



PREVALENCE OF MUSCULOSKELETAL DISORDERS AMONG NON-OCCUPATIONAL MOTORCYCLISTS

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ABSTRACT

Musculoskeletal disorders are an increasing healthcare issue globally, being the second leading cause of disability. The study objective was to determine the prevalence of musculoskeletal disorders among non-occupational motorcyclist. Study design was prospective, study type was observational type, sampling method was convenient sampling, sample size was 100 subjects, study setting was on general access the prevalence of musculoskeletal disorders among non-occupational motorcyclists. Public between 20-35 years of both genders with driving experience of above 1 year and driving duration of 2 hours/day and were given a format of STANDARDIZED NORDIC MUSCULOSKELETAL DISCOMFORT QUESTIONNAIRE which depicts the prevalence of musculoskeletal disorders among non-occupational motorcyclist. Results were analyzed by using IBM SPSS version 20.0 software. STANDARD NORDIC MUSCULO SKELETAL DISCOMFORT QUESTIONNAIRE values were applied to find out the prevalence of musculoskeletal discomfort in different areas of the body. The study concluded that Lower back (65%), neck (57%) and wrist (31%) are most common sites of musculoskeletal disorders among non-occupational motorcyclist in the past 12 months.

KEYWORDS: *Non-occupational motorcyclist, Nordic questionnaire, musculoskeletal disorders.*



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INTRODUCTION

The motorcycle often called a bike, motorbike is recognized as an important form of transport as they suit a range of different purposes: long distance travel, sport including racing and off-road riding. They are usually preferred compared to four wheelers as they are compact, consumes less fuel, pass easily through congested areas¹. In spite of the above advantages, motorcycle riding is relatively complex and risky process¹. On the other hand, the health problems are also increasing parallel to the rate of population growth. Furthermore motorcycle related issues have also been a concern for road safety¹¹. The musculoskeletal disorder is a common health problem throughout the world affecting not only industrial sector people but also the general population. The musculoskeletal disorder is a major health problem that affects the quality of life causing morbidity, increase in demand for health care and cost^{2,3,4,5}. Musculoskeletal pain affects all ages, reoccurs most time and its frequency increases with age.^{2,3,4,5} For example, the occupational motor cyclist who spends most of their working hours in driving have been reported widely as being at an increased risk of musculoskeletal disorders^{2,3,4,5}. This health problem is also prevalent among non-occupational motor cyclist (social, domestic, pleasure), whose exposure is much lesser as compared to an occupational motor cyclist. The aim of the study was to determine the prevalence of musculoskeletal disorders among Non-occupational motor cyclist. Need for the study was that even though previous studies have been done to investigate the prevalence of musculoskeletal pain among occupational riders for example mail delivery, bus drivers, truck drivers etc. A proper study investigating the health problems among non-occupational motor cyclist is still lacking and most of the studies on motor cycle problems were concentrated on the road traffic accident rather than musculoskeletal problems. Objectives were to find the prevalence of various musculoskeletal disorders among Non-occupational motor cyclist. To find out the prevalence of musculoskeletal disorders among non-occupational motor cyclist in accordance with their age and experience.

METHODS

The study design was prospective design, study type was observational, sampling method was convenient sampling, sample size was 100 subjects, study setting was on students, workers of SRM University & general public. Inclusion criteria were between 20-35 years of both genders with the driving experience of 1 year and above, duration of driving 2 hours /day. Exclusion criteria were the history of traumatic episodes in the past 12 months, history of deformities, history of recent fracture, history of recent surgery, history of neurological and orthopaedic problems. Non-Occupational motor cyclist was approached, the procedure was explained and consent was taken to participate in the study. Approval from the Institutional Ethical Committee was obtained before starting the study. Participants for the study should be the Non-Occupational motor cyclist with the driving experience of more than a year. Applying

Inclusion and Exclusion criteria, 100 samples were selected and a format of STANDARDIZED NORDIC MUSCULOSKELETAL DISCOMFORT QUESTIONNAIRE¹⁶ was given to them. The scores obtained with the help of the questionnaire helps to find areas and prevalence of musculoskeletal disorders among Non-occupational motor cyclist. outcome measures were STANDARDIZED NORDIC MUSCULOSKELETAL DISCOMFORT QUESTIONNAIRE A questionnaire depicting the prevalence of musculoskeletal disorders among non-occupational motor cyclist. Nordic reliability (r) = 0.80¹⁶.

RESULTS

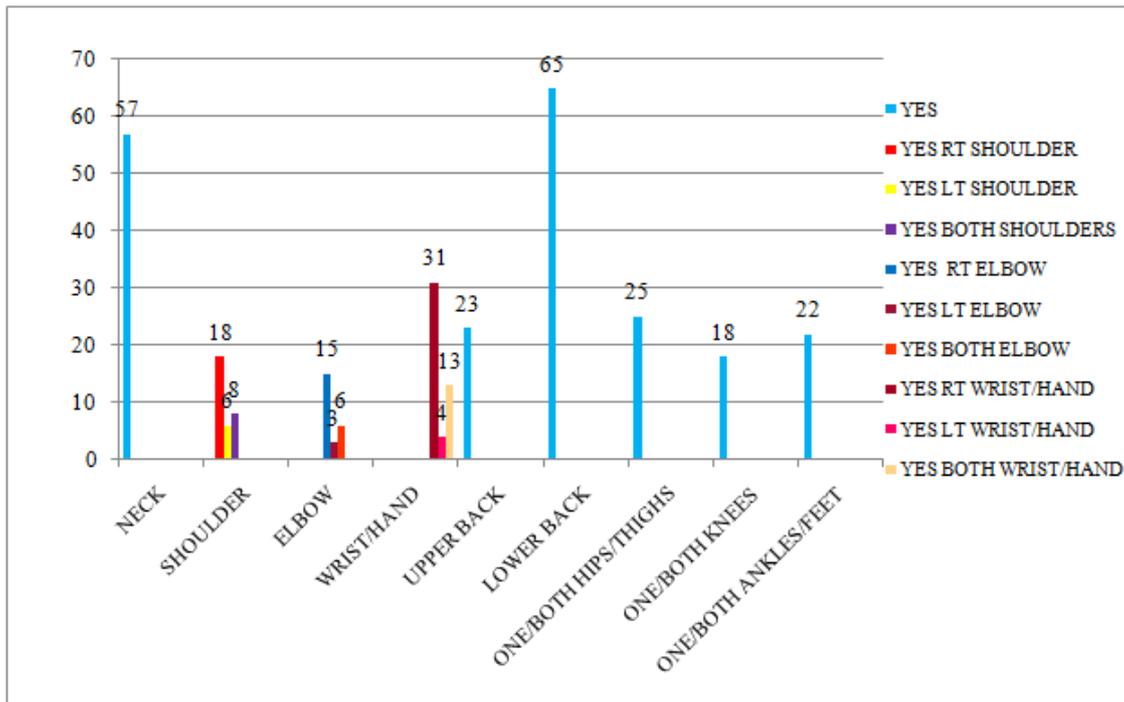
Results were analyzed by using IBM SPSS version 20.0 software. Low back region (65%), neck (57%) and hip region (25%) are the region where there was a high prevalence of musculoskeletal disorders among non-occupational motor cyclists.

DISCUSSION

The present study examined the non-occupational motor cyclist's musculoskeletal discomfort in all regions of the body. The commonly affected areas were low back region^{2,3,10} (65%), neck (57%) and hip region (25%). The present results have shown that besides lower back and neck pain, thighs and shoulders^{7,13} are also important areas of musculoskeletal disorder experienced by motor cyclists. Some of the pain or discomfort experienced in knees and thighs may possibly be referred pain from the spine^{8,13} or they may have a local origin due to mechanical loading of these joints associated with sustained postures¹⁵ and repetitive movements in driving. In accordance with their experience, those who are with 1-5 years of experience are found to be more affected with musculoskeletal problems than with greater experienced motor cyclist. This can be explained by faulty posture¹⁵ in which the spine's normal curvatures are reduced or accentuated, stress in the ligamentous structures is produced and may potentially produce pain when the riders adopt while practicing and initial holding of accelerator and break with added unwanted pressures that may be learnt effectively with experience. When age was examined as a factor for these areas of musculoskeletal pain, it was found that the younger age groups tend to show higher prevalence rates. One possible explanation for the greater prevalence of pain in younger non-occupational motor cyclists may be the "survivor bias" factor. On the other hand, there may also be a "practice" effect for those with more experience in their driving so that they were less likely to get injured as compared to young drivers with less experience. All these factors may contribute to higher rates of discomfort among the younger drivers. Based on biomechanical knowledge and past research evidence, Low back pain was mostly due to poor postures and other mechanical factors prolonged sitting not only induces greater biomechanical loading on the intervertebral discs in the lumbar region, the effects of low-load continuous vibration may also impart greater "creep" in the soft tissues.¹⁸ These factors would likely contribute to more rapid degenerative changes in the lumbar spine. Pope

et al., also commented that when the spine is loaded axially for a prolonged period, the back muscles become fatigued and the discs are being compressed, this would result in a poorer condition to sustain larger loads; when there is any suddenly applied load such as a sudden stopping of the vehicle, there may be an increased risk of sustaining serious injuries to the spine. Thus musculoskeletal disorders affect the physical, psychological, and social aspects of persons. Limitations

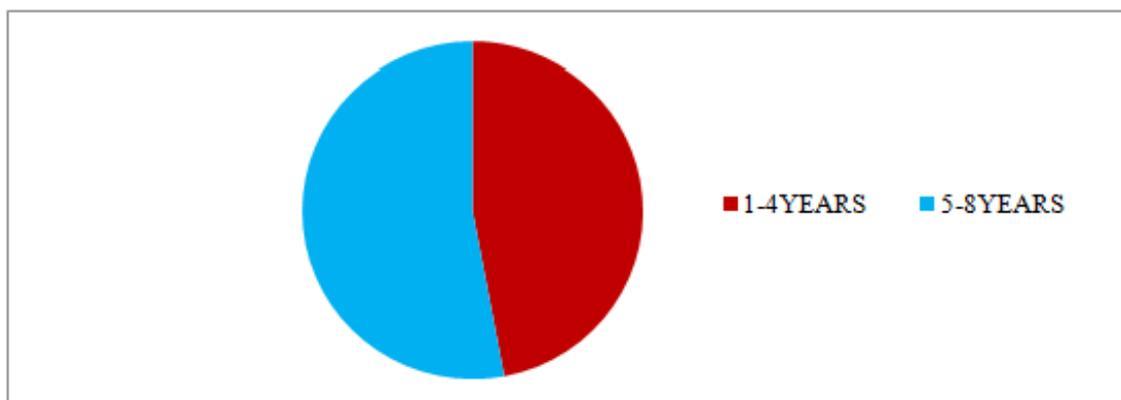
of the study were sample size was small, type of musculoskeletal disorders in the specific region was not found, Posture analysis was not done. Factors such as types of vehicle, variation with seat comfortability, and pedal position were not assessed in the study. Recommendations were risk factors among non-occupational motorcyclist can be evaluated, effects of Preventive measures can be analysed, region wise intervention with exercise protocol can be analysed.



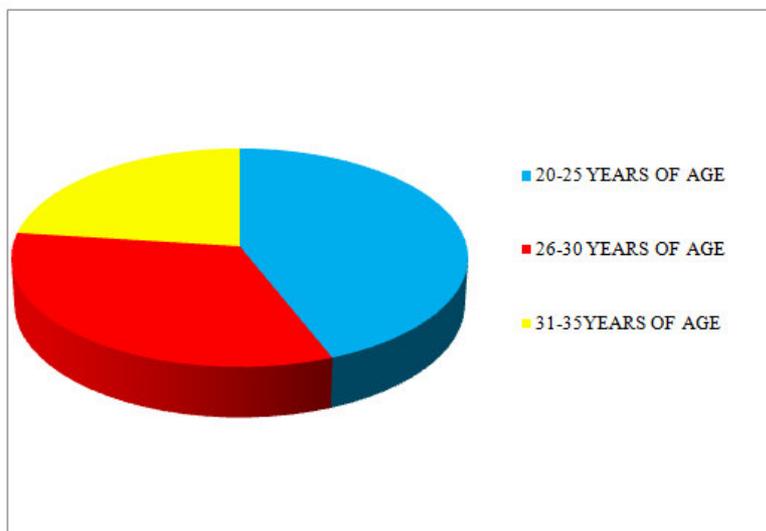
Graph 1
Region wise prevalence of musculoskeletal disorders among Non occupational motor cyclist

In Graph1, region wise prevalence rate, the prevalence of musculoskeletal disorders was shown that lower back and neck regions were affected more in Non occupational motor cyclist at a percentage of 65%.and 57%. Followed by neck, the wrist was affected .i.e. right wrist was affected at 31%. The prevalence of hip was next to wrist region at a

percentage of 25%.The prevalence of upper back was next to hips/thighs, at 23% and ankles/feet at a percentage of 22%.Then the prevalence of shoulder was next to ankle, in the side wise right side shoulder was affected more than the left side (right side 18%, left side 6% and both shoulders 8 %). Side wise prevalence of wrist, elbow region were shown in graph 1.



Graph 2
Showing years of Experience



Graph 3
Showing prevalence based on age

CONCLUSION

To conclude, a high prevalence of musculoskeletal disorders exists among the Non-occupational motor cyclist which affects the day to day activities of more than one-third of them. Further studies are needed to identify the specific risk factors for musculoskeletal disorders, so as to introduce effective remedial measures. These results indicate that most of the motorcyclist adopt positions which frequently result from pain in the neck and low back regions, so these regions are most commonly affected. Based on the outcome of

this study it is important to stress the information and ergonomic advice should be regularly delivered through newsletters, meetings and the Internet-based survey. Also, Government should establish an Ergonomic Department, whose responsibility is to implement the motorcycle safety education and database for motorcycle ergonomics geometry for different categories of the user population in the country.

CONFLICT OF INTEREST

Conflict of interest declared none.

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