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Analysis of Wind Instruments on Orofacial Anatomy: A Review of Literature

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ABSTRACT

The focus of this review of literature is on orofacial anatomy and their association with the longevity of wind instrument use. The importance of how playing wind instruments creates a disadvantage for the oral cavity and therapeutic approaches to decrease the adverse effects. Using the university's library database and PubMed, the authors performed a thorough search on the literature of our topic. Specific key terms such as wind instrumentalists, oral health, orofacial anatomy, and therapy were used to conduct our search. The searched was limited to the English language and within five years of publications. The findings acknowledged pathologically infectious microorganisms can proliferate in the mouthpiece of wind instruments, leading to diseases. The major orofacial anatomy affected by consistent use of musical instruments include salivary glands, the temporomandibular joint, and the dentition. Excessive pressure was a key factor in inflammation and damage to the hard and soft orofacial tissues. Furthermore, the reviewed literature revealed embouchure is vital to understanding a musician's oral health necessities. Developments in dentistry have been able to establish treatment in many cases for prosthodontic care and treatment plans for others wind instrumentalists so they have a chance to continue their passion with comfort and health.

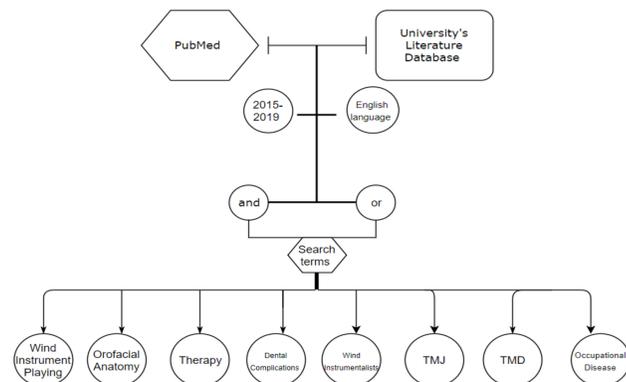
INTRODUCTION

Musical instruments are a common activity many take up at a young age. Many develop their talent into a profession. But, with playing these instruments on a daily basis, is there potential for their use to cause damage to one's health? A wind instrument is a type of instrument which creates music by the vibration of air the player blows into the mouthpiece. To create this vibration the instrumentalist would require to operate the masticatory muscles and orofacial anatomy. These particular instrumentalists are said to be more susceptible to hyperactivate the masticatory muscles and orofacial anatomy.¹ The purpose of this article is to observe the relationship between wind instruments and orofacial anatomy. It will illustrate how wind instrument playing encompasses temporomandibular disorders, root absorption, systemic health, and embouchure. Embouchure is the manner in which the lips and mouth are applied to the mouthpiece when blowing a wind instrument.² A musician's embouchure is critical to the understanding of how their instrument affects their orofacial anatomy. This article is necessary to bring awareness to wind instrumentalists who may not know about the malady of their instruments upon their orofacial tissues.

A considerable amount of literature reviews conveyed the collision of wind playing on the orofacial anatomy, with some discussing treatment options.

METHODS AND MATERIALS

Using the PubMed research database as well as, utilizing the university's literature database initiated the literature search. The articles used in this piece hold a state of currency of up to five years old, making them appropriate to be utilized in this review of literature. The search was restricted to the English language. The advance-search terms used were: 'Wind playing', 'Orofacial anatomy', 'Therapy', 'Dental complications', 'Wind instrumentalists', 'TMJ', 'TMD', and 'Occupational disease'. To combine the search terms, the authors utilized the 'AND' and 'OR' Boolean. The eligibility of the literature was determined by reading the abstract and introduction.



RESULTS

The search identified nine primary sources and six secondary sources which met the inclusion criteria. As the authors reviewed the literature, the populations included novice wind instrumentalists all the way to profession wind instrumentalists with developed careers. Articles in this review included: cross-sectional research designs, case reports, surveys, and review of literatures. These articles provided the authors with distinctive factors caused by wind instrument playing along with treatments and the identification of symptoms commonly faced by musicians. A considerable amount established a correlation between wind playing and orofacial abnormalities. The articles reviewed acquired a stronger association conclusion than a causation. Wind instrumentalists had a higher prevalence of TMD when compared to individuals who were not wind instrumentalists.

DISCUSSION

Playing wind instruments was associated with TMD, root resorption, prosthodontic care, and oral-systemic linkage to diseases. Causes are identified as hyperactivity of masticatory muscles, longevity of pressure exposure to TMJ, improper form of embouchure, and poor asepsis management with wind instrument.^{3,4,5} Further causations can be related to the type of mouthpiece used to play the wind instruments, since performing with a reed mouthpiece can cause the instrumentalist to experience a higher maximum voluntary contraction than the instrumentalist who utilize the wind instrument without a reed mouthpiece.⁵ The most prevalent TMD symptoms experienced by wind instrumentalists in the studies were pain in the muscles of mastication, temple, and anterior disc displacement. For other instrumentalists, the most prevalent symptoms were tooth and jaw pain which were related to the increase of pressure generated.⁶ Regarding treatments, there was alleviation for TMD symptoms in wind instrumentalists who presented with masticatory muscle pain. One of the primary treatments reported was the occlusal guard. The occlusal guard is a removable device for the upper jaw whose duty is to alleviate of TMD symptoms. Additionally, TMDs have the ability to improve with a proper correction of their embouchure, which is now known due to the cases displayed in this review of literature. The ultimate cause of root resorption is due to the embouchure and the force produced by playing the wind instrument. A few of clinical observations of root resorption can demonstrate: mobility of maxillary central incisors, malocclusion, overbite, and overjet. Increasing cleansing habits for mouthpieces of instruments have known to decrease the amounts of pathogenic organisms harboring in them.⁶ The importance of the comprehensive care provided is for the dental professionals to understand the crucial role a musician's embouchure plays in their lifestyle. There is a great appreciation bestowed onto the providers who have taken into the consideration of the lifestyle of this population of patients.

CONCLUSIONS

With the greater amount of research being performed on this topic of wind instrumentalist and their orofacial anatomy, there is a greater appreciation being developed for those in the dental profession and the impact they have on curing the pain many wind instrumentalists face during their day to day lives doing what they love to do. The aim of this report was for the authors to bring light to the adverse effects of wind instruments to not only dental profession, but to those who do spend most of their time playing their instruments as a profession or hobby. The results of this report, support the authors' claims of wind instruments do have negative effects on orofacial anatomy and the effects can extend to other parts of the body.

Developments of more literature on this subject is highly recommended by the authors, for the potential of developing additional treatments for the consequences pronounced among this population.



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