Journal of Communicable Diseases
Volume 56, Issue 1 - 2024, Pg. No. 165-170
Peer Reviewed & Open Access Journal

Research Article

A Cross-Sectional Epidemiological Analysis of Oral and Personal Hygiene Knowledge, Attitudes, and Practices Among Students in the Urban and Suburban Areas of Coimbatore for the Prevention of Communicable Diseases

T. Gopala Krishnan[1], R. Veerakumar[2], Prem Karthick Bhupathy[3], V. Senthil Prabhu[4], Pavani Muddepalli[5], A. Rajakumar[6], P. E. Chandra Mouli[7], Deepika Ekambaram[8]

[1]Reader, Department of Oral Pathology and Microbiology, [4]Lecturer, Department of Anatomy, Sri Ramakrishna Dental College and Hospital, Coimbatore, Tamilnadu.
[2]Professor, Department of Preventive and Pediatric dentistry, [3]Professor, Department of Oral Pathology and Microbiology, [5]Reader, Department Oral Medicine and Radiology, Priyadharshini Dental College and Hospital, Thiruvallur, Chennai, Tamilnadu.
[6]Associate Professor Physical Medicine - Madras Medical College Govt. Institute of Rehabilitation Medicine, K.K Nagar, Chennai.
[7]Professor and head, Department of Oral Medicine and Radiology, [8]Senior lecturer, Department of Oral Pathology and Microbiology, Sri Venkateswara Dental College Chennai, Tamilnadu.
DOI: https://doi.org/10.24321/0019.5138.202422

I N F O

Corresponding Author:
T. Gopala Krishnan, Department of oral pathology and microbiology, Sri Ramakrishna Dental College and Hospital, Coimbatore, Tamilnadu.
E-mail Id:
gopalan.jkm@gmail.com
Orcid Id:
https://orcid.org./0000-0003-0086-5525
How to cite this article:
Krishnan T G, Veerakumar R, Bhupathy P K, Prabhu V S, Muddepalli P, Rajakumar A, Mouli P E C, Ekambaram D. A Cross-Sectional Epidemiological Analysis of Oral and Personal Hygiene Knowledge, Attitudes, and Practices Among Students in the Urban and Suburban Areas of Coimbatore for the Prevention of Communicable Diseases. J Commun Dis. 2024;56(1):165-170.

Date of Submission: 2024-01-15
Date of Acceptance: 2024-03-01

A B S T R A C T

Introduction: India is undergoing an epidemiologic, demographic and health transition. The expectancy of life has increased, with a consequent rise in degenerative diseases of ageing and lifestyles. Nevertheless, communicable diseases are still dominant and constitute major public health issues. There are several factors associated with the control of communicable diseases, such as hygiene, sanitation and safe drinking water, which are interlinked. Inadequate sanitary conditions and poor hygiene practices play major roles in the increased burden of communicable diseases.

Objectives: The objectives of this study were to evaluate the knowledge about communicable diseases and practices of proper hygiene measures, among school-going children in and around Coimbatore, Tamil Nadu.

Methodology: A survey was conducted among the students of an English and Tamil medium school using a basic questionnaire.

Results: An overall lower percentile scores were obtained by children from Tamil medium schools.

Conclusion: There is a definite need for intense campaigns for the promotion of good oral and personal hygiene practices better aimed at the prevention of communicable diseases in local regional language medium schools in India.

Keywords: Personal Hygiene Knowledge, Communicable Diseases, Personal Hygiene Practices

Introduction

India is undergoing an epidemiological, demographic, and health transition. Life expectancy has increased, leading to a subsequent rise in degenerative diseases associated with ageing and lifestyles.[1] However, communicable diseases continue to prevail and pose significant public health challenges. A considerable portion of global illness and mortality is attributed to communicable diseases, a trend particularly pronounced in developing countries. Among young children, acute respiratory and intestinal infections remain the primary causes of morbidity and mortality. Given that many communicable diseases are transmitted through contact or droplets, ensuring proper hand hygiene and maintaining respiratory hygiene are two essential prerequisites for preventing such diseases. Several factors are associated with the control of communicable diseases, including interlinked aspects such as hygiene, sanitation, and access to safe drinking water. Inadequate sanitary conditions and poor hygiene practices significantly contribute to the increased burden of communicable diseases in developing countries. According to World Health Organization (WHO) data, approximately 3.1% of deaths (1.7 million) and 3.7% of disability-adjusted life years (DALYs) (54.2 million) worldwide are attributed to unsafe water, sanitation, and hygiene (WHO 2002 World Health Report). Alarmingly, over 99.8% of these occurrences are in developing countries, with 90% affecting children.[2]

The lack of resources, particularly soap and water and insufficient sanitation facilities are likely two main reasons why children struggle to maintain proper hygiene.[3]

Furthermore, hygiene practices are significantly shaped by students' knowledge and attitudes toward hygiene.[4] Past reviews on personal hygiene reveal that perception strongly impacts individuals' beliefs and practices related to hand washing. However, previous studies have offered limited insights into hygiene practices among populations in rural areas and their awareness of communicable diseases.[5]

The primary objectives of this study were to assess the knowledge about communicable diseases and the adoption of proper oral hygiene measures among school-going children in and around Coimbatore, Tamil Nadu.

Materials and Methods

The study was conducted in Coimbatore, Tamil Nadu, from March 2023 to August 2023. The study was approved by the Institutional Ethics Committee. A survey was conducted among students attending both English and Tamil medium schools, encompassing classes from 3rd to 7th, in and around Coimbatore, Tamil Nadu. A total of 988 students (712 students from 5 English medium schools and 276 students from 5 Tamil medium schools - Government schools) participated in the study. Randomised sample selection was done for this study. A total of 10 schools were included in this study. Written consent was obtained from all the participants. Chi-square test was applied for statistical analysis. The aim of the survey was to assess their knowledge, attitudes, and practices regarding personal hygiene. Based on the previous studies done on the same ideology in various states of India we decided the sample size.

A basic questionnaire was distributed to all students, and their responses to each question were meticulously assessed to gauge their understanding and adherence to personal hygiene standards. Scores were assigned based on the correctness of each response, with every accurate answer receiving a designated score. The details of the questionnaire, scores, and the percentage of children scoring in each category are provided in Table 1. Notably, the maximum achievable score for a child was 28. All the questions were orally presented to the participants and thoroughly explained to them.

The survey was followed by education and motivation of students, addressing the need for awareness and better oral and personal hygiene measures through a health talk.

Table 1.Responses of Students to the Questions

Question	Right (1) Answer (%)	Wrong (0) Answer (%)
To assess the knowledge of students		
1. Do you know that diseases can spread from one person to another?	Yes (83.17)	No (16.83)
2. Do water and food need covering?	Yes (84.00)	No (16.00)
3. Waste items should not be thrown around the house or in open areas.	True (56.00)	False (44.00)
4. Spraying pesticides will help control the spread of diseases.	True (77.10)	False (22.90)

ISSN: 0019-5138
DOI: https://doi.org/10.24321/0019.5138.202422

To assess the practices of personal hygiene		
5. Do you drink boiled water?	Yes (61.30)	No (38.70)
6. Do you wash your hands before meals?	Yes (99.20)	No (0.80)
7. Do you use a toilet inside your house?	Yes (99.10)	No (0.90)
8. Do you wash your hands after going to the toilet?	Yes (100.00)	No (0.00)
9. Do you cover your mouth and nose during coughing and sneezing?	Yes (99.20)	No (0.80)
10. Do you wear sandals all the time?	Yes (80.70)	No (19.30)
11. Do you brush twice daily?	Yes (87.10)	No (12.90)
12. Do you use a toothbrush and paste while brushing?	Yes (98.40)	No (1.60)
13. Do you dispose of waste to municipal waste collectors?	Yes (48.70)	No (51.30)
14. Do you use mosquito nets, coils, repellants or mosquito bats at home?	Yes (99.20)	No (0.80)
15. Sharing knowledge about healthy practices will lead to a disease-free society.	Agree (99.10)	Disagree (0.90)

Results

The results of the survey were as follows:

Upon comparing the scores obtained by children in different grades among both English and Tamil medium students in this study, a notable disparity in the knowledge, attitudes, and practices related to oral and personal hygiene emerges between the two groups. It is evident that children from Tamil medium schools obtained overall lower percentile scores. All the answers provided by the students were tallied and scores were assigned individually. Based on these scores, students scoring below 14 were categorised as poor, those scoring between 14 and 18 were deemed average, scores ranging from 19 to 23 were regarded as good, and scores between 24 and 28 were classified as very good (Table 2).

Table 2.Sum and Grading of Scores Obtained by Each Student

Standard of Student	Medium	Below 14	14–18	19–23	24–28	Total	Expected
3rd	Tamil	3	17	25	10	55	5
	English	2	15	59	40	116	32
	Total	5	32	84	50	171	37
4th	Tamil	0	12	37	29	78	10
	English	10	6	75	69	160	18
	Total	10	18	112	98	238	-
5th	Tamil	5	16	31	15	67	-
	English	20	10	25	127	182	-
	Total	25	26	56	142	249	-
6th	Tamil	0	5	13	16	34	-
	English	10	15	26	107	158	-
	Total	10	20	39	123	192	-
7th	Tamil	0	0	19	23	42	-
	English	5	20	26	45	96	-
	Total	5	20	45	68	138	-
Total	-	55	116	336	481	988	-

ISSN: 0019-5138
DOI: https://doi.org/10.24321/0019.5138.202422

Discussion

Personal hygiene encompasses a broad spectrum of practices, ranging from hand and nail cleaning to overall body cleanliness, including the tools and items used for this purpose.[6] Several factors are associated with the spread and control of communicable diseases, with personal hygiene, sanitation, and the availability of safe drinking water being interconnected. While there is explicit evidence supporting the effectiveness of measures like basic hygiene practices in controlling communicable diseases, the situation in many developing nations remains unchanged.[7] Poor sanitary conditions and basic personal hygiene behaviours, such as hand washing, are still not widely adopted.[8]

Regarding the academic performance of participants in this study, it was observed that the percentage of children achieving poor results was 0.3% in English medium schools, significantly lower than the 2.89% recorded in Tamil medium schools. Similarly, among children with average results, the percentage was 3.48% in English medium schools, contrasting with the higher figure of 18.11% in Tamil medium schools.

In line with the study conducted by Peltzer and Pengpid,[9] it was revealed that 22.4% of school children reported sub-optimal oral and personal hygiene. Notably, students demonstrating good academic performance comprised 33% in English medium schools, while the corresponding figure in Tamil medium schools was higher at 45.28%. Furthermore, those achieving very good results constituted 62.8% in English medium schools, in contrast to 36.9% in Tamil medium schools.

Comparison of Student Scores and Socioeconomic Factors

When comparing the two groups, students from Tamil medium schools exhibited suboptimal scores compared to their counterparts in English medium schools. Considering the overall socioeconomic status of children attending English and Tamil medium schools, it was observed that children from Tamil medium schools generally belonged to a lower socioeconomic status since all the Tamil medium schools in which we conducted the study were government schools. Consequently, the observed disparity in scores between the two groups could be attributed to a lack of awareness among children and their families, who come from a lower socioeconomic background.[10]

Several limitations should be considered when interpreting our results. Firstly, self-reported behaviours by students may lead to an overestimation of their actual hygiene practices. Secondly, our study focused on students in grades 3–7 who were present in school, excluding those absent due to illness or other circumstances. Therefore, the results may not be generalisable to all school children. Thirdly, the cross-sectional study design precludes the determination of causality.[11] Lastly, no significant association was found between knowledge of proper hygiene and reported hygiene practices, possibly due to the small sample size and potential over-reporting of hygiene practices.[12]

Our findings emphasise the importance of incorporating hand washing and hygiene education programs in schools. The successful implementation of such programs in schools is likely to contribute to reductions in morbidity and mortality associated with communicable diseases. A survey and literature analysis conducted by Esrey et al.[13] reported health benefits from optimal water supply and sanitation, concluding that areas with improved water supply and sanitation experienced a decrease in morbidity.

Assessment of Home Hygiene Knowledge and Practices among Students

Our survey aims to evaluate the knowledge and practice of home hygiene among students, allowing us to assess the potential risks for the future generation and implement appropriate interventions. This study addresses two critical issues that must be considered in the development of health and hygiene promotion programs.

Firstly, it was observed that nearly half of the students were unaware of the importance of possessing good knowledge about proper hygiene measures. To address this, the formation of health clubs could be considered, where students can be educated about the causes and transmission of diseases, instructed in proper hand washing techniques and hygiene practices, and provided with incentives for maintaining good personal hygiene. Education has the potential to significantly influence the behaviour patterns of students, leading to an improved understanding of hygiene.

Secondly, many hygiene practices are contingent upon the availability of sufficient resources. Well-designed and well-located hand-washing facilities and latrines, equipped with an adequate supply of soap and water, are essential for promoting hygiene. By implementing hygiene intervention programs that focus on these two crucial factors—education and resources—the needs of students and, consequently, society can be better addressed, resulting in a decreased risk of disease spread.[14]

The acquisition of personal hygiene practices as behavioural habits may become challenging with advancing age. This behaviour training for children begins in the family and continues in the school, representing their first community experience.[15] Since students are in close contact with each other in classrooms and during other activities, there is a high risk of disease transmission, extending from school to the home environment. Therefore, optimal prioritization should be given to personal cleaning and hygiene. The hygiene behaviour instilled during childhood is translated into adulthood and directly impacts the individual's health in adulthood[16] (Table 3).

ISSN: 0019-5138
DOI: https://doi.org/10.24321/0019.5138.202422

Table 3.Calculated Chi-Square Values

Standard of Student	Medium	Below 14	14–18	19–23	24–28	Total	Expected	O–E	$(O-E)^2$	$\chi^2 = \frac{\sum(O-E)^2}{E}$
3rd	Tamil	3	17	25	10	55	5	-2	4	0.1081
	English	2	15	59	40	116	32	-30	900	28.1250
	Total	5	32	84	50	171	37	-	904	-
4th	Tamil	0	12	37	29	78	10	-10	100	3.5714
	English	10	6	75	69	160	18	-8	64	3.5556
	Total	10	18	112	98	238	28	-	164	-
5th	Tamil	5	16	31	15	67	25	-9	81	3.2400
	English	20	10	25	127	182	26	-6	36	1.3846
	Total	25	26	56	142	249	51	-	117	-
6th	Tamil	0	5	13	16	34	10	0	0	0.0000
	English	10	15	26	107	158	20	0	0	0.0000
	Total	10	20	39	123	192	30	-	0	-
7th	Tamil	0	0	19	23	42	5	-5	25	5.0000
	English	5	20	26	45	96	20	0	0	0.0000
	Total	5	20	45	68	138	25	-	25	-
Total	-	55	116	336	481	988	-	-	1210	-

- O: Observed frequency
- E: Expected frequency

Now, let's sum up all the χ^2 values to get the total chi-square statistic:

x^{2total} = 0.1081 + 28.1250 + 3.5714 + 3.5556 + 3.2400 + 1.3846 + 5.0000 = 44.9847

Conclusion

The outcomes of our study lead to the conclusion that students attending English medium schools exhibit superior knowledge, attitude, and practice scores in oral and personal hygiene compared to their counterparts in Tamil medium schools. In light of these findings, we strongly advocate for targeted campaigns emphasising the promotion of optimal oral and personal hygiene practices. These campaigns should be specifically tailored for local regional language medium schools in India, with the ultimate goal of preventing communicable diseases effectively.

Source of Funding: None

Conflict of Interest: None

References

1. Kahveci G, Demirtaş Z. Cleanliness and hygiene perceptions of primary school students in 6th, 7th, and 8th grades. Pegem Eğit Öğr Derg. 2012;2(2)2:51-61. [Google Scholar]
2. Artan MO, Baykan Z, Koç AN. [The prevalence of Pediculus capitis in students of eight primary schools in the rural area of the Kayseri province]. Türkiye Parazitol Derg. 2006;30(2):112-4. Turkish. [PubMed] [Google Scholar]
3. Yaramış N, Karataş N, Ekti F, Aslantaş D. Determining oral health conditions and habits of primary school students in central Nevsehir. STED. 2005;14(12):256-9.
4. Rheinländer T, Xuan LT, Hoat LN, Dalsgaard A, Konradsen F. Hygiene and sanitation promotion strategies among ethnic minority communities in northern Vietnam: a stakeholder analysis. Health Policy Plan. 2012;27(7):600-12. [PubMed] [Google Scholar]
5. Stevenson RJ, Case TI, Hodgson D, Porzig-Drummond R, Barouei J, Oaten MJ. A scale for measuring hygiene behavior: development, reliability and validity. Am J Infect Control. 2009;37(7):557-64. [PubMed] [Google Scholar]
6. Zou KH, O'Malley AJ, Mauri L. Receiver-operating characteristic analysis for evaluating diagnostic tests and predictive models. Circulation. 2007;115(5):654-7. [PubMed] [Google Scholar]
7. Curtis V, Schmidt W, Luby S, Florez R, Touré O, Biran A. Hygiene: new hopes, new horizons. Lancet Infect Dis. 2011;11(4):312-21. [PubMed] [Google Scholar]
8. Çetinkaya S, Arslan S, Nur N, Demir ÖF, Özdemir L, Sümer H. Personal hygiene behaviors of the students attending in primary schools, in Sıvas. STED. 2005;14(10):22936.
9. Peltzer K, Pengpid S. Oral and hand hygiene behaviour and risk factors among in-school adolescents in four Southeast Asian countries. Int J Environ Res Public Health. 2014 Mar;11(3):2780-92. [PubMed] [Google Scholar]
10. Lopez-Quintero C, Freeman P, Neumark Y. Hand washing among school children in Bogotá, Colombia. Am J Public Health. 2009;99(1):94-101. [PubMed] [Google Scholar]

11. Vivas AP, Gelaye B, Aboset N, Kumie A, Berhane Y, Williams MA. Knowledge, Attitudes, and Practices (KAP) of hygiene among school children in Angolela, Ethiopia. J Prev Med Hyg. 2010;51(2):73-9. [PubMed] [Google Scholar]
12. Biran A, Tabyshalieva A, Salmorbekova Z. Formative research for hygiene promotion in Kyrgyzstan. Health Policy Plan. 2005;20(4):213-21. [PubMed] [Google Scholar]
13. Esrey SA, Potash JB, Roberts L, Shiff C. Effects of improved water supply and sanitation on ascariasis, diarrhoea, dracunculiasis, hookworm infection, schistosomiasis, and trachoma. Bull World Health Organ. 1991;69(5):609-21. [PubMed] [Google Scholar]
14. Amato PR. The impact of family formation change on the cognitive, social, and emotional well-being of the next generation. Future Child. 2005;15(2):75-96. [PubMed] [Google Scholar]
15. Mhaske MS, Khismatrao DS, Kevin F, Pandve HT, Kundap RP. Morbidity pattern and personal hygiene in children among private primary school in urban area: are the trends changing? J Fam Med Prim Care. 2013;2(3):266-9. [PubMed] [Google Scholar]
16. Vindigni SM, Riley PL, Jhung M. Systematic review: handwashing behaviour in low-to middle-income countries: outcome measures and behaviour maintenance. Trop Med Int Health. 2011;16(4):466-77. [PubMed] [Google Scholar]

ISSN: 0019-5138
DOI: https://doi.org/10.24321/0019.5138.202422