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Musicians of Wind Instruments and Oral Condition

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Abstract

The wind instruments are the musical instruments most likely to cause oral lesions, because their use involves the involvement of anatomical structures of the oral and perioral cavity. The purpose of this literature review was to assess the impact of wind instruments on the oral condition of musicians. Scientific articles indexed in the databases Pubmed, Lilacs, Scielo, Cochrane and also in Google Scholar were evaluated. Publications from 1935 to 2020 were included and the following descriptors were applied: wind musicians and oral conditions, wind musicians and periodontal conditions, wind musicians and occlusal disorders. Many wind musicians report that pressure on teeth tends to cause tooth mobility and bone resorption. Musicians may suffer from pathological conditions that are worsened by their occupation due to excessive practice and stress. These conditions can cause permanent injuries that subsequently prevent the musicians from playing. Dental surgeons must always emphasize good oral hygiene and tooth brushing, as periodontal care for wind instruments must be complex and frequent. Just as it is important to have good oral hygiene, it is extremely important to pay attention to the hygiene of your mouthpiece or mouthpiece and reed. Dentists who understand how instruments impact orofacial structures and are aware of the potential problems faced by musicians, are able to offer preventive advice and supportive treatment to these patients.

Keywords: Mouth; Lip; Stomatognathic System; Tooth Diseases

Introduction

Since prehistory, music has been present in the life of humanity. Among many explanations of what music is, the best definition is to say that music is the art of sounds. In order to transmit this art, musical instruments are used, which can be played or blown. These instruments are believed to have appeared when primitive men realized that if hollow reeds or dried fruit peels were blown in a certain way, they would emit a sound [1].

To play a wind instrument it is necessary to know the mouthpiece, which is the position of the lips and facial muscles used to obtain the sound of the instrument, it is essential that the musician does the correct mouthpiece to have an excellent sound [2]. The mouthpiece (flute headjoint), English Horn and bassoon mouthpiece, and saxophone neck crook) are essential parts of wind instruments. As the only parts of these instruments placed either in or close to the musician's mouth, research has concluded that these parts (and reeds) harbor the greatest quantities of bacteria [3]. The wind instruments are divided into two groups according to the material used in making the mouthpiece or mouthpiece (part of the instrument that contacts the lips and mouth): wood that is subdivided according to the type of mouthpiece in simple edge (flute), simple reed (clarinet, saxophone), double reed (oboe, bassoon) and metals that have a mouthpiece differing only in size between the different instruments [4].

The wind instruments are the musical instruments most likely to cause oral lesions, because their use implies the involvement of anatomical structures of the oral and perioral cavity [5-7].

In simple-edge instruments, the mouthpiece is placed under the lower lip, following its curvature and the upper lip is contracted, with a small opening in the shape of an "O" that directs the air to the instrument [8]. Many musicians of murmurs that play for a long period report that pressure on the teeth tends to cause tooth mobility and bone resorption [9]. Blowing musicians while playing secrete saliva for a long time, this can increase the amount of plaque and subsequent stone formation [9-11] which can cause or aggravate periodontal problems.

Often in blowing musicians, orthodontic problems, soft tissue trauma, focal dystonia, prosthesis retention, cold sores, dry mouth sensation [10,12] can be observed. The dental conditions of blowing musicians may change depending on the time of use of the instrument. Musicians who play from an early age usually have their front teeth projected vestibularly, the mouthpiece of the instrument sometimes works with the lever movement projecting the teeth forward [10].

The muscular force exerted constantly in the act of touching against the dental elements can interfere in their positioning, it shows that the action of the musculature can cause injuries and that, depending on the type of the instrument, these damages may be greater or lesser. Tooth position can influence musical performance and embouchure comfort of wind instrumentalists [7].

Laboratory and field tests in the little research carried out on the subject [9,13] clearly indicate that a large number of bacteria could survive for several days in the metal or plastic nozzle. In addition, it was found that a cleaning treatment, whether performed by any substance, was effective in reducing the number of microorganisms, some more efficient than others. At this point it seemed evident that there was a need for a method for cleaning nozzles. Research by simple reed instrumentalists has shown that almost everyone has some periodontal condition, including bleeding or weak gums, mobile teeth, irritation and scarring of the lower lip and varying degrees of pain.

Dental surgeons should always emphasize good oral hygiene and tooth brushing, as periodontal care for wind instruments must be complex and frequent [9]. Unfortunately, many musicians do not have this good habit of having good oral hygiene, as among many few who go to the dentist receive advice and personalized protocols about their oral hygiene [14]. Musicians must also be careful with the practice of changing instruments with another musician, as in this action cross infections can occur, which can constitute an important biological risk factor for these wind instrumentalists [5,15].

In an analysis of the various structural components of the instruments, the presence of potentially pathogenic bacterial flora was evidenced, which therefore requires recovery and proper care of the components themselves [14]. When comparing the biological potential of a new vane vs. an already used vane (use> 1 month) instrumentalist may be putting your oral health at risk. So it is necessary to develop an effective treatment to clean the mouthpiece, mouthpiece and reed [13]. A large majority of musicians do not have a protocol for obtaining an adequate form of hygiene and often do not have an idea of the harm that can be caused by lack of hygiene, unfortunately they do not know the risks that may be being exposed. There are few studies in the literature on the topic. The lack of knowledge of the musicians, of adequate studies to guide the professionals and protocols for cleaning the instruments. the objective of this review was to evaluate the effects of the use of wind instruments on the oral and dental condition of musicians,

Methodology

Scientific articles indexed in the databases Pumed, Lilacs, Scielo, Cochrane and Google Scholar were also evaluated. The literature search involved the descriptor oral condition and the two major oral pathologies observed in musicians of wind instruments, periodontal disease and anterior tooth movement. Publications from 1939 to 2020 were included and the following descriptors were applied: wind musicians and oral conditions, wind musicians and periodontal conditions, wind musicians and occlusal disorders. The inclusion criteria adopted were articles that related musicians who played wind instruments and their effects on the oral cavity. Articles that could not be obtained in full were excluded initially our sample had 46 articles and after adopting the inclusion and exclusion criteria the final sample was eighteen studies were found that related the oral conditions of temporomandibular disorder, gingival, periodontal and occlusal pathologies in wind instrument musicians.

Discussion

The wind instruments are those that trigger greater impacts on the oral health of the instrumentalists 5. In instruments that use the mouthpiece and the reed (synthetic or bamboo) the musician fits the lower lips and supports the upper teeth in the mouthpiece for greater balance, stability and comfort. For instruments that use the mouthpiece, the musician supports his lips over the mouthpiece and leaves his teeth open, to cause a vibration and generate the sound that will be amplified and shaped by the rest of the instrument [2,16]. The continuous use and for many years of wind instrument can cause injuries to the anterior teeth by the pressure caused at the time of touching and the lack of proper hygiene of the mouthpiece can lead to an accumulation of bactéria [10].

Each group of instruments has its mouth, that is, it relates to the oral and perioral tissues in a way and within the same instrument it can be different depending on the musical notes [2]. However, in all instruments, the lips and muscles that give them the function have an important role in the formation of sound. existing differences between the pressure exerted by the mouthpiece of an oboe and an English horn in the same musician, and the differences adopted by the orofacial structures regarding the different instruments, which was possible to observe with the lateral cephalograms of the musician's embouchure with the oboe and English horn [17].

In simple reed instruments, the lower lip covers the incisal surfaces of the anteroinferior teeth and the upper lip is usually resting on the reed, but it may also be covering the incisal surfaces of the antero-upper teeth. In double-reed instruments, the lower lip covers the incisal surfaces of the antero-inferior teeth and the upper lip covers the incisal surfaces of the antero-superior teeth. In metal instruments, the upper and lower lips press the mouthpiece, in the shape of a cup, to produce the different musical notes, the lips move closer or further apart. The force in the perioral structures involved during the mouthpiece mechanism of the wind instruments and concluded that the metal players apply greater forces than the musicians who use wooden wind instruments, the trombone being the one that requires the greatest application of force [5]. Playing a brass instrument with a large cup-shaped mouthpiece might predispose a musician to develop lingual crossbites or lingual crossbite tendencies [16].

Some of the orthodontic, periodontal and prosthetic conditions that can affect the musician's oral health. Musicians with an earlier age are more susceptible to tooth displacement considering that the occlusal pattern is not yet fully established, whereas in adult musicians the pattern of occlusion or malocclusion would already be established. Players are also trained to rest the trumpet's mouthpiece more on the upper than the lower lip. The lingual force applied on the lips during playing of trumpet is hypothesized to have various effects including causing tooth movement leading to lingual displacement of maxillary incisors and increased irregularities in the anterior maxillary segment [18].

The challenge of understanding the possible effects of undesired forces are important from a clinical point of view and should be applied to the pressures which wind instrumentalists are exposed daily. The different directions that the forces are carried out will determine diverse effects in terms of dental reposition or bone remodeling [6]. The height of the alveolar bone is no different for wind instrument players in anterior or posterior teeth. Semi-professional wind instrument players may benefit from orthodontic therapy in case of a more extreme malocclusion. A young musician may experience problems wearing braces but the end result may help to improve the musical performance and embouchure comfort [7].

In a classic study, individuals were classified into three subgroups according to the type of instrument played, mouthpiece, flute and reed. The mean pressures of the instruments for the reed and flute subgroups were close to the mean pressures of the whistle group, an exercise that can be considered a normal contraction, indicating that these instruments would have less influence in the dentition direction. The dentist should be able to advise on the suitability of the instrument for the patient. For this, the musician must understand the function and movement of the oral musculature while the instrument is being played [9]. Injuries, such as erosions and ulcerations accompanied by severe pain, are a consequence of constant and repetitive contact between the incisal edges of the upper and lower anterior teeth and the labial mucosa are frequently observed [12].

The first study to look at the relationship between bacteria and wind instruments attempted to develop a cleaning protocol that could help reduce the number of microorganisms. Detergent, hypochlorite, cloth (mechanical action) and only water were tested, the conclusion was that cleaning with detergent was more effective and that the nozzles of wind instruments must be cleaned frequently [13]. Since 1931 until today, there we have a protocol to follow, each musician does it in a way, some with some guidance achieve the bactericidal effect (chlorhexidine 0.12%) and most musicians unfortunately have not yet paid attention to the accumulation of microorganisms in the instruments they use.

In the care with hygiene procedures and control of cross infection of the mouthpieces, the highest priority must be given, along with the first technical teachings of the wind instrument, as it can constitute an important biological risk factor for the players [5]. The constant and specific fungal contamination among wind reed instruments with a significant sensitization among musicians, pleading in favor of regular instrument cleaning [19]. The increase in alveolar bone loss and increase in periodontitis disease have not been confirmed in wind instruments with good oral hygiene [10].

Instruments should be cleaned and decontaminated as soon as possible after use. use alcohol wipes and / or alcohol treated swabs to thoroughly clean both the outside and the inside of the mouthpiece (i.e., flute head joint and blow hole, clarinet and saxophone hard rubber / plastic mouthpiece, bassoon mouthpiece, and brass mouthpiece). I further agree to maintain the cleaning, by means of cleaning rods, swabs, mouthpiece brushes, to the extent necessary to prevent buildup of residue within the instrument. English Horn bocals can be cleaned with a pipe cleaner, mild soap solution, and running water. Be careful not to scratch the inside of the mouthpiece with the exposed wire ends of the pipe cleaner [20].

The presence of recurrent lower lip cold sores among wind instruments can be associated with constant lip irritation caused by the reed during exercises, which makes the tissue prone to infections [12]. Gingival and periodontal problems are particularly evident even in young individuals. In adolescent musicians, bad habits (nail biting, nibbling of lips / objects), and inflammation of the gum were frequently detected. Musicians may suffer from pathological conditions that are worsened by their occupation due to excessive practice and stress. These conditions can cause permanent injuries that subsequently prevent the musicians from playing [11].

Many wind musicians report that pressure on teeth tends to cause tooth mobility and bone resorption [1]. Dentists who understand how instruments impact orofacial structures and are aware of the potential problems faced by musicians, are able to offer preventive advice and supportive treatment for these patients [10,14]. Wind instrumentalists have particular specificities during their embouchure, being essential to highlight the interface of the mouthpiece and the orofacial structures, which were shown by the lateral cephalograms [3].

Conclusion

Just as it is important to have good oral hygiene, it is extremely important that musicians pay attention to the hygiene of the mouthpiece and the reed of the wind instrument. The wind instruments can influence the dental positioning, and it is the duty of dentists to guide and properly treat these musicians.

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