

Interdisciplinary Dentofacial Therapy: Maximizing Diagnosis and Treatment in Oral Health

KASHIF ADNAN¹, MUHAMMAD AHSAN FAYYAZ², PERMANAND³, NARESH KUMAR⁴, SHAHRUKH IRFAN⁵, AVINASH⁶

¹BDS, MFDS RCPS(Glasgow), FICD, Demonstrator/ Registrar, de'Montmorency College of Dentistry, Lahore.

²Bachelor of Dental Surgery, House Officer, Institute of Dentistry, CMH Lahore Medical College, Pakistan.

³Associate Professor, Department of Operative Dentistry, Bhitai Dental and Medical College, Mirpurkhas.

⁴Assistant Professor, Department of Operative Dentistry, Bhitai Dental and Medical College, mirpurkhas

⁵Resident MSc Prosthodontic Dentistry, Liaquat University of Medical And Health Sciences, Jamshoro, Sindh

⁶Resident MSc Operative Dentistry, Liaquat University of Medical and Health Sciences, Jamshoro, Sindh, Pakistan

Correspondence author: Kashif Adnan, Email: Kashifdcd@gmail.com

ABSTRACT

Aims: This study aims to investigate the current practices of Interdisciplinary Dentofacial Therapy (IDT) in the detection and management of prevalent oral illnesses. In order to ascertain the significance of Interdisciplinary Dentofacial Therapy (IDT) in optimizing preventative oral health, a comprehensive analysis is required.

Method: For this purpose, the study's approaches were centered on investigating the current practices of interdisciplinary dentofacial therapy (IDT) in relation to oral health. The researchers aimed to explore the potential benefits of integrating various dental specialties and their collaboration in treating complex oral health issues. They also examined the impact of IDT on patient outcomes, such as improved treatment outcomes, enhanced patient satisfaction, and reduced treatment time. This cross-sectional survey was conducted during the period of March 2023 across the world. The purpose of the survey was to gather data on various socio-economic factors and their impact on global trends. Participants were selected randomly from diverse demographics to ensure a representative sample. The research focused on a global sample of orthodontists, oral surgeons, and ear-nose and throat (ENT) specialists.

Results: This study elucidates the deficiencies in interdisciplinary oral health care and identifies the factors that impact four distinct cohorts of healthcare providers. The findings of our study indicate that certain criteria, namely professionals (Orthodontics or Oral Surgeons) and years of experience (more than 3 years), were found to be positively correlated with increased likelihood of referral practices.

Practical Implications: Among the characteristics that contribute to the facilitation of multidisciplinary activities, it was shown that the source of oral health knowledge, specifically from the Ministry of Health (MOH) and formal education, was substantially associated with increased likelihood of engaging in such practices.

Conclusion: The current study demonstrated that interdisciplinary dentofacial therapy is feasible if all oral health professionals collaborate. In addition, the investigation revealed disparities between healthcare professionals' interdisciplinary dentofacial therapy (IDT) knowledge and attitudes. The implementation of interdisciplinary dentofacial therapy (IDT) varied among healthcare professionals. Recognizing the importance of the disparity in oral health education, it is essential to implement comprehensive professional training in undergraduate and graduate programs.

Keywords: Interdisciplinary Dentofacial Therapy, Oral health

INTRODUCTION

The ultimate utilization of the expertise and skills in various dental disciplines is called interdisciplinary dentofacial therapy (IDT)⁽¹⁾. Its hallmark is the combination of regimental diagnostic, treatment planning and therapeutic procedures with extensive communication between the team members" (2018). This methodology facilitates a comprehensive and integrative approach to dental care, as it entails the cooperation and coordination among many dental specialists, including orthodontists, ear-nose and throat (ENT) specialists, and oral surgeons. Through collaborative efforts, these professionals have the ability to tackle intricate dental concerns and offer patients the most efficient and tailored treatment alternatives currently accessible. The implementation of interdisciplinary dentofacial therapy facilitates a heightened level of efficiency and organization, as it enables team members to collaboratively contribute their respective knowledge and skills towards the formulation of a comprehensive treatment plan for oral health, encompassing both diagnosis and treatment.

Background: Having a healthy mouth and teeth is very important to your overall health and well-being. Tooth decay, gum disease, infections, and oral cancer can be very expensive to treat and can cause serious health problems. According to the Centers for Disease Control and Prevention (CDC), poor oral health can also be related to serious problems like lung disease, heart disease, and diabetes, and can even cause problems during pregnancy. Maintaining good oral hygiene practices, such as regular brushing and flossing, can help prevent these oral health issues. Additionally, scheduling regular dental check-ups and cleanings can detect any potential problems early on and ensure prompt treatment, ultimately contributing to better overall health outcomes.

"Oral diseases can produce serious functional limitations, discomfort, and pain, leading to disability (physical, psychological, or social), impairment, and handicap. For this reason, these diseases significantly impact the quality of life for sufferers"⁽²⁾. Furthermore, oral diseases can also result in financial burdens due to the costs associated with treatment and management. The impact of these diseases extends beyond the individual, as they can also affect relationships and the overall well-being of family members and caregivers.

RESEARCH QUESTION

The following examination questions are what this research aims to answer:

1. How do the current practices under Interdisciplinary Dentofacial Therapy (IDT) assist in diagnosing and treating common oral diseases?
2. How do these practices under Interdisciplinary Dentofacial Therapy (IDT) maximize oral health prevention?

Aim and Scope: This study aims to investigate the current practices of Interdisciplinary Dentofacial Therapy (IDT) in the detection and management of prevalent oral illnesses. In order to ascertain the significance of Interdisciplinary Dentofacial Therapy (IDT) in optimizing preventative oral health, a comprehensive analysis is required.

Problem Statement: The primary issue at hand pertains to the significance of interdisciplinary dentofacial therapy in optimizing the processes of diagnosis and treatment within the field of oral health. Despite the significant social and economic implications associated with oral disorders, they remain an overlooked aspect of global health. They have the potential to exert a detrimental influence on the overall well-being of several populations across the globe. There is a reciprocal association between oral and

systemic health, whereby the condition of a person's general health can be reflected in their oral health, and dental disorders can have a substantial impact on overall health.

Significance of the Study: Maintaining oral health is crucial for overall well-being and an acceptable standard of living. The World Health Organization provides a definition of oral health as the absence of mouth and facial pain, oral infections and sores, and oral and other disorders that impede an individual's ability to bite, eat, smile, talk, and maintain psychological well-being⁽³⁾. Oral disorders such as dental caries and periodontal disease persistently afflict the human population. The prevalence of dental caries is observed in a vast majority of the adult population, whereas a notable proportion of middle-aged individuals, ranging from 15 to 20%, experience the manifestation of advanced periodontal disease. Insufficient dental care can have negative consequences on all aspects of an individual's well-being, extending beyond oral health to encompass both physical and psychological aspects. Inadequate oral hygiene practices have been associated with the development of systemic ailments, including cardiovascular disease, diabetes, respiratory infections, and unfavorable pregnancy outcomes. Furthermore, persons who suffer from oral health problems may have social and psychological ramifications, including diminished self-esteem, depressive symptoms, and challenges in sustaining interpersonal connections.

Literature Review: The oral cavity is crucial for communication, nutrition, and appearance. The oral cavity has a lengthy history of being treated independently from the rest of the body in the medical field. Dental care and medical care are governed by two different agencies and sets of rules. In Sweden, healthcare organizations separate oral cavity from the rest of the body. This divide affects patients with common diseases and treatments, compromising their overall health. Multidisciplinary approaches and teamwork are essential for providing the best care, including for the oral cavity. Investigating patients' experiences of oral symptoms and their quality of life is essential.

Oral health, diagnosis and complications: Oral health encompasses the subjective sensations and attitudes of patients towards their oral condition. In the current investigation, the term "oral symptoms" pertains to the subjective feelings reported by patients, whereas "oral complications" is employed to describe events that are evaluated by healthcare professionals. Various factors, such as diverse populations, different diagnoses, varying medical treatments, and the utilization of different evaluation methods and assessment periods, have been proposed as potential explanations for the observed discrepancies in the reporting of oral symptoms and sequelae⁽⁴⁾. These discrepancies highlight the importance of considering multiple factors when assessing and interpreting oral symptoms and complications in clinical practice. It is crucial for healthcare professionals to take into account these potential explanations to ensure accurate diagnosis and appropriate management of oral health issues.

Complications related to saliva: Saliva possesses a multitude of digestive and defensive activities, rendering it crucial for the facilitation of verbal communication. Saliva functions as a lubricant within the oral cavity and offers a defensive mechanism against infections through the provision of buffers, minerals, and proteins⁽⁹⁾. According to Locker, the presence of salivary glands within the radiation field can result in a complete or partial reduction in salivary output⁽¹⁰⁾. Previous research has indicated that a significant proportion of patients (ranging from 81% to 100%) who have radiotherapy targeting the oral cavity, specifically including the salivary glands, report experiencing xerostomia, often known as dry mouth⁽¹¹⁾. Mouth dryness is often perceived as a notable source of distress by a considerable number of patients⁽¹⁶⁾, perhaps leading to difficulties in eating and an elevated likelihood of insufficient nutritional intake. Rajan et al. showed that a significant proportion of individuals, specifically 51%, experienced speech impairments after six months following radiation⁽¹⁷⁾. Xerostomia, a condition characterized by dry mouth, has been

observed in a significant proportion of patients undergoing bone marrow transplants following total body irradiation, with a reported prevalence of 79%⁽¹⁸⁾. Additionally, a study by Kutz found that 44% of patients with advanced cancer reported dry mouth as a symptom to their healthcare provider⁽¹⁹⁾. Research conducted on individuals undergoing radiotherapy has indicated that there is a potential alteration in the composition of saliva, resulting in an increase in viscosity and stickiness.

Nursing attitude to oral health: The maintenance of oral health is a habitual practice in the realm of personal hygiene for the majority of individuals. Individuals afflicted with a medical condition and receiving therapeutic interventions that impact the oral cavity may necessitate tailored oral hygiene protocols or even support from dentistry or healthcare professionals or family members. Previous studies have frequently focused on investigating the knowledge and attitudes pertaining to oral health issues specifically among nurses working in geriatric care settings⁽⁵⁾. According to the studies conducted by Nieweg and Sweeney, it was determined that the level of education among nursing personnel responsible for caring for cancer patients was inadequate⁽⁶⁾⁽⁷⁾. According to a study conducted by Paulsson, it was shown that the level of knowledge among nursing personnel on senior care exhibited a notable improvement subsequent to their participation in a continuing education session⁽⁸⁾. Despite the recognition of dental care as a crucial aspect of nursing practice by a significant proportion of nursing staff, it remains an overlooked component, with challenges encountered in the provision of adequate oral hygiene⁽¹²⁾. In a study conducted by Wallace, it was found that attitudes and subjective norms were significant predictors, accounting for 39% of the variance in nurses' behavior regarding the provision of dental care⁽¹³⁾. According to a study conducted by Larson, it was shown that both nurses and patients had a consensus on the significant suffering caused by mucositis, which was identified as one of the most distressing symptoms⁽¹⁴⁾. However, in a separate study focusing on research priorities among oncology nurses, stomatitis received a relatively low rating. In a study conducted by Löfmark, it was discovered that both nurses and nursing students had a tendency to underestimate the extent to which patients experienced dry mouth⁽¹⁵⁾.

Oral Care: The maintenance of oral health should encompass both preventive and therapeutic measures in order to mitigate the potential for oral complications and symptoms, as well as to avert the occurrence of systemic issues. Jontell and Koch have recommended for the implementation of a multidisciplinary strategy in order to ensure the provision of appropriate dental care for patients in question⁽²⁰⁾. Currently, there exists a widespread agreement among professionals in the field that individuals undergoing chemotherapy or radiotherapy should undergo a comprehensive dental evaluation and get any necessary dental or oral interventions prior to initiating their medical treatment. Furthermore, it is recommended to implement suitable prophylaxes. Nevertheless, it is important to note that not all patients exhibit oral issues or encounter oral symptoms. Consequently, accurately identifying individuals who are susceptible to such risks becomes a challenging endeavor. The administration of intensive chemotherapy and large doses of radiotherapy is associated with an increased level of risk, as indicated by certain agents⁽²¹⁾.

Systematic evaluation of the oral cavity facilitates identification of initial indications of oral problems. Previous research has indicated that there is a lack of regular oral examination conducted by nurses on a daily basis⁽²²⁾. However, it is essential that a daily examination of the oral cavity be conducted and observations be noted in order to discover oral symptoms at an early stage. Furthermore, it is imperative to document any detected changes promptly. According to Yeager, it is recommended that trained staff perform daily examinations to check both the effectiveness and potential negative effects⁽²³⁾. Nevertheless, there exists a dearth of understanding regarding the

manner in which patients undergoing radiotherapy or chemotherapy undergo oral examinations.

METHODOLOGY

The study's approaches were centered on investigating the current practices of interdisciplinary dentofacial therapy (IDT) in relation to oral health. The researchers aimed to explore the potential benefits of integrating various dental specialties and their collaboration in treating complex oral health issues. They also examined the impact of IDT on patient outcomes, such as improved treatment outcomes, enhanced patient satisfaction, and reduced treatment time.

Study Design and Setting: This cross-sectional survey was conducted during the period of March 2023 across the world. The purpose of the survey was to gather data on various socio-economic factors and their impact on global trends. Participants were selected randomly from diverse demographics to ensure a representative sample.

Study Participants: The research focused on a global sample of orthodontists, oral surgeons, and ear-nose and throat (ENT) specialists. Exponential non-discriminative snowball sampling was employed in our study. The recruitment process involved initially contacting potential participants through email and afterwards requesting their assistance in disseminating the survey link to doctors and nurses within their professional or personal networks. These individuals then proceeded to disseminate the survey link within their respective circles. The survey link was made available for participation over the period of January to March 2023, and a purposeful sampling method was employed to recruit participants from four distinct groups of health professionals. The inclusion criteria for this study consisted of professionals throughout the course of the research and who provided their consent to participate. No exclusion criteria were identified.

The Questionnaire: The researchers employed a methodical approach by utilizing a structured, self-administered questionnaire that was disseminated through an online platform, specifically Google Forms. Furthermore, the questionnaire was shared across several social media platforms to maximize its reach and participation. The writers of this study utilized a questionnaire that was derived from prior research and afterwards adjusted to suit the specific objectives of their investigation. The questionnaire was administered in the English language in order to optimize clarity and ease of understanding. The survey consisted of a total of 40 closed-ended questions, which were categorized into four sections: demographics, attitudes regarding oral health, knowledge about oral health, and IDP (Intentional Dental Practice) associated with oral health. The questionnaire underwent a pilot testing phase, involving a sample of 20 health professionals who were not included in the main study.

STATISTICAL ANALYSIS:

a. Evaluation of Study Material

In the case of questions that have a singular correct answer, a score of one was assigned for each accurate response, while incorrect or "I do not know" replies received a score of zero. In instances where questions have several correct answers, the scoring system assigned a score of "one" to the entire set of correct answers, whereas selecting one or two correct answers resulted in a score of "zero". The cumulative knowledge score of the participant was determined by adding up the points awarded for each correct answer, resulting in a maximum score of thirteen. Participants were classified as possessing a high level of knowledge if they attained an aggregate score of 70% or more. Responding correctly to half of the questions would be deemed as indicative of an average level of knowledge, but scoring below this threshold would be indicative of a low level of knowledge.

b. Attitude Scale Evaluation

For the attitude items, we merged replies of agree and definitely agree, as well as those of disagree and totally disagree. We calculated the mean score of attitude statements as a proxy for the

participants' attitudes, and categorized them as either positive (scores above the mean) or negative (scores below the mean).

We computed some basic descriptive statistics (such as percentages, means, medians, and standard deviations [SD]). The Shapiro-Wilk test was utilized to ensure data normality. If the p-value is less than 0.05, the data is significantly out of the norm. The Kruskal-Wallis Test (a non-parametric analysis of variance) was used to compare knowledge and attitude scores across healthcare disciplines, and the Bonferroni Correction procedure was employed to compare between groups. Using a logistic regression approach with backward elimination, we looked for predictors of participants' oral health-related IDPs. The researchers calculated a 95% confidence interval around the odds ratio (OR). To be statistically significant, the P-value has to be under 0.05. For the statistical analysis, we used SPSS 23.

RESULTS

The poll received responses from a sample size of 200 professionals working in the healthcare field. Among these respondents, 78 individuals (39%) fell between the age range of 20 to 29 years. 126 respondents (63%) identified as male. According to the data presented in Table 1, a majority of the participants consisted of nurses, comprising 38% of the total sample. Additionally, 34% of the participants reported having fewer than 3 years of professional experience. Approximately 48.5% of the participants relied on their formal education, specifically their university or college education, as a primary source of knowledge regarding oral health. Furthermore, a significant majority of 61.7% (123 individuals) had never participated in any oral health lectures or training sessions.

Figure 1 illustrates the reactions of healthcare professionals to the attitude statements. The majority of participants (86%) expressed a dissenting viewpoint regarding the impact of dental health on individuals' overall well-being. Approximately 49% of respondents expressed agreement with the notion that the provision of OHE (Oral Health Education) would impose a significant hardship. A majority of health professionals, namely two-thirds or 67% of them, expressed their willingness to undergo training in order to enhance their ability to deliver oral health education (OHE) and screening services.

Table 1: Introduction to the Study Population (n = 200)

Variables	Frequencies (%)
Age	
Twenties	78 (39)
Thirties	72 (36)
Forties	32 (16)
Fifties and above	18 (9)
Gender	
Female	74 (37)
Male	126 (63)
Health Professionals	
Oral Surgeons	44 (22)
Orthodontists	76 (38)
Pediatricians	46 (23)
ENT specialists	24 (12)
Others	12 (6)
Affiliations	
Health centers	76 (38)
Public hospitals	40 (20)
Private hospitals	42 (21)
Teaching institutes	28 (14)
Both private and public	16 (8)
Years of experience	
< 3 years	68 (34)
3–6 years	46 (23)
7–9 years	40 (20)
≥ 10 years	48 (24)

Figure 2 displays the reported frequency of multidisciplinary approaches as indicated by healthcare professionals. Approximately three-fourths (74.6%) of the participants indicated

that they consistently deliver oral health education (OHE) to their patients. In a similar vein, a majority of participants (59.6%) indicated that they consistently engage in occupational health and safety (OHS) practices. A majority of the participants, specifically 66.7%, indicated that they responded to inquiries from patients regarding oral health or conditions associated with it. Additionally, 58.7% of the participants reported having referred patients to dentists in the past.

According to the data presented in Figure 4, the participants indicated various causes for dental referrals, with tooth discomfort being the predominant explanation (41.5%).

Table 2 presents the factors that are linked to the implementation of interdisciplinary activities. The occupation of being a pediatrician (OR = 2.6), possessing formal education in oral health knowledge (OR = 1.8), and having affiliation with the Ministry of Health (OR = 3.6) were found to have a statistically significant association with an increased likelihood of giving oral health education to patients. The results of the study indicate that individuals in the medical profession, specifically physicians (OR = 0.5), ear, nose, and throat (ENT) specialists (OR = 0.4), and those who participated in oral health education training (OR = 0.17), exhibited a statistically significant decrease in the likelihood of performing oral health screenings. Individuals who possess a higher level of knowledge (OR = 1.1), possess more than 10 years of professional experience (OR = 1.6), and have obtained formal health educational training as their primary source of knowledge, exhibit significantly increased likelihood of engaging in interdisciplinary practices related to oral health. These practices include responding to patient inquiries regarding oral health and making referrals to dentists.

This study elucidates the deficiencies in interdisciplinary oral health care and identifies the factors that impact four distinct cohorts of healthcare providers. The findings of our study indicate that certain criteria, namely professionals (Orthodontics or Oral Surgeons) and years of experience (more than 3 years), were found to be positively correlated with increased likelihood of referral practices. Among the characteristics that contribute to the facilitation of multidisciplinary activities, it was shown that the source of oral health knowledge, specifically from the Ministry of Health (MOH) and formal education, was substantially associated with increased likelihood of engaging in such practices. Participants who possessed a higher level of oral health knowledge exhibited a greater likelihood of effectively addressing patients' inquiries regarding oral health and engaging in a greater number of referral practices. Nevertheless, the impact of attending OHE training and the attitudes of participants on oral health-related multidisciplinary activities appeared to be limited.

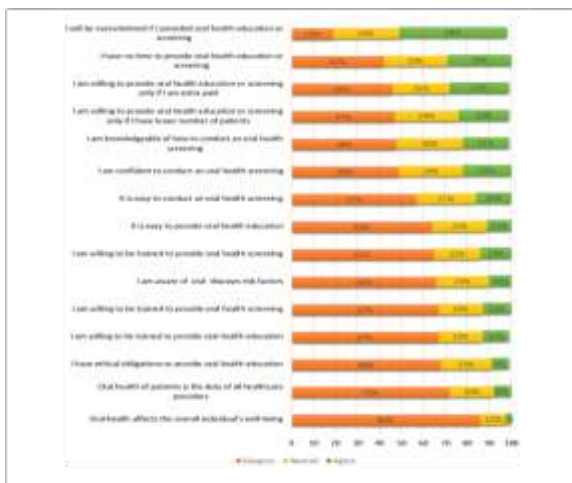


Fig. 1: Responses of oral health professionals

The present study observed that participants exhibited a moderate level of oral health awareness, with notable variations observed among health professionals. Specifically, physicians had the highest knowledge scores, while nurses displayed the lowest knowledge scores. Other studies have also revealed a disparity in oral health knowledge between nurses and physicians (Goldberg et al., 2020). The limited integration of oral health content in undergraduate training programs has been identified as a contributing factor to the low level of oral health knowledge reported among health professionals. Additionally, the absence of protocols and regulations to address contemporary oral health standards further exacerbates this issue.

The majority of participants in the present study exhibited a lack of knowledge regarding the clinical manifestations of dental caries and periodontitis, which is a noteworthy discovery. Previous studies have also found a deficiency in the ability to accurately identify dental caries and oral disease. The study implemented rigorous scoring criteria for the knowledge part. As an illustration, the inquiry pertaining to the clinical manifestations of dental caries encompassed the presence of white spot lesions, staining, and the formation of cavities. Individuals who possessed the ability to accurately select the complete set of right responses were deemed to possess knowledge regarding the clinical symptoms. The correlation between oral health and overall health is firmly established and widely acknowledged. Medical professionals, including physicians, dentists, and nurses, frequently face instances when medical disorders exacerbate mouth issues, and conversely, oral problems can have an impact on general health. For example, there exists a mutually dependent relationship between diabetes and periodontal disease, as both conditions exert detrimental effects on one another and exhibit a shared pathophysiological route.

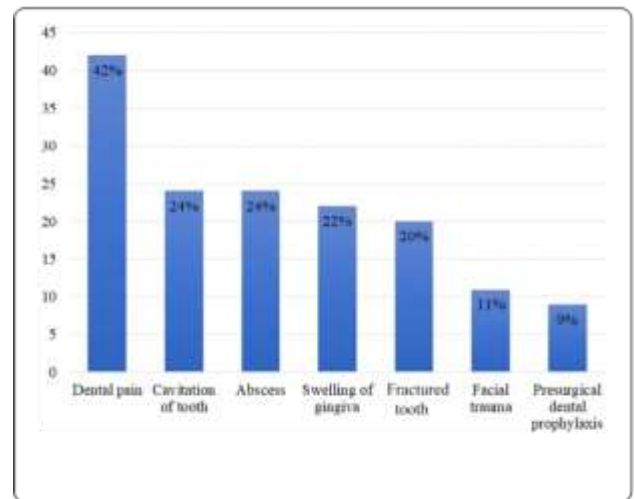


Fig. 2: Health professionals' dental referral reasons

In various countries, the incidence of uncontrolled type II diabetes is notably high, reaching 77.7%⁽²⁴⁾. Consequently, it is imperative to prioritize oral health awareness and dental treatment within this context. Similar to how early childhood caries (ECC) is a widespread dental health issue that has long-lasting implications for the child's overall health and well-being, it also imposes a financial burden on parents due to the frequent need for general anesthesia. Insufficient awareness among healthcare practitioners regarding the initial indicators of dental caries may result in delayed referrals, so exposing children to heightened health risks and the potential development of chronic conditions. Hence, it is imperative to offer healthcare practitioners with education regarding the initial indicators and clinical manifestations of oral ailments.

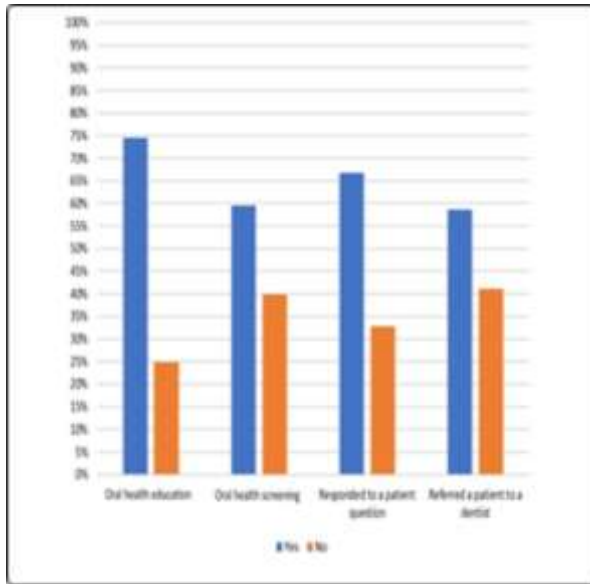


Fig. 3: Oral health related interdisciplinary practices

The present study found that attitudes towards oral health and interdisciplinary practices related to oral health were generally moderate. Specifically, ENT specialists exhibited the most favorable attitudes, while nurses displayed the least favorable attitudes. These findings are in contrast to previous research conducted in Riyadh, Saudi Arabia, and the United States, which reported different results. The significance of nurses in upholding the dental health and overall welfare of patients who are admitted to hospitals is of utmost relevance (Virtanen et al., 2012). Consequently, nurses should demonstrate a willingness to deliver sufficient oral care within their respective healthcare environment. Several negative views were detected among the participants, including concerns regarding the distribution of time and financial compensations. Otolaryngologists, as for example, adhere to a certain patient load every day and possess the autonomy to distribute time among individual patients.

This scenario does not apply to nurses who lack autonomy in managing patient influx and scheduling, so making it comprehensible that they would reluctantly undertake additional responsibilities, such as oral healthcare. The initial stage in transforming attitudes involves the establishment of a constructive social transformation, which may be accomplished by enhancements to undergraduate curricula, the provision of training and workshops, the implementation of an oral care policy in the workplace, and the provision of necessary resources in healthcare settings. The concept of perceived organizational support refers to the subjective perceptions held by employees regarding the extent to which their company values their contributions and demonstrates concern for their well-being. These perceptions have the potential to impact work attitudes and preparedness among employees.

The most frequently reported interdisciplinary practice was the provision of oral health education (OHE), whereas the least commonly practiced activities were conducting oral health screenings (OHS) and referring patients to a dentist. Additionally, responding to a patient's inquiries regarding their oral health state or problems was found to be a moderately practiced interdisciplinary activity. The process of referring patients necessitates a comprehensive awareness of the referral loops present inside one's institution, hence entailing additional administrative responsibilities. Within the same framework, the implementation of occupational health and safety (OHS) necessitates a certain level of assurance, often derived from a solid foundation of knowledge (a condition that was not met in the

present investigation). Numerous international studies conducted among physicians and other healthcare providers have revealed a scarcity in the implementation of education, risk assessment, and referral practices⁽²⁵⁾. The present investigation revealed that the frequencies at which providers reported participating in transdisciplinary activities exhibited variability based on provider type. According to a study conducted by Alshunaiber, pediatricians exhibited a higher likelihood of offering oral health education (OHE) and making referrals to dentists compared to family physicians⁽²⁶⁾. This finding aligns with a previous study that indicated pediatricians possessed superior knowledge in general dentistry and were more proficient in providing preventive oral health counseling than family physicians. According to the American Academy of Pediatric Dentistry, an early dental visit is considered a fundamental aspect in the promotion of a child's oral health and the avoidance of Early Childhood Caries (ECC)⁽²⁷⁾. Physicians and nurses often serve as patients' initial point of contact throughout the health-care system. Children are typically introduced to pediatricians and family physicians at a younger age compared to dentists. Additionally, pediatricians and family physicians are able to conduct oral health screenings (OHS) at a far higher frequency than dentists, doing this procedure seven times more often. Understanding the role of pediatricians and general practitioners in children's oral health, as well as their responsibility for quick management and referral to dental specialists, is of utmost importance. When pediatricians possess the requisite knowledge, they have the capacity to significantly contribute to parental education on children's dental health. This includes imparting information about caries preventative techniques, which in turn aids in the establishment of early dental homes.

Table 2: Factors of Interdisciplinary practices using multiple logistic regression model. (n = 200)

Independent variables	Oral health- related Interdisciplinary practices			
	OHE	OHS	Responded to PT	Referral
	OR (95% CI)			
Gender				
Female	1	1	1	1
Male	0.44* (0.46-0.87)	0.69 (0.53-0.83)	0.83 (0.67-1.16)	0.84 (0.67-1.12)
Specialty Orthodontists				
Oral Surgeons	0.37* (0.22-0.46)	0.44* (0.32-0.64)	0.91 (0.64-1.3)	1.97* (1.38-2.74)
Pediatrician	2.61* (1.66-4.17)	1.17 (0.81-1.62)	1.01 (0.76-1.53)	2.35* (1.71-3.36)
ENT specialist	0.41* (0.29-0.77)	0.41* (0.28-0.69)	0.57* (0.38-0.92)	0.89 (0.59-1.37)
Others	0.31* (0.19-0.68)	0.68 (0.37-1.21)	0.65 (0.37-1.2)	1.04 (0.63-1.83)
Affiliation				
Public Hospitals	1	1	1	1
Ministry of health	0.76 (0.39-1.34)	1.64 (0.98-2.94)	0.69 (0.39-1.15)	0.91 (0.59-1.61)
Teaching institute	0.84 (0.47-1.5)	1.21 (0.74-2.05)	0.97 (0.58-1.61)	1.53 (0.95-2.46)
Private hospital	0.98 (0.51-1.9)	0.87 (0.48-1.52)	1.132 (0.63-2.04)	0.85 (0.5-1.45)
Both private and public	0.51* (0.28-0.94)	0.84 (0.51-1.52)	0.49* (0.29-0.84)	0.55* (0.33-0.91)
Years of experience				
Less than 3 Years	1	1	1	1
3-6 years	0.76 (0.52-1.14)	1.24 (0.91-1.81)	1.08 (0.74-1.46)	1.64* (1.19-2.29)
More than 6 less than 10 years	0.724 (0.47-1.11)	1.02 (0.73-1.55)	0.97 (0.62-1.32)	1.68* (1.18-2.42)
More than 10 years	0.83 (0.55-1.26)	0.96 (0.69-1.41)	1.55* (1.06-2.26)	2.51* (1.81-3.67)
Knowledge score	1.018 (0.95-1.09)	0.97* (0.86-0.98)	1.05* (1.03-1.17)	1.18* (1.05-1.19)

*Significant at 0.05 level

The study findings indicated a positive association between the number of years of experience and the likelihood of engaging in referral practices. Additionally, those with higher knowledge

scores shown a higher propensity to respond to patients and exhibited superior referral practices. These findings are consistent with other investigations conducted both domestically and overseas. A recent multicenter study was conducted, involving dental pediatricians from three distinct nations, namely the United States of America, Greece, and Saudi Arabia. The study revealed a positive correlation between knowledge and experience. The observed disparities in oral health knowledge and interdisciplinary practices, particularly in the context of referrals, were attributed to differences in individuals' experiences. It is anticipated that health practitioners with extensive experience will encounter a higher frequency of instances pertaining to oral health and possess a greater understanding of the referral processes within their respective institutions.

DISCUSSION

Individuals who placed a higher emphasis on their formal education or sought information from the Ministry of Health (MOH) were more likely to engage in multidisciplinary practices related to oral health. The inadequate knowledge, attitudes, and behaviors can primarily be attributed to a deficiency of organizational support within both the educational system and practical settings. Numerous studies have recognized deficiencies in the oral health-related curricula of medical and nursing education. Furthermore, it has been proposed that the integration of oral health education into the medical staff curriculum may enhance understanding of oral health and bolster self-assurance in conducting oral health screenings and assessing the risk of dental caries. This study places significant emphasis on the impact of organizational support on transdisciplinary activities, as well as the various factors that exert effect on these practices.

Unexpectedly, the inclusion of oral health instruction inside professional development programs did not have a significant impact on the practices of the participants. In contrast to our own findings, certain studies have indicated that physicians who have received training in oral health are inclined to offer more pertinent and comprehensive guidance to patients experiencing oral health issues, as well as providing more extensive emergency care. It is imperative for healthcare providers to possess a comprehensive understanding of their responsibilities in facilitating the integration of oral health into overall healthcare, as well as recognizing the importance of acquiring suitable training in oral healthcare. The incorporation of oral health into the protocols of healthcare providers has the potential to enhance the availability of oral health services for marginalized populations. Various means of delivering OHE, including as workshops, seminars, distance learning, and in-service training, can offer flexibility in terms of schedule and delivery. The regulation of continuous medical education (CME) in Saudi Arabia is overseen by the Saudi Commission for Health Specialties. It is mandatory for healthcare practitioners to get a specific number of CME hours annually in order to uphold their professional license. Nevertheless, the licensing authority does not recognize continuing medical education (CME) hours completed beyond the confines of an individual's professional domain. It is strongly advised that Continuing Medical Education (CME) training courses be implemented in order to address the educational requirements pertaining to oral health, particularly in the areas of disease detection, risk assessment, and timely referrals.

The findings of this study indicate that there was no significant correlation between participants' multidisciplinary behaviors and their knowledge and attitude. The bulk of the participants exhibited a mean level of knowledge and attitude that aligns with findings reported globally. There exists an anticipation that individuals possessing greater knowledge or awareness of a particular ailment will exhibit more favorable attitudes towards it, thereby increasing the likelihood of their active engagement in protective measures against it. The participants in the present study exhibited an average level of knowledge, but there were notable gaps in their understanding of key concepts pertaining to the clinical manifestations of dental diseases and their prevention.

These gaps in knowledge may help to elucidate why the participants' attitudes and knowledge did not exert a more substantial impact on their interdisciplinary practices. A subsequent study conducted in Eritrea also documented similar findings, indicating that nurses' beliefs did not have a significant impact on their oral healthcare practices. In addition to the aforementioned macro-level issues encompassing legislation and regulations, as well as meso-level elements involving financial compensation and personnel, a notable distinction exists in the daily practice of dentists and other healthcare practitioners. In both the private and governmental sectors, dentists operate within distinct clinics, where diverse specialties are organized into departments, such as the ENT department and the pediatric department. This factor potentially exacerbates the existing disparity between dental professionals and other healthcare providers.

We would want to highlight certain limitations in our study. The interpretation of cross-sectional data is limited to an association rather than establishing a cause-effect link. Furthermore, it should be noted that the data in this study were obtained through self-reporting, which introduces the possibility of both over-reporting and under-reporting. Furthermore, it is important to note that the current study did not employ random sampling, hence introducing the possibility of selection bias. Finally, an examination of the variations in the undergraduate curricula of the participants was not conducted. Notwithstanding the aforementioned potential limitations, our study's utilization of a substantial sample size and a validated instrument leads us to assert that our findings hold significance for interdisciplinary and integrated care providers on a global scale. Furthermore, our research sets the stage for future investigations into the efficacy of potential solutions and interventions.

CONCLUSION

The current study demonstrated that interdisciplinary dentofacial therapy is feasible if all oral health professionals collaborate. In addition, the investigation revealed disparities between healthcare professionals' interdisciplinary dentofacial therapy (IDT) knowledge and attitudes. The implementation of interdisciplinary dentofacial therapy (IDT) varied among healthcare professionals. Recognizing the importance of the disparity in oral health education, it is essential to implement comprehensive professional training in undergraduate and graduate programs. In addition, there is an urgent need to establish institutional and collaborative alliances between dental practitioners and other healthcare specialists. Finally, providers of health services should consider the implementation of authorized training and continuing education programs that are both fundamental and easily accessible. These programs can be delivered in a variety of ways, including through distance learning, in-service training, workshops, and seminars. These initiatives aim to improve the preparedness of healthcare professionals by providing them with the knowledge and skills necessary to effectively address oral health issues. Moreover, the incorporation of oral health education into the curricula of medical schools and other healthcare programs can serve to bridge the existing gap and foster interprofessional collaboration in the delivery of patient care.

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