Cross-Sectional Study

ROLE OF PHYSIOTHERAPY IN THE MANAGEMENT OF CHRONIC OROFACIAL PAIN- A CROSS-SECTIONAL STUDY

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ABSTRACT

Chronic Orofacial Pain (COP) presents a challenge in both diagnosis and management. While pharmacotherapy is available, it often results in adverse effects. Physiotherapy offers a non-invasive, local and economical alternative. However, literature lacks studies assessing the role of physiotherapeutic applications in dentistry. To assess the knowledge, awareness and perception amongst the dental students regarding the role of physiotherapy in the management of Chronic Orofacial pain. A cross-sectional questionnaire-based study was conducted amongst 200 students at a dental institute. The questionnaire consisted of 20 closed ended questions which were graded on a 5-point Likert scale. The responses were analyzed using Chi-square and One way ANOVA tests. Among the 200 students, majority (97.5%) of the students had predictable knowledge regarding common etiological factors for Orofacial pain. To the contrary, very few students were aware of the specific physiotherapeutic modalities pertinent to Orofacial pain management such as Myofascial Release Therapy (35%), Low-Level Laser Therapy (34.5%), Dry Needling Technique (41%) and Kinesio Taping Technique (28%). A majority of the students (90%) perceived a need to include instructions on physiotherapeutic modalities for Orofacial pain management. The study concluded that, there is an overall awareness amongst the dental students regarding the various applications of Physiotherapy in dentistry, but there is lack of awareness regarding specific therapies used in the management of COP. Hence the study, emphasizes the need of an Interdisciplinary approach between dentistry and physiotherapy for the effective management of patients.

Key words: Chronic orofacial pain, Interdisciplinary care, Myofascial pain, Physiotherapy, Exercises, Dentistry.

Introduction

Orofacial pain with a reported prevalence of 10-15% among the adult populationis one the most common cause of chronic pain next to back, neck and knee pain and has a negative effect on daily activities of the patient [1]. Orofacial pain is defined as the pain that originates below the orbito-meatal line, above the neck and anterior to the ears including pain within the mouth [2]. Depending on the etiology, it is classified by the International Classification of Orofacial Pain (ICOP) as; orofacial pain attributed to disorders of dentoalveolar and anatomically related structures, myofascial orofacial pain, temporomandibular joint (TMJ) pain, orofacial pain attributed to lesion or disease of the cranial nerves, orofacial pains resembling presentations of primary headaches and idiopathic orofacial pain [3].

Chronic Orofacial pain, a debilitating condition is defined as the pain that lasts for more than three months and can impact the quality of life of the affected individuals [4]. Diagnosing COP is challenging, as the symptoms can be vague and can overlap with other coincidental conditions such as dental pain, sinusitis pain and many more.

The management of COP includes identification of the underlying cause and treating it accordingly [5]. COP can be managed by both pharmacological and non-pharmacological methods. Pharmacological treatment approach may lead to various side effects such as nausea, drowsiness, headache and gastritis [6]. Physiotherapy being a preferable alternative, is relatively simple, non-invasive, and cost effective with reduced adverse effects and complications [7]. Physiotherapy, or physical therapy, is a non-pharmacological treatment that is often used in the management of Orofacial pain [8]. In Physiotherapy, the patient is physically involved in the process of his/her wellbeing through a self-management approach [6]. The various Physiotherapeutic modalities used in the management of Orofacial pain include manual therapy, massage, muscle conditioning exercises, postural training, electrotherapy, Trans-Cutaneous Electric Nerve Stimulation (TENS), Low-Level Laser Therapy (LLLT), Ultrasound Therapy and Thermal therapy [8]. Other techniques like Dry Needling and Kinesio Taping have proved to be supportive in relieving COP [9].

The level of knowledgeamong the dental students influences the management and also plays an important role in the referral of COP patients to a physiotherapist [10-15]. The collaborative management between the dentist and the physiotherapist improves the effectiveness of the therapeutic interventions and contributes to the satisfactory rehabilitation of the patients [16, 17]. However, literature lacks studies assessing the role of Physiotherapy in the management of COP. Hence, this study was planned to

assess the knowledge, awareness and perception amongst the dental students regarding the role of Physiotherapy in the management of COP.

Materials and Methods

A cross-sectional questionnaire-based study was conducted amongst the final year dental undergraduates, interns and postgraduates at a dental institute over a duration of two months from January to February 2024. Ethical approval was obtained from the Institutional Research and Ethics Committee (reference no. EC/NEW/INST/2024/256). The study was conducted in alignment with Ethical [18-24] guidelines of Helsinki declaration, revised version of 2013.

With a d=15% allowed error and an Alpha (a) value of 0.05, the predicted sample size was 217. The total sample size was determined to be 240 after taking 10% attrition into account. After receiving informed consent, final-year undergraduates, interns, and postgraduates who consented to participate in the study were added. First, second and third year BDS students, participants of the pilot study along with the students who did not give consent to participate were excluded.

The proportion or percentage value of interest was obtained from a similar study conducted by Desai M and Jain U [25].

Data collection instrument

After reviewing the literature, a self-designed questionnaire was framed which underwent the process of validity and reliability assessment after conducting a pilot study among 20 participants (not included in the main study), wherein students and subject matter experts were included. After the pilot study, the responses were assessed, and necessary changes were incorporated into the questionnaire for further study.

The questionnaire consisted of 4 open-ended questions recording the demographic details, such as name, age, gender and year of study, and 20 close-ended questions assessing the role of Physiotherapy in the management of COP. There were 5, 11 and 4 questions under knowledge, awareness and perception domains respectively. The responses were evaluated to assess the agreement using a 5-point Likert scale (strongly agree, agree, neutral, disagree, strongly disagree). The questionnaire was distributed amongst 240 students in a print form in the institute and 10 minutes were provided to answer the questionnaire. The lead investigator circulated and gathered the responses.

IBM-SPSS® Statistics-Version 21 (USA: IBM Corp.) was used to statistically analyse the data after the responses were tabulated in an Excel sheet. Descriptive statistics were applied for the frequency distribution, mean and standard deviation. One way ANOVA was used to compare the differences between groups, and Chi-square test was used to check for association between groups. The Likert scale was modified into scores for the analysis (strongly agree=5; agree=4; neutral=3; disagree=2; strongly disagree=1). Statistical significance was set at $p \leq 0.05$.

Results and Discussion

Demographic details

The questionnaire was distributed among 240 students and a total of 200 responses were received yielding a response rate of 83.33%. Majority of the students were females (65.4%) and a higher percentage of postgraduate students participated in the study (32.9%), followed by interns (27.5%) and final year undergraduates (22.9%).

Frequency distribution of various questions under domains; knowledge, awareness and perception among the study population is presented in **Tables 1-3** respectively.

Table 1. Responses assessing the knowledge regarding etiology and management of Orofacial pain

Distribution of Knowledge scores among participants					
Questions	**Response**	**Final year N (%)**	**Intern N (%)**	**Postgraduate N (%)**	**P value**
Do you know the various dental and non-dental causes of Orofacial pain?	Agree	53 (96.36%)	63 (95.45%)	79 (100%)	<0.001*
	Neutral	2 (3.64%)	3 (4.55%)	0 (0%)	
	Disagree	0 (0%)	0 (0%)	0 (0%)	
Are you aware that Physiotherapy is an upcoming modality in treating Orofacial pain?	Agree	47 (85.45%)	54 (81.81%)	76 (96.20%)	0.04*
	Neutral	8 (14.55%)	11 (16.67%)	3 (3.80%)	
	Disagree	0 (0%)	0 (0%)	0 (0%)	

All values are expressed as the number (n) and percentile (%). The statistical test used: Chi-square. Level of significance: *P≤0.05 is considered statistically significant.

The assessment of knowledge revealed that 195 students (97.5%) were familiar with the various dental and non-

dental causes of Orofacial pain, while 188 students (94%) were confident in diagnosing a patient suffering from Orofacial pain. It is noted that as many as 177 students (88.5%) agree that physiotherapy is an emerging modality in treating Orofacial pain. Around 174 students (87%) agree that Orofacial pain was adequately taught in the dental curriculum.

Table 2. Responses assessing the awareness regarding the Role of Physiotherapy in the management of COP

Distribution of Awareness scores among participants					
Questions	**Response**	**Final year N (%)**	**Intern N (%)**	**Postgraduate N (%)**	**P value**
Are you aware that Physiotherapy helps in relaxing/improving muscle tone for Orofacial pain management?	Yes	47 (85.5%)	56 (84.8%)	73 (92.4%)	
	No	3 (5.5%)	2 (3.0%)	1 (1.3%)	0.474
	Not sure	5 (9.1%)	8 (12.1%)	5 (6.3%)	
Are you aware that Myofascial Release Therapy (MRT) is used in reducing stress induced muscle pain?	Yes	26 (47.3%)	45 (68.2%)	59 (74.7%)	
	No	14 (25.5%)	13 (19.7%)	6 (7.6%)	0.006*
	Not sure	15 (27.3%)	8 (12.1%)	14 (17.7%)	
Are you aware that Low-Level Laser Therapy (LLLT) can be used in managing Orofacial pain?	Yes	34 (61.8%)	36 (54.5%)	61 (77.2%)	
	No	12 (21.8%)	9 (13.6%)	7 (8.9%)	0.011*
	Not sure	9 (16.4%)	21 (31.8%)	11 (13.9%)	
Are you aware of the Dry Needling technique is used in the management of neuro-musculoskeletal pain in Orofacial region?	Yes	21 (38.2%)	30 (45.5%)	31 (39.2%)	
	No	21 (38.2%)	13 (19.7%)	20 (25.3%)	0.193
	Not sure	13 (23.6%)	23 (34.8%)	28 (35.4%)	
Are you aware that Kinesio Taping Technique (KTT) helps in management of patients with Masticatory Myofascial Pain Syndrome (MMPS)?	Yes	9 (16.4%)	16 (24.2%)	31 (39.2%)	
	No	33 (60.0%)	23 (34.8%)	23 (29.1%)	≤0.001*
	Not sure	13 (23.6%)	27 (40.9%)	25 (31.6%)	

All values are expressed as the number (n) and percentile (%). The statistical test used: Chi-square. Level of significance: *P≤0.05 is considered statistically significant.

When inquired about the role of Physiotherapy in relaxing/improving muscle tone, majority of the students (88%) were aware with no statistically significant difference (p>0.05). Furthermore, students (86.5%) were also aware that mouth opening exercises are used to treat trismus. Very few students were aware regarding the use of Myofascial Release Therapy in treating stress induced muscle pain (35%) and the use of Low-Level Laser Therapy in managing COP (34.5%), which was statistically significant (p<0.05). Less than half of the students were aware of the physiotherapeutic techniques, such as Dry Needling Technique (41%) and Kinesio Taping Technique (28%). Similarly, quite a few students (47%) have witnessed any physiotherapeutic procedure being carried out for a patient for the management of COP.

Table 3. Responses assessing the perception of the Role of Physiotherapy in the management of COP

Distribution of Perception scores among participants					
Questions	**Response**	**Final year N (%)**	**Intern N (%)**	**Postgraduate N (%)**	**P value**
Lack of awareness amongst dentists acts as a barrier in referring patients to a physiotherapist for Orofacial pain management?	Don't know	7 (12.7%)	14 (21.2%)	12 (15.2%)	
	Disagree	1 (1.8%)	0 (0%)	7 (8.9%)	0.044*
	Agree	47 (85.5%)	52 (78.8%)	60 (75.9%)	
Training in various Physiotherapeutic modalities for Orofacial pain should be part of the dental curriculum?	Don't know	4 (7.3%)	5 (7.6%)	8 (10.1%)	
	Disagree	1 (1.8%)	0 (0%)	2 (2.5%)	0.716
	Agree	50 (90.9%)	61 (92.4%)	69 (87.3%)	
Physiotherapy should be used as an adjunct to	Don't know	3 (5.5%)	5 (7.6%)	6 (7.6%)	

dental treatment for the management of Orofacial pain?	Disagree	0 (0%)	0 (0%)	3 (3.8%)	0.289
	Agree	52 (94.5%)	61 (92.4%)	70 (88.6%)	

All values are expressed as the number (n) and percentile (%). The statistical test used: Chi-square. Level of significance: *P≤0.05 is considered statistically significant.

More than half of the students (68.25%) perceive that a lack of awareness amongst dentists acts as a barrier in referring the patients to a Physiotherapist for Orofacial pain management. Almost all the students felt that there is a need to educate patients regarding the various benefits of Physiotherapy in the management of COP (96%). As many as 90% of the students believe that the training in relevant physiotherapeutic modalities should be considered as an essential component of the dental curriculum. Additionally, the majority of students (91.5%) think that in order to manage COP, physiotherapy should be employed in addition to dental treatment.

Table 4. Comparison of mean values assessing level of knowledge, awareness and perception among final year undergraduates, interns and postgraduates

Mean knowledge, awareness and perception scores among participants						
Categories	**Knowledge score**		**Awareness score**		**Perception score**	
	Mean ± SD	***P* value**	**Mean ± SD**	***P* value**	**Mean ± SD**	***P* value**
Final year	4.21 ± 0.48	<0.001*	2.39 ± 0.32	0.002*	2.85 ± 0.36	0.595
Intern	4.13 ± 0.42		2.46 ± 0.31		2.80 ± 0.34	
Postgraduate	4.43 ± 0.38		2.57 ± 0.27		2.79 ± 0.35	

All values are expressed in mean ± standard deviation (SD). The statistical test used: Analysis of variance (ANOVA). Level of significance: *P≤0.05 is considered statistically significant.

Mean knowledge score was higher among postgraduate students (4.43 ± 0.38) than the final year undergraduates and interns which was statistically significant (p<0.05), as depicted in **Table 4**. Statistically significant difference (p<0.05) was also noted on comparison of mean awareness scores among the final year students, interns and postgraduate students, with postgraduates having higher awareness (2.57 ± 0.27). **Table 4** also shows the mean perception scores for final year students, interns and postgraduates. Mean perception score for final year students (2.85 ± 0.36) was higher, followed by interns (2.80 ± 0.34) and was least for postgraduates (2.79 ± 0.35) which was not statistically significant (p>0.05).

Physiotherapy is an effective modality which has various benefits in the management of COP. Physiotherapy helps in relaxing the affected muscles and improves the local blood flow thus, reducing the pain. Physiotherapeutic exercises also restore the normal function and range of movements of the Temporomandibular joint (TMJ) [8]. Despite the fact that physical therapy has many uses in dentistry, its active practice in dentistry is frequently subservient because dental students and practitioners are not well-informed about it. Majority of the students in the current study were aware of the various physiotherapeutic modalities used in managing COP. The promotion of various interdisciplinary programs in the present institute and the use of systematic referral approach for patients have contributed to the knowledge and awareness amongst the students. A collaborative approach between a dentist and a physiotherapist renders effective treatment and rehabilitation of the patients. The present study raised awareness regarding the significance of an interdisciplinary approach in managing COP.

Knowledge regarding the various dental and non-dental etiologies of COP, its clinical presentations is essential for the effective management. This knowledge among dental students influences the diagnosis and management and exposes them to the availability of referral options. The current study concluded that 88.5% of the students were aware regarding the application of Physiotherapy in managing Orofacial pain which was in accordance with a similar study conducted by Sabahat Ali *et al*. [26] which concluded that 94% of the participants were aware about the benefits of Physiotherapy [27-31]. The study conducted by Ashwin PS and Sri PB, [10] reported that 66.7% of the participants had little confidence in diagnosing temporomandibular joint disorders. However, in the current study, 94% of the students agreed having confidence in diagnosing Orofacial pain disorders.

In contrast to similar studies, one conducted among postgraduates, by Ashwin PS and Sri PB, [10] concluded that, 56% of participants said that only little knowledge or just theoretical knowledge was being provided in the undergraduate education. This is in accordance with the study conducted by Patil *et al*. [32] and another study conducted by Baharvand *et al*. [33] which further concluded regarding the inadequacy of undergraduate dental education regarding temporomandibular joint disorders and Orofacial

pain. However, in this study, 87% of the students agreed that Orofacial pain is adequately covered in the dental curriculum. This difference was evident in the current institution, where, as part of the last year of the BDS program, Orofacial Pain was studied in detail using Flipped Classroom, a form of blended learning technique, to improve comprehension and application of the subject's knowledge.

A study conducted by Shaheen A in Riyadh, [34] concluded that only 46.9% of the participants were aware that Physiotherapy can treat patients with temporomandibular joint disorders, while 59.9% of the participants were not aware that Physiotherapy helps improve TMD symptoms with oral exercise, manual therapy and postural training. This study reported a comparatively higher number of students (84.5%) who knew that Physiotherapy helps in posture training to reduce pain in patients with TMD. This is in accordance with a similar study conducted by Ahmed A, [17] wherein 70.5% of the participants perceived physical therapy to be an effective management modality for TMD. In continuance with the vision of the University, the present institute promotes conduct of various interdisciplinary programs, semiannually, thus enhancing the knowledge and awareness of the faculty and students [35-39].

Similar to previously conducted studies by Gadotti IC, [40] Desai M and Jain U, [25] present study also concludes that 67.25% of the students agreed that the lack of awareness amongst dentists regarding benefits of Physiotherapy acts as a barrier in referring the patients to a physiotherapist. Thus, the present study was an attempt to increase the awareness regarding the role of Physiotherapy in managing COP amongst the dental students [41-46].

Physiotherapy can be an adjunctive modality for the management of COP, was agreed by 91.5% of the students in the present study. This was in accordance with a similar study conducted in by Shaheen A, [34] where 97.5% of the participants were willing to refer patients to a physiotherapist for collaborative treatment approach, when needed for better outcomes [47-51].

Limitations

The present study had few shortcomings that need to be addressed in the future studies. The study had included students from a single dental institute and not students from other dental institutes which may limit the generalizability of the findings. Further studies with a larger sample size from multiple institutes, under different universities across the country should be conducted. Furthermore, clinical trials evaluating the outcome of collaborative approach between dentists and physiotherapists for management of COP are also recommended.

Conclusion

The study drives a conclusion that majority of the dental students are aware of the significance of Physiotherapy in COP management. The present study addressed the issues, such as the lack of awareness of specific physiotherapeutic modalities which may lead to decreased referral rate to physiotherapists, depriving the patients of alternative treatment options. There is also a need to revise the dental curriculum to include interdisciplinary care rather than segmented care for the patients with COP.

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Conflict of interest: None

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Ethics statement: The study was initiated after getting the institutional ethical clearance from Institutional Research and Ethics Committee(reference no. EC/NEW/INST/2024/256). Before completing the survey, each participant gave their informed consent.

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