

# A Comparative Evaluation to Assess the Knowledge, Attitude, and Practices Regarding the Effects of Oil Pulling and Its Health Benefits among Ayurvedic and Dental Students in Bareilly City: A Cross-sectional Study

Sriparna De<sup>1</sup>, Shivangi Sharma<sup>2</sup>, Sathyajith N Naik<sup>3</sup>, Pallavi Vashisth<sup>4</sup>, Priya Maheshwari<sup>5</sup>, Rasleen Dua<sup>6</sup>

Received on: 20 April 2024; Accepted on: 15 May 2024; Published on: 18 July 2024

## ABSTRACT

**Background:** Oil pulling is one of the ancient customs in India. It is said to provide several health advantages in addition to maintaining periodontal and gum health. People are progressively returning to more traditional techniques of preserving oral health and cleanliness due to the rising incidence of adverse effects from contemporary drugs and oral hygiene products.

**Aim:** This survey was conducted to evaluate and compare the knowledge, attitude, and practice of the ayurvedic and dental students toward oil pulling and its role in maintaining oral hygiene.

**Methodology:** A questionnaire consisting of 16 questions about the knowledge, attitude, and practice regarding oil pulling and its effects on oral health were circulated among 240 ayurvedic and dental students. Descriptive statistics and Chi-square test were employed to check the association between the survey questions.

**Results:** It was found that out of 120 ayurvedic students, about 86.7% knew what oil pulling is whereas 61.7% of dental students were aware of the same. As a whole, knowledge of ayurvedic students was higher as compared with dental students.

**Conclusion:** This research emphasizes the necessity of educational initiatives that highlight the value of oil pulling. Dental students should be made more aware of the benefits of oil pulling for oral health and how it can be a safer, more cost-effective substitute for pharmaceutical medicine.

**Keywords:** Ayurveda, Oil pulling, Oral hygiene, Traditional practice.

*Journal of Oral Health and Community Dentistry* (2024): 10.5005/jp-journals-10062-0183

## INTRODUCTION

The widely held assumption that good dental health is the first step toward overall health suggests that mental and physical health are closely related.<sup>1</sup> Oral symptoms of several general illnesses are a risk factor for certain oral health issues.<sup>2</sup> This association is thought to be caused by risk factors that are common in many different illnesses. The most prevalent types of oral disorders are dental caries and periodontal diseases (such as gingivitis and periodontitis).<sup>1</sup> An efficient plaque control technique can successfully prevent and control both.

Adjuvants for reducing plaque development and maintaining oral hygiene have been sought; however, mechanical teeth cleaning techniques are the most dependable and well recognized means of maintaining oral hygiene. Chemotherapeutic mouthwashes containing chlorhexidine are now utilized as adjuvant agents to prevent plaque development, however, they come with drawbacks such as altered taste, extrinsic tooth and tongue discoloration, and desquamation of the oral mucosa.<sup>3,4</sup>

In recent years, significant technical improvements have been made in the domains of medicine and dentistry. Nevertheless, because of their natural origins, affordability, few negative effects, and enhanced patient compliance, certain ancient medical practices, like Ayurveda, have begun to regain favor in recent years.<sup>1</sup>

"Oil pulling" or "oil swishing" is a popular home remedy that involves swishing oil around the mouth for benefits to dental

<sup>1-6</sup>Department of Pediatric and Preventive Dentistry, Institute of Dental Sciences, Bareilly, Uttar Pradesh, India

**Corresponding Author:** Sriparna De, Department of Pediatric and Preventive Dentistry, Institute of Dental Sciences, Bareilly, Uttar Pradesh, India, Phone: +91 8159954818, e-mail: sriparnade95@gmail.com

**How to cite this article:** De S, Sharma S, Naik SN, *et al.* A Comparative Evaluation to Assess the Knowledge, Attitude, and Practices Regarding the Effects of Oil Pulling and Its Health Benefits among Ayurvedic and Dental Students in Bareilly City: A Cross-sectional Study. *J Oral Health Comm Dent* 2024;18(1):24-28.

**Source of support:** Nil

**Conflict of interest:** None

and systemic wellness.<sup>5</sup> Oil pulling is a traditional oral kriya, or technique, that is advised as a crucial component of daily health rituals, or Dinacharya, in ayurvedic literature.<sup>6</sup> Dr. Karach introduced the idea of oil pulling to the Russian public in the 1990s, claiming that it could heal a variety of ailments, including disorders of the mouth.<sup>5</sup> Oil pulling practitioners assert that oil pulling can help with acne, headaches, migraines, diabetes mellitus, asthma, and teeth whitening, among other dental and systemic health issues.<sup>3</sup>

One of the most widely used and respected supplementary and alternative medicine modalities is Ayurveda, which is

becoming more and more well-known as complementary medicine worldwide.<sup>7</sup> The Ministry of Health and Family Welfare's Department of AYUSH suggested combining homoeopathy, siddha, unani, and ayurveda with the allopathic system to guarantee everyone's health throughout the nation. Guidelines for promoting the idea of oil pulling among Indian residents have been prepared by the Ministry of Ayush.<sup>8</sup> Medical students should be shaped with an awareness of the advantages of conventional medicine, as they will be the physicians of the future, bringing with them their values, expertise, and aspirations for the profession.<sup>9</sup> In order to evaluate the ayurveda and dental students' comprehension of oil pulling and to boost their confidence in prescribing this therapy in regular clinical practice, this study was designed to measure their knowledge, attitudes, and practice regarding it.

## METHODOLOGY

### Sample Size Estimation

$\chi^2$  tests—Goodness-of-fit tests: Contingency tables

Analysis:	A priori: Compute required sample size	
Input:	Effect size $w$	= 0.3
	$\alpha$ err prob	= 0.05
	Power ( $1-\beta$ err prob)	= 0.95
	Df	= 5
Output:	Noncentrality parameter $\lambda$	= 19.8000000
	Critical $\chi^2$	= 11.0704977
	Total sample size	= 220
	Actual power	= 0.9502155

To compensate for dropout, sample size was rounded off to 240.

This cross-sectional observational study was carried out on 120 dental students and 120 ayurvedic students who were selected using convenience sampling. The study was conducted at Rohilkhand Ayurvedic Medical College and Institute of Dental Sciences, Bareilly from 4th March to 12th April, 2023. Students were provided with predesigned pre-validated 16-item questionnaire based on study objectives.<sup>10</sup>

The questionnaire was filled by the participants in the presence of the investigator without any inputs to avoid bias. Basic demographic data were also collected from the study subjects in the questionnaire.

The questionnaire consisted of 16 questions which were knowledge-based (9) questions regarding familiarity of students toward oil pulling, attitude-based (3) questions asking about their opinions about these strategies, and practice-based (4) questions assessing whether or not they use these strategies on a regular basis. To ensure confidentiality, all subjects' identity was coded and stored safely. Subjects were assured of the confidence in the handling of their responses.

### Statistical Analysis

For data analysis and statistical assessment, data collected were tabulated and compiled in MS Excel. Data collected were grouped into data for undergraduates of ayurvedic and dental students and total summation of the entire sample was tabulated. Descriptive statistics was used in terms of percentage and frequency. With a level of significance value  $<0.05$ , the Chi-square test was employed to check the association between the survey questions.

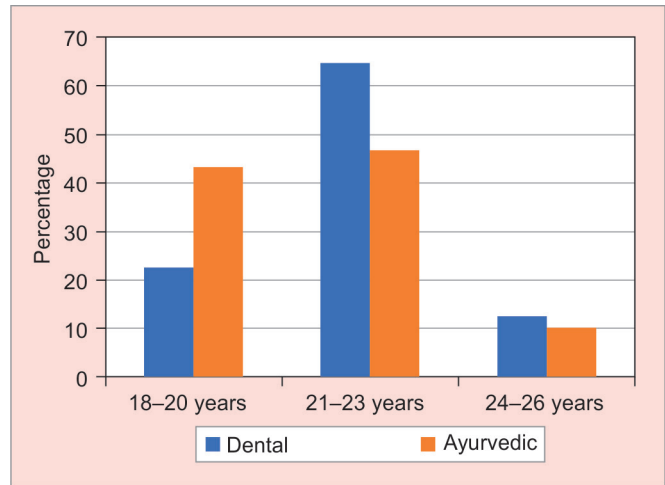


Fig. 1: The bar graph represents the age-wise distribution of study participants

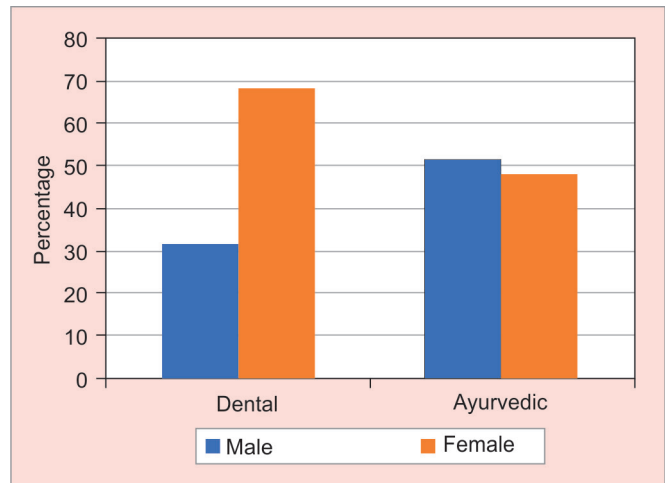


Fig. 2: The bar graph represents the gender-wise distribution of students who participated in the study

## RESULTS

This study is the first questionnaire study done among dental and ayurvedic students to assess their knowledge and awareness about effects of oil pulling. Out of total 240 participants, maximum dental and ayurvedic students belonged to the age group 21–23 years (Fig. 1). It was observed that maximum dental students ( $n = 82$ ) were female and maximum ayurvedic students ( $n = 62$ ) were male (Fig. 2).

The number of correct answers given for each question in the questionnaire was calculated and the percentage of correct answers for each question was determined for the entire sample (Table 1). Approximately 61.7% of dental students and 86.7% of ayurvedic students responded that they are aware of practice of oil pulling and the difference between two groups was found to be statistically significant. About 30.8% of dental students and 78.3% of ayurvedic students were aware that oil pulling should be done before brushing early in morning and the difference between two groups was found to be statistically significant. Approximately 62.5% of dental students and 80.8% of ayurvedic students were aware that oil pulling is based on mechanism of emulsification and

the difference between two groups was found to be statistically significant. Approximately 52.5% of dental students and 68.3% of ayurvedic students knew that oil pulling is very efficient in treating plaque induced gingivitis and the difference between two groups was found to be statistically significant. Only 15% of dental students and 46.7% of ayurvedic students feel that oil pulling inhibits growth of malignant tumor and the difference between two groups was found to be statistically significant. Approximately 30.8% of dental students and 78.3% of ayurvedic students think oil pulling can replace the usage of chemical mouthwashes to prevent and maintain oral health and the difference between two groups was found to be statistically significant. Approximately 33.3% of dental students and 45% of ayurvedic students think chronic usage of oil pulling has effect on systemic issues like GERD, peptic ulcers, diabetes, migraine and the difference between two groups was found to be statistically significant. Approximately 56.7% of dental students and 81.7% of ayurvedic students are aware that practicing oil pulling improves both oral and general health and the difference between two groups was found to be statistically significant. The difference between dental and ayurvedic students was found to be statistically significant in all questions pertaining to practices regarding oil pulling (Table 1).

## DISCUSSION

In developing nations, oral disorders are becoming more prevalent and constitute one of the major issues in public health. Health administrators should encourage the inclusion of oral health in the national health plan and create appropriate oral health strategies that take into account promotion and disease prevention activities.<sup>11</sup> The cornerstone of maintaining good oral health and preventing oral illnesses is prevention. Modern medicine has not been very successful in treating or preventing oral illnesses.<sup>12</sup>

In many Asian developing and developed countries, a deeper comprehension of traditional medicine as an adjunctive method is essential, as it connects to ingrained cultural ideas and might increase public acceptance of dental healthcare initiatives. A good substitute that might inspire the creation of fresh dental health preventatives or treatment plans is Ayurveda. Recently, there has been a resurgence of interest in the use of different ayurvedic medications for tooth and oral health, with oil pulling becoming more popular.<sup>13</sup> This is a useful technique not just for the wealthy but also for the underprivileged, for whom using inexpensive methods would allow them to maintain better dental hygiene.

**Table 1:** Comparison of participants' responses to questions regarding the effects and outcomes of oil pulling on health

Questions	Options	Dental	Ayurvedic	p-value
Questions on knowledge				
1. Do you know about oil pulling?	a) Yes	74 (61.7%)	<b>104 (86.7%)</b>	<b>0.000</b>
	b) No	30 (25%)	10 (8.3%)	
	c) Not sure	16 (13.3%)	6 (5.0%)	
2. Oil pulling should be done _____	a) Early morning (empty stomach) before brushing	62 (51.7%)	<b>91 (75.8%)</b>	<b>0.000</b>
	b) Early morning (empty stomach) after brushing	23 (19.2%)	22 (18.3%)	
	c) Night time before bed	35 (29.2%)	7 (5.8%)	
3. Ideal time to spit oil after doing oil pulling?	a) After 10 minutes	<b>58 (48.3%)</b>	23 (19.2%)	0.063
	b) After 20 minutes	7 (5.8%)	43 (35.8%)	
	c) Once oil loses its viscosity and becomes thick and milky	55 (45.8%)	<b>54 (45%)</b>	
4. Oil pulling works under _____ mechanism?	a) Emulsification	75 (62.5%)	<b>97 (80.8%)</b>	<b>0.000</b>
	b) Saponification	12 (10%)	9 (7.5%)	
	c) None of the above	33 (27.5%)	14 (11.7%)	
5. Oil that is used to swishing around the mouth can be swallowed instead of spiting it out.	a) Agree	17 (14.2%)	27 (22.5%)	0.133
	b) Disagree	76 (63.3%)	<b>79 (65.8%)</b>	
	c) Not sure	27 (22.5%)	14 (11.7%)	
6. Oil pulling is very effective against plaque induced gingivitis.	a) Agree	63 (52.5%)	<b>82 (68.3%)</b>	<b>0.000</b>
	b) Disagree	10 (8.3%)	20 (16.7%)	
	c) Not sure	47 (39.2%)	18 (15%)	
7. Oil pulling inhibits growth of malignant tumor.	a) Agree	18 (15%)	56 (46.7%)	<b>0.000</b>
	b) Disagree	<b>35 (29.2%)</b>	30 (25%)	
	c) Not sure	67 (55.8%)	34 (28.3%)	
8. Oil pulling can be practiced daily.	a) Agree	45 (37.5%)	<b>66 (55%)</b>	0.174
	b) Disagree	26 (21.7%)	32 (26.7%)	
	c) Not sure	49 (40.8%)	22 (18.3%)	

(Contd...)

Table 1: (Contd...)

Questions	Options	Dental	Ayurvedic	p-value
9. Is it advisable for children's below 5 years to practice oil pulling?	a) Yes	13 (10.8%)	18 (15%)	0.838
	b) No	54 (45%)	<b>65 (54.2%)</b>	
	c) Not sure	53 (44.2%)	37 (30.8%)	
Questions on attitude				
10. Do you think oil pulling can replace the usage of chemical mouthwashes to prevent and maintain oral health?	a) Yes	37 (30.8%)	<b>94 (78.3%)</b>	<b>0.000</b>
	b) No	29 (24.2%)	16 (13.3%)	
	c) Not sure	54 (45%)	10 (8.3%)	
11. According to you which of the following oil is most commonly used for oil pulling?	a) Sesame oil	30 (25%)	19 (15.8%)	0.489
	b) Mustard oil	39 (32.5%)	9 (7.5%)	
	c) Coconut oil	51 (42.5%)	<b>92 (76.7%)</b>	
12. Do you think chronic usage of oil pulling has effect on systemic issues like GERD, peptic ulcers, diabetes, migraine?	a) Yes	40 (33.3%)	<b>54 (45%)</b>	<b>0.000</b>
	b) No	17 (14.2%)	27 (22.5%)	
	c) Not sure	<b>63 (52.5%)</b>	39 (32.5%)	
Questions on practice				
13. Practicing oil pulling improves both general health and oral health.	a) Agree	68 (56.7%)	<b>98 (81.7%)</b>	<b>0.000</b>
	b) Disagree	8 (6.7%)	10 (8.3%)	
	c) Not sure	44 (36.7%)	12 (10%)	
14. Oil pulling aids in reduction of halitosis.	a) Agree	<b>67 (55.8%)</b>	55 (45.8%)	<b>0.025</b>
	b) Disagree	8 (6.7%)	14 (11.7%)	
	c) Not sure	45 (37.5%)	51 (42.5%)	
15. Chronic usage of oil pulling stains teeth.	a) Agree	42 (35%)	<b>53 (44.2%)</b>	<b>0.054</b>
	b) Disagree	25 (20.8%)	48 (40%)	
	c) Not sure	53 (44.2%)	19 (15.8%)	
16. Dentist (practitioner) should advise oil pulling for patient with moderate oral health for maintenance.	a) Agree	59 (49.2%)	<b>92 (76.7%)</b>	<b>0.000</b>
	b) Disagree	11 (9.2%)	11 (9.2%)	
	c) Not sure	50 (41.7%)	17 (14.2%)	

Bold values signifies the maximum number (%) of correct answers provided by both dental and ayurvedic students

Students, professionals, people, and society at large bear responsibility for this area of dentistry.<sup>12</sup> Hence, this study was done to assess and compare the knowledge, attitude, and practices about effects of oil pulling and its health benefits among ayurvedic and dental students.

In the present study, 61.7% of dental students were aware of oil pulling. Approximately 62.5% of them knew about the mechanism of oil pulling and 63.3% knew that oil should be spit out instead of swallowing it. The low knowledge scores among dentists in this study were consistent with those of Krishnapriya et al., Bharathi and Dhanraj and Ram et al.<sup>10,14,15</sup>

Although 56.7 and 55.8% of dental students felt that practicing oil pulling improves both general and oral health and helps in the reduction of halitosis, respectively, there is a knowledge gap among dental students. A study done by Basha and Gurumurthy et al. on the general population found significantly high concentrations of people were unaware of this practice and there was a growing need to spread information on the same.<sup>16,17</sup>

Various KAP studies have been performed on different populations, but this is the first research of this kind and it showcases the familiarity of ayurvedic students with the benefits of oil pulling. The present study also evaluated the knowledge, attitude, and practice of ayurvedic and dental students with respect to the advantages of oil pulling for oral health maintenance. The former group performed significantly better in all three domains than the latter, but there is still a deficiency in the recommendation of oil pulling. Dental students can successfully collaborate with ayurvedic colleagues to build an interdisciplinary approach, communicate, and improve oral healthcare for patients, thus closing the knowledge and practice gap on oil pulling. Furthermore, consistent planning and implementation of continuing education programs that emphasize the significance and impacts of oil pulling on oral health are necessary to inspire and educate dentistry students.

In spite of all the advances in the field of health science, traditional healing methods still have a major role to play. Accurate

knowledge will enable dental and ayurvedic students to make appropriate decisions about their patients' health.

### Limitations

Since the study is questionnaire, its limitations stem from the fact that the majority of responses are self-reported and provide imprecise information. Due to the possibility that participants provided responses that were socially acceptable but did not accurately reflect their opinions, bias may exist. There were no open-ended questions on the questionnaire to delve deeper into participants' answers.

An additional constraint is that the study was conducted solely in a single city; consequently, it is advised that similar investigations be conducted across the entire country to alert the authorities and initiate a plan of action for upgrading the knowledge of the nation's practicing ayurvedic physicians and dentists. The small sample size taken in this study is another limitation, a larger sample size could yield more accurate results.

### CONCLUSION

Overall, the survey offered valuable information on the general comprehension and perspective of ayurvedic and dental students regarding oil pulling. Examining ayurvedic students' knowledge and attitude toward recommending oil pulling as a method of dental hygiene is crucial, as the majority of patients see it as a way to maintain their general and oral health. By avoiding the drawbacks of using chemical mouthwashes for extended periods of time, the practitioners may help patients maintain their dental health more affordably while also enhancing their general and oral health.

### REFERENCES

- Naseem M, Khiyani MF, Nauman H, et al. Oil pulling and importance of traditional medicine in oral health maintenance. *Int J Health Sci* 2017;11(4):65–70. PMID: 29085271.
- Amith HV, Ankola AV, Nagesh L. Effect of oil pulling on plaque and gingivitis. *J Oral Health Community Dent* 2007;1(1):12–18. DOI: 10.5005/johcd-1-1-12.
- Mythri H. Oil pulling: A traditional method on the edge of evidence. *Dental Hypotheses* 2017;8(3):57–60. DOI: 10.4103/denthyp.denthyp\_64\_16.
- Raja BK, Devi K. Oral health effects of oil pulling: A systematic review of randomized controlled trials. *J Indian Assoc Public Health Dent* 2021;19(3):170–179. DOI: 10.4103/jiaphd.jiaphd\_8\_21.
- Pathak S. Oil pulling therapy in dental practice: A short review. *SRM J Res Dent Sci* 2016;7(1):33–35. DOI: 10.4103/0976-433X.176481.
- Rana AS, Sehgal N, Rana A. Oil pulling: A review. *Int Healthcare Res J* 2022;5(12):RV1–RV3. DOI: 10.26440/IHRJ/0512.03477.
- Lakshmi T, Rajendran R, Krishnan V. Perspectives of oil pulling therapy in dental practice. *Dental Hypotheses* 2013;4(4):131–134. DOI: 10.4103/2155-8213.122675.
- Reddy UJ, Hegde MN, Rao M, et al. Awareness among dental practitioners about oil pulling – Its effect on the Corona Virus and immunocompromised patients: A questionnaire-based survey. *J Indian Assoc Public Health Dent* 2021;19(4):255–228. DOI: 10.4103/jiaphd.jiaphd\_81\_21.
- Yeoh KG. The future of medical education. *Singapore Med J* 2019;60(1):3–8. DOI: 10.11622/smedj.2019003.
- Krishnapriya V, Vikneshan M, Senthil M. Knowledge and awareness about effects of sesame oil pulling and its health benefits among dental students of Igids, Puducherry: A cross sectional study. *J Scient Dent* 2020;8(2):2–7. DOI: 10.5005/jsd-8-2-2.
- Kandelman D, Arpin S, Baez RJ, et al. Oral health care systems in developing and developed countries. *Periodontology* 2000 2012;60(1):98–109. DOI: 10.1111/j.1600-0757.2011.00427.x.
- Nagarajappa R, Sanadhya S, Batra M, et al. Perceived barriers to the provision of preventive care among dentists of Udaipur, India. *J Clin Exp Dent* 2015;7(1):e74–e75. DOI: 10.4317/jced.51770.
- Garg G, Mangal DG, Chundawat N. Ayurvedic approach in oral health & hygiene: A review. *Int J Ayur Pharma Res* 2016;4(5):17–21. Available from: [https://www.researchgate.net/publication/303822209\\_AYURVEDIC\\_APPROACH\\_IN\\_ORAL\\_HEALTH\\_HYGIENE\\_A\\_REVIEW](https://www.researchgate.net/publication/303822209_AYURVEDIC_APPROACH_IN_ORAL_HEALTH_HYGIENE_A_REVIEW).
- Bharathi S, Dhanraj. Awareness about oil pulling among dental students. *J Emerg Technol Innov Res* 2019;6(6):31–37. Available from: <https://www.jetir.org/papers/JETIR1908A94.pdf>.
- Ram VV, Priya J, Devi G. A Survey Based study on effectiveness of oil pulling and mouthwash. *J Pharm Res Int* 2020;32(17):136–147. DOI: 10.9734/jpri/2020/v32i1730676.
- Basha FY. Knowledge and attitude towards oil pulling as an oral hygiene maintenance aid among the general population – A survey. *Nat Vol Essent Oil J* 2021;8(5):4826–4839. Available from: <https://www.nveo.org/index.php/journal/article/view/1499>.
- Gurumurthy K, Priya J, Devi G, et al. Effects of oil pulling on bad breath and cavities. *Ann Roman Soc Cell Biol* 2021;25(2):2648–2656. Available from: <https://www.proquest.com/docview/2563511322?sourcetype=Scholarly%20Journals>.