International Journal of Current Advanced Research
ISSN: O: 2319-6475, ISSN: P: 2319-6505, Impact Factor: 6.614
Available Online at www.journalijcar.org
Volume 8; Issue 09 (E); September 2019; Page No.20027-20029
DOI: http://dx.doi.org/10.24327/ijcar.2019.3899.20029

Research Article

THE CORRELATION BETWEEN CHRONIC NECK PAIN AND HAND GRIP STRENGTH IN DENTISTS OF GUJARAT

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A R T I C L E I N F O

Article History:

Received 4th June, 2019
Received in revised form 25th July, 2019
Accepted 18th August, 2019
Published online 28th September, 2019

Key words:

Chronic neck pain, Dentists, Dynamometer, Grip strength, neck disability index (NDI).

A B S T R A C T

Background: Neck pain is an ache in anatomical area between occiput and 3rd thoracic vertebra & between middle margin of scapula. Which persists more than three months.
Dentists have to do their works in awkward posture for prolonged periods, so dentists are at risk for developing work related musculoskeletal disorders.
Hand is the functional unit of dentists & it used in keeping firm holding of tools. So, hand grip strength must be good enough to perform work effectively.
Methodology: After taking informed written consent of 61 dentists from Ahmedabad included in the study. Neck pain was determined by neck disability index (NDI) depending upon score, Hand grip strength was measured using Jamar Dynamometer. Average of three trials was taken as final reading with 60 sec rest between each trial.
Result: Pearson's correlation coefficient was used. Result of the study showed the negative correlation between chronic neck pain and hand grip strength. r value was -0.11 for NDI (15-24) and hand grip strength and r value were -0.45 for NDI (25-35) and hand grip strength.
Conclusion: From this study it can be concluded that hand grip strength was reduced in Dentists with Chronic neck pain. With negative correlation between neck pain and grip strength.

INTRODUCTION

Neck pain is an ache or discomfort in anatomical area between occiput and 3rd thoracic vertebra and laterally between middle margin of scapula[1]. If it persist more than three months it is said to be chronic[2]. Dentistry is the profession in which dentists have to do their works in awkward posture for a prolonged period of time like neck flexion, shoulder elevation, back flexion etc. so dentists are at risk for developing work related musculoskeletal disorders (WRMSD). Jyostna Batra *et al* found that there was a 58.9% of prevalence of WRMSD's in wrist and hand [3], and Viral Chitara *et al* found the prevalence of neck pain was 42% in dental profession[4].

The most common cause of neck pain in dentists is prolonged work- postures which makes high load on muscle of neck and shoulder region.

Hand is the functional unit of dentists and is used in keeping firm holding of instruments and tools. Dentists have to use their hands for holding instruments while doing their work like scaling, root canal, polishing etc. so hand grip strength must be good enough to perform work effectively and accurately.

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Sheetal Kalra found in her study that there was a negative correlation between neck pain and grip strength in physiotherapy practitioners. In dentists some study showed positive correlation and some negative correlation between neck pain and grip strength.

So the purpose of the study was to find out correlation between neck pain and grip strength in Dentists with chronic neck pain

MATERIAL AND METHODS

Subjects*:* The study included 61 Dentists (9males, 52 females) aged 20- 40 years from different Hospitals of Ahmedabad city of Gujarat. They were divided into two sub groups depending upon neck disability index (NDI) score, 15-24 which indicates moderate disability whereas score between *25-35 indicates severe disability*.

Study Design: Cross sectional Co -relational Study Design.

Sampling Technique: Convenience Random Sampling.

Inclusion Criteria

Dentist suffering from Chronic neck pain,

Age group 20 -40 years,
Normal BMI 18.5-24.5 kg/m^2,
In practice (At least one year).
Working hours (4 -5 hours),

NDI score:≥15.

Exclusion criteria

Neck pain before joining the profession,
Pain in other areas like shoulder,
scapula, lumbar spine etc.,
Congenital abnormality of U.L.,
Neurological deficits in U.L.

Procedures

Subjects were selected based on inclusion and exclusion criteria and informed written consent was signed by them. NDI was administered for assessment of pain and neck discomfort. Familiarization with the technique of the test performance was done. Hand grip strength measurement was done using Jamar dynamometer at second handle position. The standard position recommended by American society of hand therapists was given (ASHT) for the measurement of grip strength. participants were asked to hold the dynamometer and asked to use maximum force of hand squeeze around the dynamometer. The test was done dominant hand. Three trials were performed, 60 seconds rest was given between each trial. Average of the three trials was considered as final reading. The dynamometer were calibrated prior to start of data collection.

Fig 1

RESULTS

The statistical Analysis of the present correlation study was done by using Microsoft excel 2007.Pearson test was used to find out the correlation between NDI and HGS. The results of the analysis are shown in the tables.

Table 1 Correlation between NDI (15-24) and HGS (N=41)

Correlation between NDI and HGS					
NDI(15-24)		HGS(kg)		Correlation value	P-value
Mean	SD	Mean	SD		
17.5	2.6	23.8	4.5	-0.11	0.49

NDI: Neck Disability Index, HGS: Hand Grip Strength, SD: Standard Deviation

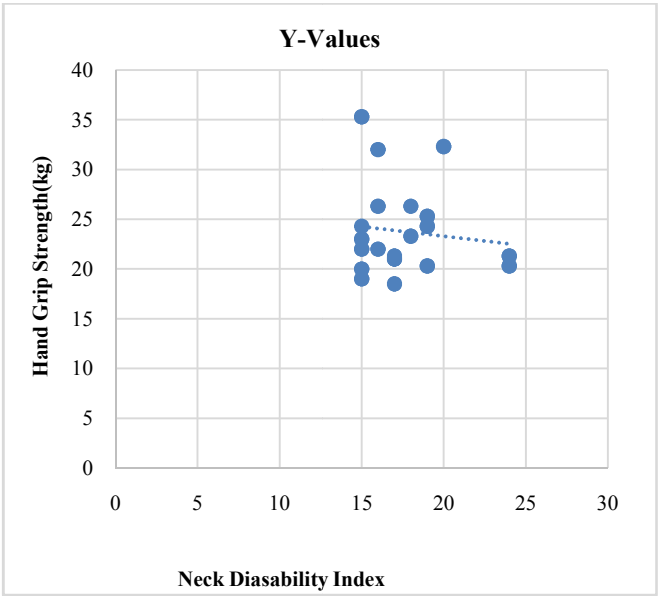
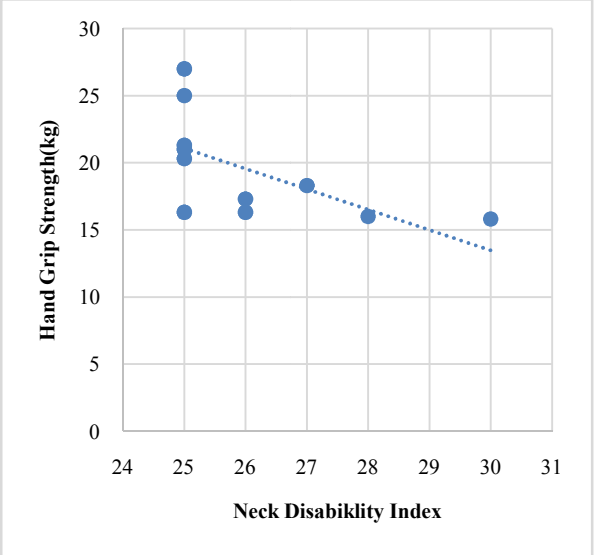


Table 2 Correlation between NDI (25-34) and HGS (N=20)

Correlation between NDI and HGS					
NDI(25-34)		HGS(kg)		Correlation value	P-value
Mean	SD	Mean	SD		
25.8	1.3	19.9	3.7	-0.58	0.007

NDI: Neck Disability Index, HGS: Hand Grip Strength, SD: Standard Deviation



DISCUSSION

The study was conducted on 61 Dentists of Gujarat in which 9 males and 52 females were participated in study. Depending upon NDI score it was subdivided, score 15-24 indicates moderate and 25-34 indicates severe neck disability.

The result of correlation between neck pain and handgrip strength are presented in Tables according to NDI score.

There was a significant negative correlation in NDI score 25-34 with p value 0.007 and r value

-0.58.There was no correlation in group with NDI score 15-24 and it was non-significant with p value is 0.49 and r value -0.11.Result of this study agree with Jyoti Kiran Kohli and Sheetal kalra et al. who found that HGS significantly decrease in Dentists and Physiotherapists with chronic neck pain respectively. This finding may be due to abnormality in

sensory and motor neurons in neck pain leads to poor quality of sensory information that generate motor output.

CONCLUSION

From the results of the study it can be concluded that grip strength is reduced in Dentists with Chronic neck pain with severe neck disability. There exists a negative correlation between neck pain, neck disability and grip strength.

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How to cite this article:

Vanita Ramdati and Neela Soni (2019) 'The Correlation Between Chronic Neck Pain and Hand Grip Strength in Dentists of Gujarat', *International Journal of Current Advanced Research,* 08(09), pp. 20027-20029.
DOI: http://dx.doi.org/10.24327/ijcar.2019.3899.20029

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