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CORRELATION AMONG FORWARD HEAD POSTURE AND FUNCTIONAL STATUS ASSOCIATED WITH NECK PAIN IN BANKING-PROFESSIONALS.

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Abstract: Background: Forward head posture is being seen as one of the most common postural problems in the general population. Despite much research on this sensitive variable, there is no clear-cut correlation regarding these. Moreover, with the increased usage of computers mainly in the area of banking where a person sits in a computer for several hours raises several health issues, resulting in FHP, Neck pain, and various other problems. The main objective of this observational study is to assess the correlation among forward head posture, and functional status associated with neck pain in bankers working in Arunachal Pradesh. The study is based on an observational based design, (n=100) was taken randomly.

Method: Banking professional workers (n=100) participated in this study on the basis of inclusion and exclusion criteria. The data collection was done via tragus-to-wall test for the measurement of FHP, NPRS for pain measurement, and NDI for Functional Disability.

Results: This observational study states that there is a significant negative correlation of FHP, Neck pain associated with Functional status. This may be said that there are other factors that may have a direct response of correlation with these variables.

Conclusion: The study signifies that the variables FHP, and Functional status related to neck pain in banking professionals almost had no direct effect on relation to one another. The decisive reason for their poor health issues may be due to including the absence of ergonomic training, working hours, and no physical workout.

Index Terms **– Forward Head Posture, Neck Pain, Bankers, Tragus to Wall Test.**

I. INTRODUCTION

Forward head posture is seen as one of the most common postural problems in the general population. It is a postural problem which can be caused by several factors which includes extended use of cell phones, computers,
laptops and lack of back muscles (Apurva Nitin Worlikar, 2019). Most people use their computers with their head tilted forward with their computers in front in a sitting position. Thus, maintaining this position for a greater amount of time decreases the lordosis of the lower cervical vertebrae and creates a posterior curve in the upper thoracic vertebrae (Ashiyat K.Akodu.et al, 2018). This constant usage of electronic gadgets results in constant load on the cranio vertebral extension muscles which in respect to time results in change of structural deformity reducing bio-mechanical movement, and inducing increased stress and musculoskeletal damage with pain (Dae- Hyun Kim. Et al, 2018). Therefore, faulty mechanics associated with this postural position may lead to

excessive compression on the apophyseal joints and posterior surfaces of the vertebral bodies, excessive lengthening with associated weakness of the neck extensors. Additional changes can be shortening of the sub occipital and suprahyoid musculature and lengthening of the infrahyoid muscles with elevation of the hyoid bone (Ayub Et al, 1984). Head in forward posture may add up to 30 pounds of abnormal leverage on the cervical spine which can completely distract out the spine in outward position. Forward head posture may result in 30% of vital capacity (Apurva Nitin Worlikar, 2019). Apart from these problems there are other symptoms which has been promptly seen such as fatigue, muscle spasm, headache, migraine, pinched nerve, and restricted range of motion (Sutantar Singh. et al, 2020). The relation among FHP and Neck pain can be still debatable, while some researchers claims that there is a significant difference among them. Whereas, in literature forward head posture has not always been associated with neck pain (Parisa Nejati et al, 2015). According to research conducted by Parsia Netaji. et al, in determination of correlation between rounded shoulders and neck pain on Iranian office workers. The result concluded stating correlation of neck pain with thoracic and spinal posture. However, the aim of this study to see the correlation of FHP, Neck Pain on Functional disability of a person.

Hypothesis

There is a correlation among FHP, Neck pain associated with Functional disability on Banking Professionals.

Null hypothesis

There is no correlation among FHP, Neck pain associated with Functional disability on Banking Professionals.

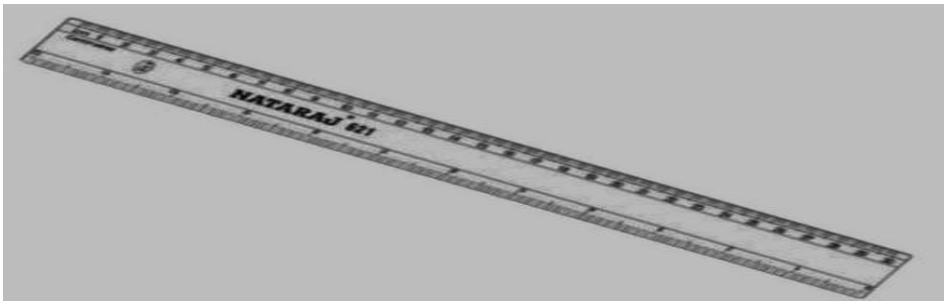
METHODOLOGY & MATERIALS

This observational study evaluates the correlation among forward head posture, and functional status associated with neck pain in Banking Professionals. The volunteer was taken at random. Ethical approval was obtained from the university, written consent was obtained and before the conduction of the study. NPRS Scale and NDI Questionnaire were used to assess both the subjective measurement of pain and to determine how it affects one's daily lifestyle.

Inclusion Criteria: Normal healthy individuals of the age group of 20-50yrs with working hours ranging from 2-3hrs on a regular basis.

Exclusion Criteria: Subjects with History of cancer, headache within the last year that resulted in limitation of daily activity. Physiological conditions such as cervical spine surgical history, any neurological symptoms or inflammatory illness, and spinal instability. A medical diagnosis of systemic, muscular, or connective tissue and participants who are currently getting therapy or taking medication for neck discomfort

Materials: Measuring Scale, Numeric Pain Rating scale, Neck Disability Index Questionnaire.

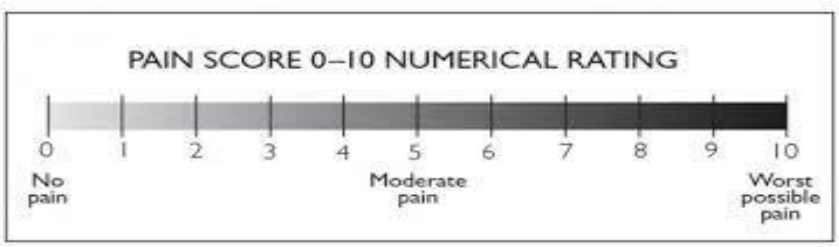


measuring scale

PROCEDURE

Before the study began, volunteers were told of the study's aim and the study's confidentiality. All the volunteers were included on the basis of inclusion and exclusion criteria. First all the participants were asked to fill a demographic sheet containing age, sex, height etc. The process for correct presentation of FHP was clarified to the volunteers.

Measuring pain- The NPRS was used to evaluate the participant's neck pain index. The patient was asked to record average pain felt in the current day on a scale of 0 to 10, with 0 being no pain and 10 being terrible agony. The NPRS expresses pain in a straight forward manner, and its dependability was reported to be 0.90.



numeric pain rating scale

Measuring functional status- For the measurement of functional status, neck disability index questionnaire was used. Where each section is scored on the basis of the present condition of the volunteer. Rating from 0 to 5 in each section, the test is interpreted with a maximum score of 50. The reliability of NDI was reported to be 0.68. Measuring of forward head posture- In order to accurately measure the value of FHP, tragus to wall test was performed with the volunteer taking support on the wall with chin tuck. The measurement was obtained from the tragus to wall in which generally the normal range is 9.5, if greater it is seen as positive test for fhp.

figure1. performing tragus to wall test (anterior view)

figure2. performing tragus to wall test (lateral view)

DATA ANALYSIS AND INTERPRETATION

All the data collected were organized and analysed using SPSS 21.0 (IBM CORP.). Descriptive statics of age, height, weight and valid % on the basis of gender was calculated. To determine the difference among the variables an paired t test was performed. In addition, the correlation among the variables was also determined using Pearson correlation.

Descriptive statistics and features of the volunteers are shown via Table 1. And 2. Out of 100 samples 42% were female and 58% were male. The mean average values of age, height, and weight were seen as 32.32±6.609, 65.51±11.011, and 163.36±9.427.

table 1: descriptive statistics

	N	MEAN±SD
AGE	100	32.32±6.609
WEIGHT	100	65.51±11.011
HEIGHT	100	163.36±9.427

table 2: characteristics

GENDER

		Frequency	Percent	Valid Percent	Cumulative Percent
	FEMALE	42	42.0	42.0	42.0
	MALE	58	58.0	58.0	100.0
	Total	100	100.0	100.0	

graph 1: graph depicting descriptive statistics

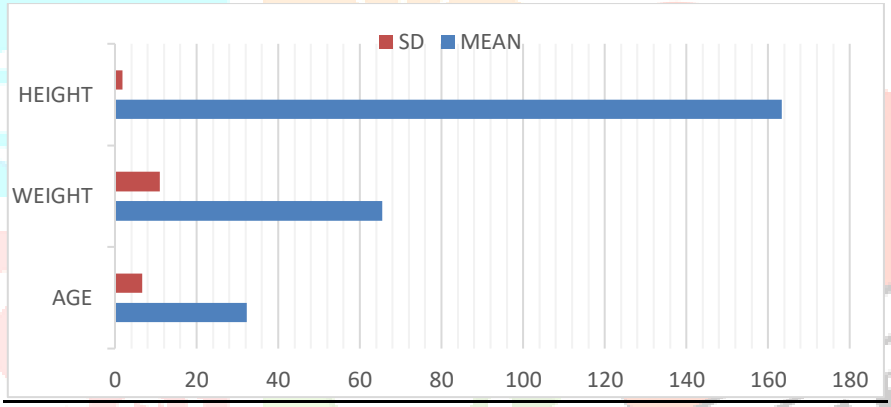
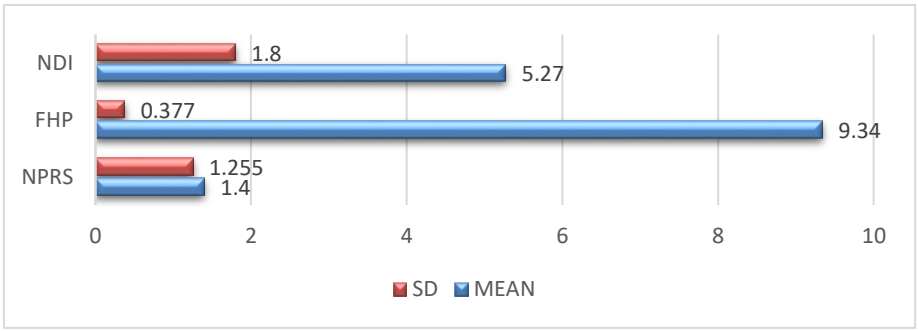


table 3: difference among the variables

VARIABLES	MEAN±SD	T-TEST	P-VALUE
NPRS	1.40±1.255	11.153	P<0.05
FHP	9.34±.377	247.714	P<0.05
NDI	5.27±3.481	15.139	P<0.05

Table 3. shows difference in variable statistical mean calculated via paired t test to be 1.40±1.255 (t=11.153), 9.34±.377 (t=247.714), 5.27±3.481 (t=15.139). “The significance threshold was chosen at p<0.05”. T values confirms that there exists significant difference among the variables.

graph 2: statistics of variables



Graph 2. Represents the above statistical standard deviation and mean for the respective variables which is NDI (1.8/5.27), FHP (0.377/9.34), and NPRS (1.255/1.4)

table 4: main correlation among variables

VARIABLES		NPRS	FHP	NDI
NPRS	**Pearson Correlation**	**1**	**-.025**	**-.032**
	Sig. (2-tailed)		**.807**	**.753**
	N	**100**	**100**	**100**
FHP	**Pearson Correlation**	**-.025**	**1**	**-.226***
	Sig. (2-tailed)	**.807**		**.024**
	N	**100**	**100**	**100**
NDI	**Pearson Correlation**	**-.032**	**-.226***	**1**
	Sig. (2-tailed)	**.753**	**.024**	
	N	**100**	**100**	**100**

- **At the 0.05 level, the correlation is significant (2-tailed).**
- **Standard correlation values: -**

The values vary between -1.0 to 1.0. -1.0 indicates a perfect negative correlation, whereas 1.0 indicates a perfect positive correlation.

Table 4. shows that the correlation among the variables calculated via Pearson correlation to be (NPRS- FHP/NDI) [-0.25/0.32], (FHP-NPRS/NDI) [-0.25/-0.226] and (NDI-NPRS/FHP) [-0.32/-0.226]. Therefore, the values calculated shows that there is a negative correlation among the variable. This affirms that there is inverse link among the variables which states that if one of the variables increases then the other decreases.

DISCUSSION

This study investigated the correlation among Forward head posture, Neck pan, and Functional status among banking professionals within the age group of 20 to 50yrs, working for min 2-3hrs a day. The result in Table 4. shows that there is a negative correlation among the variables, where FHP was strongly negatively correlated to NDI whereas all the other variables had a moderate negative correlation against one another. According to the

In previous studies, Juliana Correa Soares et. al. (2012) the CV angle and VAS was negatively correlated to each other, whereas NDI and VAS showed a positive correlation. Suggesting that the smaller the cv angle, the higher the intensity of pain. This data supports our studies were the FHP and NPRS correlation were calculated and found to be negatively correlated while a little difference was seen in the FHP and NPRS as in this result suggests a negative correlation. This difference can be due to participants while the later study inclusion criteria included only with pain, while in this study the participant was either with or without pain. In another study, Kwok Tung Lau et al. (2010) in the study NPRS and Northwick Park Neck Pain questionnaire was used for evaluation. Hence the result showed a negative correlation with pain. Based on the speculation of this study the professionals such as banking individual are at a potential risk of postural impairment with the neck but not in the collision of both of them together as seen in the study. Whereas there is a high chance of development of neck pain with respect to functional disability.

CONCLUSION

The study concludes the existence of a significant negative correlation among FHP, FUNCTIONAL STATUS, and NECK PAIN in banking professionals. This results in a conclusive fact that FHP and Functional status doesn't increase with respect to one and the same goes for neck pain too. However, there are other factors that may have a direct response of correlation with these variables. Therefore, it is essential for people working in banks to improve their posture and maintain their physical health condition with regular exercise.

LIMITATION OF STUDY

The no. Of volunteer in the study was small and could be done on a larger scale. Moreover, for more precise of accurate results of FHP value, photographic analysis could be done.

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