

Effects of Neck Exercise Program on a Taxi Driver's with Chronic Neck Pain

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Abstract

The purpose of this study is to identify the effects of physical exercise for taxi drivers with chronic neck pain score between 7 points from 4 points. After this neck exercise program, the neck pain, fatigue and exercise benefits-barriers were measured. Neck exercise program involved neck pain related to education and neck stretching, isometric exercise, other areas stretching with education. Data were collected at baseline after 4 weeks and 8 weeks. Effects of neck exercise program there were significant interactions with group (between experimental group and control group) by time (baseline, after 4 weeks & 8 weeks) in the neck pain ($F=36.23$, $p<.001$), fatigue ($F=335.92$, $p<.001$). There were significant interactions with group by time in the exercise benefits ($F=327.94$, $p<.001$) and exercise barriers ($F=161.14$, $p<.001$). The neck exercise program could be an effective neck pain, fatigue, exercise benefits-barriers. Consequently neck exercise program was a nursing intervention as a method of improving neck pain relief and fatigue decrease for taxi drivers with chronic neck pain.

Keywords: Neck, Exercise, Program, Taxi drivers, Pain, Fatigue

1. Introduction

As the lifestyle changes due to the automation of modern society, the number of repetitive tasks in the sitting position increases and the physical activity decreases, the physical symptoms related to body function and structure are regarded as health problems in modern society [1]. Among them, neck pain is an uncomfortable posture that puts burden on the neck and shoulders, abnormal movements that bend the neck forward for a long time weaken the neck muscles and cause fatigue of muscle contraction, resulting in dull pain around the neck or on the shoulder [2].

Taxi drivers often appeal more to the neck pain than back pain because of the repetitive task of turning the handle for a long time and the inadequate driver's stance to lean forward [3]. They are stiff and painful while driving in a fixed posture for a long time, but unlike back pain, they do not treat the neck pain in a small amount and do not receive treatment at the right time, which makes the pain worse and chronic [4]. In addition, a taxi driver is reluctant to bow his head during driving for more than 10 hours, causing a recurrence of the neck pain, which causes systemic fatigue during work. It does not easily decrease even if they breaks down and reduces concentration and work efficiency during driving. It is necessary to know the symptoms of the neck pain and to be active in self-care [5].

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Neck pain is limited by the movement of the neck, and strength and endurance of the neck flexion temple are reduced. Therefore, it is essential to increase the flexibility of the neck and to strengthen the muscles [6][7][8]. Stretching for increased flexibility promotes muscle relaxation and blood circulation to alleviate the pain of the neck, and isometric exercise of light resistance is suitable for improving neck muscle strength [9]. In addition, cervical exercises can be combined with multiple exercises rather than one exercise to increase the flexibility of the cervical vertebrae [6][10] and strengthen the neck muscle strength to prevent the recurrence of the neck pain [8].

As such, taxi drivers are increasingly systemic fatigue due to constant neck pain, so continuing neck exercises to maintain correct posture during work and alleviate neck pain will be a very important health care for them.

The purpose of this study was to provide a taxi driver who appeal neck pain, with correct posture training during work and provide educational counseling for neck exercises and exercise maintenance that can be done anytime and anywhere easily, The study was purposed to investigate the effects of pain relief, fatigue reduction and neck exercise program on the benefits and disabilities.

2. Methods

2.1. Study design

The design of this study is a nonequivalent control group pre–post design to analyze the effects of the neck training, the fatigue and the exercise benefit and the disability by providing the neck exercise program to the taxi drivers who appeal to the neck pain [Figure 1].

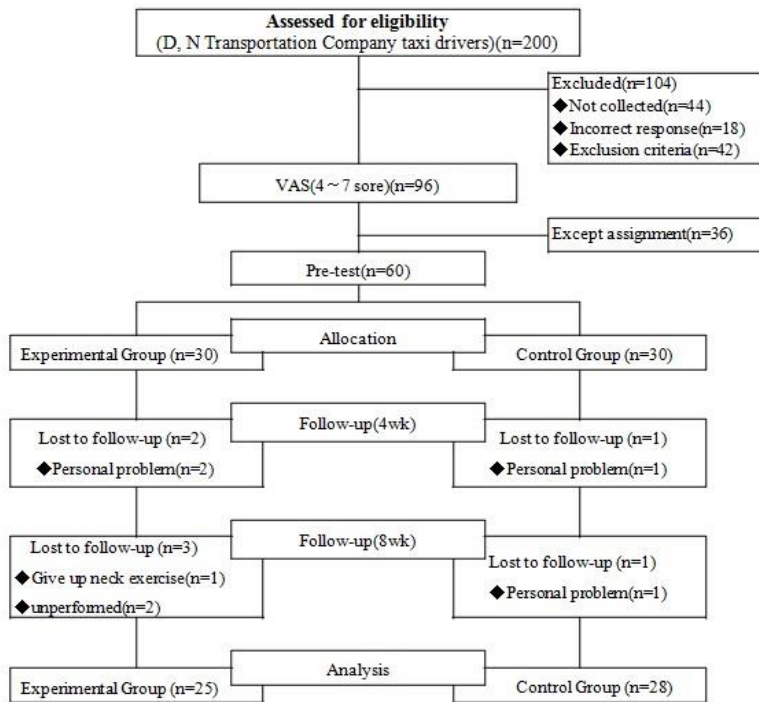


Figure 1. Flow chart of enrollment in study

2.2. Recruitment of participants

The screening survey for this study was conducted from July 14, 2014 to August 8, 2014, and the data collection of the subjects participating in this study was conducted for about 2 months from August 18 to October 24, 2014.

The subjects of this study were selected by the researcher who selected D and n transportation company located in B metropolitan city, explained the study to a male taxi driver working at each company, From July 14 to August 8, the questionnaire survey was conducted for 4 weeks. The questionnaire was continued for more than 6 months, and the degree of neck pain was measured by the NRS.

The subjects of this study were the researchers who selected D and N transportation company in B city to explain the study to the male taxi drivers who work at each company, From 14th of July to 8th of August, conducted screening surveys for 4 weeks and selected the subjects who meet the selection criteria. The criteria for selection of the study subjects were as follows: persistent cervical pain for 6 months or longer, and the degree of cervical pain was measured by the numeric rating scale. This was excluded the subjects who got 8 score or more in NRS because of considered to have severe deformity or other spinal disorders due to severe pain during neck exercise.

2.3. Statistical analysis

The collected data were set to a significance level of .05 using the PASW statistics 18.0(SPSS Inc. 2009). The demographic characteristics of the subjects and the health behaviors related to the cervical pain were identified by real number, percentages, mean and standard deviation, and the results of this study were as follows: First, the pre-test was used to compare the categorical variables with the χ^2 -test and Fisher's exact test, and the continuous variables with independent t-test or ANOVA.

3. Results

3.1. Homogeneity of variables

There was no statistically significant difference between the two groups in the benefit and disability of the neck pain and exercise, which were the dependent variables of the experimental group and the control group before the neck exercise program [Table 1][Table 2].

3.2. Hypothesis verification

The results of this study were as follows: 1) The neck pain of experimental group who participated in the 8-week weekly neck exercise program was more satisfied than the non-participated control group. 2) The fatigue of the experimental group participating in the 8 week weekly neck exercise program will be lower than that of the control group not participating. 3) The experimental group participating in the 8-week weekly neck exercise program showed an increase in exercise benefit and a decrease in exercise disability compared to the non-participated control group [Table 3].

Table 1. Homogeneity of demographic characteristics and neck pain related to health behaviors between experimental and control group (N=53)

| Characteristics | Categories | Exp.(n=25) | Cont.(n=28) | χ^2 or t | p |
|------------------------------------|-------------------------------|-------------------------------|--------------------------------|---------------|-------|
| | | M \pm SD or n(%) | M \pm SD or n(%) | | |
| Age (years) | | 53.00 \pm 6.38 | 52.25 \pm 6.48 | 0.42 | .674 |
| Working duration(Months) | | 184.72 \pm 89.17 | 182.93 \pm 96.68 | 0.07 | .945 |
| Type of employment | Regular Irregular | 20(80.0) 5(20.0) | 21(75.0) 7(25.0) | 0.19 | .664 |
| Working hours(hr/day) | | 11.14 \pm 1.91 | 10.71 \pm 1.98 | 0.79 | .431 |
| Working day(day/months) | | 23.44 \pm 2.26 | 23.61 \pm 2.04 | -0.28 | .778 |
| Neck pain duration (month) | | 64.56 \pm 62.38 | 66.11 \pm 62.11 | -0.09 | .928 |
| Neck pain time(min) | | 157.00 \pm 387.52 | 149.39 \pm 311.71 | 0.08 | .937 |
| Neck pain frequency (times/week) | | 4.28 \pm 1.65 | 3.75 \pm 1.99 | 1.05 | .300 |
| Neck pain management | Rest Physiotherapy None | 14(56.0) 9(36.0) 2(8.0) | 17(60.7) 4(14.3) 7(25.0) | 4.65* | .087 |
| Working of the rest interval (hr) | | 1.84 \pm 1.18 | 2.04 \pm 1.26 | -0.58 | .564 |
| Working of the rest time (min) | | 14.60 \pm 8.03 | 15.00 \pm 10.97 | -.15 | .881 |
| Working of stretching | Yes No | 10(40.0) 15(60.0) | 7(25.0) 21(75.0) | 1.36 | s.243 |
| Neck-exercise education experience | Yes No | 17(68.0) 8(32.0) | 19(67.9) 9(32.1) | .00 | .991 |
| Exercise | Yes No | 18(72.0) 7(28.0) | 17(60.7) 11(39.3) | 0.75 | .386 |

* Fisher's exact test

Exp.=Experimental group, Cont.=Control group

Table 2. Homogeneity of neck pain, fatigue and exercise benefits-barriers between experimental and control group (N=53)

| Variables | Range(score) | Exp.(n=25) | Cont.(n=28) | t | p |
|-------------------|--------------|-------------------|-------------------|-------|------|
| | | M \pm SD | M \pm SD | | |
| Neck pain | 0~10 | 5.04 \pm 0.93 | 5.07 \pm 1.05 | -0.11 | .909 |
| Fatigue | 19~133 | 77.96 \pm 17.51 | 77.64 \pm 20.25 | 0.06 | .952 |
| Exercise benefits | 27~108 | 78.92 \pm 10.70 | 80.46 \pm 11.60 | -0.50 | .618 |
| Exercise barriers | 13~52 | 33.64 \pm 8.16 | 34.39 \pm 9.39 | -0.31 | .758 |

Exp.=Experimental group, Cont.=Control group

4. Conclusion

The purpose of this study was to investigate the effect of neck exercise program on the benefit and disability of the neck pain, fatigue and exercise by taxi drivers who appealed to

the neck pain. In the experimental group participating in the 8-week neck exercise program, the neck pain was alleviated, the fatigue was decreased, the neck exercise program benefit was increased, and the disability of the exercise decreased.

In this way, the neck exercise program can be applied to the general public who appeal to the neck pain during daily life, and it can be applied as self-exercise to alleviate the neck pain. It is expected.

Table 3. Comparison of neck pain, fatigue and exercise benefits-barriers between experimental and control group (n=53)

| Variables | Times | Exp.(n=25) | Cont.(n=28) | Source | F | p |
|-------------------|---------------|-------------|-------------|--------|--------|-------|
| | | M±SD | M±SD | | | |
| Neck pain | Pre-test | 5.04±0.93 | 5.07±1.05 | G | 4.80 | .033 |
| | After 4 weeks | 4.76±0.97 | 5.29±1.08 | T | 33.83 | <.001 |
| | After 8 weeks | 4.04±0.79 | 5.14±0.85 | G*T | 36.23 | <.001 |
| Fatigue | Pre-test | 77.96±17.51 | 77.64±20.25 | G | 0.18 | .671 |
| | After 4 weeks | 75.28±17.73 | 78.07±20.00 | T | 96.15 | <.001 |
| | After 8 weeks | 74.44±17.82 | 78.68±20.24 | G*T | 335.92 | <.001 |
| Exercise benefits | Pre-test | 78.92±10.70 | 80.46±11.60 | G | 1.51 | .224 |
| | After 4 weeks | 84.72±10.54 | 79.46±11.60 | T | 166.11 | <.001 |
| | After 8 weeks | 86.80±10.31 | 79.29±11.51 | G*T | 327.94 | <.001 |
| Exercise barriers | Pre-test | 33.64±8.16 | 34.39±9.39 | G | 1.87 | .178 |
| | After 4 weeks | 36.92±8.29 | 32.36±9.48 | T | 17.22 | <.001 |
| | After 8 weeks | 38.28±8.06 | 32.07±9.69 | G*T | 161.14 | <.001 |

Exp.=Experimental group, Cont.=Control group G=Group, T=Time

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