ISSN: 2347-6567

International Journal of Allied Medical Sciences and Clinical Research (IJAMSCR)

IJAMSCR |Vol.14 | Issue 2| Apr - Jun - 2026

www.ijamscr.com

DOI : https://doi.org/10.61096/ijamscr.v14.iss2.2026.1019-1024

Knowledge and Awareness Regarding Effects of Soil on Dental Health

***Dr. Venkataramana ambati, Dr. T. Madhavi Padma, Dr. K.V.N.R. Pratap, Dr. B. Vengal Rao, Dr. V. Srujan Kumar, Dr. K. Darshika.**

[1]*Student, Department of public health dentistry, Mamata Dental College, Khammam, India*
[2]*Professor and HOD, Department of public health dentistry, Mamata Dental College, Khammam, India.*
[3,4] *Professor, Department of public health dentistry, Mamata Dental College, Khammam, India.*
[5, 6]*Senior lecturer, Department of public health dentistry, Mamata Dental College, Khammam, India.*

Published on: 08.06.2026
Published by: Futuristic Publications
2026| All rights reserved.

Creative Commons Attribution 4.0 International License.

Abstract: Recognition of the relationship between soils and human health dates back to ancient times and soil degradation has certainly been an important issue for human civilization. The intake of food quality and its nutrition value depends to a large extent on the health of soils, in which it is grown.
Aim: To evaluate quantitatively the knowledge and attitude of undergraduate dental students on effects of soil on dental health.
Objectives: To assess the knowledge, awareness, attitude and perception among undergraduate dental students regarding effects of soil on dental health.
Methodology: Role of Soils and Its Trace Element Concentration on Human Dental Health
Results: In the study population, majority of them were females with 78% and males were 22%.
Conclusion: Based on the review of literature, it is deeply realised that there is a strong connection between soil and human teeth
Key words: Soil, contamination, trace elements, groundwater, dental caries, fluorosis

INTRODUCTION

Soil plays a major role in the dental health of human beings. Mainly, soil affects the dental conditions through foods obtained from crops grown on the soils and through water that passes through the soils. Consumption of food and water flourished in contaminated soil may cause dental diseases like the formation of cavities and tooth decay (dental caries), dental fluorosis, periodontal problems, and even tooth loss.

Moreover, the treatments needed to grow even carbonaceous vegetation on soils in most of the countries are lime (calcium) and superphosphate (phosphorus), which are the chemical composition of our teeth i.e. calcium phosphate. Hence, there is a good reason that the poor dental condition of the people in these areas should relate to the low fertility of the soils (Schlack and Birren, 1946). It cannot be denied that significant technological development in dental treatment has taken place over time i.e., starting from the use of a silver paste as an amalgam to maintain oral health in 700 AD to the introduction of synthetic.

Soil is a thin layer of organic and inorganic materials that cover the earth's rocky surface. The organic part of the soil, derived from plant and animal biomass, is concentrated in the dark, uppermost topsoil. The inorganic part consists of rock components formed over thousands of years through the parent rock material's physical and chemical weathering (Brady et al., 2008). Productive soils are essential for good agricultural productivity. Soil pollution refers to anything that causes contamination of soil and degrades the soil quality. It occurs when the pollutants causing the pollution reduce the quality of the soil and convert the soil inhabitable for microorganisms and macro-organisms living in the soil.

Soil pollution is the accumulation of persistent toxic compounds, salts, chemicals, disease-causing agents, and radioactive materials that negatively impact plant growth and animal health. This phenomenon occurs when pollutants, including chemicals, heavy metals, and organic waste, are introduced into the soil at levels that exceed natural background concentrations, leading to detrimental effects. The most common chemicals involved in soil pollution include petroleum hydrocarbons, polynuclear aromatic hydrocarbons (such as naphthalene and benzo(a)pyrene), pesticides, solvents, lead, and other heavy metals. Contamination levels are often linked to the degree of industrialization and the intensity of chemical usage (Shankar and Shikha, 2017).

AIM

To investigate the opinions on the use of effects of soil and dental health among the undergraduate dental students.

OBJECTIVES

1. To investigate the opinions on the effects of soil on dental health items among the undergraduate dental students based on gender.
2. To investigate the opinions on the effects of soil on dental health among the undergraduate dental students based on year of the study.

METHODOLOGY

Study design and area: A cross sectional study was conducted at Mamata Dental College, Khammam, Telangana.

Study population: The health care students included a total of 200 dental students of all years.

Study instruments: A protested offline questionnaire was given consisting of 19 questions each participant had to fill in their demographic data like name, gender, age, year of study. Participants had to select one option from the options provided against each question.

Sampling methodology: The sampling methodology used is convenience sampling.

Inclusion criteria: Students who were present on the day of the study and willing to participate are included.

Exclusion criteria: Students who were absent on the day of the study and who has not given consent were excluded.

Organizing the study: The study was designed in a paper-based version of the self-administered questionnaire of 19 questions focusing on knowledge and awareness includes the sections of demographic data.

RESULTS

Based on the year of study majority of them were IV Bds students with 25.5% followed by Interns and III Bds with 46.5% and intern with 28.0%.
In this study group most of the females (78.0%) agreed that oral jewellery will help in identification in forensic odontology.

	N	Minimum	Maximum	Mean	Std. Deviation
Age	200	19	26	22.65	1.657

Gender

		Frequency	Percent
	MALE	44	22.0
Valid	FEMALE	156	78.0
	Total	200	100.0

Year of Study

		Frequency	Percent
	III BDS	93	46.5

Valid	IV BDS	51	25.5
	INTER N	56	28.0
	Total	200	100.0

Distribution and comparison of responses based on gender:

Item	Response	Males		Females		Chi-Square value	P value
		n	%	n	%		
Q1	1	12	27.2	32	72.8	9.755	0.05*
	2	25	22.5	86	77.6		
	3	3	14.2	18	85.7		
	4	4	16.6	20	83.3		
Q2	1	9	17.2	25	16.0	10.378	0.016*
	2	19	54.9	41	26.2		
	3	11	19.3	54	34.6		
	4	5	9.4	26	16.6		
Q3	1	4	6.7	15	/10.4	6.481	0.090
	2	5	15.4	20	12.1		
	3	3	4.1	15	22.6		
	4	32	75.1	96	56.8		
Q4	1	16	42.1	22	17.9	19.818	0.0001*
	2	15	40.5	25	19.5		
	3	9	15.4	70	51.3		
	4	4	4.2	34	25.1		
Q5	1	16	45.7	102	74.3		
	2	28	54.3	54	25.7	10.620	**0.014***
Q6	1	15	63.7	25	46.3	5.049	0.168
	2	7	47.6	33	52.4		
	3	10	62.5	85	67.5		
	4	12	67.7	10	32.3		
Q7	1	18	57.1	21	42.9	9.489	**0.023***
	2	15	54.9	37	45.1		
	3	10	22.5	87	54.1		
	4	1	20.4	1	32.5		
Q8	1	25	60.4	95	76	10.167	**0.017***
	2	19	39.6	23	24		
Q9	1	12	29.1	30	46.9	1.211	0.750
	2	15	30.6	26	39.4		
	3	10	25.4	73	54.6		
	4	7	12.5	12	37.5		
Q10	1	24	52.2	22	15.8	8.275	**0.041***
	2	9	30.4	19	19.6		
	3	7	20	20	23		
	4	4	10.4	94	43.5		
Q11	1	36	57.1	55	19.3	5.928	0.115
	2	8	43.2	99	81.3		
Q12	1	20	13.5	26	16.5	6.303	0.98
	2	32	19.3	22	20.7		
	3	61	64.9	33	25.1		
	4	35	16.6	90	47.5		
Q13	1	10	39.2	54	30.8	2.483	0.478
	2	20	42.5	18	17.5		
	3	14	19.1	83	53.5		
Q14	1	21	46.7	24	13.3	3.258	0.350
	2	6	13.6	24	13.3		
	3	10	20.3	52	33.1		

	4	7	6.5	56	37.3		
Q15	1	11	23.4	31	23.6	5.657	0.07
	2	10	22.1	29	22.6		
	3	9	18.6	20	17.1		
	4	14	35.9	76	53.5		
Q16	1	14	31.5	64	42.2	4.768	0.09
	2	10	29.4	30	26.6		
	3	9	18.5	29	20.7		
	4	11	21.8	31	21.6		
Q17	1	20	41.5	43	58.5	8.766	0.075
	2	14	21.3	65	68.7		
	3	4	25.0	12	75.0		
	4	6	14.1	36	83.9		
Q18	1	13	19.7	47	81.3	7.354	0.06
	2	17	27.0	63	73.0		
	3	4	14.5	20	83.5		
	4	10	41.0	26	59.0		
Q19	1	12	33.5	66	66.5	11.655	0.094
	2	18	45.0	20	55.0		
	3	11	21.6	43	78.4		
	4	3	11.2	27	88.8		

P≤0.05 is statistically significant

Distribution and comparison of responses based on year of the study:

Item	Response	III BDS		IV BDS		INTERN		Chi-Value	P-Value
		n	%	n	%	n	%		
Q1	1	11	40.7	9	33.3	7	25.9	11.575	0.02*
	2	56	46.2	32	26.4	34	28.0		
	3	14	50.0	6	21.4	8	28.6		
	4	12	66.6	4	22.2	2	11.1		
Q2	1	7	9.7	10	16.6	14	20.5	7.842	0.005”
	2	36	50	36	60	32	47.0		
	3	20	27.7	12	20	14	20.5		
	4	9	12.5	2	3.3	8	11.7		
Q3	1	6	15	6	15	6	15	11.192	0.513
	2	14	20.6	16	23.5	3	4.4		
	3	18	21.7	14	16.9	9	10.8		
	4	7	15.9	11	25	7	15.9		
Q4	1	6	15.8	6	15.8	4	10.5	17.051	0149
	2	6	16.2	11	29.7	1	2.7		
	3	26	23.4	33	34.5	34	43.5		
	4	42	36.5	8	12.6	25	34.6		
Q5	1	5	14.3	5	14.3	5	14.3	18.317	0.106
	2	15	23.8	17	27	3	4.8		
Q6	1	9	16.7	8	14.8	8	14.8	42.592	**0.07**
	2	15	23.8	16	25.4	1	1.6		
	3	7	8	20	22.7	9	10.2		
	4	14	45.2	4	12.9	7	22.6		
Q7	1	3	6.1	9	18.4	11	22.4	19.802	0.071
	2	16	19.5	18	22.5	7	8.5		
	3	46	54.7	25	32.6	20	21.5		
	4	12	32.2	17	23.6	30	51.9		
Q8	1	50	69.4	31	51.6	43	63.3	15.579	0.004*
	2	22	30.6	29	49.4	25	36.9		
Q9	1	8	12.5	6	9.4	13	20.3	22.714	**0.07**

	2	11	16.7	15	22.7	6	9.1		
	3	15	20.3	20	27	4	5.4		
	4	11	34.4	7	21.9	2	6.2		
Q10	1	5	10.9	5	10.9	10	21.7	19.322	0.081
	2	10	20.8	12	25.5	3	6.2		
	3	30	50.6	13	26.7	17	54.6		
	4	27	19.1	30	39.5	38	18.5		
Q11	1	61	84.7	35	58.3	40	58.8	25.349	**0.013***
	2	11	15.3	25	41.7	28	41.2		
Q12	1	6	13	5	10.9	10	21.7	29.118	**0.04***
	2	10	8.5	7	13.6	4	17.4		
	3	17	18.1	31	53.5	5	15.3		
	4	39	73.8	22	24.5	59	67.6		
Q13	1	36	39.5	13	20.6	11	17.5	14.206	0.288
	2	10	20.8	8	16.7	4	8.3		
	3	22	32.6	39	53.6	54	74.6		
Q14	1	6	13.3	4	8.9	6	13.3	24.286	**0.019***
	2	7	15.6	21	31.8	11	16.7		
	3	25	24.5	25	33.7	30	38.5		
	4	26	25.7	5	7.8	21	27.5		
Q15	1	32	44.4	25	41.6	34	50	3.657	0.05*
	2	20	27.7	4	6.6	20	29.4		
	3	15	20.8	11	18.3	9	13.3		
	4	5	6.9	20	33.3	7	10.2		
Q16	1	33	45.8	23	38.3	28	41.1	4.648	0.005*
	2	15	20.8	15	25	9	13.2		
	3	12	16.6	11	18.3	27	39.7		
	4	12	16.6	10	14.7	4	5.8		
Q17	1	45	36.6	31	31.6	32	33.8	6.587	0.07
	2	32	43.6	11	28.5	8	23.7		
	3	9	31.6	7	28.6	11	35.7		
	4	7	50.0	2	23.0	5	27.0		
Q18	1	13	22.7	22	33.7	21	31.6	7.655	0.06
	2	40	42.6	23	32.6	19	21.6		
	3	16	51.7	4	12.6	6	18.9		
	4	14	51.7	2	11.8	10	28.5		
Q19	1	11	21.6	21	39.6	23	43.7	8.657	0.07
	2	59	54.6	17	21.6	7	19.6		
	3	13	43.5	2	9.6	11	32.8		
	4	20	43.6	11	32.3	5	19.5		

P≤0.05 is statistically significant

DISCUSSION

This study was undergone to assess the opinion of undergraduate students regarding **Role of Soils and Its Trace Element Concentration on Human Dental Health**

Most of the final year students accepted that Role of Soils and Its Trace Element Concentration on Human Dental health

CONCLUSION

Based on the review of literature, it is deeply realised that there is a strong connection between soil and human teeth. The following points are concluded from the present study. The dentalresearch has not seriously considered trace elements other than fluoride.

REFERENCES:

1. Albrecht, W. (1951). Pattern of caries in relation to the pattern of soil fertility in the United States. Australian Dental Journal, 23: 1-6.
2. Albrecht, W.M.A. (1947). Our teeth and our soils. Annals of Dentistry, 6: 1-15. Armstrong, R.W. (1964).
3. Environmental factors involved in studying the relationship between soil elements and disease. American Journal of Public Health Nations Health, 54: 1536-1544. doi: https://doi.org/10.2105/ajph.54.9.1536
4. Bhaskar. A., Sharma A. and Prabhakar, I. (2018). Trace elements in dentistry: A review. International Healthcare Research Journal, 1: 309-314. Bhattacharya P. and A.C. Samal (2018).