the prevalence from a previous study by Revathi B and Pandurangan KK, 2020 [14]. The desired sample size obtained was 197, and a total of 203 participants were included in our study.

Study Procedure

Data collection was conducted using a multilingual (English, Bengali, and Hindi), close-ended questionnaire in this offline cross-sectional survey. The questionnaire used in this study was formulated based on a previous study by Revathi B and Pandurangan KK, 2020 [14]. A pilot study was conducted with 15 participants to assess the reliability, internal consistency, and validity of the questionnaire. The internal consistency of the questionnaire was deemed good, with a Cronbach's alpha of 0.769. The validity of almost all questions (except three) was confirmed through correlation analysis and those invalid questions were excluded from the final questionnaire.

The questionnaire consisted of 23 close-ended questions divided into four sections. The first section comprised five questions aimed at gathering data on the demographic and socio-economic characteristics of the mothers. The second section consisted of seven questions regarding the mothers' knowledge about antibiotic usage. The third section contained five questions pertaining to the mothers' attitudes towards antibiotic use, and the last section included six questions concerning the practices of mothers related to antibiotics.

STATISTICAL ANALYSIS

The data was tabulated and graphs and tables were generated using Microsoft excel. The statistical analysis was conducted using International Business Machines (IBM) Statistical Package for the Social Sciences (SPSS) Statistics 23.0 (IBM Corporation, Armonk, NY, USA). Descriptive statistics were used to analyse the socio-demographic variables and other relevant factors of the study population. Frequencies and percentages were used for categorical variables, while mean and standard deviation were used for continuous variables. Chi-square analysis was performed to measure the association between categorical variables. The p-value less than 0.05 were considered statistically significant.

RESULTS

A total of 203 mothers participated in the study. Among them, 73.3% (149) had an educational background above high school. 46.8% (95) of the mothers were homemakers, while 20.7% (42) belonged to the medical field. 42.8% (87) of the mothers had a monthly income of less than Rs. 35,000 [Table/Fig-1].

Variables	Frequency (n)	Percentage (%)
Age		
≤35 years	104	51.2
>35 years	99	48.7
Education		
<High school	54	26.6
>High school	149	73.3
Occupation		
Homemaker	95	46.8
Medical field	42	20.7
Non medical field	66	32.5
Monthly income		
≤Rs. 35000	87	42.8
>Rs. 35000	116	57.1
Number of children		
More than one	70	34.5
One	133	65.5

[Table/Fig-1]: Characteristics related to the socio-demographics of the study population (N=203).

Regarding knowledge about antibiotics, 82.2% (167) of the mothers had heard or knew about the term "Antibiotics" before. 67.5% (137) of the study population believed that antibiotics are used to treat dental pain. 85.7% (174) of the mothers agreed that antibiotics are used to combat bacterial infections that can cause toothache or facial swelling. A total of 55.1% (112) of the participants acknowledge that antibiotic resistance is a global issue [Table/Fig-2].

In terms of attitudes towards antibiotics use, 98% (199) of the participants confirmed that antibiotic treatment should only be started upon receiving a doctor's prescription. A total of 96.1% (195)

Questions asked	Answer	n	%
Knowledge			
Have you heard/know the term "Antibiotics" before?	Yes	167	82.2
	No	36	17.8
Antibiotics are used to treat dental pain?	Agree	137	67.5
	Disagree	66	32.5
Antibiotics are used against bacterial infections leading to toothache or facial swelling?	Agree	174	85.7
	Disagree	29	14.3
Antibiotics are used to treat oral ulcers caused by viral infections?	Agree	116	57.1
	Disagree	87	42.9
Antibiotics have no side-effects.	Agree	128	63.1
	Disagree	75	36.9
Indiscriminate use of antibiotics leads to antibiotics resistance?	Agree	145	71.4
	Disagree	58	28.6

Antibiotic resistance is a worldwide problem.	Agree	112	55.1
	Disagree	91	44.9
Attitudes			
If your child was affected by severe dental infection, antibiotic treatment should be started by?	After Doctors prescription	199	98
	Self-medication	4	2
Do you pay attention to the expiry date?	Agree	195	96.1
	Disagree	8	3.9
Do you believe that the child should receive antibiotics according to their condition?	Agree	186	91.6
	Disagree	17	8.4
Do you prefer antibiotics which are expensive?	Agree	50	24.6
	Disagree	153	75.4
Do you administer a higher dose of antibiotics to your child than what the doctor prescribed?	Agree	21	10.3
	Disagree	182	89.7
Practices			
Do you store antibiotics for future use?	Agree	91	44.8
	Disagree	112	55.2
Have you ever administered antibiotics to your child without seeking advice from a doctor?	Agree	45	22.2
	Disagree	158	77.8
How long will u continue the course of antibiotics?	Till the full course of prescribed antibiotics is completed	182	89.6
	Till the symptoms subside	21	10.4
What do you do when antibiotics are not effective?	Consult Doctor	199	98
	Buy more antibiotics	4	2
Have you ever given over the counter/left over antibiotics to your child?	Agree	58	28.6
	Disagree	145	71.4
Have you ever administered antibiotics prescribed by pharmacists/medical shopkeeper?	Agree	128	63.1
	Disagree	75	36.9

[Table/Fig-2]: Knowledge, Attitudes, and Practices (KAP) of mothers concerning antibiotic use for children.

of the mothers paid attention to the expiry date of antibiotics, 91.6% (186) believed that their child should receive antibiotics according to their condition. Only 10.3% (21) of the mothers administered higher doses of antibiotics than what the doctor had prescribed [Table/Fig-2].

Regarding practices related to antibiotic usage, approximately 44.8% (91) of the mothers stored antibiotics for future use. The majority, 77.8% (158) of the mothers, had not administered antibiotics to their child without seeking advice from a doctor. 89.6% (182) of the mothers believed that antibiotics should be continued until the full course of prescribed antibiotics is completed. Only 28.6% (58) of the mothers had provided their children with leftover antibiotics. A total of 36.9% (75) of the mothers admitted to administering antibiotics prescribed by pharmacists or medical shopkeepers [Table/Fig-2].

Chi-square analysis showed a significant association (p<0.01) between parents' education and correct knowledge about antibiotic resistance. Mothers with a higher educational background (88.6%) exhibited greater awareness of the correlation between indiscriminate antibiotic use and the development of antibiotic resistance [Table/Fig-3].

Education	Indiscriminate use of antibiotics leads to antibiotics resistance?		Chi-square p-value
	Agree	Disagree	
<High school	17 (11.4%)	37 (64.3%)	<0.001**
>High school	128 (88.6%)	21 (35.7%)	

[Table/Fig-3]: Association between education of mothers and knowledge about antibiotic resistance.
**statistically significant at p<0.05

A notable difference (p=0.04) was observed in the awareness of the expiry date of antibiotics based on the education level of mothers [Table/Fig-4]. 75.5% of mothers with a higher educational background paid attention to the expiry date of antibiotics.

Education	Do you pay attention to the expiry date?		Chi-square p-value
	Agree	Disagree	
<High school	48 (24.5%)	6 (77.8%)	0.04*
>High school	147 (75.5%)	2 (22.2%)	

[Table/Fig-4]: Association between education of mothers and attention towards expiry date.
**statistically significant at p<0.05

There was a statistically significant association (p=0.01) between monthly family income and the attitude of mothers towards using expensive antibiotics [Table/Fig-5]. Interestingly, mothers belonging to low-income families (≤Rs. 35,000) preferred expensive antibiotics for their children compared to mothers belonging to high-income families (>Rs. 35,000).

Monthly income	Do you prefer antibiotics which are expensive?		Chi-square p-value
	Agree	Disagree	
≤35000	22 (43.9%)	65 (42.5%)	0.01*
>35000	28 (56.1%)	88 (57.5%)	

[Table/Fig-5]: Association between monthly income of family and attitude of mothers about using expensive antibiotics.
**statistically significant at p<0.05

The Chi-square analysis showed a statistically significant (p=0.03) association between the occupation of mothers and their knowledge about the side-effects of antibiotics [Table/Fig-6].

Occupation	Antibiotics have no side-effects		Chi-square p-value
	Agree	Disagree	
Homemaker	62 (65.2%)	33 (34.8%)	0.03*
Medical field	13 (30%)	29 (70%)	
Non medical field	53 (81.3%)	13 (18.8%)	

[Table/Fig-6]: Association between the occupation of the mothers and their views on the side-effects of antibiotics.
**statistically significant at p<0.05

DISCUSSION

Numerous countries have documented a lack of knowledge regarding antibiotic use among the public and medical professionals, leading to potential instances of misuse [15]. Consequently, misuse can lead to a rise in antibiotic resistance within bacteria, consequently impacting the overall burden of diseases [16-18]. To effectively oversee antibiotic resistance in the community, it is important to encourage behavioural changes among community members, including parents of children, towards the prudent use of antibiotics Nonetheless, in India, only a limited number of studies have explored the knowledge of mothers regarding antibiotic use for managing odontogenic infections in children [12-14].

In the present study, a substantial 85.7% of the mothers were aware that antibiotics are used to combat bacterial infections that cause toothache or facial swelling. In contrast, in the study conducted by Gualano MR et al., among the Turkish population, the awareness found among Turkish mothers was merely 33% [19]. The majority of participants (63.1%) believed that antibiotics do not have any side-effects, indicating a lack of awareness that can lead to inappropriate consumption and postcomplications. A 71.4% of the study population had the knowledge that indiscriminate use of antibiotics can lead to antibiotic resistance, although 44.9% of the mothers were unaware of the fact that antibiotic resistance is a worldwide problem which is lower compared to study done by Alkaeff RN et al., 201 9 [20].

Regarding attitudes towards antibiotic use, the majority of participants (98%) agreed that antibiotics should only be started according to a doctor's prescription for severe dental infections. Most commonly, mothers relied on their own previous experience or self-medication. Additionally, 96.1% of the mothers paid attention to the expiry date of antibiotics, showing good adherence to proper usage. However, 75.4% of the participants did not prefer expensive antibiotics for their children, potentially due to time constraints and financial status. A significant 89.7% of the participants acknowledged that they refrain from administering higher doses of antibiotics than what the doctor prescribed if the condition does not improve within a short period. This is in contrast to the study done by Revathi B and Pandurangan KK where 56.8% of the study population preferred higher doses of antibiotics [14].

In terms of practices, 44.8% of the mothers stored antibiotics for future use. Previously, Agarwal S et al., conducted a study among the Indian population, which revealed that a mere 18% of the mothers had reported dealing with leftover antibiotics [21]. When asked about how long will you continue the course of antibiotics, 89.6% of the mothers responded that they will continued the antibiotics till the full course of prescribed antibiotics is completed. It is a positive indication that the primary caregivers gave importance to the prescription of dentists to combat the infection by giving their children, the full prescribed course of antibiotics. Consistent with findings in other countries, the majority of respondents (63.1 %) acquired antibiotics without a prescription, primarily from their local pharmacy [22,23]. The reason behind such an attitude among parents could be attributed to the perception that their child's condition may not be severe, coupled with the lack of time to go to a clinic. However, such attitudes are expected to be partially deterred through the stricter implementation of regulations in India, where the sale of antibiotics without a prescription by pharmacists may result in heavy penalties and disciplinary actions.

However, a concerning finding was that 36.9% of the mothers admitted to administering antibiotics prescribed by pharmacists or medical shopkeepers.

The study found significant associations between parents' education and knowledge about antibiotic resistance, as well as between education level and awareness of the expiry date of antibiotics. Mothers with higher education demonstrated better knowledge and practices related to antibiotics. There was also a significant association between monthly family income and attitudes towards using expensive antibiotics, with low-income mothers showing a preference for expensive antibiotics. This contrasts with the findings reported in the study conducted by Abobotain AH et al., [24]. Upon correlating occupation with knowledge about antibiotic side-effects, it was discovered that mothers working in the medical field exhibited better awareness compared to those in non medical fields; as their regular work revolves around information about antibiotics on a daily basis. Despite possessing knowledge about the appropriate use of antibiotics, misconceptions persist among parents regarding their children's medication, owing to a failure in translating that knowledge into constructive attitudes and practices. Mothers with a high school education or above exhibited better adherence to antibiotic practices compared to those with an educational level below high school. A similar correlation was identified in the study done by Voidazan S et al., [25]. Education and professional background highly influence the KAP of mothers related to antibiotics use in combating odontogenic infections.

Limitation(s)

The study has limitations as it only covered a specific geographical area and did not include major cities outside Kolkata. Future studies should aim to cover a wider geographical area to obtain a broader understanding of mothers' knowledge, attitudes, and practices related to antibiotic usage for the well-being of their children.

CONCLUSION(S)

The present study revealed that the studied population had sufficient knowledge of antibiotic use. However, more than half of the mothers reported administering antibiotics prescribed by pharmacists or medical shopkeepers. A significant association was observed between the education level of mothers and their knowledge of antibiotics use in paediatric dentistry. The findings suggest that special attention should be given to the most underprivileged mothers, particularly those with lower educational attainment and/or unemployment, as they exhibited a relatively lower level of knowledge regarding antibiotics. Implementing multilevel parent education programs on antibiotic usage and raising awareness about the consequences of antibiotic misconceptions can significantly reduce antibiotic abuse and the development of antibiotic resistance.

REFERENCES

[1] Bhuvaraghan A, King R, Larvin H, Aggarwal VR. Antibiotic use and misuse in dentistry in India-a systematic review. Antibiotics (Basel). 2021;10(12):1459.
[2] Zaman SB, Hussain MA, Nye R, Mehta V, Mamun KT, Hossain N. A review on antibiotic resistance: Alarm bells are ringing. Cureus. 2017;9(6):e1403.
[3] Bennadi D. Self-medication: A current challenge. J Basic Clin Physiol Pharm. 2013;5(1):19-23.
[4] Laxminarayan R, Matsoso P, Pant S, Brower C, Røttingen JA, Klugman K, et al. Access to effective antimicrobials: A worldwide challenge. Lancet. 2016;387:168-75.
[5] World Health Day 2011-Antibiotic resistance: No action today, no cure tomorrow. [http://www.who.int/mediacentre/news/statements/2011/whd_20110407/en/index.html].
[6] Patel PS, Patel SN, Bhave A. Evaluation of prescribing pattern at dental outpatient department at a hospital, Gujarat. Natl J Physiol Pharm Pharmacol. 2017;7(1):47-50.
[7] Vaz LE, Kleinman KP, Lakoma MD, Dutta-Linn MM, Nahill C, Hellinger J, et al. Prevalence of parental misconceptions about antibiotic use. Pediatrics. 2015;136(2):221-31.
[8] Cebotarenco N, Bush PJ. Reducing antibiotics for colds and flu: A student-taught program. Health Educ Res. 2008;23(1):146-57.
[9] Van Boeckel TP, Gandra S, Ashok A, Caudron Q, Grenfell BT, Levin SA, et al. Global antibiotic consumption 2000 to 2010: An analysis of national pharmaceutical sales data. Lancet Infect. Dis. 2014;14(8):742-50.
[10] Ranjalkar J, Chandy SJ. India's National Action Plan for antimicrobial resistance-An overview of the context, status, and way ahead. J Family Med Prim Care. 2019;8(6):1828-34.
[11] Kaul R, Angrish P, Jain P, Saha S, Sengupta AV, Mukherjee S. A survey on the use of antibiotics among the dentists of Kolkata, West Bengal, India. Int J Clin Pediatr Dent. 2018;11(2):122-27.
[12] Swapnil B, Kaikade NP. Prescribing pattern of antibiotics in pedodontics OPD of tertiary care dental hospital in Dhule district. Int J Basic Clin Pharmacol. 2016;5:1462-65.

[13] Pawan K, Inder D. A study of Drug Utilization Pattern (DUP), at Dental Outpatient Department of a Teaching Institution, in South Delhi, India. Int J Pharm Chin Med. 2019;3(3):01-05.
[14] Revathi B, Pandurangan KK. A cross-sectional survey of knowledge, attitude and practice of antibiotic use for children in Chennai among mothers. Journal of Pharmaceutical Research International. 2020;32(20):103-12.
[15] Baadani AM, Baig K, Alfahad WA, Aldalbahi S, Omrani AS. Physicians' knowledge, perceptions, and attitudes toward antimicrobial prescribing in Riyadh, Saudi Arabia. Saudi Med J. 2015;36(5):613-19.
[16] Zowawi HM. Antimicrobial resistance in Saudi Arabia. An urgent call for an immediate action. Saudi Med J. 2016;37(9):935-40.
[17] Alumran A, Hurst C, Hou XY. Antibiotics overuse in children with upper respiratory tract infections in Saudi Arabia: Risk factors and potential interventions. Clinical Medicine and Diagnostics Journal. 2011;1(1):08-16.
[18] Levy Hara G, Kanj SS, Pagani L, Abbo L, Endimiani A, Wertheim HF, et al. Ten key points for the appropriate use of antibiotics in hospitalised patients: A consensus from the Antimicrobial Stewardship and Resistance Working Groups of the International Society of Chemotherapy. Int J Antimicrob Agents. 2016;48(3):239-46.
[19] Gualano MR, Gili R, Scaioli G, Lovato E. Knowledge and attitudes towards the use of antibiotics in the paediatric age group: A multicenter survey in Italy. Eur J Public Health. 2017;27(3):506-12.
[20] Alkaff RN, Kamigaki T, Saito M, Ariyanti F, Iriani DU, Oshitani H. Use of antibiotics for common illnesses among children aged under 5 years in a rural community in Indonesia: A cross-sectional study. Trop Med Health. 2019;47:45.
[21] Agarwal S, Yewale VN, Dharmapalan D. Antibiotics use and misuse in children: A knowledge, attitude and practice survey of parents in India. J Clin Diagn Res. 2015;9(11):SC21-SC24.
[22] Alhomoud F, Aljamea Z, Almahasnah R, Alkhalifah K, Basalelah L, Alhomoud FK, et al. Self-medication and self-prescription with antibiotics in the middle east-do they really happen? A systematic review of the prevalence, possible reasons, and outcomes. Int J Infect Dis. 2017;57:03-12.
[23] Pavydė E, Veikutis V, Mačiulienė A, Mačiulis V, Petrikonis K, Stankevičius E, et al. Public knowledge, beliefs and behaviour on antibiotic use and self-medication in Lithuania. Int J Environ Res Public Health. 2015;12(6):7002-16.
[24] Abobotain AH, Sheerah HA, Alotaibi FN, Joury AU, Mishiddi RM, Siddiqui AR, et al. Socio-demographic determinants of antibiotic misuse in children. Saudi Med J. 2013;34(8):832-40.
[25] Voidăzan S, Moldovan G, Voidăzan L, Zazgyva A, Moldovan H. Knowledge, attitudes and practices regarding the use of antibiotics. Study on the general population of Mureş County, Romania. Infect Drug Resist. 2019;12:3385-96.

PARTICULARS OF CONTRIBUTORS:
1. Postgraduate Student, Department of Paediatric and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India.
2. Postgraduate Student, Department of Paediatric and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India.
3. Postgraduate Student, Department of Paediatric and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India.
4. Reader, Department of Paediatric and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India.
5. Professor and Head, Department of Paediatric and Preventive Dentistry, Guru Nanak Institute of Dental Sciences and Research, Kolkata, West Bengal, India.

NAME, ADDRESS, E-MAIL ID OF THE CORRESPONDING AUTHOR:
Professor (Dr.) Shabnam Zahir,
157/F, Nilgunj Road, Panihati, Kolkata-700114, West Bengal, India.
E-mail: dr.shabnam.zahir@gmail.com

PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: May 11, 2023
- Manual Googling: Jul 07, 2023
- iThenticate Software: Aug 01, 2023 (14%)

ETYMOLOGY: Author Origin

EMENDATIONS: 8

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **May 07, 2023**
Date of Peer Review: **Jun 27, 2023**
Date of Acceptance: **Aug 03, 2023**
Date of Publishing: **Sep 01, 2023**