

Proposed Study to Investigate Temporomandibular Joint Disorder Among University Orchestra Musicians

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Background

Temporomandibular Joint Disorder (TMD) is a multifactorial, function-limiting disorder affecting ~12 million Americans.¹ Individuals suffering from TMD can experience debilitating pain, inefficient mastication, and speech impediment. The complex etiology of TMD with influences from genetic, psychological, and occupational risk factors makes it an important malady to be addressed from a public health perspective.

Study Population

The prevalence of TMD is higher among orchestra musicians and specific instrument subpopulations exhibit further increased odds.² This is likely due to the direct external pressure applied to the area by upper string instruments and internal air pressure generated by wind instruments..

University orchestra musicians are at a critical juncture of their lives and career, but little is known about their TMJ health. High performance expectations coupled with both historic and present risk factor exposure could be causing significant morbidity among these often under-supported individuals.

Learning Objectives

- Critically appraise the scientific literature about a public health problem/issue.
- Identify an optimal survey research design to assess TMD among university musicians.
- Assess different sampling methods.
- Apply epidemiological methods to a complex public health topic and settings
- Recognize the principles of collaboration with various stakeholders, including barriers and facilitators in such endeavors.

Activities

- Worked independently to review the current literature about the epidemiology of TMD to develop a Capstone research proposal including the study questionnaire.
- Attended weekly meetings to review and improve project deliverables.
- Sought consultation with epidemiologists to improve the study questionnaire's clarity.
- Collaborated with experts in the dental and music communities to identify strategies for survey research.

Deliverables

- Capstone Research Proposal
- IRB Exemption Protocol
- Five topic, 25-item survey instrument
- General Demographics
- Music Demographics
- Music Habits
- Organizational Practices
- TMD Screening

Selected Survey Items

Music Demographics

What is your primary instrument's family?

☐ Bowed Strings

☐ Brass

☐ Woodwind

☐ Percussion

☐ Keyboard Instruments

☐ Plucked Strings

☐ Not Listed (Please Specify)

Was the instrument chosen above your first choice? If this was not your first choice, please enter which instrument was.

☐ Yes

☐ No

Music Habits

How many **years** have you been playing your primary instrument?

Please indicate how much time you individually practice **daily** in minutes.

Please indicate how much time your primary orchestra rehearses **weekly** in minutes.

Organizational Practices

Thinking over your music career thus far:

	Yes	Maybe	No
Do you expect any to experience discomfort from playing your primary instrument?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Have you ever received instruction to reduce music-related injuries?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Did any of your previous orchestras provide health and wellness guidelines?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does your current orchestra provide health and wellness guidelines?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Do you feel that you would have support if you were experiencing a music-related health issue from your orchestra?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

TMD Screening

In the last 30 days, have you had any pain or stiffness in your jaw or temple areas?

	No	Yes
Jaw Area	<input type="radio"/>	<input type="radio"/>
Temple Area	<input type="radio"/>	<input type="radio"/>

In the last 30 days, did the following activities change any pain (that is, make it better or make it worse) in your **jaw** area on either side?

	No	Yes
Chewing hard or tough food	<input type="radio"/>	<input type="radio"/>
Opening your mouth or moving your jaw forward or to the side	<input type="radio"/>	<input type="radio"/>
Jaw habits such as holding teeth together, clenching, grinding, or chewing gum	<input type="radio"/>	<input type="radio"/>
Other jaw activities such as talking, kissing, or yawning	<input type="radio"/>	<input type="radio"/>
Playing your instrument	<input type="radio"/>	<input type="radio"/>

Study Methods

Data will be collected by a self-administered questionnaire on the Qualtrics platform. IRB-approved email scripts containing a brief study explanation, researcher contact, and anonymous survey link will be sent to orchestra administrators who will forward the study invitations to musicians in their organization three times during a one-month recruitment period. Individuals who complete the full survey will be redirected to separate form to enter a drawing for one of several Starbucks gift cards. Data will be analyzed using SAS v9.4 to compile descriptive statistics and well as TMD prevalence among all respondents and instrument family subpopulations. Analyses will utilize Student's t-test, ANOVA, and Chi-square tests with the level of significance set at alpha ≤ 0.05 .

Lessons Learned

- Inter-departmental collaborative research has additional challenges, some inherent and others intentional.
- Research of dental public health outcomes among university students appears limited.

Public Health Implications

- TMD is an important deterrent to the health of students and the implication of several social determinants in its etiology warrant further research.
- Research about oral health problems among musicians, especially those attending universities, should be a priority.

References

- [1] U.S. Department of Health and Human Services. (n.d.). TMD (temporomandibular disorders). National Institute of Dental and Craniofacial Research. Retrieved January 1, 2023, from <https://www.nidcr.nih.gov/health-info/tmd>
- [2] Selms, M. K., Wiegers, J. W., Meer, H. A., Ahlberg, J., Lobbezoo, F., and Visscher, C. M. (2019). Temporomandibular disorders, pain in the neck and shoulder area, and headache among musicians. Journal of Oral Rehabilitation, 47(2), 132–142. <https://doi.org/10.1111/joor.12886>