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Original Article

# Features of Neck Pain and its Related Factors Among Patients With Cervical Spondylosis

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## Abstract

**Background and aims:** The prevalence of cervical spondylosis is rising. The objective of this study was to figure out the various features and their related factors among cervical spondylosis patients in Dhaka, Bangladesh.

**Methods:** A descriptive cross-sectional study was conducted enrolling 40 patients from NITOR (National Institute of Traumatology and Orthopedic Rehabilitation) in Dhaka, Bangladesh. Data were collected from the physiotherapy department of NITOR using convenient sampling technique. A structured questionnaire was used for data collection. Patients who were diagnosed with cervical spondylosis were included in this study. Data were analyzed using SPSS version 22.0. Descriptive analysis was done using frequency measures, mean and percentages.

**Results:** Among our respondents, the majority of them were female (62.5%). Majority of the participants were in the age group of 35 to 50 years (62.5%). Many of them were urban population engaged in service or housewives. Stressful job (55%), duration of working hour >8 hours (62.5%) were the most common characteristics among patients. The main location of pain was in the shoulder (82.5%) followed by the neck (77.4%) and forearm (70%). Most patients had intermittent pain (57.5%), numbness (55%), tingling sensation (47.5%) and paresthesia (42.5%). Moderate type of pain (65%), the involvement of both upper limbs (35%) and radiating pain to shoulder (72.5%) were the most reported features by patients. No response to medication was also observed.

**Conclusion:** Being female, middle age group, stressful occupation, location and radiation of pain to shoulder are some of the common features revealed in this study. The findings will help the practitioner to plan their treatment goals and techniques considering the characteristics of patients.

**Keywords:** Cervical spondylosis, Neck pain, Features, Characteristics, Factors.

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## Introduction

Pain is an extensive public health issue nowadays.[1] One in 5 adults suffers from pain in their lifespan globally, while every year, another 1 in 10 adult individuals get diagnosed with chronic pain according to the WHO estimation.[2] Neck pain is also contributing to this emerging public health priority hampering both the personal health and overall well-being.[3,4] Treatment also requires heavy financial load indirectly.[5] In a review,[6] the point prevalence of neck pain among adult population (15-74 years) ranged from 5.9%[7] to 22.2%[8] with a mean of 7.6%.[6]

Neck pain is a symptom of many pathological conditions, cervical spondylosis (also called cervical degenerative arthritis) is one of them and is the most common.[9,10] Neck pain, stiffness, and restriction of movement are some of the clinical presentations of cervical degenerative arthritis.[10] The main symptoms of cervical spondylosis include radiculopathy or myelopathy caused by disc protrusion and related soft tissue disorders.[11] People who suffer from pain may experience acute, chronic, or intermittent pain or a combination of them.[1] In case of chronic neck pain, both mechanical and degenerative factors are more likely to be found.[12] Sometimes, severe degeneration of cervical spine remains asymptomatic but can lead to neck pain, stiffness and other neurological complications in later stage.[12]

Female gender, age, psychological distress, depression, and type of job are some of the explored risk factors for neck pain revealed by many studies.[13-18] Lifestyle is also an important predictor of neck pain.[19] In Bangladesh, very limited data exist estimating the prevalence of neck

pain or cervical spondylosis among adults; however, one study conducted among coolies in Bangladesh found a high prevalence of cervical spondylosis (51.3%).[20] The growing prevalence of cervical spondylosis worldwide, demands proper attention and appropriate intervention to be put in place. It is also important to discover the categories of neck pain and their associated factors among patients with cervical spondylosis to deliver a right form of the treatment protocol. Considering the high impact of neck pain commonly caused by cervical spondylosis on public health, this study was conducted with the objective to determine the various features of neck pain and their related factors among cervical spondylosis patients attended for treatment in a super-specialized hospital in Dhaka, Bangladesh.

## Methods

A descriptive cross-sectional study was conducted recruiting suitable patients from the physiotherapy department of NITOR (National Institute of Traumatology and Orthopedic Rehabilitation), Dhaka, Bangladesh. NITOR is a super-specialized tertiary care hospital in Bangladesh providing outpatients and inpatients services for serious trauma and orthopedic disorders. In this study, our target population was cervical spondylosis patients who were diagnosed previously by orthopedic consultants at NITOR and came for follow-up treatment. The study was conducted during October to November 2016. Participants were selected from the department of physiotherapy using convenient sampling technique. A total of 40 participants were selected based on the following criteria: (1) patients with neck pain diagnosed as cervical spondylosis, (2) both male and females were included and (3) patients without any age specification. On the other hand, patients with non-specific neck pain, cervical spondylosis with other abnormal pathological condition and patients with unwillingness to participate were excluded from this study.

### Data Collection and Analysis

Data was collected through face to face interview. Patients were interviewed soon after they have finished their physiotherapy session on that day. Data were collected by trained personnel in this field. A structured questionnaire was prepared for collecting the data. The questionnaire had 4 sections which included (*i*) socio-demographic section, (*ii*) pattern of physical activity, (*iii*) posture of the patient and (*iv*) disease-related information (nature, duration, the severity of pain etc.). The severity of pain was assessed using 10 points numerical pain rating (NPR) scale which is widely used to measure the intensity of chronic pain. The questionnaire was pre-tested and necessary modifications were made before the final data collection. After data collection, data were checked for any error or missing data; then the data were entered into SPSS (Statistical Package for Social Sciences) version 22.0. Continuous data were expressed as mean ± standard deviation (SD) and categorical data were expressed as percentages (numbers). Results were shown in graphical and tabular form after descriptive analysis of the data.

## Results

### Socio-demographic Details

In total, 40 patients were enrolled in this study based on defined inclusion criteria and availability of patients during the study period. The mean ± SD age of our patients was 47.08 ± 9.58 with a range of 24 to 62 years. Most of our participants belonged to the age group of 35 to 50 years (n = 25, 62.5%). Majority of our participants in this study were female (n = 25, 62.5%) while only 15 of them were male. We have asked our participants about their educational qualification. Most of them were graduates or had higher educational levels (n = 14, 35%) followed by only primary (Grade 5) level (n = 12, 30%). More than 65% of the patients were urban inhabitants (n = 27, 67.5%). Most of our participants were service holders (n = 17, 42.5%) followed by housewives (n = 14, 35%). Very few of them were retired (Table 1).

### History of Physical Activity and Trauma

Most of our participants in this study have reported that they work more than 8 hours a day (n = 25, 62.5%). Majority of them also reported being engaged in a stressful

**Table 1.** Socio-demographic Characteristics of Patients (n = 40)

| Characteristics | Number | % |
|---|---|---|
| Age group (y) | | |
| 20-35 | 4 | 10 |
| 36-50 | 25 | 62.5 |
| 51-65 | 11 | 27.5 |
| Gender | | |
| Male | 15 | 37.5 |
| Female | 25 | 62.5 |
| Education | | |
| Primary (Grade 5) | 12 | 30 |
| Secondary (Grade 10) | 6 | 15 |
| Higher Secondary (Grade 12) | 8 | 20 |
| Graduate or above (Bachelors/Masters) | 14 | 35 |
| Habitat | | |
| Urban | 27 | 67.5 |
| Rural | 13 | 32.5 |
| Occupation | | |
| Service holder | 17 | 42.5 |
| Farmer | 1 | 2.5 |
| Housewife | 14 | 35 |
| Day laborer | 3 | 7.5 |
| Businessman | 3 | 7.5 |
| Retired | 2 | 5.0 |

job (both physically and mentally) (n = 22, 55%). Eighty percent of the patients replied that they do certain sort of physical activity in a day (n = 32). Majority of them did not have any history of previous trauma (n = 37, 92.5%). Among them, no one ever had any history of surgery in the cervical spine (Table 2).

### Posture

Only 25% of the patients had good posture while sitting (n = 10); the majority of them had fair posture in sitting position (n = 18, 45%). Most of the patient have reported that they use one pillow during sleep (n = 26, 65%) while only 11 patients reported that they use two pillows during sleep (n = 27.5%). Most of our participants said that they use a hard mattress during sleep (n = 26, 65%), while few of them use firm or soft mattresses (n = 7, 17.5) (Table 3).

### Disease-related characteristics

We have asked our participants about the location of pain. Majority of our participants have reported that they felt pain in shoulder (n = 33, 82.5%) followed by neck (n = 31, 77.4%) and forearm (n = 28, 70%) (Figure 1). Regarding the nature of pain, most of our participants in this study had intermittent pain (n = 23, 57.5%), numbness (n = 22, 55%), tingling sensation (n = 19, 47.5%) and paresthesia (n = 17, 42.5%) (Figure 2). Most of our participants have been suffering from pain for more than 6 months to 1 year (n = 22, 55%); but many of them also have been suffering from pain for more than a year (n = 13, 32.5%). Regarding the severity of pain, the majority of them replied that they had the moderate type of pain according to the NPR scale (n = 26, 65%). An equal number of participants have reported that their pain was in either left or right limb (n = 10, 25%) while the majority of them reported that both limbs were involved (n = 14, 35%). Most of our patients had radiation of pain in their shoulder (n = 29, 72.5%) followed by neck (n = 27, 67.5%), forearm (n = 23, 57.5%) and hand (n = 22, 55%). Majority of our participants replied that their pain was aggravated by flexion movement (n = 25, 62.5%) followed by rotation (n = 18, 45%) of the neck. Pain was aggravated by extension in 42.5% of the patients. Rest relieves the pain according to 85% of the participants (n = 34). No response to medication was reported by the majority of the participants (n = 21, 52.5%).

**Table 2.** History of Physical Activity and Trauma (n = 40)

| Characteristics | Number | % |
|---|---|---|
| Working hour in a day | | |
| ≤8 hours | 15 | 37.5 |
| >8 hours | 25 | 62.5 |
| Job environment | | |
| Stressful | 22 | 55 |
| Healthy | 18 | 45 |
| Physical activity | | |
| Yes | 32 | 80 |
| No | 8 | 20 |
| Previous trauma | | |
| Yes | 3 | 7.5 |
| No | 37 | 92.5 |

**Table 3.** Posture and Sleeping Pattern (n = 40)

| Characteristics | Number | % |
|---|---|---|
| Sitting posture | | |
| Good | 10 | 25 |
| Fair | 18 | 45 |
| Poor | 12 | 30 |
| Use of pillow | | |
| None | 3 | 7.5 |
| One | 26 | 65 |
| Two | 11 | 27.5 |
| Type of mattress | | |
| Hard | 26 | 65 |
| Firm | 7 | 17.5 |
| Soft | 7 | 17.5 |

## Discussion

Neck pain, commonly caused by cervical spondylosis is seen frequently in certain age groups. The psychosocial, physical and economic impact of such problem is yet to be revealed. Before any medical intervention, it is

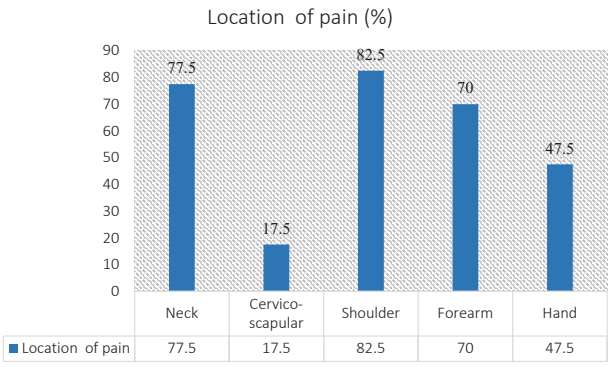


**Figure 1.** Distribution of Participants According to the Location of Pain

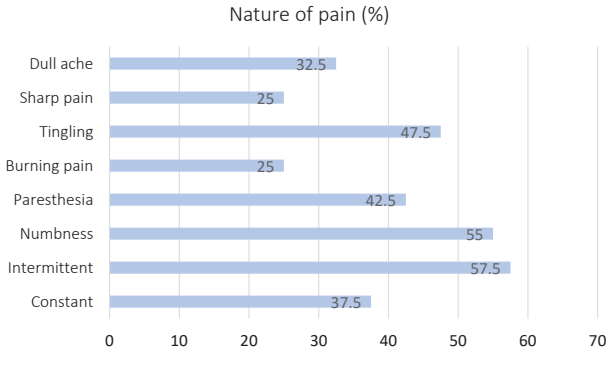


**Figure 2.** Distribution of Patients According to the Nature of Pain

always important to confirm the diagnosis by examining clinically. Features of a disease help the practitioners to select the appropriate treatment method. However, features of pain vary even among patients with a similar diagnosis or different geography. This study has helped in figuring out different features of cervical spondylosis that patients usually present with during their visit to the medical facility.

In this study, we have found that most of our participants suffering from cervical spondylosis were females. Higher prevalence of cervical spondylosis among females was also reported in many other studies.[6,21-23] Most of our patients in this research were in the age group of 36 to 50 years. Our study shows similarity with other studies where most of the patients were in the similar range of age suffering from neck pain.[10,17,20,21] Most of our patients were urban inhabitants (67.5%). Some other studies have also reported that the prevalence of neck pain was higher among urban population compared to the rural population.[24]

In this study, the majority of our participants were engaged in service (government and private) (42.5%) followed by housewives (35%) as their main occupation. Another study in Bangladesh conducted by Shakoor et al had the similar results where most of their respondents were white-collar workers; housewives were second in the list.[10] Many of our participants have replied that they are exposed to the stressful occupation. The result showed similarity with the previous study which emphasized that stressful job (physically or mentally) acts as a major risk factor for cervicobracialgia.[25] A study conducted by Mahbub et al among coolies in Bangladesh, found a significant association between duration of the work and prevalence of cervical spondylosis. Coolies who had worked for more than 10 to 15 years, had higher rates of cervical spondylosis.[20] In this study, we have found that majority of our cervical spondylosis patients reported that their duration of working hour is more than 8 hours per day. Duration of workload might have an impact on the incidence of cervical spondylosis.

Certain risk factors for neck pain include whiplash injuries, sports injuries, and trauma. In our study, very few participants (7.5%) reported having any previous injuries in the neck. The reason could be the small sample size that failed to show the higher percentage. Though, studies have revealed that previous neck trauma contributes to the risk of developing neck pain at a later stage.[26] The type of pillow used during sleep and poor posture was the major predisposing factor for neck pain in the undergraduates of Nigerian University.[27] In this particular study, the prevalence of poor and fair sitting posture was higher than good posture. Though a majority of patients reported that they use one pillow, the type of pillow was not revealed in this study.

The duration of pain among most of our patients (55%) was more than 6 months to 1 year. Experts suggest that pain and symptoms following chronic pain are a subjective experience; patient's symptoms might be influenced or they may tend to hide the actual status of their pain in order to gain more attention from the physiotherapist.[28]

Intermittent pain was the complaint of the majority of the patients in this study which was followed by numbness. Evidence shows that the intermittent neck pain is the most common symptom found in clinical practice.[29] Our findings showed that shoulder (82.5%) followed by the neck (77.5%) and forearm (70%) were the common locations of pain for cervical spondylosis patients. This finding was in accordance with other similar studies where cervical spondylosis found to be the most common cause of neck pain.[10,21,25,30]Another study in Bangladesh found that prevalence of symptoms was higher in hands/fingers among patients with cervical spondylosis.[20] In our study, we have also observed the involvement of right/left limbs or both among the patients.

In our study, the majority of our patients (65%) reported the severity of their pain as moderate (NPR 6-8). This finding supports the results of a previous study conducted in Canada.[31] Evidence also suggests that cervicobrachialgia is associated with radiculopathy.[23] In our study, participants also reported having radiating pain. The radiation of pain was reported commonly in the shoulder, around the neck and forearm by most of the patients. Another study also found the association between neck pain and numbness in arm, forearm and hands.[21,30] In this research, many patients reported that their pain was aggravated after flexion movement. Higher prevalence of neck pain was also observed in forward bending of the neck in a previous study.[32] Our study found that the response to medication was very poor among patients. Evidence suggests that treatments like spinal manipulation and physiotherapy work better than the other forms of conservative treatments in patients with neck pain (e.g. nonsteroidal anti-inflammatory drugs [NSAIDs], muscle relaxants).[21,33]

The main limitations of this study were that we have conducted only descriptive type of analysis, therefore, we failed to show any analytical details between different variables. Another limitation was the small sample size and the duration of study. Furthermore, we did not have any control group in this study; if we could include a control group, we could compare our results with them. Some information was recorded just by asking the patients (duration of working hour, job stress, age and etc). That information is not verifiable. Another

limitation was the study design (a cross-sectional study). It is difficult to establish the causal relationship with such study design. As data is also limited in this research domain, it was difficult to compare our result particularly in similar context.

## Conclusion

Cervical spondylosis has a growing prevalence in our population with high public health priority. Females were affected more than males and urban inhabitants were more affected than rural ones by cervical spondylosis. Middle age group was the most vulnerable to this disease, though it affects at any age. Occupation (as service and housewives), longer duration of working hour in a day and stressful job are some of the common characteristics found among the patients. Most patients were suffering from the moderate type of pain involving both upper limbs. The most common locations of the pain include shoulder, neck, and forearm. Response to medication was not observed in many of the cases. Therefore, further research comprised of large sample size and a control group can retrieve different results. Findings in this study can help practitioners to set the appropriate treatment goals and techniques considering the factors revealed.

## Ethical Approval

The study was approved by the ethical committee of the department of physiotherapy at NITOR. A written consent was obtained prior to the data collection from the authority of the corresponding department at NITOR. Verbal consent was obtained from the patients before collecting the data. Patients were briefed about the objective of the study to ensure their participation. All the data were kept confidential; codes were used instead of patient's identity or name on the questionnaire.

## Conflict of Interest Disclosures

None.

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