

Disability And Severity Of Playing Related Soft Tissue Injuries Among Professional Guitar Players: A Cross Sectional Survey

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Abstract:*Background of study: Soft tissue injuries include pain, weakness, numbness, and tingling sensations involving the muscles, ligaments and tendons. The etiological factors of these injuries can be professional, personal, environmental, and psychosocial. These disorders in musicians are designated as playing related soft tissue injuries. Aim of Study: To investigate the disability and severity of playing related soft tissue injuries among professional guitar players. Methodology The cross sectional survey was conducted from February 2017 to June 2018 after taking ethical approval from institutional ethical committee. The participants fulfilling the inclusion criteria were recruited through convenient sampling technique and informed consent was taken. A structured anonymous questionnaire and validated scales like Disability Arm Shoulder and Hand Scale (DASH), Neck Disability Index (NDI), Oswestry Disability Index (ODI) Oswestry Disability Index (ODI) were used for data collection. The results was assessed by using IBM SPSS Version 20.0. Results: In this study 98 participants were included constituting 50 (51 %) females and 48 (49 %) males. The highest prevalence site of pain was wrist 57% followed by back 26 %, shoulder 22 % and elbow 21 % while least pain was reported in neck 7 %. Likewise, When Compared with DASH score was more than to ODI and NDI score was lower with significant difference assessed at 95% confidence interval ($p < 0.05$) Conclusion: This study concludes severity of soft tissue injuries are more prone in guitar players. The common sites was in wrist, shoulder, back. Proper technique, postural education, warm up and cool down will benefit in reducing the risk of injuries.*

Keywords: Disability, Musculoskeletal disorders, Soft tissue injuries, prevalence, guitar players

Introduction:

Soft tissue injuries include pain, weakness, numbness, and tingling sensations involving the muscles, ligaments and tendons. The etiological factors of these injuries can be professional, personal, environmental, and psychosocial. Playing-related soft tissue injuries in musicians cause discomfort, fatigue, numbness, tingling, that conflict in their instrumental capacity to perform [1]. Evidences suggest that various positions and movements of upper limb stimulate the pain in guitarist. The concentric and eccentric muscle contractions results in musculoskeletal injuries [2,3]. Studies in the field of musician describe relationship between playing time and neuro-musculoskeletal problems. In recent years the job related health problems was observed in guitarists and have increased the need to address their musculoskeletal problems.

The occupational health has included the work-related overuse syndrome as active research domain to prevent the injury and improve the quality of life [5]. Movements performing

repeatedly results in mechanical compression leads to soft tissue injury [3]. A systematic review observe five most common guitar related hand injuries in nerve compression syndrome, tendonitis, tennis elbow, focal dystonia, arthritis [6]. Improper posture and repetitive hand movements by guitarists cause strain injury [7]. Likewise, different studies have reported that guitarists are prone to develop occupational related soft tissue disorders (sitting for extended hours, awkward posture and standing in same place etc.). Most of problems was observed with plucked instruments playing around, repetitive finger movements with various techniques[2]. Fjellman et al. reported a trend for more left extremity involved [8]. The wrist fixed and finger are essential force to pluck, and also pulling of depress strings. The grasping between thumb and index finger through a guitar pick is related to hand and wrist problems [1]. Musician is in sitting position or in standing position may lead neck and back pain [2].

Work related soft tissue injuries cause pain, disability, decreasing quality of life, and loss of employment including guitar players [2]. Often it was overlooked, that playing guitar can cause injuries and it can be prevented easily. The present study was to investigate the disability and severity of playing related soft tissue injuries among professional guitar players.

Methodology:

The cross-sectional survey was conducted from February 2017 to June 2018 after taking ethical approval from institutional ethical committee of MGM institute of physiotherapy Aurangabad. The instructions were given to the participants and an informed consent was taken from the participants before completing the questionnaire. The inclusion criteria was guitar professionals including male and female, between age 20 to 40 years, practicing guitar at least from 6 months and suffering from soft tissue disorder. The guitar professionals with any disability or systematic problem were excluded. A structured interview was conducted among professional guitarists in Aurangabad by two trained interviewers from final year students. A total of 98 participants fulfilling the inclusion criteria were recruited through convenient sampling. During first stage, the participants were asked to fill in the self-structured and anonymous questionnaire then those participants who complained of any soft tissue pain were included in the study. During phase II, level of intensity and disability in neck pain were evaluated by using validated neck disability index scale (NDI) and their scores were recorded. Disability Arm Shoulder and Hand scale (DASH) [11] was used to evaluate the severity of shoulder arm and hand problem and score was recorded. Oswestry disability scale (ODI) was used for the participants who complained of back pain. Disability Arm Shoulder and Hand Scale (DASH) and Oswestry disability scale (ODI), neck disability scale (NDI) are validated scales and widely used to evaluate the level of disability [9,10].

The data was exported and analyzed by using the SPSS version 20.0. Descriptive statistics were represented as mean, frequencies and percentages. The statistical test Kruskal – Wallis non -parametric test was used to compare the means of three aforementioned scales. The level of significant was considered with p value less than 0.05.

Results:

A total of 125 potential participants were approached and 98 participants agreed to participant in the study giving a response rate of 78.4%. Of those 98 participants 50 (51 %) were females and 48 (49 %) were males. 76 % were from age group of 20 - 30 years and 24 % were from age group of 31 - 40 years of age. 68 % was using acoustic type of guitar, 34 % electric guitar, 20 % electric - acoustic guitar, 1 % steel guitar, 4 % twelve string guitar. The duration of practicing guitar was 26 % from 6 months, 20 % from one year, 37 % from 2 years, and 17 % from 5 years or above.

The position of guitarist 56 % were playing guitar with sitting back support, 24 % sitting without back support, 23 % with standing. The highest prevalence site of pain was wrist 57% followed by back 26 %, shoulder 22 % and elbow 21 % while least pain was reported in neck 7 %.

(Table 1) (Figure 1 & 2).

Table 1: Characteristics of study participants

Characteristics	Frequency	Percentage
Gender		
Male	48	49
Female	50	51
Age groups (Years)		
20 - 30	74	76
31 - 40	24	24
Types of guitar		
Acoustic guitar	67	68
electric guitar	33	34
electric – acoustic guitar	20	20
Steel guitar	1	1
String guitar	4	4
Duration of practicing guitar		
6 months	25	26
1 year	20	20
2 years	36	37
5 years or above	17	17
Position while playing guitar		
Sitting back support	55	56
Sitting without back support	23	24
Standing	22	23
Pain distribution		
Wrist	56	57
Back	25	26
Elbow	21	21
Shoulder	22	22
Neck	7	7

Table 2. Association between DASH, ODI, and NDI

Outcome measures	Sum of scores	Mean of scores	p value
DASH	2532	90.72	p < 0.05
ODI	1384	58.9	
NDI	1628	53.86	
Kruskal Willis non parametric ANOVA shows p < 0.05 which is extremely significant			

Table 3. Scores of DASH, ODI, NDI

Outcome measures	Median	Minimum	Maximum
DASH	50	25	75
ODI	31	20	52
NDI	36	20	52

Kruskal Willis non parametric ANOVA shows $p < 0.05$ which is extremely significant

The mean score of DASH was 90.73, while ODI and NDI was 58.9, and 53.86 respectively. The association between above mentioned scales was established, and there was highly significant difference between their scores as p - value was less than 0.05. DASH score was highest as compare to ODI and NDI score was the minimum. The association between different scales has been in Table 2.

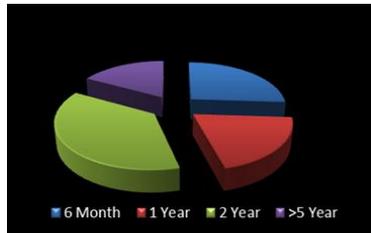


Chart 1: Duration of Practice

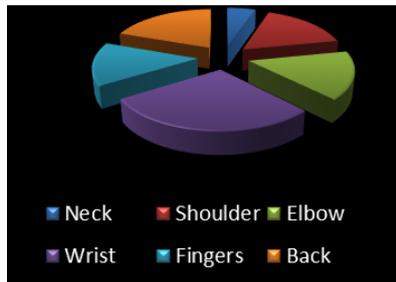


Chart 2: Pain Distribution

Discussion:

The present survey was to investigate the disability and severity of soft issue injuries among guitar players. The survey has focused soft tissue problems among guitar players that has been given an inadequate attention. The soft tissue injuries are more prone in guitar player which effect in their professional career and decreased quality of life [11].

The current study found a significant percentage of the soft tissue problems among guitarists. The reason is long hours spent in sitting or standing in same position. The stress of performance are potential dangers to work place to all guitarists [6,12].

The study also found to have high proportion of injury in age group 20 to 23 years that is 76%, indicates that non-professional guitarists are more prone for soft tissue injuries during their training. Our data analysis reveals that 38% of guitar players experience pain in wrist. This is because of continuous flexion and extension of wrist joint which may result into overuse injury. These findings are in agreement with the previous study conducted on student guitar players [13]. In elbow 21% of guitar players experience pain this is caused by repetitive stress on tendon for a prolonged period without taking rest. In fingers 19% guitar layers experience pain this happens more on heavier strings like on bass or acoustic guitar more than on electric guitar. In shoulder 19% guitar players experience pain this is caused by bad or incorrect postural habits while playing. Only 7 % participants has shown the neck pain [13].These findings are contrasting a previous study conducted on guitarists in which high prevalence was reported in neck and back area and main factor found was poor posture and sitting without any back support [13].

Conclusion: The study showed high frequency and severity of soft tissue injuries in professional guitar players. The most of injuries was observed in wrist, back and shoulder. To prevent the injuries in guitar player needs to take certain measures like avoid practicing and performing for lengthy periods, taking rest, warm up techniques which include stretching of upper extremity muscles, postural correction, and usage of proper technique of playing guitar.

The recommended physiotherapy plan can be postural correction, strengthening of intrinsic hand muscles, and endurance training.

Conflict of interest: None

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