

Prevalence of, and Related Factors Associated with, Neck Pain among Musicians at Dhaka Bangladesh

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Abstract

Objectives: To determine the prevalence of, and factors related with, neck pain among musicians at Dhaka, Bangladesh;

Study Design: Descriptive cross-sectional study;

Study Period: 01 January to 30 June 2011;

Materials & Methods: In the presents study, the 120 respondent population (Age: 18-45 years, Mean age \pm SD = 25.1 \pm 6.1 years, Gender: 104 males & 16 females) were the artists of established and rising bands and solo artists in government and private music institutes at Dhaka city. They played different types of musical instruments regularly and involved in a band, pub and music institutes with different educational, occupational and socio-economic background and status. The information about the respondents and related to instruments and related neck pain were obtained using the structured questionnaire;

Results: The study revealed that 13.56% of the respondents who practiced seven days a week sustained 14 days prolonged pain in neck and 37.29% had 7 days prolonged pain in neck. Among them, 36.7% did not have knowledge about adverse effect of their job and 80% never participated in training in musician's posture. Those respondents playing the instruments regularly for below 4 years had 30% prevalence of neck pain, whereas the prevalence is 80% among the musicians playing instruments regularly for 17-20 years. The neck pain was

significantly related to training in musician's posture, BMI, body weight, period spend without a break and monthly family income ($p < 0.05$);

Conclusions: Musicians who spend more hours on the instrument without break each day and playing instrument regularly for many years are more vulnerable to neck pain. Appropriate posture related training, awareness to take sufficient rest and knowledge about neck pain seemed to be important. Further studies, particularly on interventional physiotherapy, are needed so that high quality care can be provided to musicians to enable them pursuing their passion for music.

SHORT TITLE: Neck pain among musicians

Keywords: Musician, Neck pain, Musculoskeletal disorder, MSD

INTRODUCTION

Musculoskeletal disorders (MSDs) related to work commonly involve the cervical spine, back and upper extremities. Understanding of these problems has developed rapidly during the past decade.¹ Work-related MSDs are significantly associated with disability at work and its incidence is increasing day by day. In United States, annually 150,000 persons have musculoskeletal disability. Static working postures including primarily long term sitting appears to increase the risk of neck pain and back pain.²

In terms of playing related MSDs (PRMSDs) among musicians, the incidence of neck pain is surpassed only by low back pain and shoulder conditions. Much like back pain, neck pain can lead to functional limitations, disability, lost work time and result in a huge economic and societal burden.^{3, 4, 5} Neck pain is any pain originating from the cervical spine that can be caused by dysfunction of the intervertebral discs, ligaments, zygapophyseal joints or soft tissue structures.^{5, 6, 7} Unfortunately, the exact patho-anatomical cause of neck pain often cannot be identified. While there has recently been an increase of evidence supporting the effectiveness of physical therapy in the management of neck pain, no consensus exists regarding practice guidelines or even on the natural course of the disorder.^{7,8,9,10,11} The main objectives of the present study were to determine the prevalence and related factors of neck pain among musicians at Dhaka, Bangladesh and to identify prognostic variables with regard to outcome.

MATERIALS & METHODS

This descriptive cross-sectional study included 120 respondents (gender: 104 males, 16 females; age range: 18-45 years; mean age \pm SD: 25.1 \pm 6.1 years) who played different types of music instruments regularly. They were involved in a band, pub, music institute, school with different educational, occupational and socio-economic background and status. The study was conducted with some selected music institutes, members of established and rising bands and solo artists and musicians in different location of Dhaka city. The duration of the study was 6 months, i.e. from 01 January to 30 June 2011. Samples were selected purposively to interview the study population considering the inclusion and exclusion criteria following the eligibility

of study samples. All music related organizations, institutes and band performers were selected purposively for collecting samples.

A structured questionnaire was designed to collect information related to neck pain associated with the use of instruments. The questionnaire included items on prominent socio-demographic characteristics such as age, gender, educational level, religion, marital status, family income, occupation and body mass index (BMI) and background information of the musicians like years of playing the instrument, hours spend in rehearsal per day/week and type of the instrument. The Questionnaire also included items in the musicians' life initiating and influencing neck pain like musculoskeletal pain around neck, pain severity, treatment-seeking behavior and knowledge on ergonomics and knowledge of applicable preventive measures. Pain perception was assessed by using levels of pain scale, where pain was categorized into I to IV levels according to onset and severity.^{10,11} Data collection involved face to face interview and the information provided by related administration.

The collected data were checked for their completeness, correctness and internal consistency to exclude missing or inconsistent data. Corrected data were entered into the computer and analyzed by using Statistical Package for Social Sciences (SPSS) programme version-20.

RESULTS

According to age range (years), the distribution of 120 respondents were as follows: 18-22 (49/120), 23-27 (47/120), 28-32 (12/120), 33-37 (6/120), 38-42 (2/120) and 43-45 (4/120). Among them, 86/120 (71.7%), 18/120 (15.1%), 13/120 (10.8%), 0/120 (0.0%) and 3/120 (2.5%) belonged to Islam, Hinduism, Buddhism, Christianity and others respectively. The BMI varied as < 18.0 (24/120, 20%), 18.0-24.9 (58/120, 48.3%) and > 25.0 (38/120, 31.7%). The education level varied as follows: SSC (17/120, 14.1%), HSC (47/120, 39.2%), undergraduate (38/120, 31.7%) and postgraduate (18/120, 15.0%) respectively. Among the respondents, 9/120 (7.5%), 111/120 (92.5%) and 0/120 (0%) were married, unmarried and widowed respectively. The monthly family income (Taka) varied from 10000-29000 (17/120, 14.2%), 30000-49000 (22/120, 18.3%), 50000-69000 (32/120, 26.6%), 70000-89000 (35/120, 29.3%) and > 90000 (14/120, 11.6%) respectively. The respondents belonged to varied occupations such as student (86/120, 71.7%), service (14/120, 11.7%), computer related 3/120, 2.5%) and others (17/120, 14.1%) respectively. Regarding the type of instruments used multiple answers were obtained as the following: Guitar-71.7% (86/120), Violin-4.2% (5/120), Keyboard-6.7% (8/120), Dram-12.5% (15/120) and others-23.3% (28/120). The other information related to the instruments are shown in Table-1. The information about ergonomic (instrument) related factors, information about the factors not related to instrument use and information related to musculoskeletal problem (pain and others) are stated in Table-2, Table-3, and Table-4 respectively. The statistical analyses of the relationships between neck pain and the factors are shown in Table-5.

Table-1: Information related to instruments.

Information related to instruments		R e s p o n d e n t s	
		Number	Percentage
Use of computer daily (Hours)	0-2	26	21.6
	3-4	68	56.7
	5-6	18	15.0
	7-10	8	6.7
	Total	120	100
Period of usage of the instrument daily (Hours)	< 2	42	35.0
	<4	36	30.0
	4-6	34	28.3
	6-8	8	6.7
	Total	120	100
Period spend to watch TV/ Video daily (Hours)	0-2	41	34.1
	3-4	42	35.1
	5-6	34	28.3
	7-8	3	2.5
	Total	120	100
Longest period spend without a break (fours)	1-3	59	49.2
	4-6	48	40.0
	7-9	13	10.8
	Total	120	100
Period playing the instrument regularly (Years)	1-4	50	41.6
	5-8	43	35.8
	9-12	12	10.1
	13-16	6	5.1
	17-20	5	4.2
	>21	4	3.2
	Total	120	100
Frequency of usage of the instrument	< Once a week.	3	2.5
	Once a week	12	10.1
	2-3 days	46	38.3
	Everyday	59	49.1
	Total	120	100
Duration of break from playing (Hours)	Once an hour	69	57.5
	Once in every 2 hours	34	28.3
	Once every 4 hours	8	6.7
	Never	9	7.5
	Total	120	100
Period spend to read book daily (Hours)	0-2	65	54.2
	3-4	43	35.7
	5-6	12	10.1
	Total	120	100

Table-2: Information about ergonomics (instrument) related factors.

Ergonomics (instruments) related factors		Respondents	
		Frequency	Percentage
Correct Posture	Yes	114	94.9
	No	6	5.1
	Total	120	100
Neck bend activity	Yes	99	82.5
	No	21	17.5
	Total	120	100
Circular movement	Yes	83	69.2
	No	37	30.8
	Total	120	100
Excessive movement of neck	Yes	78	65.0
	No	42	35.0
	Total	120	100
Prolonged neck malpositioning	Yes	77	64.2
	No	43	35.8
	Total	120	100
Training in musician's posture	Yes	24	20.0
	No	96	80.0
	Total	120	100
Neck position straightened	Yes	88	73.3
	No	32	26.7
	Total	120	100
Neck twisting	Yes	86	71.7
	No	34	28.3
	Total	120	100
Changing posture of neck	Yes	110	91.7
	No	10	8.3
	Total	120	100
Position of thoraco-cervical region	Good posture	108	90.0
	Bad posture	12	10.0
	Total	120	100
Adjustability of height	Yes	107	89.2
	No	13	10.8
	Total	120	100
Take break while using instrument	Yes	109	90.8
	No	11	9.2
	Total	120	100

Table-3: Information not related to instrument use.

Factors not related to instrument	Response	Respondents	
		Number	Percentage
Satisfied with performance	Yes	79	65.8
	No	41	34.2
	Total	120	100
Duration of play without rest (hours)	1-3	80	66.8
	4-6	40	33.2
	Total	120	100
Take physical exercise	Yes	97	80.8
	No	23	19.2
	Total	120	100
Suffering from neck trauma	Yes	9	7.5
	No	111	92.5
	Total	120	100
Social support	Yes	82	68.3
	No	38	31.7
	Total	120	100
Physical exercise in a week	< Once a week	21	17.5
	2-3 Days a week	41	34.2
	Almost everyday	58	48.3
	Total	120	100

Table-4: Information related to musculoskeletal problem (pain and others).

Musculoskeletal problem (pain and others)	Response	Respondents	
		Frequency	Percentage
14 days prolonged pain in neck	Yes	16	13.3
	No	104	86.7
	Total	120	100
Pattern of neck pain (14 days)	Temporary	13	81.2
	Continuous	2	12.5
	On movement	1	6.3
	Total	16	100
7 days prolonged pain in neck	Yes	49	40.8
	No	71	59.2
	Total	120	100
Pattern of neck pain (7 days)	Temporary	37	75.5
	Continuous	2	4.1
	On movement	10	20.4
	Total	49	100
Treatment taken for pain, ache or discomfort	Yes	49	67.7
	No	16	32.3
	Total	65	100
Muscle Strain	Yes	8	6.7
	No	112	93.3
	Total	120	100
14 days neurological sign present	Yes	5	31.2
	No	11	68.8
	Total	16	100
Severity of neck pain (14 days)	Mild	8	50.0
	Moderate	3	18.8
	Severe	5	31.2
	Total	16	100
Knowledge about adverse effect (7 days)	Yes	31	63.3
	No	18	36.7
	Total	49	100
Severity of neck pain (7 days)	Mild	30	61.2
	Moderate	12	24.5
	Severe	7	14.3
	Total	49	100
Where treatment received (7 days)?	Physician	11	22.5
	Physiotherapist	19	38.7
	Take medicine	16	32.6
	Pharmacist	3	6.2
	Total	49	100
Cervical Strain	Yes	9	7.5
	No	111	92.5
	Total	120	100

Table-5: Statistical analyses of the relationship between neck pain and related factors of the respondents.

Age ranges (Years)	7 clays prolonged pain in neck		Total	Monthly family income (Tk)	7 days prolonged		Total
	Yes	No			Yes	No	
18-22	17	32	49				
23-27	17	30	47	10000-29000	5	12	17
28-32	9	3	12	30000-49000	13	9	22
33-37	3	3	6	50000-69000	9	23	32
38-42	1	1	2	70000-89000	19	16	35
43-45	1	3	4	>90000	8	6	14
Total	48	72	120	Total	54	66	120
			$x^2=7.695, df=5, p=0.044$				$x^2=11.805, df=4, p=0.019$
Body mass index (BMI)	7 days prolonged pain in neck		Total	Training in musician's posture	7 days prolonged		Total
	Yes	No			Yes	No	
< 18.0	10	14	24				
18.0-24.9	18	40	58	Yes	17	7	24
>25.0	21	17	38	No	32	64	96
Total	49	71	120	Total	49	71	120
			$x^2=5.368, df=2, p=0.048$				$x^2=11.884, df=1, p=0.001$
Body mass index (BMI)	14 days prolonged pain in neck		Total	Longest period (hours) spend without a break	7 days prolonged		Total
	Yes	No			Yes	No	
<18.0	3	31	34	1-3	25	34	59
18.0-24.9	9	72	81	4-6	15	33	48
>25.0	4	1	5	7-9	8	5	13
Total	16	104	120	Total	48	67	120
			$x^2=21.924, df=3, p=0.000$				$x^2=13.348, df=2, p=0.001$
Where treatment taken?	14 days	07 days	Total	Severity of neck pain	14 days	07 days	Total
Physician	4	11	15	Mild	8	30	38
Physiotherapist	7	19	26	Moderate	3	12	15
Pharmacist	2	3	5	Severe	5	7	12
Taken Medicine	3	16	19	Total	16	49	65
Total	16	49	65				$x^2=12.237, df=2, p=0.001$
			$x^2= 9.325, df=3, p=0.002$				

DISCUSSION

The present study revealed that 13.31% and 37.29% of the respondents practicing 7 days a week sustained 14 days and 7 days neck pain respectively. An Irish study also reported that 36.1% of the respondents practicing 7 days a week sustained a playing related injury in the neck.12 We observed that 24% of those practicing up to 03 hours a day had sustained a playing related injury compared with 44% of those practicing between 3.5 and 7 hours a day as reported in the Irish study.12 We also noted that 22.22% and 47.22% of those practicing up to 04 hours a day, had history of 14 days and 7 days neck pain respectively. The respondents who practiced 6-8 hours a day, the prevalence of 14 days and 7 days neck pain were 25% and 50% respectively. A

direct relationship seemed to exist between the number of hours a musician played or practiced and the danger of developing an injury (Table-1). In our study, 80% violin players and 34.89% Guitar players had pain in the neck, while the prevalence of neck pain among Drum players and Keyboard players were 26.67% and 25.0% respectively. String players, whose playing requires both repetitive actions and static loading, had the highest risk of PRMSDs i.e. 66.0% prevalence, with the neck being the prime site affected (Table-1,2,3).

MSDs among the musicians occur in increasing prevalence over time. It causes pain, disability and loss of performance level of musicians. Throughout the 1980s and 1990s many epidemiological studies were undertaken in an attempt to identify the incidence, prevalence, nature and severity of PRMSDs experienced by musicians.^{1,2,3} Among the players with PRMSDs described, 50% had mild, 18.8% had moderate and 31.2% had severe pain and 31.2% had 14 days prolonged neurological signs present with regard to the different sites of pain in the neck. An ability to alternate between different strategies of shoulder muscle engagement could therefore be useful, in working situations where the trapezius muscle suffers from overuse, to unload exposed muscles.¹³

In our study, 64.7% respondents had prolonged mal-position of the neck, among them 41.33% had neck pain. Among them, only 20% had taken training in musician's posture (Table-4,5). The period of playing instruments regularly is another important factor for neck pain. The respondents playing the instruments regularly for below 4 years had 30% prevalence of neck pain, whereas the prevalence is 80% among the musicians playing instruments regularly for 17-20 years (Table-1,5). Among many different styles of head banging such as the up-down, the circular swing, the full body and the side-to-side, circular swinging style head banging gives considerable physical damage.¹⁴ In our study, 37.37%, 37.20%, 38.55% and 38.15% of the respondents who had neck bent activity, neck twisting activity, neck circular movement and excessive neck movement had neck pain respectively (Table-2). If instrumental musicians are also computer users, their risks are compounded and complicated. Among our respondents, 41.02% of them using computers had neck pain. The body weight i.e. BMI was also a concerning factor as 26.6% (9/24) of the respondents with BMI < 18.0 had neck pain, whereas 80.0% (4/5) of the respondents above BMI > 25.0 had neck pain (Table-1,5).

Education on proper playing technique is essential to avoid injury. Depending on the severity of the injury, a period of 2 to 7 days rest is recommended. Practitioners of performing arts suggest limiting the rest period to prevent muscle atrophy. In addition, ice should be applied during the acute phase of the injury; another preventive measure is to take adequate breaks and limit the length of rehearsal times. As some musicians may become depressed while coping with their injury and rehabilitation, appropriate treatment for depression may be needed.^{15,16,17} The treatment seeking behaviour of the respondents showed that 67.7% had taken treatment for pain, ache or discomfort. Among them 22.4% had gone to Physicians, 34.8% had gone to Physiotherapists, 32.5% had taken medicine and 6.2% had gone to Pharmacists (Table-4,5).

Whenever going to do any form of strenuous exercise, one should always warm up first to avoid possibly hurting oneself. So, it is important to warm up before doing anything on the guitar, be it recording, playing a gig or rehearsing. There are many bones, tendons and muscles involved in moving, fingers around, so before start flailing around recklessly, one should really do some form of warm up. Warming up not only helps the technique, it also helps prevent injuries. Many guitarists have been forced to stop playing because of tendonitis and Carpal Tunnel Syndrome.

In fact, receiving very long even a year of intense physical therapy, one may get better if really lucky.⁵

Relaxation techniques such as the Alexander technique and Feldenkris method have been reported to be beneficial to musicians. These techniques emphasize self-awareness of body position, muscle tension and efficiency of movement. A musician should return to playing the instrument gradually after an injury and preferably under the supervision of an occupational or physical therapist. If a musician has not played the instrument for a long period of time, he or she should return to playing gradually. This gradual return includes progressively increasing the length of practice times, frequency of practices and intensity of playing.¹⁸ The quality of physiotherapy care invites evaluation using a range of constructs. These must reflect the needs of different stakeholders and the different elements of the 'package' of physiotherapy. Measurement of quality can consider organisation of the service, the way in which care is provided, the way in which information about care is recorded and used for evaluation purposes, and the outcome of care.

Clinicians including physiotherapists, educators and researchers must work collaboratively to ensure that the physiotherapy profession has an evidenced-based platform on which its survival may well depend. Thus it seems imperative that physiotherapy services are underpinned with evidence-based practice that is acceptable to, and reflects the needs of all stakeholders. A clear understanding of the elements of quality is essential for physiotherapists to be competitive by providing consistently effective services.^{19, 20, 21} Further studies, particularly interventional physical therapy and physiotherapy, are needed so that high quality care can be provided to the musicians that will enable them pursuing their passion for music. In conclusion, musicians should be more conscious and trained for gaining adequate knowledge about neck pain. Appropriate posture related training and awareness to take appropriate physical therapy and physiotherapy and sufficient rest seemed to be important. Interventional studies are warranted.

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