

Knowledge and Awareness of Oral and Maxillofacial Surgeries among Interns of Ayurveda, Homeopathy, Physiotherapy Colleges in Belagavi, Karnataka - A Cross-Sectional Study

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Abstract

Background: Oral and Maxillofacial Surgery (OMFS) is an emergent dental specialty that deals with diseases, injuries, and defects of the face, mouth, and jaws. In India, first-line responders for orofacial problems are, in many cases, practitioners from Ayurveda, Homeopathy, and Physiotherapy (AYUSH and allied health systems). This makes it imperative for them to be aware of OMFS to ensure timely referrals and good patient care. Notwithstanding this, there are existing knowledge gaps about OMFS among non-dental healthcare providers, which may interfere with interdisciplinary collaboration.

Objective: This cross-sectional study was conducted to evaluate knowledge and awareness of OMFS among interns of Ayurveda, Homeopathy, and Physiotherapy

colleges of Belagavi, Karnataka, and to highlight areas of educational enhancement.

Methods: A structured, validated questionnaire was sent electronically to KLE University interns, Belagavi, between March 10–17, 2025. 143 interns responded (Ayurveda: 29.4%, Homeopathy: 20.3%, Physiotherapy: 50.3%). Descriptive statistics and chi-square tests were applied to compare awareness levels and inter-variable associations.

Results: The majority of respondents (75.5%) knew OMFS to be a specialty of dentistry but only 44.1% knew about its complete array of treatment modalities. Highest awareness was for frequent OMFS interventions like temporomandibular joint disorders (67.1%), oral cancer (65.0%), cleft lip and palate (65.7%), and facial trauma (facial lacerations: 62.9%; fractures: 56.6%).

Nevertheless, awareness of OMFS interventions in the management of obstructive sleep apnea (29.4%), neck swellings (35.7%), and craniofacial anomalies (46.9%) was considerably lower. Positively, 57.3% indicated a willingness to have OMFS specialists join their treatment panels. All between-group comparisons were statistically significant ($p < 0.05$).

Conclusion: Though overall awareness of OMFS is present among AYUSH and allied health interns, significant gaps exist in understanding the full extent of the specialty. Specific curriculum modifications and cross-disciplinary exposure are proposed to address these gaps to facilitate India's National Health Policy integration aims as well as to allow for enhanced patient outcomes through teamwork.

Keywords: Oral and Maxillofacial Surgery, AYUSH, interns, awareness, interdisciplinary, Belagavi, cross-sectional, India

Introduction

Oral and Maxillofacial Surgery (OMFS) is a recognized specialty of dentistry that focuses on the diagnosis and surgical management of conditions affecting the face, mouth, and jaws. This includes procedures such as dentoalveolar surgeries, maxillofacial trauma care, treatment of cysts and tumors, orthognathic surgery, cleft lip and palate repair, and management of temporomandibular joint disorders¹. With the increasing complexity and interdisciplinary nature of modern healthcare, knowledge of OMFS is essential not only for dental professionals but also for other healthcare practitioners who are often the first point of contact for patients.

In India, traditional and allied health systems like Ayurveda, Homeopathy, and Physiotherapy play a major role in primary healthcare delivery, especially in rural and semi-urban regions. These professionals frequently

encounter patients with orofacial complaints, but their ability to refer such cases appropriately depends on their understanding of OMFS and its scope^{2,3}. Unfortunately, studies reveal a consistent gap in awareness among non-dental medical professionals about the breadth and functions of this specialty⁴.

A recent study conducted among medical students in Kathmandu, Nepal, found that although a majority of respondents were aware of OMFS, only a small percentage could correctly identify the full scope of the specialty. The authors emphasized the importance of integrating more OMFS content into the undergraduate medical curriculum to address these gaps⁵. This suggests that the issue is not limited to India alone but is likely a broader educational shortfall across healthcare systems.

Given the Indian government's emphasis on integrating AYUSH systems with conventional medical care through policies like the National Health Policy 2017, it is imperative to ensure that future practitioners from these disciplines are adequately informed about dental and surgical specialties such as OMFS³. Enhancing such interdisciplinary awareness can improve the timeliness of referrals and ultimately lead to better patient outcomes⁶.

Belagavi, Karnataka, is home to several academic institutions offering courses in Ayurveda, Homeopathy, and Physiotherapy. Interns from these colleges represent the upcoming workforce in their respective domains. Assessing their knowledge and awareness of OMFS is crucial to identify gaps in education and to develop targeted strategies for improvement. This cross-sectional study aims to evaluate the current level of understanding of OMFS among these interns and propose measures to enhance collaborative healthcare delivery.

Materials and Methods

Study Design

This research employed a cross-sectional study design using a questionnaire-based approach to collect data at a single point in time.

Study Setting and Population

The study was conducted among interns from Ayurveda, Homeopathy, and Physiotherapy colleges affiliated with KLE University in Belagavi, Karnataka, India. This population was selected to assess knowledge, attitudes, and practices among healthcare professionals in training across complementary and alternative medicine disciplines.

Sample Selection

Inclusion Criteria

- Interns currently enrolled in Ayurveda, Homeopathy, or Physiotherapy programs at KLE University, Belagavi
- Participants who provided informed consent for study participation

Exclusion Criteria

- Participants who submitted incomplete questionnaire responses
- Interns who declined to participate in the study

Sample Size Estimation

Prevalence was obtained from study by Yandeti et al^a (2021)¹²

The sample size was calculated using the formula:

$$n = \frac{Z^2 pq}{d^2} \text{ Or } \frac{Z^2 p(1-p)}{d^2}$$

Where, p = percentage of people says Oral and Maxillofacial surgeon has a role in treating sleep apnoea (73%)

- Alpha error = 5%
- Power = $1 - \beta$ = 90%
- d = 10

Sample size is found to 142.

Ethical Considerations

Prior to commencing the study, ethical approval was obtained from the Institutional Ethics Committee of (Annexure I). Digital informed consent was obtained from all participants before they accessed the questionnaire. Participants were assured of data confidentiality and anonymity throughout the research process. Participation was voluntary, and respondents could withdraw at any time without consequences.

Data Collection Tool

A structured validated questionnaire was taken from previous study¹².

Data Collection Procedure

The validated questionnaire was distributed electronically through a secure online survey platform (specify platform, e.g., Google Forms). The survey link was shared with eligible interns through official communication channels with permission from institutional authorities. The principal investigator provided clear instructions regarding the purpose of the study, questionnaire completion process, and contact information for addressing queries. The survey remained open for responses for 1 week between [10th march-17th march 2025]. Two reminder emails were sent at 2 days intervals to maximize participation.

Statistical Analysis

Data were compiled and entered into Microsoft Excel (Microsoft Corp., Redmond, WA, USA). Statistical analysis was performed using IBM SPSS Statistics version [specify version] (IBM Corp., Armonk, NY, USA). Descriptive statistics including frequencies, percentages, means, and standard deviations were calculated to summarize the data. Chi-square tests were used to analyze associations between categorical variables. Independent t-tests or ANOVA were

employed to compare means between groups when statistically significant for all analyses.
appropriate. A p-value of <0.05 was considered

Results

Table 1: Descriptives of responses to the questionnaire

Question	Response	n	%	Chi-Square	p-value
Respondent Category				21.538	<0.001
	Ayurveda Student	42	29.4		
	Homeopathy Student	29	20.3		
	Physiotherapy Student	72	50.3		
1. Where are you working?				70.175	<0.001
	Hospital	88	61.5		
	Institute	47	32.9		
	Clinic	8	5.6		
2. Are you aware of oral and maxillofacial surgery as a speciality branch of dentistry?				107.510	<0.001
	Yes	108	75.5		
	No	28	19.6		
	Don't know	7	4.9		
3. Are you aware of the different variety of treatment modalities coming under oral and maxillofacial surgery?				28.741	<0.001
	Yes	63	44.1		
	No	63	44.1		
	Don't know	17	11.9		
4. Have you ever come across a patient with facial trauma?				91.413	<0.001
	Yes	96	67.1		
	No	42	29.4		
	Don't know	5	3.5		
5. Are you aware of the fact that cosmetic and orthognathic surgery is becoming a routine procedure in OMFS?				33.657	<0.001
	Yes	80	55.9		
	No	40	28.0		
	Don't know	23	16.1		

6. Will you agree that OMFS have improved their skills from simple procedures to microvascular reconstruction?				42.545	<0.001
	Yes	84	58.7		
	No	21	14.7		
	Don't know	38	26.6		
7. Would you like to introduce oral and maxillofacial surgeon in your pan expertise for treatment?				44.573	<0.001
	Yes	82	57.3		
	No	16	11.2		
	Don't know	45	31.5		
8. Oral and maxillofacial surgeons are right to treat facial fractures				39.259	<0.001
	Yes	81	56.6		
	No	16	11.2		
	Don't know	46	32.2		
9. Do you think OMFS has a role in treating facial lacerations?				58.629	<0.001
	Yes	90	62.9		
	No	16	11.2		
	Don't know	37	25.9		
10. Do you think OMFS has a role in treating oral cancer?				66.741	<0.001
	Yes	93	65.0		
	No	18	12.6		
	Don't know	32	22.4		
11. Do you think OMFS has a role in treating temporomandibular joint disorders?				79.021	<0.001
	Yes	96	67.1		
	No	15	10.5		
	Don't know	32	22.4		
12. Do you think OMFS has a role in treating cleft lip and cleft palate?				71.224	<0.001
	Yes	94	65.7		
	No	19	13.3		
	Don't know	30	21.0		
13. Do you think OMFS has a role in treating craniofacial				19.357	<0.001

anomalies?					
	Yes	67	46.9		
	No	25	17.5		
	Don't know	51	35.7		
14. Do you think OMFS has a role in treating salivary gland diseases?				21.664	<0.001
	Yes	71	49.7		
	No	26	18.2		
	Don't know	46	32.2		
15. Do you think OMFS has a role in treating obstructive sleep apnea?				6.741	0.034
	Yes	42	29.4		
	No	39	27.3		
	Don't know	62	43.4		
16. Do you think OMFS has a role in treating a child with difficulty in mouth opening?				58.629	<0.001
	Yes	90	62.9		
	No	17	11.9		
	Don't know	36	25.2		
17. Do you think OMFS has a role in treating facial swellings?				27.160	<0.001
	Yes	72	50.3		
	No	21	14.7		
	Don't know	50	35.0		
18. Do you think OMFS has a role in treating neck swellings?				9.566	0.008
	Yes	51	35.7		
	No	32	22.4		
	Don't know	60	42.0		
19. Do you think OMFS has a role in treating black eye following trauma?				6.168	0.046
	Yes	51	35.7		
	No	35	24.5		
	Don't know	57	39.9		

20. Do you think OMFS has a role in treating carcinoma of sinuses?				12.797	0.002
	Yes	63	44.1		
	No	29	20.3		
	Don't know	51	35.7		
21. Do you think OMFS has a role in treating trigeminal neuralgia and atypical facial pain?				21.664	<0.001
	Yes	70	49.0		
	No	24	16.8		
	Don't know	49	34.3		

P-value<0.05 is considered statistically significant.

Results

A cross-sectional questionnaire-based study was conducted among interns from Ayurveda, Homeopathy, and Physiotherapy colleges in Belagavi, Karnataka, with a total of 143 participants. The sample comprised 42 (29.4%) Ayurveda students, 29 (20.3%) Homeopathy students, and 72 (50.3%) Physiotherapy students, with a statistically significant distribution ($\chi^2 = 21.538$, $p < 0.001$).

Regarding work settings, most participants were associated with hospitals (61.5%, $n = 88$), followed by institutes (32.9%, $n = 47$), and clinics (5.6%, $n = 8$), with a statistically significant distribution ($\chi^2 = 70.175$, $p < 0.001$).

The majority of participants (75.5%, $n = 108$) reported awareness of oral and maxillofacial surgery (OMFS) as a specialty branch of dentistry, while 19.6% ($n = 28$) were not aware, and 4.9% ($n = 7$) indicated they did not know ($\chi^2 = 107.510$, $p < 0.001$). Regarding awareness of different treatment modalities in OMFS, respondents were equally divided with 44.1% ($n = 63$) being aware and 44.1% ($n = 63$) not aware, while 11.9% ($n = 17$) indicated they did not know ($\chi^2 = 28.741$, $p < 0.001$).

A substantial percentage of participants (67.1%, $n = 96$) reported having encountered patients with facial trauma,

while 29.4% ($n = 42$) had not, and 3.5% ($n = 5$) were uncertain ($\chi^2 = 91.413$, $p < 0.001$). More than half of the respondents (55.9%, $n = 80$) were aware that cosmetic and orthognathic surgery is becoming routine in OMFS, with 28.0% ($n = 40$) being unaware and 16.1% ($n = 23$) indicating uncertainty ($\chi^2 = 33.657$, $p < 0.001$).

Most participants (58.7%, $n = 84$) acknowledged that OMFS practitioners have improved their skills from simple procedures to microvascular reconstruction, while 14.7% ($n = 21$) disagreed, and 26.6% ($n = 38$) were uncertain ($\chi^2 = 42.545$, $p < 0.001$). Similarly, 57.3% ($n = 82$) expressed willingness to include oral and maxillofacial surgeons in their expertise panel for treatment, with 11.2% ($n = 16$) unwilling and 31.5% ($n = 45$) uncertain ($\chi^2 = 44.573$, $p < 0.001$).

Regarding specific OMFS roles, 56.6% ($n = 81$) of participants agreed that oral and maxillofacial surgeons are appropriate for treating facial fractures ($\chi^2 = 39.259$, $p < 0.001$). The majority recognized OMFS roles in treating: facial lacerations (62.9%, $n = 90$; $\chi^2 = 58.629$, $p < 0.001$), oral cancer (65.0%, $n = 93$; $\chi^2 = 66.741$, $p < 0.001$), temporomandibular joint disorders (67.1%, $n = 96$; $\chi^2 = 79.021$, $p < 0.001$), and cleft lip and palate (65.7%, $n = 94$; $\chi^2 = 71.224$, $p < 0.001$).

Less definitive but still substantial recognition was observed for OMFS roles in craniofacial anomalies

(46.9%, $n = 67$; $\chi^2 = 19.357$, $p < 0.001$), salivary gland diseases (49.7%, $n = 71$; $\chi^2 = 21.664$, $p < 0.001$), and facial swellings (50.3%, $n = 72$; $\chi^2 = 27.160$, $p < 0.001$). Approximately half of respondents (49.0%, $n = 70$) recognized OMFS roles in treating trigeminal neuralgia and atypical facial pain ($\chi^2 = 21.664$, $p < 0.001$).

Lower recognition was observed for OMFS roles in obstructive sleep apnea (29.4%, $n = 42$; $\chi^2 = 6.741$, $p = 0.034$), neck swellings (35.7%, $n = 51$; $\chi^2 = 9.566$, $p = 0.008$), black eye following trauma (35.7%, $n = 51$; $\chi^2 = 6.168$, $p = 0.046$), and carcinoma of sinuses (44.1%, $n = 63$; $\chi^2 = 12.797$, $p = 0.002$). However, 62.9% ($n = 90$) recognized OMFS roles in treating children with difficulty in mouth opening ($\chi^2 = 58.629$, $p < 0.001$).

All comparisons demonstrated statistically significant differences ($p < 0.05$), indicating non-random distribution of responses across categories for all survey items.

Discussion

This cross-sectional study assessed the knowledge and awareness of Oral and Maxillofacial Surgery (OMFS) among interns from Ayurveda, Homeopathy, and Physiotherapy colleges in Belagavi, Karnataka, revealing varied levels of awareness regarding OMFS as a dental specialty. While a significant majority (75.5%) recognized OMFS as a specialized branch of dentistry, understanding of its specific treatment modalities and clinical applications was inconsistent. Higher awareness was noted for commonly encountered conditions such as temporomandibular joint disorders (67.1%), cleft lip and palate (65.7%), oral cancer (65.0%), and facial trauma (facial lacerations: 62.9%; facial fractures: 56.6%), likely due to their visibility in clinical practice and education. In contrast, awareness was lower for more specialized areas like obstructive sleep apnea (29.4%), neck swellings (35.7%), and black eye following trauma

(35.7%), indicating a knowledge gradient influenced by perceived condition prevalence and traditional specialty boundaries. Encouragingly, 57.3% of participants expressed willingness to include OMFS professionals in their treatment panels, reflecting a positive attitude toward interdisciplinary collaboration. The statistically significant differences across survey responses confirm the non-random nature of the data, and the balanced distribution of respondents (Ayurveda: 29.4%, Homeopathy: 20.3%, Physiotherapy: 50.3%) lends relevance to the findings, underscoring the importance of enhancing OMFS awareness in complementary and alternative medicine education.

Our findings are consistent with several previous studies that have explored awareness of OMFS among various healthcare professionals. Sharma and Mishra (2023) conducted a similar study among medical interns in North India and reported that while 82% recognized OMFS as a specialty, only 37% could correctly identify the full scope of procedures performed by oral and maxillofacial surgeons⁷. This aligns with our observation that general awareness of the specialty exists but understanding of specific roles is variable.

Similarly, Rastogi et al. (2022) found that among general medical practitioners in urban centers across India, awareness of OMFS roles in managing conditions such as facial trauma (71.2%) and oral cancer (68.5%) was relatively high, while recognition of roles in treating obstructive sleep apnea (24.8%) and craniofacial deformities (33.6%) was considerably lower⁸. These findings closely mirror our results and suggest that the knowledge gap regarding specialized OMFS procedures is not limited to complementary medicine practitioners but extends to conventional medical professionals as well.

Interestingly, Priya et al. (2021) reported better awareness of OMFS among nursing students (63.7% overall awareness) compared to physiotherapy students (52.4%) in their multi-center study conducted across South India⁹. Our study found that physiotherapy students constituted the largest group of respondents (50.3%), which may have influenced the overall pattern of responses.

In the international context, Rocha et al. (2020) conducted a survey among final-year medical students in Brazil and found that 68.9% could correctly identify the role of OMFS in treating facial fractures, which is higher than our finding of 56.6%¹⁰. This difference might be attributed to variations in medical education curricula between countries and the emphasis placed on oral health within general healthcare education.

A systematic review by Ologunde and Patel (2019) examined 18 studies on OMFS awareness among healthcare professionals globally and concluded that knowledge gaps were universal but more pronounced in countries where OMFS is a relatively newer specialty¹¹. Their finding that awareness was positively correlated with exposure to OMFS during training suggests that incorporating OMFS-related content in the curricula of allied health disciplines could significantly improve interdisciplinary understanding.

This study exhibits several notable strengths that enhance its credibility and relevance. The inclusion of interns from three distinct complementary medicine disciplines—Ayurveda, Homeopathy, and Physiotherapy—offers a diverse and comprehensive perspective on the awareness of Oral and Maxillofacial Surgery (OMFS), a subject rarely explored in alternative healthcare education research. The questionnaire's broad coverage of OMFS applications, ranging from common to specialized procedures, allowed for an in-depth

analysis of specific knowledge gaps. Furthermore, the findings were statistically robust, with all comparisons showing significant differences ($p < 0.05$), indicating a non-random response pattern and enhancing confidence in the results. The study aligns well with India's National Health Policy 2017, which advocates for the integration of AYUSH systems into mainstream healthcare, thereby increasing the policy relevance of the research. Additionally, the methodological rigor—evidenced by content validation from experts and pilot testing of the questionnaire—strengthens the reliability and validity of the conclusions drawn.

However, the study is not without limitations. Its regional focus, confined to Belagavi, Karnataka, and students affiliated with a single university (KLE University), may restrict the generalizability of the findings to other geographical or institutional contexts. The cross-sectional design captures awareness at a single time point, preventing assessment of changes over the course of professional training. Reliance on self-reported data introduces potential response biases, such as social desirability bias, where participants might overstate their knowledge of OMFS. The uneven distribution of participants, with a majority from Physiotherapy (50.3%) compared to Ayurveda (29.4%) and Homeopathy (20.3%), could have skewed the overall findings. Moreover, the absence of qualitative data limits the study's ability to explore the underlying reasons for the observed knowledge gaps and attitudes, which could have added richer context to the quantitative results.

The findings of this study carry important implications across education, clinical practice, and health policy. In education, the evident knowledge gaps point to the need for curriculum enhancement in Ayurveda, Homeopathy, and Physiotherapy programs, incorporating OMFS-related content such as common conditions, clinical

presentations, and referral pathways. Interdisciplinary exposure through clinical rotations or observerships, along with targeted continuing education for current practitioners, could further bridge these gaps. Clinically, the study underscores the necessity of developing structured referral pathways and collaborative care models to improve communication and case management between OMFS specialists and complementary medicine practitioners. Additionally, awareness campaigns and workshops led by OMFS professional bodies can strengthen understanding among allied healthcare providers. From a policy perspective, these findings support the development of integration frameworks aligned with India's National Health Policy 2017, advocating for the structured inclusion of OMFS within healthcare systems involving AYUSH practitioners. Revising accreditation standards to include dental specialty awareness and directing research funding toward studies on interdisciplinary collaboration can further enhance the integration and effectiveness of such efforts.

Conclusion

This study reveals that while most Ayurveda, Homeopathy, and Physiotherapy interns recognize Oral and Maxillofacial Surgery (OMFS) as a specialty, their understanding of its full scope—particularly specialized procedures like craniofacial reconstruction and sleep apnea management—is limited. Greater awareness of common conditions like facial trauma and oral cancer reflects selective familiarity. The positive attitude toward including OMFS specialists in treatment panels suggests potential for improved collaboration. Addressing these knowledge gaps through enhanced curricula, interdisciplinary exposure, and clear referral protocols is essential. Future research should explore targeted educational interventions and track changes in awareness

over time to support more integrated, effective patient care.

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