

Original Article

Prevalence of Upper Extremity Pain among Tabla Players working in Islamabad/Rawalpindi

Natinya Pervaiz^{1*}, Anam Javed², Saba Sajjad¹, Burhan Athar¹

¹Shaheed Zulfiqar Ali Bhutto Medical University, Islamabad

²HOD, Faculty of Rehabilitation Sciences, Bashir Institute of Health Sciences, Islamabad

*Corresponding Author: Natinya Pervaiz; Email: natinyapervaiz777@gmail.com

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ABSTRACT

Background: Upper extremity pain is a significant concern among musicians, particularly those involved in repetitive and high-stress activities such as playing the tabla. This study aims to assess the prevalence and risk factors of upper extremity pain and associated functional disabilities in tabla players based in Islamabad and Rawalpindi.

Objective: To determine the prevalence of upper extremity pain and functional disability among tabla players and to identify associated risk factors.

Methods: A cross-sectional descriptive survey was conducted at music schools, academies, and churches in Islamabad and Rawalpindi. The study spanned five months from June 23, 2023, following the approval of the synopsis. A sample size of 100 male tabla players aged 19-38 years, with at least two years of playing experience and a minimum of two practice sessions per week, was selected using a non-probability convenient sampling technique. Data collection tools included the Visual Analogue Scale (VAS) for pain assessment and the Disabilities of Arm, Shoulder, and Hand (DASH) questionnaire for evaluating functional limitations. Participants with a history of upper extremity diseases, surgical history, trauma, or congenital deformities were excluded. Descriptive analysis was performed using SPSS version 25, with frequencies, percentages, and p-values calculated to determine statistical significance.

Results: Among the participants, 40% were aged 19-23 years, 26% were aged 24-28 years, 31% were aged 29-33 years, and 3% were aged 34-38 years. The prevalence of upper extremity pain was 89%, and functional disability was 88%. Pain levels varied with playing hours per week: 11% reported no pain, 16% had mild pain, 67% experienced moderate pain, and 6% had severe pain. Functional disability scores were similarly distributed across playing hours, with 11% reporting no disability, 16% mild disability, 67% moderate disability, and 6% severe disability. The relationship between playing hours and both VAS and DASH scores was statistically significant (p-values 0.045 and 0.032, respectively).

Conclusion: The study revealed a high prevalence of upper extremity pain and functional disability among tabla players, significantly impacting their quality of life. Key risk factors included repetitive movements, abnormal posture, prolonged practice hours, poor technique, age, and gender. These findings underscore the need for preventive strategies and targeted interventions to reduce musculoskeletal disorders in this population.

Keywords: Upper extremity pain, functional disability, tabla players, Visual Analogue Scale.

INTRODUCTION

Upper extremity (UE) pain encompasses discomfort in the shoulders, arms, and hands (1). Given the pivotal role of hands in generating sound across musical instruments, the upper extremities are particularly prone to injuries due to extensive practice or prolonged professional performance (2). Studies have shown that Playing-Related Musculoskeletal Disorders (PRMDs) are prevalent, with musicians encountering 86% of PRMDs over their careers (3). Playing a musical instrument requires coordinated and controlled movements of the arms, hands, and fingers, often accompanied by maintaining an asymmetric playing posture. The repetitive and static nature of these movements can strain the muscles in the upper extremities and neck-shoulder region, potentially leading to musculoskeletal problems (4). Consequently, musicians may be at increased risk of developing a variety of musculoskeletal issues due to the physical demands of playing their instruments (5).

Musical instruments come in various types, including percussion instruments, which are played by shaking, rubbing, or striking with sticks or hammers (6). One notable membranophone percussion instrument, the tabla, is popularly performed in Pakistan. The repetitive striking movements inherent in playing percussion instruments like the tabla, coupled with improper posture, are significant contributors to musculoskeletal issues, particularly Playing-Related Musculoskeletal Disorders (PRMDs) (7, 8). PRMDs can arise from a combination of intrinsic and extrinsic factors, such as instrument design and ergonomic considerations, as well as external factors like age, gender, and psychological aspects (9). Strategies such as rest, flexibility exercises, massage therapy, physical treatment, and occupational therapy can all help mitigate the risk of developing PRMDs (10).

MATERIAL AND METHODS

The study employed a cross-sectional descriptive survey design and was conducted at various music schools, academies, and churches in Islamabad and Rawalpindi. The research spanned five months following the approval of the synopsis on June 23, 2023. The study population comprised tabla players from these institutions, with a sample size of 100 participants selected through a non-probability convenient sampling technique. The outcome variables of interest included pain, assessed using the Visual Analogue Scale (VAS), and functional limitation and disability, measured by the Disabilities of Arm, Shoulder, and Hand (DASH) questionnaire. Inclusion criteria were strictly adhered to, involving only male tabla players aged 19 to 38 years who had at least two years of playing experience and played the tabla at least twice a week for a minimum of two hours. Female tabla players, those with a history of upper extremity diseases, previous surgical history, trauma, birth defects, and deformities were excluded from the study. Participants were recruited after obtaining informed consent, ensuring ethical compliance with the principles outlined in the Declaration of Helsinki. Demographic data, including age, were recorded using a self-structured questionnaire. Data on pain and disability were collected through the VAS and DASH questionnaires. The collected data were analyzed using Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics, including frequencies and percentages, were calculated to summarize the data. The study was conducted with strict adherence to ethical guidelines, ensuring participant confidentiality and voluntary participation (10).

RESULTS

The study involved a diverse group of participants whose age distribution and pain levels were thoroughly analyzed. Among the participants, the largest age group was between 19-23 years, accounting for 40% of the total sample. Within this group, 4% reported no pain, 11% experienced mild pain, 22% suffered from moderate pain, and 3% endured severe pain. The 24-28 years age group comprised 26% of the participants, with 3% experiencing no pain, 5% reporting mild pain, 22% with moderate pain, and 2% suffering from severe pain. The age group of 29-33 years made up 31% of the participants, with 5% reporting no pain, 1% experiencing mild pain, 21% having moderate pain, and 2% suffering from severe pain. Lastly, the 34-38 years age group constituted only 3% of the participants, with 1% experiencing no pain, 1% reporting mild pain, 2% having moderate pain, and 1% suffering from severe pain (Table).

Table 1: Age Group and Pain Distribution

Age Group (years)	Total Participants (%)	No Pain (%)	Mild Pain (1-3) (%)	Moderate Pain (4-6) (%)	Severe Pain (7-10) (%)
19-23	40	4	11	22	3
24-28	26	3	5	22	2
29-33	31	5	1	21	2
34-38	3	1	1	2	1

Table 2: Frequency of Playing Hours/Week and VAS

Hours/Week	No Pain	Mild Pain	Moderate Pain	Severe Pain	Total	p-value
2-6	0	1	1	0	2	
7-11	1	1	4	1	7	
12-16	1	5	20	0	26	
17-21	3	3	10	0	16	
22-26	0	1	5	0	6	
27-31	2	2	17	2	23	

Hours/Week	No Pain	Mild Pain	Moderate Pain	Severe Pain	Total	p-value
32-36	2	2	5	1	10	
37-41	0	0	1	0	1	
42-46	2	1	4	2	9	
Total	11	16	67	6	100	0.045

Table 3: Frequency of Playing Hours/Week and DASH Disability Score

Hours/Week	No Disability	Mild Disability	Moderate Disability	Severe Disability	Total	p-value
2-6	0	1	1	0	2	
7-11	1	1	4	1	7	
12-16	1	5	20	0	26	
17-21	3	3	10	0	16	
22-26	0	1	5	0	6	
27-31	2	2	17	2	23	
32-36	2	2	5	1	10	
37-41	0	0	1	0	1	
42-46	2	1	4	2	9	
Total	11	16	67	6	100	0.032

Table 4: Experience of Playing and DASH Disability Score

Experience (years)	No Disability	Mild Disability	Moderate Disability	Severe Disability	Total	p-value
2-5	0	7	1	1	9	
6-9	1	6	1	0	8	
10-13	2	16	5	1	24	
14-17	5	17	3	1	26	
18-21	3	18	2	0	23	
22-25	1	7	2	0	10	
Total	12	71	14	3	100	0.028

When examining the frequency of playing hours per week in relation to the Visual Analogue Scale (VAS) scores, it was evident that the majority of participants experienced moderate pain. For those playing 2-6 hours per week, only 1 participant reported mild pain and 1 reported moderate pain. In the 7-11 hours per week category, 1 participant reported no pain, 1 reported mild pain, 4 reported moderate pain, and 1 reported severe pain. The 12-16 hours per week group had 1 participant reporting no pain, 5 reporting mild pain, and a significant 20 reporting moderate pain, with none reporting severe pain. Participants playing 17-21 hours per week included 3 with no pain, 3 with mild pain, and 10 with moderate pain. For those playing 22-26 hours per week, 1 participant reported mild pain and 5 reported moderate pain. The 27-31 hours per week group showed 2 participants with no pain, 2 with mild pain, 17 with moderate pain, and 2 with severe pain. In the 32-36 hours per week category, 2 participants reported no pain, 2 reported mild pain, 5 reported moderate pain, and 1 reported severe pain. Those playing 37-41 hours per week had only 1 participant reporting moderate pain. Finally, the 42-46 hours per week group included 2 participants with no pain, 1 with mild pain, 4 with moderate pain, and 2 with severe pain. Overall, the relationship between the frequency of playing hours per week and VAS scores was statistically significant, with a p-value of 0.045 (Table 1).

The frequency of playing hours per week was also examined in relation to the Disabilities of the Arm, Shoulder, and Hand (DASH) disability scores. For participants playing 2-6 hours per week, 1 reported mild disability and 1 reported moderate disability. Among those playing 7-11 hours per week, 1 participant reported no disability, 1 reported mild disability, 4 reported moderate disability, and 1 reported severe disability. In the 12-16 hours per week group, 1 participant reported no disability, 5 reported mild disability, and 20 reported moderate disability. For the 17-21 hours per week category, 3 participants reported no disability, 3 reported mild disability, and 10 reported moderate disability. Participants playing 22-26 hours per week had 1 reporting mild disability and 5 reporting moderate disability. The 27-31 hours per week group included 2 participants with no disability, 2 with mild disability, 17 with moderate disability, and 2 with severe disability. In the 32-36 hours per week category, 2 participants reported no disability, 2 reported mild disability, 5 reported moderate disability, and 1 reported severe disability. Those playing 37-41 hours per week had only 1 participant reporting moderate disability. Finally, the 42-46 hours per week group included 2 participants with no disability, 1

with mild disability, 4 with moderate disability, and 2 with severe disability. The relationship between the frequency of playing hours per week and DASH disability scores was statistically significant, with a p-value of 0.032 (Table 2).

The relationship between the experience of playing and DASH disability scores revealed that among participants with 2-5 years of experience, 7 reported mild disability, 1 reported moderate disability, and 1 reported severe disability. For those with 6-9 years of experience, 1 participant reported no disability, 6 reported mild disability, and 1 reported moderate disability. The 10-13 years experience group included 2 participants with no disability, 16 with mild disability, 5 with moderate disability, and 1 with severe disability. Participants with 14-17 years of experience had 5 reporting no disability, 17 reporting mild disability, 3 reporting moderate disability, and 1 reporting severe disability. In the 18-21 years' experience group, 3 participants reported no disability, 18 reported mild disability, and 2 reported moderate disability. Lastly, those with 22-25 years of experience included 1 participant with no disability, 7 with mild disability, and 2 with moderate disability. The relationship between the experience of playing and DASH disability scores was statistically significant, with a p-value of 0.028 (Table 3).

DISCUSSION

The current study demonstrated that upper extremity pain is prevalent among tabla players in Islamabad and Rawalpindi, with 89% of participants reporting pain and 88% experiencing functional disability according to the Visual Analogue Scale (VAS) and Disabilities of Arm, Shoulder, and Hand (DASH) questionnaire results. The primary risk factors identified were repetitive movements, abnormal posture, long practice hours, poor technique, age, and gender. These findings align with previous research, reinforcing the significant impact of playing-related musculoskeletal disorders on musicians.

Wricha Mishra et al. (2013) conducted a cross-sectional survey that explored the prevalence of musculoskeletal disorders among tabla players, identifying the low back, right shoulder, neck, left shoulder, upper back, and knees as frequently affected areas. Mishra's study also utilized the VAS to assess pain, which underscores a methodological similarity with the current study. However, while Mishra's research emphasized broader musculoskeletal pain, the current study focused specifically on upper extremity pain, providing a more targeted analysis of the issue among tabla players (7).

Similarly, Antonina Kaczorowska et al. (2021) investigated musculoskeletal pain among professional symphony orchestra musicians, finding that 94% of female musicians and 69% of male musicians reported pain. Both studies used the VAS to assess pain, but the current study also employed the DASH questionnaire and had a larger sample size of 100 participants. The consistent use of the VAS scale in these studies highlights its reliability in assessing pain among musicians. In contrast to Kaczorowska's study, which did not focus on functional disability, the current study provided a comprehensive view of both pain and functional limitations, showing significant impacts on the quality of life of tabla players (11).

The strengths of this study included a well-defined sample of tabla players and the use of validated tools such as the VAS and DASH questionnaire, which enabled a thorough assessment of pain and functional disability. The inclusion criteria ensured that participants had substantial experience and regular practice, making the findings highly relevant to the target population.

However, the study also had limitations. The non-probability convenient sampling technique may have introduced selection bias, limiting the generalizability of the results. Additionally, the cross-sectional design precluded the establishment of causality between playing the tabla and musculoskeletal disorders. Future research could benefit from longitudinal studies to better understand the progression of these conditions over time and the potential long-term effects of playing the tabla.

CONCLUSION

In conclusion, the findings of this study indicated that upper extremity pain and functional limitations were common among tabla players, significantly impacting their quality of life. These results highlight the need for preventive strategies and interventions, such as ergonomic training, technique improvement, and regular breaks during practice sessions, to mitigate the risk of musculoskeletal disorders in this population. Further research should explore the effectiveness of these interventions and consider a broader range of risk factors, including psychological stress and overall physical fitness, to develop comprehensive guidelines for musicians' health and well-being.

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