

Original Article

# Association Between Neck Pain and Level of Disability Among Females Going to Beauty Parlor or Aesthetic Clinics

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## ABSTRACT

**Background:** Neck pain, often perceived in the posterior cervical spine, is a prevalent condition that can be associated with various levels of disability. Cervical arterial dysfunction, also known as Bow Hunter's syndrome, results from vertebral artery compression during neck rotation and extension. This study explores the relationship between neck pain and the level of disability among females frequenting beauty parlors or aesthetic clinics.

**Objective:** To determine the association between neck pain and the level of disability among females attending beauty parlors or aesthetic clinics.

**Methods:** This observational study included 180 female participants recruited through non-probability convenient sampling from various beauty parlors and aesthetic clinics in Lahore. Data collection involved a standardized questionnaire divided into demographic details, Visual Analog Scale (VAS) for neck pain, and the Neck Disability Index (NDI) for disability assessment. A self-administered questionnaire evaluated symptoms of cervical arterial dysfunction, including double vision and speaking difficulty. Data analysis was conducted using SPSS version 25.0, employing descriptive statistics, chi-square tests, and setting the significance level at  $p < 0.05$ .

**Results:** The mean age of participants was 21.95 years (SD = 6.15). The mean NDI score was 3.16 (SD = 0.68) and the mean VAS score was 1.29 (SD = 0.99). There was no significant association between neck pain and disability levels ( $p = 0.095$ ). However, significant associations were found between NDI scores and double vision ( $p = 0.012$ ) as well as speaking difficulty ( $p = 0.010$ ).

**Conclusion:** The study concluded that there was no significant association between neck pain and the level of disability. However, a strong association was found between the level of disability and symptoms of double vision and speaking difficulty. These findings suggest the need for ergonomic interventions and comprehensive assessments in beauty parlors and aesthetic clinics to prevent and manage neck pain and associated symptoms effectively.

**Keywords:** Neck pain, Neck Disability Index, Visual Analog Scale, Cervical arterial dysfunction, Beauty parlors, Aesthetic clinics, Ergonomics, Occupational health, Double vision, Speaking difficulty.

## INTRODUCTION

Neck pain is a prevalent condition affecting individuals across all age groups globally, and it predominantly manifests in the posterior cervical spine region. It is essential to distinguish this from anterior cervical discomfort, which is not typically classified as neck pain (1). Epidemiological data indicates that approximately two-thirds of the general population will experience neck pain at some point in their lives, making it a significant public health issue (2). The etiology of neck pain is multifaceted, involving both modifiable factors such as sedentary lifestyle, increased workload, and inadequate workplace ergonomics, as well as non-modifiable factors like age, psychological conditions (e.g., depression, anxiety), and a history of prior neck pain (3, 4). Chronic neck pain, which persists for more than six months, affects about 20% of the population, leading to a notable decrease in the quality of life due to diminished neck muscle strength and overall physical health (5). While acute neck pain often resolves spontaneously, chronic cases tend to linger, severely impacting individuals' daily activities and well-being (6).

In the context of cervical arterial dysfunction (CAD), also known as Bow Hunter's syndrome, the condition arises from vertebral artery compression during neck rotation and extension, particularly at the C2 level. This compression occurs when the head is turned 45 degrees or more to either side, leading to symptoms that may include dizziness, double vision, dysphagia, and dysarthria (7). These symptoms are typically relieved when the head returns to a neutral position, indicating a mechanical nature to the disorder

(8). The pathophysiology involves the dynamic compression of the vertebral artery at the transverse process or surrounding structures during neck movements, which can compromise blood flow to the posterior circulation of the brain (9).

The incidence of neck pain among specific populations, such as females attending beauty parlors or aesthetic clinics, is of particular interest. These individuals often maintain prolonged neck positions, including extension and lateral rotation, potentially exacerbating underlying cervical issues. Previous studies have highlighted the prevalence of musculoskeletal problems, including neck pain, among individuals with specific occupational postures or activities (10). Despite this, the relationship between neck pain and the resultant disability remains complex and not fully elucidated.

This study aims to explore the association between neck pain and the level of disability among females visiting beauty parlors or aesthetic clinics in Lahore. Understanding this relationship is crucial, given that neck positions maintained during beauty treatments could potentially lead to or exacerbate cervical arterial dysfunction symptoms. The study uses the Visual Analog Scale (VAS) to assess neck pain severity and the Neck Disability Index (NDI) to measure the level of disability. Additionally, it examines symptoms of cervical arterial dysfunction through a self-administered questionnaire, focusing on symptoms like double vision, dizziness, dysphagia, and dysarthria.

A comprehensive understanding of the association between neck pain and disability in this specific population can inform better ergonomic practices and preventive measures in beauty parlors and aesthetic clinics. By addressing the risk factors and implementing appropriate interventions, it may be possible to reduce the prevalence and impact of neck pain and associated disabilities in this population, ultimately improving their quality of life and occupational health outcomes (11, 12).

## MATERIAL AND METHODS

This observational study included 180 female participants who were recruited through non-probability convenient sampling from various beauty parlors and aesthetic clinics in Lahore. The participants' selection criteria were based on their regular visits to these facilities, ensuring that they had ample exposure to prolonged neck positions during beauty treatments. Before commencing the study, ethical approval was obtained, and the research protocol adhered to the principles outlined in the Declaration of Helsinki. All participants provided informed consent, which included detailed information about the study's objectives, procedures, and their right to withdraw at any time without any repercussions.

Data collection was conducted using a standardized questionnaire, which was divided into three main sections. The first section collected demographic information, including age and frequency of visits to beauty parlors or aesthetic clinics. The second section assessed neck pain severity using the Visual Analog Scale (VAS), a reliable and widely used tool for measuring pain intensity. Participants were asked to rate their pain on a scale from 0 to 10, with 0 indicating no pain and 10 representing the worst possible pain. The third section measured the level of disability using the Neck Disability Index (NDI), a validated questionnaire that evaluates the impact of neck pain on daily activities, including personal care, lifting, reading, work, driving, sleeping, and recreational activities. Additionally, a self-administered questionnaire was used to assess symptoms of cervical arterial dysfunction (CAD). This questionnaire included items related to double vision, dizziness, dysphagia, dysarthria, and drop attacks, which are symptoms indicative of compromised posterior circulation due to vertebral artery compression during neck movements.

The collected data were meticulously recorded and analyzed using SPSS version 25.0. Descriptive statistics, such as means and standard deviations, were calculated for continuous variables like age, VAS scores, and NDI scores. The association between neck pain (VAS) and the level of disability (NDI) was examined using appropriate statistical tests, ensuring that the p-value was set at  $<0.05$  for determining statistical significance. Chi-square tests were employed to explore the relationship between NDI scores and specific symptoms of CAD, such as double vision and speaking difficulty.

The ethical considerations of the study were paramount. Participants were assured of the confidentiality and anonymity of their data, and the study was designed to minimize any potential risks to the participants. All procedures followed were in accordance with the ethical standards of the institutional and national research committees.

By adhering to rigorous methodological standards and ethical guidelines, this study aimed to provide a comprehensive understanding of the association between neck pain and disability among females frequenting beauty parlors and aesthetic clinics, contributing valuable insights into occupational health and ergonomics.

## RESULTS

In this study, a total of 180 female participants were included, all of whom were asked to fill out the Neck Disability Index (NDI) and Visual Analog Scale (VAS) questionnaires to assess their level of disability and neck pain, respectively. The demographic details and descriptive statistics of the participants are presented in Table 1.

**Table 1:** Demographic and Descriptive Statistics of Participants

Variable	Mean	Standard Deviation
Age	21.95	6.15
NDI	3.16	0.68
VAS	1.29	0.99

The analysis of the data revealed that there was no significant association between neck pain, as measured by VAS, and the level of disability, as measured by NDI. The p-value for this association was 0.095, indicating that the relationship between these two variables was not statistically significant. The detailed association between VAS and NDI is shown in Table 2.

**Table 2:** Association Between Neck Disability Index (NDI) and Visual Analog Scale (VAS)

NDI Level	No Pain	Mild Pain	Moderate Pain	Severe Pain	Total	p-value
Mild Disability	4	8	6	4	22	0.095
Moderate Disability	33	40	31	10	114	
Severe Disability	6	15	6	10	37	
Complete Disability	1	1	4	1	7	
<b>Total</b>	<b>44</b>	<b>64</b>	<b>47</b>	<b>25</b>	<b>180</b>	

There was, however, a significant association between NDI and the presence of double vision and speaking difficulty. The p-value for the association between NDI and double vision was 0.012, and for the association between NDI and speaking difficulty, it was 0.010. These results suggest that participants with higher NDI scores were more likely to report double vision and speaking difficulty.

**Table 3:** Association Between Neck Disability Index (NDI) and Double Vision

NDI Level	No Double Vision	Same Day	Next Day	Some Day	Total	p-value
Mild Disability	22	0	0	0	22	0.012
Moderate Disability	95	6	4	9	114	
Severe Disability	27	4	2	4	37	
Complete Disability	4	3	0	0	7	
<b>Total</b>	<b>148</b>	<b>13</b>	<b>6</b>	<b>13</b>	<b>180</b>	

**Table 4:** Association Between Neck Disability Index (NDI) and Speaking Difficulty

NDI Level	No Speaking Difficulty	Same Day	Next Day	Some Day	Total	p-value
Mild Disability	21	1	0	0	22	0.010
Moderate Disability	105	8	0	1	114	
Severe Disability	27	4	3	3	37	
Complete Disability	7	0	0	0	7	
<b>Total</b>	<b>160</b>	<b>13</b>	<b>3</b>	<b>4</b>	<b>180</b>	

Other symptoms of cervical arterial dysfunction, such as swallowing difficulty, muscle weakness, vomiting, and walking difficulties, showed no significant association with NDI scores, as their p-values were greater than 0.05.

In summary, while there was no significant association between neck pain and disability levels, significant associations were observed between disability levels and the symptoms of double vision and speaking difficulty among females visiting beauty parlors and aesthetic clinics. These findings underscore the importance of considering specific symptoms in assessing the impact of neck pain on disability.

## DISCUSSION

The present study aimed to investigate the association between neck pain and the level of disability among females frequenting beauty parlors and aesthetic clinics in Lahore. The results indicated that there was no significant association between neck pain, as measured by the Visual Analog Scale (VAS), and disability levels, as assessed by the Neck Disability Index (NDI). This finding is consistent with previous research which suggested that neck pain and disability are complexly interrelated but not always directly proportional (13,14). The lack of significant association in this study may be attributed to the relatively mild pain levels reported by the participants, which may not have been sufficient to influence their disability scores (15,17).

Interestingly, the study found significant associations between NDI scores and symptoms of double vision and speaking difficulty. These results align with existing literature that highlights the potential for cervical arterial dysfunction (CAD) symptoms, such as diplopia and dysarthria, to manifest in individuals with higher levels of neck disability (18, 19). This suggests that while neck pain itself may not always correlate with disability, the presence of certain neurological symptoms could indicate a higher degree of functional impairment (20, 21).

One of the strengths of this study was the use of standardized and validated tools, such as the VAS and NDI, for assessing neck pain and disability. These measures are widely accepted in clinical and research settings for their reliability and validity (22, 23). Moreover, the study's focus on a specific population—females attending beauty parlors and aesthetic clinics—provided valuable insights into occupational health risks associated with prolonged neck positions. However, the study had several limitations. The cross-sectional design precluded the establishment of causal relationships between neck pain, disability, and CAD symptoms. Additionally, the use of non-probability convenient sampling may have introduced selection bias, limiting the generalizability of the findings to the broader population (24, 25).

The study's reliance on self-reported data also posed potential limitations, as subjective measures are susceptible to recall bias and reporting inaccuracies. Future research could benefit from incorporating objective assessments, such as Doppler ultrasound, to evaluate the hemodynamics of the cervical arteries more precisely (9). Furthermore, longitudinal studies are warranted to explore the causal pathways between neck pain, disability, and CAD symptoms over time (26,29).

It is recommended that beauty parlors and aesthetic clinics implement ergonomic interventions to mitigate the risks associated with prolonged neck extension and rotation. Education on proper neck posture and the use of supportive equipment could help reduce the incidence of neck pain and associated symptoms in this population. Health care providers should also be vigilant in assessing neurological symptoms in individuals with neck pain, as these may be indicative of more severe underlying conditions requiring prompt intervention (27, 28).

In conclusion, this study provided important insights into the relationship between neck pain and disability among females visiting beauty parlors and aesthetic clinics. While no significant association was found between neck pain and disability levels, the significant associations between disability and neurological symptoms underscore the need for comprehensive assessments in this population. Addressing ergonomic factors and enhancing awareness of potential cervical arterial dysfunction could help improve the health and well-being of individuals in such occupational settings.

## CONCLUSION

The study concluded that there was no significant association between neck pain and the level of disability. However, a strong association was found between the level of disability and symptoms of double vision and speaking difficulty. These findings suggest the need for ergonomic interventions and comprehensive assessments in beauty parlors and aesthetic clinics to prevent and manage neck pain and associated symptoms effectively.

## REFERENCES

1. Hoy D, Protani M, De R, Buchbinder RJBp, rheumatology rC. The epidemiology of neck pain. 2010;24(6):783-92.
2. Misailidou V, Malliou P, Beneka A, Karagiannidis A, Godolias GJJocm. Assessment of patients with neck pain: a review of definitions, selection criteria, and measurement tools. 2010;9(2):49-59.
3. Fejer R, Hartvigsen JJESJ. Neck pain and disability due to neck pain: what is the relation? 2008;17(1):80-8.
4. Kavlak B, Bakar Y, Sarı ZJJoMp. Investigation of the efficacy of different physiotherapy methods for neck pain. 2012;20(4):284-91.
5. Ye S, Jing Q, Wei C, Lu JJBo. Risk factors of non-specific neck pain and low back pain in computer-using office workers in China: a cross-sectional study. 2017;7(4):e014914.
6. Kim R, Wiest C, Clark K, Cook C, Horn MJMS, Practice. Identifying risk factors for first-episode neck pain: A systematic review. 2018;33:77-83.
7. O'Riordan C, Clifford A, Van De Ven P, Nelson JJAopm, rehabilitation. Chronic neck pain and exercise interventions: frequency, intensity, time, and type principle. 2014;95(4):770-83.
8. Salo PK, Häkkinen AH, Kautiainen H, Ylinen JJJH, outcomes qol. Effect of neck strength training on health-related quality of life in females with chronic neck pain: a randomized controlled 1-year follow-up study. 2010;8(1):1-7.
9. Kääriä S, Laaksonen M, Rahkonen O, Lahelma E, Leino-Arjas PJEJoP. Risk factors of chronic neck pain: A prospective study among middle-aged employees. 2012;16(6):911-20.
10. Joslin LE, Davis CR, Dolan P, Clark EMJJoom, health e. Quality of life and neck pain in nurses. 2014;27(2):236-42.
11. Henschke N, Kamper SJ, Maher CG, editors. The epidemiology and economic consequences of pain. Mayo Clinic Proceedings; 2015: Elsevier.
12. Popescu A, Lee HJMC. Neck pain and lower back pain. 2020;104(2):279-92.
13. Noormohammadpour P, Mansournia MA, Koohpayehzadeh J, Asgari F, Rostami M, Rafei A, et al. Prevalence of chronic neck pain, low back pain, and knee pain and their related factors in community-dwelling adults in Iran. 2017;33(2):181-7.
14. Jun D, Zoe M, Johnston V, O'Leary SJlaoo, health e. Physical risk factors for developing non-specific neck pain in office workers: a systematic review and meta-analysis. 2017;90(5):373-410.

15. Asad A, Chughtai AS, Sohail A, Gill AJPT. Prevalence of Myofascial Trigger Points in Neck Pain With its Associated Risk Factors in Undergraduate Students of Physical Therapy Department of University of Lahore. 2020;03-8.
16. Lluch E, Nijs J, De Kooning M, Van Dyck D, Vanderstraeten R, Struyf F, et al. Prevalence, incidence, localization, and pathophysiology of myofascial trigger points in patients with spinal pain: a systematic literature review. 2015;38(8):587-600.
17. Chandrathava A, Werring D, Kaski DJPN. Vertebrobasilar insufficiency: an insufficient term that should be retired. BMJ Publishing Group Ltd; 2021. p. 2-3.
18. Zaidi HA, Albuquerque FC, Chowdhry SA, Zabramski JM, Ducruet AF, Spetzler RFJWn. Diagnosis and management of bow hunter's syndrome: 15-year experience at barrow neurological institute. 2014;82(5):733-8.
19. Yan Y, Wang J, Zhong C, Zhang Y, Wei Y, Liu HJMIMJoE, et al. Effects of endovascular stent-assisted angioplasty on cellular metabolism in the hippocampus of elderly patients with symptomatic vertebrobasilar artery stenosis. 2020;26:e922131-1.
20. Amin-Hanjani S, See AP, Du X, Rose-Finnell L, Pandey DK, Chen Y-F, et al. Natural history of hemodynamics in vertebrobasilar disease: temporal changes in the veritas study cohort. 2020;51(11):3295-301.
21. Pirau L, Lui F. Vertebrobasilar insufficiency. StatPearls [Internet]: StatPearls Publishing; 2021.
22. Zuo L, Zhan Y, Liu F, Chen C, Xu L, Calic Z, et al. Clinical and laboratory factors related to acute isolated vertigo or dizziness and cerebral infarction. 2018;8(9):e01092.
23. Trivedi T, Reddi R, Kumar A, Agarwal BJECCM. Recurrent vertebrobasilar insufficiency—bow hunter's syndrome. 2018;2:65.
24. Rastogi V, Rawls A, Moore O, Victorica B, Khan S, Saravanapavan P, et al. Rare etiology of bow hunter's syndrome and systematic review of literature. 2015;8(3):7.
25. Healy AT, Lee BS, Walsh K, Bain MD, Krishnaney AAJJoCN. Bow hunter's syndrome secondary to bilateral dynamic vertebral artery compression. 2015;22(1):209-12.
26. Xu Y, Wang Y, Chen J, He Y, Zeng Q, Huang Y, et al. The comorbidity of mental and physical disorders with self-reported chronic back or neck pain: Results from the China Mental Health Survey. 2020;260:334-41.
27. Kameda T, Otani K, Tamura T, Konno SJJNS. Beauty parlor stroke syndrome due to a bone fragment from an osteophyte of the atlas: case report. 2018;28(4):389-94.
28. Akaltun MS, Kocyigit BFJRI. Assessment of the responsiveness of four scales in geriatric patients with chronic neck pain. 2021;41(10):1825-31.
29. Beltran-Alacreu H, Lopez-de-Uralde-Villanueva I, Calvo-Lobo C, La Touche R, Cano-de-la-Cuerda R, Gil-Martinez A, et al. Prediction models of health-related quality of life in different neck pain conditions: a cross-sectional study. 2018;12:657.