



Original Article:

Assessing the Level of Disability, Deep Cervical Flexor Endurance and Fear Avoidance Beliefs in Bankers with Neck Pain.

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Abstract: Objective: To assess the level of disability, the deep cervical flexor endurance and fear avoidance beliefs (FAB) in bankers with neck pain and to find a correlation between disability and deep cervical muscle endurance, FAB and disability, FAB and deep flexor muscle endurance. **Methods:** It was an observational study. The Subjects who had neck pain and minimum 5 years' experience as a Banker participated in the study. Total 100 subjects were selected. All the subjects were assessed for their disability by the neck pain and disability score (NPDI), their deep cervical flexor endurance using Pressure Biofeedback using Cranio-Cervical flexion test (CCFT) and Fear Avoidance Belief by using questionnaire (FABQ). **Results:** It was found that bankers have a moderate level of disability. The results showed an elevated fear avoidance belief with a mean value of FABQ-PA 21.61±4.42 and FABQ-W 37.81± 5.69. The results indicated that a negative correlation was found between NPDI and CCFT ($r=0.855$). A positive correlation was found between NPDI and FABQ-PA ($r=0.337$), FABQ-W ($r=0.500$). In the present study a negative correlation was found between CCFT and FABQ-W ($r=0.553$), FABQ-PA (0.348) and positive correlation ($r=0.540$) was found between FABQ-PA and FABQ-W. **Conclusion:** The present study concluded that there was a significant level of disability and significantly decreased endurance level and increased fear avoidance beliefs (both work and physical activity related) among bankers with neck pain. In addition to that there was a significant correlation found between NPDI and CCFT, NPDI and FABQ, CCFT and FABQ, FABQ-W and FABQ-PA.

Key Words: Fear Avoidance Belief; Cranio-Cervical flexion test; Musculoskeletal Disorders

Introduction:

Banking is a profession which initially used to include paper work, but with rapid technological developments, especially in the use of electronic data, have affected both workers and the workplace. Electronic data are mainly displayed on visual display terminals. Improper body posture and long hours in front of these terminals can result in many health hazards, including eye strain and fatigue and musculoskeletal disorders (MSDs).¹

Individual musculoskeletal complaints in bankers were associated with various risk factors including personal attributes, working posture, repetitive movements and work station design.² Wong et al¹ did a survey of musculoskeletal problems among bankers and found the prevalence of complaints in various body parts to be: neck—31.4%, back 30.6%, shoulder—16.5%, hand and wrist—14.9% and arm—6.6%. Tella BA et al found the prevalence of neck and upper extremity repetitive stress injury among bank workers in Lagos Nigeria.³

Evidence from existing literature states that more than 60% of the bank employees have one or other problem directly or indirectly related to these drastic changes stated by Jayashree R (2010).⁴ Work-related stress has been linked to a range of adverse physical and mental health outcomes, including depression and anxiety, as well as maladaptive behaviors.⁵ In 2003, about 21% of the sick leave and 49% of the invalidity retirements in a major Brazilian bank were due to mental health problems, with increasing prevalence of these disorders.⁶

Patients with elevated fear-avoidance beliefs were more likely to have higher pain and disability scores. In longitudinal studies, patients with elevated fear-avoidance beliefs were more likely to not return to work and to experience poor treatment outcomes following physical therapy episodes.⁷ Collectively, these studies support the

clinical application of the fear avoidance model (FAM) for patients with low back pain. It was therefore a need to assess this FAB in Bankers, to find the exact cause for persistent neck pains, and design a proper treatment protocol for neck pain in them. In addition our study will also be beneficial in designing a proper ergonomic modification for Bankers by assessing their neck endurance level and disability.

Materials and Methods:

The subjects were taken as per inclusion criteria and informed consent form was obtained after the explanation of the procedure to the subjects. The Subjects were having neck pain and had minimum 5 years' experience as a Banker. Total 100 subjects were selected. All subjects were assessed for their disability by the NPDI score, their deep cervical flexor endurance using Pressure Biofeedback (CCFT) and Fear Avoidance Belief by using FABQ.⁸⁻¹⁰ Plinth, Pressure biofeedback, Stop watch, Neck pain and disability index(NPDI) and Fear avoidance belief questionnaire(FAB) were used.

Results:

In our study the mean value for CCFT in bankers with neck pain was found to be 24.88±2.22 which indicates that deep cervical flexor muscle endurance level is low in bankers with neck pain. It depicted that bankers have a moderate level of disability when calculated in percentage (28.46 %) with a mean value of 14.23±5.25. The results for FABQ in the present study showed an elevated fear avoidance belief. A negative correlation was found between NPDI and CCFT (r=0.855). Thus we can say the pain and disability in bankers is related to decrease low cervical flexor endurance. A positive correlation was found between NPDI and FABQ-PA(r=0.337), FABQ-W(r=0.500) and a negative correlation was found between CCFT and FABQ-W(r=0.553), FABQ-PA (0.348). According to these results more fear avoidance beliefs leads to low cervical muscle endurance. In addition to that a statistically significant positive correlation (r=0.540) was found between FABQ-PA and FABQ-W.

Table 1: Correlation Values

Variable	r value	p value
NPDI Score Vs. FABQ - W	0.500	0.000
NPDI Score Vs. FABQ - PA	0.337	0.000
NPDI Score Vs. CCFT Value	0.855	0.000
CCFT Vs. FABQ- W	-0.553	0.000
CCFT Vs. FABQ- PA	-0.348	0.000

Table 1.2: Frequency of distribution according to the Post

Variable	Post				
	Manager	VDU Worker	Clerk	CCO	Others
NPDI	15.78	12.45	15.11	12.78	15.5
CCFT	24.56	25.72	24.35	25.04	24.33
FABQ-W	39.78	32.95	39.76	38	39.16
FABQ-PA	23.37	18.18	22.41	22.08	20.66

Discussion:

The results of the present study proved that there was a significant level of disability and significantly decreased endurance level and increased fear avoidance beliefs (both work and physical activity related). In addition to that there was a significant correlation found between NPDI and CCFT, NPDI and FABQ, CCFT and FABQ, FABQ-W and FABQ-PA (table 1.1). According to previous literature 55% of normal subjects range their deep cervical neck flexor endurance level calculated CCFT more than 26(either 28 mmHg or 30 mmHg)¹¹ whereas in our study the mean value for CCFT in bankers with neck pain was found to be 24.88±2.22. This proved that endurance level is low in bankers with neck pain. The probable reason behind this can be adaptation of poor posture while working. According to

Punjabi, decreased stability of passive structures (joints/ligaments) places an increased demand on active structures (deep cervical muscles). The deep cervical short flexors are considered to be important stabilizers of head on neck posture. Without this stability, the superficial neck muscle would increase cervical lordosis. These deep muscles demonstrate lesser but continued activity when compared to the superficial neck muscles, thus have a major postural and supporting role.¹² Poor performance of bankers has been associated with poor resting posture. This suggests that poor cervical postures keep the deep cervical short flexor in a biomechanically disadvantageous position, which leads to lesser endurance in them.

When we calculate NPDI for present study, it was found to be (28.46%) with a mean value of 14.23±5.25. in concert with our results Q.A.S. Akrouf et al² depicted that the increased use of computer screens, keyboards and mouses in recent years has been associated with an increased prevalence of disorders in the neck and upper extremities.¹ The reason behind increased disability in present study is supported by many authors. First of all Gwendolen A. Jull, et al depicted the neck pain patients' inability to sustain isometric contractions in the incremental stages of the clinical CCFT has been demonstrated which can be an important factor for increasing disability.⁹

In the present study a negative correlation was found between NPDI and CCFT with r =0.855 which was found statistically significant. According to McKenzie¹³ it is clear that purely postural or positional mechanism may produce pain. Thus neck pain is frequently caused or enhanced by overstretching of soft tissue brought about by position of prolong loading. Few studies have demonstrated that neck muscle weakness was common in patients with chronic neck pain.¹² According to the above facts whenever pain increases disability also increases ultimately leads to reduction in deep cervical flexor endurance. There may have several reasons among bankers which lead to increase in pain. As depicted by I. T. S. Yu and T. W. Wongfor, neck pain, VDU working experience, daily VDU working hours, bent back at work and incorrect height of chair were found not to contribute to the final model after adjustment. Bent neck at work, fixed keyboard height, frequent VDU use and age were important risk factors for neck pain.¹

In the present study a positive correlation was found between NPDI and FABQ which was statistically significant. The probable reason can be psychology of subjects in which due to fear they avoid the activities leading to pain. Siegrist, in a recent review of 16 studies, 12 longitudinal ones, covering a variety of occupations in various countries, showed that working in situations of high demand and low control or of effort/reward imbalance increase the risk of developing depression by up to eight times.¹⁴ Caruso et al. reported the relationship appeared to be explained by physical demands: longer hours may increase the amount of physical activities, which in turn may increase risk.¹⁵

According to TW Chiu et al Fear avoidance beliefs are hypothesized as the most powerful cognitive variables in predicting disability.¹¹ In the present study a statistically significant negative correlation was found between CCFT and FABQ. The reason can be overuse of muscles due to prolonged flexion activities which leads to weakness of muscles and increase in pain which could have caused increase in fear while performing those activities. A positive correlation was found between NPDI and FABQ. In concert with our results Steven Z. George, Sandra E. Stryker, depicted that elevated fear-avoidance beliefs were associated with higher intake pain intensity ratings for all anatomical regions.¹⁶

After the collection the data, the data of the present study was grouped according to their designation and age. According to

designation it was found that managers and clerks have higher disability level than VDU and CCO (table 1.2). The reason behind which can be the excess work load in managers and clerks. Cervical flexor endurance was found to be decreased in all subjects regardless of their post. FABQ-PA was found lower in VDU workers as compared to others, the probable reason can be awareness of ergonomically modifications among computer users. According to age it was expected that there will be marked decrease in cervical flexor endurance due to degenerative changes¹², but surprisingly in the present study we found that CCFT level was almost same in all groups the reason behind this can be intractable distribution of sample size. The results of the present study bring us to a need to develop a better treatment or to develop modified means to tackle the MSD in bankers with neck pain.

Conclusion:

The present study concluded that there was a significant level of disability and significantly decreased endurance level and increased fear avoidance beliefs (both work and physical activity related) among bankers with neck pain. In addition to that there was a significant correlation found between NPDI and CCFT, NPDI and FABQ, CCFT and FABQ. The results suggests that neck pain among bankers is mainly of mechanical origin so deep cervical flexors strengthening should be added to rehabilitation. In association with that psychological factors should be considered for occupational neck pain especially in bankers as the present study depicts that fear avoidance beliefs also contribute to pain and disability which in turn leads to low work efficiency and more derangements in neck.

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