



## Original Article

## Effect of Forward Head Posture with Neck Disability and Quality of Life in Freelancers

Rabia Tasmeer<sup>1</sup>, Syed Asad Ullah Arslan<sup>1</sup>, Ashfaq Ahmad<sup>1</sup> and Fareeha Amjad<sup>1</sup>\*<sup>1</sup>University Institute of Physical Therapy, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan

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## \*Corresponding Author:

Fareeha Amjad  
 University Institute of Physical Therapy, Faculty of Allied Health Sciences, The University of Lahore, Lahore, Pakistan  
[fareeha.amjad222@gmail.com](mailto:fareeha.amjad222@gmail.com)

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## ABSTRACT

Freelancer is an independent person who earns money from clients on a task basis. Freelancers are often known to work on a computer or a laptop. They spend the majority of the time on the computer due to which they are more likely to develop bad posture. **Objective:** To determine the effect of forward head posture with neck disability and quality of life in Freelancers. **Methods:** This cross-sectional study was conducted on 133 participants. The data was collected from freelancer teachers and students from The University of Lahore. Goniometer was used to assess the people with forward head posture. The neck disability was assessed by using neck disability index questionnaire. Quality of life was assessed by using SF-36 questionnaire. History of the symptoms including pain and tenderness clicking was noted. **Results:** The results showed that the frequency of posture, no forward head cases out of 133 were 24 (18.0%) and forward head cases out of 133 were 109 (82.0%). The results show the comparative relationship between posture and hours for which people use laptop. About 21 people without forward head posture use laptop for 4 to 6 hours and around 46 people with forward neck posture use laptop for 12 to 14 hours. The results show the comparative relationship between posture and time at which people use laptop. About 9 people (37.5%) without forward head posture use laptop at late night and around 38 people (34.9%) with forward neck posture use laptop at night time. **Conclusions:** Based on the result, it was concluded that forward head posture has a strong effect on neck functional disability and quality of life in freelancers.

## INTRODUCTION

Over the past few years, the usage of computers has been drastically increased [1]. Such digital means include freelance work [2,3]. Forward head posture (FHP) is the position where your head is slightly forward and the ear of the person is in front of the vertical midline [4]. Change in the curvature of the neck bone causes upper-crossed syndrome due to an imbalance in muscular pattern, which subsequently leads to rounded shoulder posture [5]. The rounded shoulder is a protrusion of the acromion of the shoulder joint relative to the centerline of gravity of the body [6,7]. FHP that causes round shoulder and neck pain due to an imbalance between the curvature of the spine and muscles that are attached to the neck bone, is correlated with problems in the neck bone [8]. Our body is

associated with our head by a significant structure "Neck" [9]. Neck pain is commonly known as neck disability [10]. Neck pain that happens in individuals who spend significant stretches utilizing electronic gadgets with a bad body posture [11]. Researchers found that neck problems are very common and it is obvious the cell phone has become a regular need [12]. The anatomical connection between neck and cervical spine is quite complicated. It facilitate the muscles, bones, nerves and spine [13,14]. Neck pain can result in shoulder pain, thoracic kyphosis, radiating hand pain, back pain and headache [15]. Bad posture can cause the upper back muscle to work persistently to offset the pull of the gravity and forward neck [16]. Bad posture such as forward head posture is

seen while utilizing cell phones or laptops, which may lead to neck pain and this posture is known cause for neck pain [17]. It happens due to outrageous and successive pressure to the flexed neck. [18]. The aggravation of the nerves can cause neck and shoulder pain [19]. Neck cause problems such as rounded shoulder, increase vertebral curvature and spastic back muscles. [20] While gazing forcefully downwards on the smartphones causes an unnecessary bend in the lower cervical vertebra, and over the top backbend in the upper thoracic vertebra to look after adjusting [21]. While several interventional studies are underway to improve FHP, research on the correlation between round shoulder and neck pain remains incomplete [22]. Neck problems normally cause a person to fall into depression, anxiety or frustration and affect a person daily activities as it diminishes the person's ability to work [23]. Parisa Nejati *et al.*, researched in 2013 in order to determine the relationship status between rounded shoulders and pain in the neck region. The study was conducted on Iranian office workers. Results showed that neck pain was positively correlated with work-related sitting positions and during normal positions [24]. In 2015 Parisa Nejati *et al.*, conducted a research in order to determine the correlated link between neck pain and forward head posture among the Iranian population. It was concluded that office workers have faulty posture during work time due to this faulty posture they suffer from problems such as neck pain [25]. In order to determine the incidence rate of forward head posture with desktop usage. The study was conducted on desktop users. It was concluded that there is no relationship between forward head posture with pain and the range of motion of the cervical spine and neck pain [26]. So, neck problem affects a person's quality of life. Hence, this study is conducted in order to see the impact of FHP on neck disability and quality of life in the freelancer's community.

## METHODS

This cross-sectional study was conducted on 133 participants. The data was collected from The University of Lahore from freelancer teachers and students and home-based setting. The data was collected through convenient sampling technique. Goniometer was used to assess the people with forward head posture. Fulcrum of the goniometer is placed on the C7 level at the spinous process. Moving arm of the goniometer is placed to the tragus of the ear and the stationary part of the goniometer is placed at the horizontal line [27]. The neck disability was assessed by using neck disability index questionnaire. Neck disability scale was divided in to 10 sections which is scored from 0 to 5. All sections have a total score of 50 and is further divided in to 5 classification based on score no disability, mild

disability, moderate disability, severe disability and total or complete disability [28]. Quality of life is assessed by using SF-36 questionnaire. The SF-36 consists of eight scaled scores, which are the weighted sums of the questions in their section. Each scale was directly transformed into a 0-100 scale on the assumption that each question carries equal weight [29]. The lower the score the more disability. The higher the score the less disability i.e., a score of zero is equivalent to maximum disability and a score of 100 is equivalent to no disability [30]. History of the symptoms including pain and tenderness clicking was noted. Tenderness was checked by adding firm pressure to the anatomical structures unilaterally or bilaterally palpation and trigger reflex was observed. Sample size was calculated using non-probability convenient sampling technique. Written consent was taken from all patients and importance of the study was explained before filling the questionnaires. The total score qualitative classification was used to find *Chi square* in order to see the association. After taking informed written consent, basic demographic data were collected using Neck disability index, goniometer and SF 36 questionnaire and Include age, sex, self-reported weight, and height was calculated. It was analyzed using SPSS (version 22.0). For qualitative data, frequency and percentage were being taken out, and bar charts and pie charts were formed. For the quantitative type of data, the mean and standard deviation was analyzed, and the histogram was used.

## RESULTS

Several participants who encountered the inclusion criteria were registered i.e. N= 133. Neck disability index, goniometer and SF 36 questionnaire were used to confirm the finding for all 133 participants both genders. The relationship of forward head posture with neck disability and quality of life was evaluated. The results showed distribution of the time mostly person use a laptop in. Morning time had a frequency of 23 (17.3%), evening with a frequency of 24 with a percentage of 18.0%, Night time had a frequency of 46 (34.6%) and late night time had a frequency of 40 with a percentage of 30.1%. The results showed distribution of the hours mostly person use a laptop in. People use laptop for 4 to 6 hours' laptop had a frequency of 13 with a percentage of 9.8%, people who use laptop for 7 to 9 hours with a frequency of 18 (13.5%), people use laptop for 10 to 12 hours had a frequency of 39 (29.3%) and people use laptop for had a frequency of 57 (42.9%) and people who use laptop for 14 to 16 hours had a frequency of 6 (4.5%). The results showed that the frequency of posture, no forward head cases out of 133 were 24 (18.0%) and forward head cases out of 133 were 109 with a percentage of 82.0% (Table 1).

Variables	Frequency (%)
<b>Time on laptop</b>	
Morning	23(17.3)
Evening	24(18.0)
Night	46(34.6)
Late Night	40(30.1)
<b>Hours on Laptop</b>	
4 To 6 Hours	13(9.8)
7 To 9 Hours	18(13.5)
10 To 12 Hours	39(29.3)
12 to 14 Hours	57(42.9)
14 To 16 Hours	6(4.5)
<b>Posture</b>	
No Forward Head Posture	24(18.0)
Forward Head Posture	109(82.0)

**Table 1:** Socio Demographic Details

The results show the comparative relationship between posture and hours for which people use laptop. About 21 people without forward head posture use laptop for 4 to 6 hours and around 46 people with forward neck posture use laptop for 12 to 14 hours. The results show the comparative relationship between posture and time at which people use laptop. About 9 (37.5%) people without forward head posture use laptop at late night (Table 2).

POSTURE IN RELATION TO HOURS		
Posture		Frequency (%)
no forward head posture	4 to 6 hours	21(87.5)
	10 to 12 hours	2(8.33)
	12 to 14 hours	1(4.17)
forward neck posture	4 to 6 hours	6(5.5)
	7 to 9 hours	18(16.5)
	10 to 12 hours	33(30.3)
	12 to 14 hours	46(42.2)
	14 to 16 hours	6(5.5)
POSTURE IN RELATION TO TIME		
No forward head posture	Morning	21(87.5)
	Evening	2(8.33)
	Night	1(4.17)
	Late night	6(5.5)
Forward neck posture	Morning	18(16.5)
	Evening	33(30.3)
	Night	46(42.2)
	Late night	6(5.5)

**Table 2:** Relation of Posture, Time, Hour and Gender

## DISCUSSION

Forward head posture is the position where your head is slightly forward and the ear of the person is in front of the vertical midline [4]. Forward head posture prevalence is increasing rapidly it is about 63.96% in the student population. Forward head posture is also known as rounded shoulder often results in neck disability. Neck disability is a common disorder that involves soreness and pain of the

muscles in the neck region. Neck disabilities are very prevalent globally, especially in Asian countries. Its prevalence range is between 54 to 64% [31]. The purpose of this research was to determine the effect of forward head posture with neck disability and quality of life in Freelancers. This cross-sectional study was conducted on 133 participants. The data was collected from University of Lahore from freelancer teachers and students. Goniometer was used to assess the people with forward head posture. The neck disability was assessed by using neck disability index questionnaire. Quality of life was assessed by using SF-36 questionnaire. The lower the score the more disability. The higher the score the less disability *i.e.*, a score of zero is equivalent to maximum disability and a score of 100 is equivalent to no disability. History of the symptoms including pain and tenderness clicking was noted. In previous studies, it was observed that individuals spending more hours while looking down at cells phones, causes the neck to be too stiff [32, 21]. While several interventional studies are underway to improve FHP, research on the correlation between round shoulder and neck pain remains incomplete [22,23]. Results show that people with forward head posture use laptop during night time. It is stated that people are more likely to develop forward head flexion who use laptop for more than 10 hours [33]. This statement is supported by our study result that people who use laptop for 12 to 14 hours have more forward head posture. This occurs as a result of reduce muscle activity over the time due to fatigue by overuse. These muscles include upper trapezius and erector spinae muscle of the cervical region [34]. According to results females are more likely to develop forward head posture than male population. The results were supported by the study conducted by Ashok *et al.*, in the year 2020. According to that study females are more likely to develop forward head flexion [35]. While another study Arfa Naz *et al.*, had some conflicting debate related this. According to this 2018 study it was stated that males are more prevalent to forward head posture than females [36]. People with forward head posture have less quality of life as it impacts their activity of daily living. This study lies as an evidence base which states that forward head posture does impact neck disability and quality of life of a person. Higher the forward head people more at a risk they are at developing neck disability.

## CONCLUSIONS

It was concluded that forward head posture has a strong effect on neck functional disability and quality of life in Freelancers.

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