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Musculoskeletal Pain And Its Correlation With Music Performance Anxiety In Semi-Professional Violinists

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Abstract: **Background**: Musculoskeletal disorders are the most prevalent medical conditions affecting musicians. Along with this, anxiety can also affect their performance. **Aim**: To find out the correlation of musculoskeletal pain intensity and music performance anxiety in semi-professional violinists. **Method**: A cross-sectional survey study was used. A purposive sample method, composed of 87 semi- professional Violinists between the ages of 10 to 40 years in and around Kerala. The participants were selected according to the inclusion and exclusion criteria. The study duration was 3 months. The outcome measures used were Musculoskeletal Pain Intensity and Interference Questionnaire for Musicians (MPIIQM)for assessing musculoskeletal pain intensity and interference and Mazzarolla Music Performance Anxiety Scale (M-MPAS) for assessing music performance anxiety. **Result**: According to this study among 87 Semi-professional violinists, there is prevalence of musculoskeletal pain intensity (74.71%) and music performance anxiety (58.62%) and also, there is no statistically significant correlation between these two variables in semi-professional violinists. **Conclusion**: From this study we concluded that there is no statistically significant correlation between musculoskeletal pain intensity and music performance anxiety in semi-professional violinists.

KEYWORD: Musculoskeletal pain intensity, Music performance anxiety, Semi-Professional Violinist

I. INTRODUCTION

The violin also known as a "fiddle," is a wooden piano that is the smallest in the violin family and, as such, has the highest pitch (soprano) when played regularly. Most violins are made of wood, contain four strings (or occasionally five), and are played mainly by dragging a bow over the strings. Additionally, the violin can be played by striking the strings with the wooden side of the bow (col legno) in certain situations or by plucking the strings with the fingers (pizzicato). They are particularly common in the Western classical tradition, where they are used as solo instruments as well as in groups (from chamber music to orchestras). Jazz, bluegrass, and country music are just a few of the many genres of folk music that feature violins. Certain styles of rock and jazz fusion employ electric violins with solid bodies and piezoelectric pickups; the pickups are connected to speakers and instrument amplifiers to produce sound. Indian and Iranian music are just two of the many non-Western musical traditions that now use the violin. [(1)]

Musculoskeletal disorders are among the most prevalent medical conditions affecting musicians [(2,3,4)]. The majority of musicians report impaired functioning at work and in daily life at home, and half report sleep disturbances related to these complaints. [(5,6)] These complaints have a significant negative impact on musicians' physical, psychological, social, and financial well-being. [(7,8)] Musculoskeletal issues will affect most professional musicians at some time in their careers, and some will finally retire from performing. [(4,9,10)] When reviewing studies done in other countries; the jaw, back, neck, shoulder, and hands are common places for violinists and violists to experience issues, which can be either muscular or nerve-related. Numerous ailments

stem from improper postures, repetitive tasks, and stress from extended periods of sitting and standing or lifting heavy objects. Musculoskeletal problems in instrumentalists are primarily caused by focused dystonia, nerve compression, and overuse. String players are primarily impacted by overuse lesions, which cause pain as their primary symptom. (11)

Music Performance Anxiety

Symptoms of cognitive, physiological, and behavioral nature that affect artists when they attend public musical performances are collectively referred to as music performance anxiety, or MPA. When under pressure to perform in front of an audience, music performance anxiety (MPA) is a normal, emotional, and physical reaction. (12) Causes include academic institutions which are generally the starting point for the high levels of MPA among musicians, both professionals and those pursuing training. In the classroom, the primary source of conflict arises when an instructor assigns assignments without taking into account the students' combined physical and mental needs. Lack of attention to their emotional needs or preparation for the real world is common among educators who demand their students to maintain high levels of perfectionism, practice a great deal, and use recordings as role models . (12) Other causes of MPA that are most commonly cited by musicians are 'pressure from self', 'excessive arousal' and 'inadequate preparation for performance'. (13)

Playing Related Musculoskeletal Disorders [PRMD]

It takes a lot of work from the muscles, ligaments, and bones to play an instrument since it involves a wide range of motions, such as quick, repeated, and intricate hand and finger movements. Since 1980, there has been a significant increase in the body of research on performing arts medicine. PRMDs is defined as "pain, weakness, numbness, tingling, or other symptoms that interfere with (their) ability to play (their) instrument at the level (they) are accustomed to." Violinists must maintain an extreme external shoulder rotation posture, elevate their arms, and continuously supine their left forearm to the utmost extent possible. These actions can cause tendinopathies and bursitis in the shoulder muscles. Since 1980, the body of research on Performing Arts Medicine has expanded significantly. They have found the following risk factors for such disorders: an abrupt increase in the number of instrument-playing sessions; an inadequate exercise routine; improper playing habits, such as not warming up and stretching muscles; technical problems with the instrument, such as a tight grip or excessive force; switching instruments; poor rehabilitation from prior injuries; and incorrect postures and body use. Other significant influences include variations in anatomical features between individuals and genders, the use of incorrect chairs, the performance of extra-musical activities that cause muscular stress, the quality of the instruments used, and the room's low lighting and temperature. (11)

II. NEED OF STUDY

Studies that have been conducted in India regarding the assessment and interventions to reduce musculoskeletal pain intensity and music performance anxiety among musicians have been found to be less when compared to studies conducted in other countries. There is a dearth of literature reviews on Indian violinists, necessitating this study to determine the prevalence of musculoskeletal pain intensity and its relationship to music performance anxiety in semi-professional violinists. It also aims to educate these musicians about their poor ergonomic posture and anxiety problems in order to help them avoid injuries, which in turn can enhance their performance.

III. MATERIALS AND METHODS

MATERIALS USED:

- Pen
- Paper
- Google forms
- Demographic chart
- Mazzarolla Music Performance Anxiety scale (M-MPAS)
- Musculoskeletal Pain Intensity and Interference Questionnaire for Musicians (MPIIQM)

METHODOLOGY USED:

- STUDY DESIGN: Cross sectional study
- STUDY SETTING: Various music academies in Kerala
- SAMPLE METHOD: Purposive sampling
- STUDY DURATION: 3 months
- SAMPLE SIZE: 87

87 Semi-professional violinists were recruited for this study. The age group of all the participants ranges from 10-40 years.

Subjects were selected according to inclusion and exclusion criteria.

IV. CRITERIA

INCLUSION CRITERIA

- Age: 10-40 years
- Both genders
- Violinists who have played for minimum 6 months
- Practicing at least for 2 hours weekly
- Subjects who are able to read and understand English
- Right side dominant hand

EXCLUSION CRITERIA

- Other Musculoskeletal injury and neurological injury
- Subjects not willing to participate
- Left side dominant hand

V. RESULTS

The present study was designed to determine the association of MSK pain intensity and MPA in semi-professional violinists.

Table 1: Distribution of prevalence of musculoskeletal pain intensity among study population

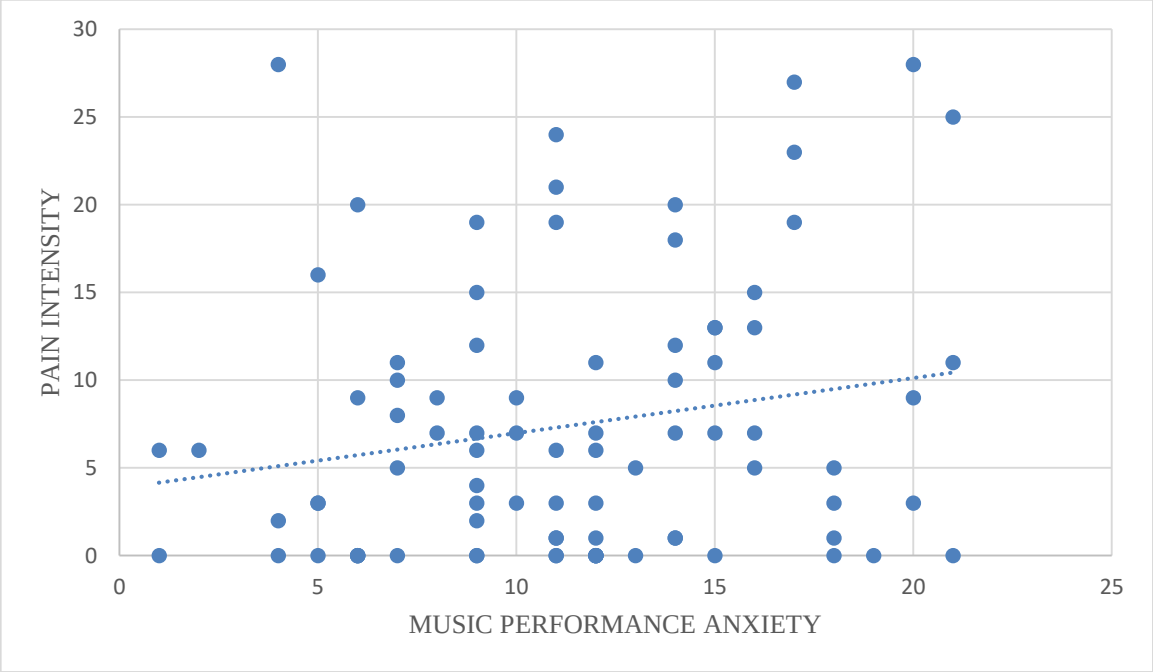
Total Number of study population	87
Violinists who have experienced musculoskeletal pain intensity	65
Violinists who have not experienced musculoskeletal pain intensity	22

The above table summarizes the number of people that have and have not experienced pain in last 4 weeks which was assessed using the MPIIQM.

Table 2: Distribution of prevalence of music performance anxiety among study population

Total Number of study population	87
Violinist who have experienced anxiety	51
Violinists who have not experienced anxiety	24

The above table summarizes the number of people that have and have not experienced music performance anxiety which was assessed using the M-MPAS.



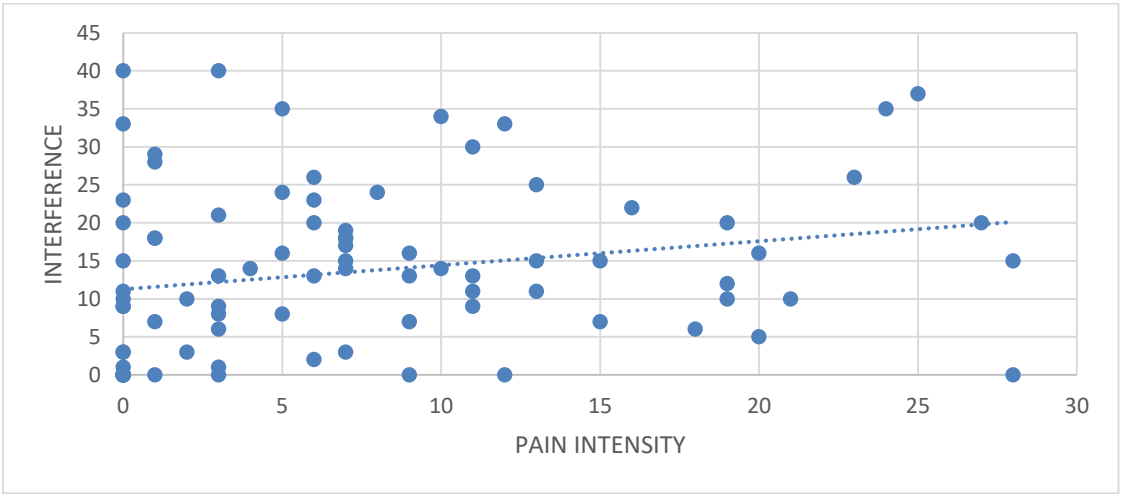
Graph-1 Correlation of music performance anxiety to musculoskeletal pain intensity

The above graph shows correlation of music performance anxiety to pain intensity is positively correlated. Pearson correlation coefficient (r=0.165) suggests a weak 26 positive linear relationship between the two variables the P-value (>0.05) indicates that this correlation is not statistically significant.

Table 2: Distribution of prevalence of interference among study population

Total Number of study population	87
Violinists who have experienced interference	72
Violinist who have not interference	15

The above table summarizes the number of people who have and have not experienced interference which was assessed using the MPIIQM.



Graph-2 Correlation of musculoskeletal pain intensity to interference

The above graph shows correlation of musculoskeletal pain intensity to interference is positively correlated. Pearson correlation coefficient (r=0.224) suggests a weak positive linear relationship between the two variables the P-value (<0.05) indicates that this correlation is statistically significant.

VI. DISCUSSION

The purpose of this study was to determine the association of musculoskeletal pain intensity and music performance anxiety among semi-professional violinists. The medical literatures available are mainly about professional orchestral musicians and string musicians as a whole and very few about violinists as such. Studies about semi- professional violinists in India or Kerala can be described as very few to none. In our study, we found out that there is no significant correlation of MPA and PRMDs in semi- professional violinists.

Our findings while assessing with MPIIQM shows that musculoskeletal pain intensity occurrence among semi-professional violinists was 65 out of 87 subjects, and the most common site affected by pain is left shoulder (17.3%) followed by right shoulder (13.1%). It might be due to placement of violin on to the left shoulder and bowing is done with the right upper extremity which is similar to the result of a study done by Laura M Kok et.al. [(14)] We also assessed interference along with musculoskeletal pain intensity which found that 72 out of 87 subjects felt that the pain has interfered in their lifestyle.

When assessing the MPA with M-MPAS, the prevalence among the semi-professional violinists was found to be 51 out of 87 subjects. It might be caused due to tight practice schedule, irregular work schedules, lack of proper sleep, pressure to satisfy the audience with their talent which is in accordance to a study done by Rebecca Herman et.al. MPA can cause physiological responses like nausea, vomiting, excessive muscle tension and fatigue, reduced motor control and coordination, uncontrollable shaking, numbness, tingling in extremities and several behavioral responses like hunched shoulders, agitation, fidgetiness, repeatedly checking the instrument, moistening of lips which can affect the performance of the violinists. [(15)]

While assessing the correlation of music performance anxiety to musculoskeletal pain intensity, we couldn't find a significant correlation between them which was contradictory to the study conducted by Dianna Kenny et.al in professional orchestral musicians of Australia. [(16)]This might be due to fact that the present study was conducted in semiprofessional violinists and they might be able reschedule their performances according to their convenience.

While checking the correlation between musculoskeletal pain intensity and interference, it was found that a significant positive correlation between these two factors which shows that their pain interferes with mood, we also checked the correlation of interference with factors like age, years of experience and hours of practice but it was not statistically significant.

VII. CONCLUSION

The study concluded that there is prevalence of musculoskeletal pain intensity (74.71%) and music performance anxiety (58.62%) and also, there is no statistically significant correlation between these two variables in semi-professional violinists. Understanding the prevalence can help in preventive training, establishment and implementation of interventions aiming to decrease the prevalence of both musculoskeletal pain and music performance anxiety.

VIII. LIMITATIONS

1.Less availability of getting Semi-Professional Violinists.
2. Unwillingness of the participants was a major problem in conducting the study
3. Females were less in number

IX. FUTURE SCOPE

1.More samples can be added for more accuracy in research survey.
2.Direct interaction with subjects while administrating the questionnaire will be more beneficial.
3.We can use many more interpretations scales other than MPIIQM and M-MPAS

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