



## PREVALENCE OF NECK PAIN IN QUICK SERVICE PROVIDER HELMET USERS USING NECK DISABILITY INDEX

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### ARTICLE INFO

#### Article History:

Received 12<sup>th</sup> June, 2018

Received in revised form 23<sup>rd</sup>

July, 2018

Accepted 7<sup>th</sup> August, 2018

Published online 28<sup>th</sup> September, 2018

#### Key words:

Quick service provider, helmet users, neck disability index, helmet, neck pain.

### ABSTRACT

**Aim:** To find out neck pain in quick service provider helmet users.

**Background:** The average weight of head is about 8-12 pounds & the average weight of helmet is 4 pounds. This amount of weight has to be overcome by quick service providers every day for an average of about 8 hours. The weight of head & helmet must be held by seven vertebrae, ligaments, muscles etc. Due to this neck muscles get fatigue, hence is followed by stress & pain in neck.

**Methodology:** Primary data collection was done using convenient sampling. 150 individuals between 20- 40 age group were selected and were asked to fill the neck disability index scale which contains 10 sections with 5 questions in each section in the language best understood by them.

**Results:** Neck pain & disability has shown to be prevalent in quick service provider helmet users.

**Conclusion:** The study concludes that there is pain & disability in quick service provider helmet users.

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### INTRODUCTION

According to Indian Association for the Study of Pain, cervical spinal pain is defined as pain perceived anywhere in the posterior region of cervical spine, from the superior nuchal line to the first thoracic spinous process. Bogduk and McGuirk suggested that neck pain can be subdivided into upper cervical spinal pain and lower cervical spinal pain, above & below an imaginary line passing through C4. Upper cervical spinal pain is usually referred to head whereas lower cervical spinal pain is referred to scapular region, neck, anterior chest wall, shoulder or upper limb.<sup>[2]</sup>

Helmet wearing is very essential while riding bikes, which acts as a life saving equipment. Helmet is a protective headgear. The primary goal of helmet is to protect the riders head during impact thus preventing or reducing head injury and saving the riders life. As head injuries are main cause of death and disability among motorcycle users, wearing helmet is the single most effective way in reducing head injuries & also decreases the risk & severity of injury among motorcyclists<sup>[10]</sup>

According to Javab Faryabi's survey:

Evaluation of the use & reason for not wearing helmet by motorcyclist admitted in the emergency ward of Shahid Bahonar Hospital in Kerman, there were many reasons for not wearing helmet, which are:

- Uncomfortable & heavy weight of helmet (77%).
- Neck pain after wearing helmet (69.4%)
- Limitation of movements of head & neck (59.6%).
- Visual limitation during wearing helmet (57.1%).
- Feeling of heat (71.4%).
- Feeling of suffocation (67.7%).
- Unfavourable appearance of helmet (55.4%).
- Difficulty of preserving or holding helmet before & after ride (59.2%).
- Being ridiculed by others due to use of helmet (53.9%).<sup>[3]</sup>

The average helmet weight is around 4 pounds. With the average weight of the head around 8-12 pounds & the average weight of helmet around 4 pounds, the head & the helmet must be held by seven cervical vertebrae, connective tissue, muscles & ligaments.<sup>[9]</sup> Wearing a helmet will protect the head, but the weight of helmet results in altered muscular activity, incidents of pain, higher perception of discomfort, increased risk of head injury & accelerated time to fatigue. While wearing helmet, the postural neck muscles against gravity where muscles undergoes fatigue, this may cause pain & disability & limitation of cervical ROM. Wearing a helmet will protect the head, but the weight of helmet results in altered muscular activity, increased incidence of pain, higher perception of discomfort, increased risk of neck injuries & accelerated time to fatigue.<sup>[7]</sup>

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**Types of Helmet**

**Five Basic types of helmet**

1. **Full face:**-Covers entire head with a rear that covers the base of the skull. Protective section over front of chin. Plastic transparent tinted face shield known as visor. Vent to allow airflow. Most commonly used as is easily available, cheap, lighter, covers entire face.
2. **Off road:**-Elongated chin& visor portions & chin bar. Partially opens face to give rider extra protection while wearing goggles & to allow unhindered flow of air during riding.
3. **Modular/Flip up:**-Full face helmet that as a chin bar which may be pivoted upwards by special levers to allow access to face.
4. **Open face/ 3/4<sup>th</sup> helmet:**-Covers ears, cheeks & back of head. Lacks lower chin bar .Little protection.
5. **Half helmet:**-Covers head from top of forehead to about halfway down the back of head. Less safety.<sup>[12]</sup>

**MATERIALS AND METHODS**

**Study Design**

Type of study – observational study  
 Tool used-Neck pain and disability index  
 Duration of study – 1 year  
 Location – metropolitan city

**Sample Design**

Sample selection:- Quick service provider motorcycle riders between 20-40 years with 1 year riding experience.  
 Sample size – 100  
 Sample population – Quick service providers.  
 Sampling – convenient sampling

**Materials Used**

Neck disability index scale  
 Pen  
 Writing pad

**Inclusion Criteria**

(1)Quick service providers who wear helmet daily. (2) Age group 20-40 years. (3) Rides for about 6-8 hours daily with an experience of 5-10 years. (4) Subjects willing to participate

**Exclusion Criteria**

(1) Quick service providers who do not use helmet (2) Computer office workers. (3) Long time mobile phone users. (4) People who carry heavy weights on neck & shoulders daily. (5) Any congenital deformities. (6) Any previous musculoskeletal disorders. (7) Any previous fracture or injury. (8) Any neurological conditions. (9) Subject unwilling to participate.

**Procedure**

- A written consent form will be taken from the subject in the language best understood by them.
- Screening of the subject will be done as per the inclusion criteria.
- 100 quick service provider motorcycle helmet users with 1 year riding experience for half to 1 hour daily, will be selected for finding out occurrence of neck pain & disability using neck pain and disability index.

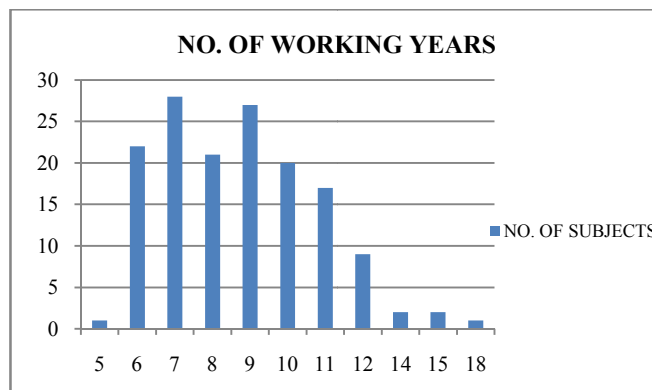
- The total obtained score will be calculated to find out the level of disability by using following formula & results will be analyzed from the given information.

Formula:-

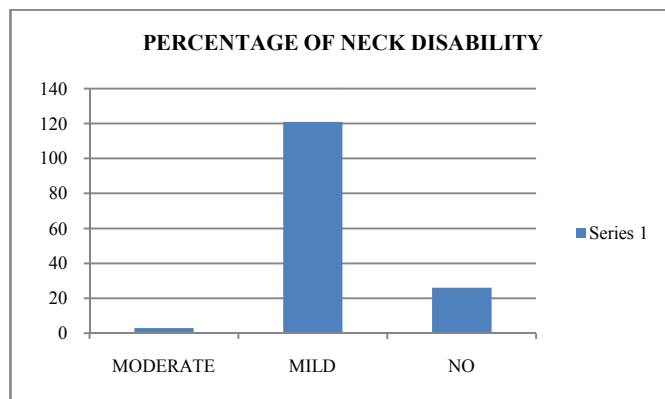
$$\% \text{ DISABILITY} = \frac{\text{Patients Score} \times 100}{\text{No. of sections completed} \times 5}$$

**RESULT**

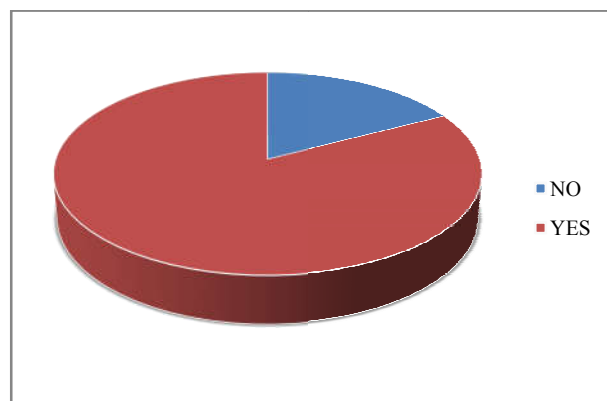
**Number of Working Years**



This graph shows out of 150 samples, 1 sample each works since 5 & 18 years, 22 works since 6 years, 28 work since 7 years, 21 works since 8 years, 27 works since 9 years, 20 since 10 years, 17 since 11 years, 9 since 12 years, 2 since 14 & 15 years each.



This graph shows percentage of disability in neck disability index in which 26 subjects had no disability, 121 had mild disability, & 3 had moderate disability.



This graph shows percentage of neck pain in which out of 150 subjects 124 subjects had neck pain which comes out to be 83.66% and 26 subjects had no pain which shows 17.33%.

The result concludes that Neck pain & disability has shown to be prevalent in quick service provider helmet users.

## DISCUSSION

The present study aimed to find out prevalence of neck pain in quick service provider helmet users.

The present study documents that neck pain is prevalent in quick service providers because the combined weight of head and helmet has to be taken by the neck muscles which get fatigue due to load also jayab faryabi et al. conducted a study evaluation of use and reason for not using helmet by motorcyclist 69.4% subject has neck pain on using helmet ,which supports the present study.<sup>1</sup>

The present study concludes that 83% subjects has neck pain while 17.33% has no neck pain .Out of 150 subjects 121 has mild pain i.e,80.66%,26 subjects had no pain i.e,17.33% and 3 subjects has moderate pain i.e,2%.

In the present study ,neck disability index was used as an objective scale which was found to be reliable (0.89) and valid (0.88) for measuring neck pain and disability.<sup>3</sup> The probable cause of neck pain in quick service providers is that they have to wear 78 of helmet is about 4 pounds ,in addition to the average weight of head 8-12 pounds. This amount of weight has to be overcome by quick service providers daily for an average of 5-8 hours.

The weight of both head and helmet must be held by 7 vertebrae, muscles and ligaments. Because of this ,neck muscles get fatigue hence is followed by pain and stress in neck.<sup>9</sup>

## Acknowledgement

We thank principal, guide and all the staff of DPOS's Nett College of Physiotherapy, Thane, respected parents for support, suggestions, co-operation, and last but not the least almighty for keeping spirits high and successful attempt throughout the study.

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### How to cite this article:

Maheshwari R. Bongoni *et al* (2018) 'Prevalence of Neck Pain in Quick Service Provider Helmet Users Using Neck Disability Index', *International Journal of Current Advanced Research*, 07(9), pp. 15564-15566.  
DOI: <http://dx.doi.org/10.24327/ijcar.2018.15566.2846>

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