

Knowledge, Attitude and Practice among Undergraduate Ayurvedic Students towards Effects of Oil Pulling and Its Health Benefits in Bareilly City: A Cross Sectional Study

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Abstract:

Background: Oil pulling treatment has been used extensively as a traditional Indian folk remedy for many years to strengthen teeth, gums, and jaws as well as to prevent decay, oral malodor, bleeding gums, dry throat, and cracked lips. The increased frequency of side effects from modern medications and dental hygiene products has led many to turn back time to more conventional methods of maintaining dental health and hygiene.

Aim: This survey was conducted to evaluate and compare the knowledge, attitude and practice of undergraduate Ayurvedic students towards oil pulling and its role in maintaining oral hygiene.

Methodology: This survey was conducted using a pre-validated questionnaire consisting of 16 questions about the knowledge, attitude and practice regarding oil pulling and its effects on oral health that was circulated among the ayurvedic students. Descriptive statistics along with chi-square test were used to check the association between the survey questions.

Results: Out of 120 ayurvedic students, students in the age group of 21-23 years had better knowledge regarding benefits of oil pulling as compared students in the age group of 18-20 years and 24-26 years.

Conclusion: This research emphasizes the necessity for educational initiatives that emphasize the value of oil pulling. Ayurvedic students need to be made more aware of the ways in which oil pulling improves dental health and is a safer, more economical substitute for pharmaceutical drugs.

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

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Introduction

Globally, oral diseases remain a significant health concern. [1] In addition to oral and pharyngeal malignancies and oral tissue lesions, dental caries and periodontal disorders are among the most serious issues affecting oral health worldwide. [2]

Oral health is integral to general well-being and relates to the quality-of-life that extends beyond the functions of the craniofacial complex. It is generally known that the activities of microbial species that make up the oral cavity's microbiota are linked to oral illnesses. [3] The rise in disease incidence (especially in developing nations), increased pathogenic bacterial resistance to

currently available antibiotics and chemo therapeutics, opportunistic infections in immuno compromised people, and financial constraints in developing nations have created a global need for alternative prevention and treatment options and products for oral diseases that are safe, effective, and affordable. [4]

Moreover, the prevention of periodontal disease and the treatment of a wide range of oral disorders have been rather successfully handled by conventional Western medicine. Natural phyto chemicals extracted from plants and utilized in traditional medicine are therefore seen to be

excellent substitutes for synthetic chemicals as the hunt for substitute goods continues. [5]

Ayurveda is the traditional Indian medical and longevity system. It takes a comprehensive approach to understanding human health and sickness. [6] Ayurveda is currently practiced widely throughout the Hindustan peninsula (India and its neighboring countries). It has also gained a lot of interest recently in economically developed nations like the US, Japan, Europe, and Europe. [7] Based on several hundred to several thousand years of usage, the botanicals in the Ayurvedic substance medica have been shown to be safe and efficacious. [8] It is possible that new preventative or therapeutic approaches for oral health will result from the investigation of botanicals used in traditional medicine. [9] Since the majority of oral illnesses are caused by bacterial infections, and because medicinal herbs have strong antibacterial properties against a wide range of microorganisms, including the bacteria that cause tooth caries, it is widely known. [10]

The medical students who will become the doctors of tomorrow, carrying values, skills and hopes for the profession into the future should be moulded regarding the benefits contributed by traditional medicine.

So this study was formulated to test knowledge, attitude and practices about oil pulling among Ayurvedic students and assess their understanding about the same to further help improve their confidence in prescribing this therapy in routine clinical practice.

Materials and Methods

Sample size estimation-

χ^2 tests - Goodness-of-fit tests: Contingency tables

Analysis: A priori: Compute required sample size

Input: Effect size $w = 0.3$

α err prob = 0.05

Power (1- β err prob) = 0.80

Df = 5

Output: Noncentrality parameter $\lambda = 12.8700000$

- Critical $\chi^2 = 11.0704977$
- Total sample size = 143
- Actual power = 0.8015133

This cross-sectional observational study was carried out among 143 Ayurvedic undergraduates students. The study was conducted at Institute of Dental Sciences, Bareilly from 4th September, 2023 to 12th October, 2023. Students were provided with

predesigned pre-validated 16-item questionnaire based on study objectives. [11]

The questionnaire was filled by the participants in the presence of the investigator without any inputs to avoid bias. Basic demographic data was 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 towards oil pulling, attitude-based (3) questions eliciting what they feel about such strategies, and practice-based (4) questions to judge whether they incorporate these strategies in their daily practice. 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 students and total summation of the entire sample was tabulated. Descriptive statistics along with chi-square test were used for data analysis. A p-value of less than 0.05 was considered significant.

Results

Out of 143 questionnaires circulated, 120 participants responded to the survey, yielding an overall response rate of 84%. Table 1 show that 78 students in the age group of 21-23 years had given a maximum mean knowledge score of 6.12 ± 2.512 with p-value of 0.669. About 82 male students had given a maximum knowledge score of 6.20 ± 2.664 with p-value 0.158.

The number of correct answers given for each question in the questionnaire was calculated and the percentage of correct answers for each question were determined for the entire sample as shown in Table 2. Majority of students (73.3%) in the age group of 24-26 years were aware of oil pulling. About 52.6% of students in the age group of 21-23 years knew that oil pulling is contraindicated in children below the age of 5 years. Only 13.3% of students in age group of 24-26 years knew that oil should be spit after 20 minutes. 66.7% of students in age group of 21-23 years were aware that oil pulling aids in reduction of halitosis whereas only 37% of students in the age group of 18-20 years knew that oil pulling inhibits growth of malignant tumor. The difference in the knowledge about oil pulling among 18-20 years, 21-23 years and 24-26 years students for all these questions was found to be statistically significant.

Table 1: Students knowledge score based on age and gender

		N	Knowledge Score			P value
			Range	Mean	± SD	
Age Group	18-20	27	0 – 11	5.74	3.145	0.669
	21-23	78	1 – 12	6.12	2.512	
	24-26	15	1 – 10	5.53	2.875	
Gender	Male	82	1 – 12	6.20	2.664	0.158
	Female	38	0 – 11	5.45	2.729	

Table 2: Students responses to questions regarding the effects and outcomes of oil pulling on health

Questions	Options	Age Group						P value
		18-20 yrs		21-23 yrs		24-26 yrs		
		N	%	N	%	N	%	
1. Do you know about oil pulling?	a) Yes	13	48.1	50	64.1	11	73.3	0.421
	b) No	8	26.6	19	24.4	3	20.0	
	c) Not sure	6	22.2	9	11.5	1	6.7	
2. Do you think oil pulling can replace the usage of chemical mouthwashes to prevent and maintain oral health?	a) Yes	11	40.7	21	26.9	5	33.3	0.270
	b) No	4	14.8	19	24.4	6	40.0	
	c) Not sure	12	44.4	38	48.7	4	26.7	
3. According to you which of the following oil is most commonly used for oil pulling?	a) Sesame oil	8	29.6	19	24.4	3	20.0	0.572
	b) Mustard oil	10	37.0	26	33.3	3	20.0	
	c) Coconut oil	9	33.3	33	42.3	9	60.0	
4. Oil pulling should be done _____	a) Early morning (empty stomach) before brushing	17	63.0	36	46.2	9	60.0	0.280
	b) Early morning (empty stomach) after brushing	6	22.2	14	17.9	3	20.0	
	c) Night time before bed	4	14.8	28	35.9	3	20.0	
5. Is it advisable for children's below 5 years to practice oil pulling?	a) Yes	3	11.1	7	9.0	3	20.0	0.048*
	b) No	6	22.2	41	52.6	7	46.7	
	c) Not sure	18	66.7	30	38.5	5	33.3	
6. Ideal time to spit oil after doing oil pulling?	a) After 10 minutes	13	48.1	38	48.7	7	46.7	0.049*
	b) After 20 minutes	0	0	5	6.4	2	13.3	
	c) Once oil loses its viscosity and becomes thick and milky	14	51.9	35	44.9	6	40.0	
7. Oil pulling works under mechanism?	a) Emulsification	15	55.6	54	69.2	6	40.0	0.178
	b) Saponification	4	14.8	5	6.4	3	20.0	
	c) None of the above	8	29.6	19	24.4	6	40.0	
8. Do you think chronic usage of oil pulling has effect on systemic issues like GERD, peptic ulcers, diabetes, migraine?	a) Yes	9	33.3	28	35.9	3	20.0	0.104
	b) No	1	3.7	11	14.1	5	33.3	
	c) Not sure	17	63.0	39	50.0	7	46.7	
9. Oil that is used to swishing around the mouth can be swallowed instead of spitting it out.	a) Agree	1	3.7	11	14.1	5	33.3	0.094
	b) Disagree	19	70.4	51	65.4	6	40.0	
	c) Not sure	7	25.9	16	20.5	4	26.7	
10. Practicing oil pulling	a) Agree	16	59.3	46	59.0	6	40.0	0.703

improves both general health and oral health.	b)Disagree	2	7.4	5	6.4	1	6.7	
	c)Not sure	9	33.3	27	34.6	8	53.3	
11. Oil pulling aids in reduction of halitosis.	a)Agree	9	33.3	52	66.7	6	40.0	0.002*
	b)Disagree	0	0	6	7.7	2	13.3	
	c)Not sure	18	66.7	20	25.6	7	46.7	
12. Chronic usage of oil pulling stains teeth.	a)Agree	8	29.6	29	37.2	5	33.3	0.434
	b)Disagree	3	11.1	18	23.1	4	26.7	
	c)Not sure	16	59.3	31	39.7	6	40.0	
13. Oil pulling is very effective against plaque induced gingivitis.	a)Agree	17	63.0	39	50.0	7	46.7	0.317
	b)Disagree	2	7.4	5	6.4	3	20.0	
	c)Not sure	8	29.6	34	43.6	5	33.3	
14. Oil pulling inhibits growth of malignant tumor.	a)Agree	10	37.0	7	9.0	1	6.7	0.005*
	b)Disagree	4	14.8	27	34.6	4	26.7	
	c)Not sure	13	48.1	44	56.4	10	66.7	
15. Oil pulling can be practiced daily.	a)Agree	11	40.7	29	37.2	5	33.3	0.278
	b)Disagree	2	7.4	21	26.9	3	20.0	
	c)Not sure	14	51.9	28	35.9	7	46.7	
16. Dentist (practitioner) should advise oil pulling for patient with moderate oral health for maintenance.	a)Agree	12	44.4	40	51.3	7	46.7	0.918
	b)Disagree	2	7.4	7	9.0	2	13.3	
	c)Not sure	13	48.1	31	39.7	6	40.0	

Discussion

Poor dental health adversely affects growth in different spheres of human development. The prevention and treatment of oral problems have not made significant advances in modern medicine. In light of the fact that both developed and developing nations lack oral health policies, health administrators should advocate for the inclusion of oral health in national health plans and create suitable oral health strategies that take disease prevention and promotion into account. [12]

Ayurveda is an excellent substitute and might inspire the creation of cutting-edge dental health preventative or therapeutic approaches. In addition to suggesting particular herbal and mineral therapies for a range of oral ailments, this 5,000-year-old medical system also suggests several everyday therapeutic practices that have been shown to be both safe and helpful for maintaining and preventing oral health issues. Oil pulling is becoming more and more popular among the several Ayurvedic medications that have recently attracted attention for their potential benefits to tooth and oral health. [13]

A spoonful of oil is swished about the mouth during oil pulling, which is done in the morning before breakfast and on an empty stomach for around 20 minutes. When dealing with youngsters older than five, one teaspoon of oil is utilized. Swallowing the oil throughout the mouth causes it to be "pulled" and forced in between each tooth. If everything is done correctly, the thick oil will become thinner and milky white at the end of this activity. After it is spit out, the mouth is properly cleaned with tap or clean, warm salted water, and

the teeth are either manually cleaned or brushed on a regular basis. [14] Due to the risk of swallowing, it is not recommended for children under the age of five. [15] With the exception of taking longer than with chlorhexidine, oil pulling treatment has no drawbacks. For this reason, adults and children over the age of five can use it as a preventative at-home treatment to maintain good dental hygiene. [16]

Prevention is the mainstay to avoid oral diseases and to have positive oral health. This aspect of dentistry is the responsibility of professionals, individuals, and society at large. Dentists as well as the Ayurvedic practitioners are in a key position to help their patients to reduce the burden of oral disease and attain positive oral health behavior.

The attitude of dental practitioners toward preventive dentistry is an important factor that can influence their decision to apply preventive dental care and may potentially affect their ability to motivate patients to receive preventive care measures. Therefore, the major goal of this study was to assess knowledge, attitude and practice regarding oil pulling.

A total of 120 Ayurvedic undergraduate students participated in this questionnaire study. The results of the present study reflected that 86.7% students were generally aware of oil pulling. About 75.8% students counsel that oil pulling should be done early in the morning before brushing. 80.8% students were aware that oil pulling works on saponification. Although the knowledge scores were high but the scores obtained in attitude and practice were comparatively low. However, these results cannot be truly compared to those of the

previous study due to differences in the target population. Various studies conducted among dental students by Krishnapriya et al (2018) [11], Bharathi.S et al (2019) [17] and Ram et al (2020) [18] suggested low scores about knowledge, attitude and practices on oil pulling. A study done by Kaviyaselvi et al (2021) [19], Basha et al (2021) [20] on 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. This is the first research of its kind conducted among ayurvedic students which focuses on understanding of the importance of oil pulling and build confidence in prescribing this therapy in routine clinical practice.

Further, to motivate and increase knowledge among ayurvedic students, continuing education programs should be planned and implemented regularly emphasizing the importance and effects of oil pulling on oral health. Dental students can establish successful collaborations with Ayurvedic colleagues to communicate and establish interdisciplinary approach and provide better oral health care to patients. To keep a pace with the ever changing and improving scientific knowledge in the field of dentistry, Ayurvedic doctors must remain updated. Accurate knowledge will enable them to make appropriate decisions on their patients' oral health.

Conclusion

It was concluded in our study that Ayurvedic practitioners in Bareilly city have good knowledge regarding oil pulling but their attitude and practice about the same needs to improve. This study further stresses the need to conduct more educational programs and create awareness among dental students who are the future clinicians about the about benefits of oil pulling on oral and general health.

Limitations

As it is a questionnaire study, 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 and did not accurately reflect their opinions, bias may exist. There were no open-ended questions on the questionnaire to delve deeper into participants' answers.

Another limitation is that it was carried out only in one city; therefore, it is recommended that such studies be carried out on a nation-wide basis to alarm the authorities in making and implementing a course of action for updating the knowledge of practicing Ayurvedic doctors in the country.

Recommendations

Our study suggests that further research would be needed to assess the outcome and impact of such interventions. Greater effort should be made by the professional organization and governmental agencies to inform patients of the benefits of preventive measures.

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