APPLICATION OF THE NECK DISABILITY INDEX TO PEOPLE WITH SITTING PROFESSIONS

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ABSTRACT

The publications on the study and prevention of static positional stress in Bulgaria are scarce.

The purpose of the study is to apply the Neck Disability Index to healthy people with sitting professions and to analyze the results.

Method: During the period 2015-2018, 73 persons with an average age of 35,8 years were examined. The gender distribution is 42 men and 31 women. The contingent is tracked by professions (accountants and IT specialists). Indicators for exclusion from the study have been identified as having suffered traumas and surgical interventions, neurological and other diseases, shoulder disorders, and etc. For the first time in Bulgaria, the Neck Disability Index (NDI) is attached. Each of the persons surveyed should mark only one response to the 10 sections listed.

Results: We report the worst results in the first section of Pain Intensity, with 68 (93%) individuals having pain. With are Headaches complains 43 (58,9%). Problems with driving have 37 (50,7%) and with Reading in seating position 21 (28,8%). Sleep disturbance was reported in 52 (71,2%). Only 5 (6,85) people find that they have problems doing their usual work. The smallest percentage is related to Lifting with upper limbs - 3 (4,1%) and Personal Care (Washing, Dressing, etc.) - 2 (2,74%). All persons are without problems with Concentration and Recreation.

Conclusion: The application of the Neck Disability Index is efficient at the workplace. The results obtained provide information on disruptions in leading indicators from the daily activities of seated occupations. This in turn contributes to timely reduce of symptoms and prevention of complications.

Key words: Neck Disability Index, people with seating professions

INTRODUCTION

The publications on the study and prevention of static positional stress in Bulgaria are scarce. In our previous studies, we examined the effect of positional stress on the state of the neck muscles by introducing biofeedback to objectify the results (Tasheva, Dimitrov, Mitrev, Kolev, 2015). Static stress or stress at the work place is regularly arises. This social meaning of the problem imposes prevention through timely diagnostic. One of the instruments of the diagnostic is the Neck Disability Index (NDI).

The NDI appears to have good responsiveness in measuring neck pain and disabilities in patients with neck pain due to acute or chronic conditions as well as patients suffering from musculoskeletal dysfunctions, whiplash associated disorders and cervical radiculopathy (Macdermid, et al., 2009).

The purpose of the study is to apply the Neck Disability Index to healthy people with sitting professions and to analyze the results.

METHOD

During the period 2015 -2018, 73 persons with an average age of 35, 8 years were examined. The gender

distribution is 42 men and 31 women. The contingent is tracked by professions (accountants and IT specialists). Indicators for exclusion from the study have been identified as having suffered traumas and surgical interventions, neurological and other diseases, shoulder disorders, and etc. For the first time in Bulgaria, the Neck Disability Index (NDI) is attached. We have added additional questions about pain management and headaches through medication. Mean duration of the test is from 4 to 9.8 minutes.

The NDI is a modification of the Oswestry Low Back Pain Disability Index. Each of the persons surveyed should mark only one response to the 10 sections listed. It is a patient-completed, condition-specific functional status questionnaire with 10 items including pain intensity, personal care (washing, dressing, etc.), lifting with upper limbs, reading in seating position, headaches complains, concentration, work, driving, sleep disturbance and recreation.

The NDI has sufficient support and usefulness to retain its current status as the most commonly used self-report measure for neck pain (Macdermid, et al., 2009).

Method of application

Prior to NDI application, we applied tests to examine the cervical spine including compression and

distraction cervical tests (Figure 1, Figure 2) (Tasheva, 2013).

Figure 1. *Compression cervical test*

Figure 2. *Distraction cervical test*

The NDI can be scored as a raw score (Vernon, Mior, 1991) or doubled and expressed as a percent (Riddle, Stratford, 1998). Each section is scored on a 0 to 5 rating scale, in which zero means 'No pain' and 5 means 'Worst imaginable pain'. As a result, 0 points or 0% means no activity limitations, 50 points or 100% means complete activity limitation. All the points can be summed to a total score. The test can be interpreted as a raw score, with a maximum score of 50, or as a percentage.

A higher score indicates more person-rated disability. There is no statement in the original literature on how to handle missing data. To use the NDI for patient decisions, a clinically important change was calculated as 5 points, with a sensitivity of 0.78 and a specificity of 0.80 (Stratford, et al., 1999).

Some benchmarks can be found in literature but methodologically they were not described, and their validity and reliability are questionable. Vernon and Mior presented the following interpretation (Vernon, Mior, 1991).

- 0-4 points (0-8%) no disability
- 5-14 points (10 - 28%) mild disability
- 15-24 points (30-48%) moderate disability
- 25-34 points (50- 64%) severe disability
- 35-50 points (70-100%) complete disability

RESULTS

The worst incidence rates were reported in the first section of pain intensity, with 68 (93%) of the subjects experiencing pain. The result is average 2.9 points and can be defined as a mild disability. At this level, pain is described as fairly severe.

Sleep disturbance was reported in 52 (71,2%) with average 3.4 points, as almost everyone reporting a sleep disorder at night for at least 1 hour and sometimes 3 hours or more. Of interest is the fact that, at the same time, almost all persons (except two persons) note that they have no problem with concentration.

The worst result in terms of points is headache. Headache complaints had 43 (58,9%) subjects with a score of 3.7 points, with some of the subjects controlling the headache and pain with medication.

Problems with driving had 37 (50,7%) and a score of 1.8 points indicates no disability, however, there are limitations to one of the everyday activities of the investigated persons that can lead to accidents.

Regarding reading in sitting position 21 (28,8%) persons reported violations of 2.3 points, which means mild disability.

Only 5 (6,85%) people find that they have problems doing their usual work with a result 2.8 points, as three of them identified „I can do most of my usual work, but no more”.

The smallest percentage is related to lifting with upper limbs - 3 (4,1%) with 1.9 points and personal Care (washing, dressing, etc.) - 2 (2,74%) individuals with 0.9 points.

All persons are without problems in section: Recreation.

According to the Vernon and Mior scale (1991), the mean of the final result is 19.7 points, which summarizes the status of the subjects studied as moderate disability.

DISCUSSION

Usually the application of the Neck Disability Index is in: chronic neck pain, musculoskeletal neck pain, whiplash injuries and whiplash associated disorders, cervical radiculopathy. There is no information in the literature about its use for prevention purposes.

Validity is tested in different trials by comparing NDI with different instruments. They all had strong correlation coefficients suggesting their content is highly comparable and the conclusion is that the NDI has a good construct validity (Vernon, Mior, 1991; Young, et al., 2010; Hoving, et al., 2003).

In our study, the results from the applying of the NDI demonstrated presence of pain, headache, sleep disturbance and impaired motor activity. This indicates that the use of NDI in healthy subjects is also appropriate and thus provides another diagnostic tool for the prevention of positional stress and dysfunction in the cervical spine.

CONCLUSION

The application of the Neck Disability Index is efficient at the workplace. The results obtained provide information on disruptions in leading indicators from the daily activities of seated occupations. The NDI is a valid tool to measure neck pain and disabilities in workers. This in turn contributes to timely reduce of symptoms and prevention of complications.

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