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Frequency of Knee Pain and its Associated Factors among Traffic Wardens of Faisalabad

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[1-2] Conception and design,[2-3] Collection and assembly of data, Analysis and interpretation of the data,[1]Critical revision of the article for important intellectual content, Statistical expertise, [4]Final approval and guarantor of the article.

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ABSTRACT

Objective: This main focus of the study was to investigate the frequency of knee pain among traffic wardens of different age groups in Faisalabad Punjab, Pakistan.

Methodology: A cross sectional survey was conducted on 100 traffic wardens of Faisalabad through face to face interview by using self-structured questionnaire from January to October 2019. Convenient sampling was used during data collection. Individuals with age from 20-70 years working as traffic warden with work experience more than 5 years were included. Individuals who were facing some respiratory problems, cardiac issues, auto immune inflammatory joint diseases, rheumatology diseases, poliomyelitis, malignancies, amputations and those disorders and conditions which require proper supervised training fitness and rehabilitation programs and could not participate in general fitness program were not included in the study.

For quantitative variables, mean standard deviation was determined, whereas for qualitative variables, frequencies and percentages were calculated. The Chi square test was done to see if there was a link between pain and associative factors. A p-value of less than 0.05 was deemed significant.

Results: The results of the study showed that 57% traffic wardens had mild to severe knee pain. According to visual analog scale, 10% wardens felt mild pain, 32% felt moderate, 15% felt severe pain. The knee pain is significantly associated with age, obesity, static posture and working hours with P value < 0.05.

Conclusion: There is increased frequency of knee pain among traffic wardens and is associated with age, obesity, static posture and prolong working hours.

Keywords: Knee, Pain, Traffic Warden, Traffic Police, Causes.

Introduction

Occupation related musculoskeletal problems has been considered as the leading cause resulting in decreased functioning capability and work efficiency. The nature of job and the time period spending in job are main factors which increases the risk of work related disorders. Among various occupations, traffic police personnel (TPP) are at greater risk of developing health hazards due to their nature of job and longer duration of working hours in adverse conditions.[1] The work-related musculoskeletal disorder (WRMSD) is defined as “a wide range of inflammatory and degenerative disease conditions that result in pain and functional impairment affecting the neck, shoulders, elbows, wrists and hands”.[2]

Occupations involving longer duration of standing, static standing posture and heavy lifting results in ergonomic and biomechanical changes causing knee pain. Also these biomechanical factors reduces work efficiency, puts economic burden and comprises the social interaction of the individuals.[3,4] Work-related MSK discomfort is frequent in TPW. Heavy Load, incorrect posture, and excessive repletion are the most prominent biomechanical reasons causing MSK pain. Financial strain at work, lower productivity, society, or socioeconomic deprivation are all possible factors.[5]

Knee discomfort affects about 25% of adults, impairing their function, mobility, and overall quality of life. Knee pain has increased 65 percent in prevalence over the last 20 years, resulting in an estimated 4 million primary care visits every year. The tenth most common reason for outpatient appointments is knee pain.[6]

Individual's body homeostatic condition mainly depends upon the working environmental condition.[7] The traffic wardens has to work in static posture for longer duration during their job time which put them on risk of developing various occupation related musculoskeletal disorders.[8] Together with obesity also makes them vulnerable to health hazards results in deteriorating changes in knee joint causing knee pain.[9] The risk of developing knee problems increases as the weight of individual gets increase above normal range.[10] Among traffic wardens, the increased risk of developing WRMSD affecting extra articular and intra articular structures has been found associated with nature of their job, longer duty hours, posture and other environmental factors.[11] Besides all above factors, age has also significant association with deteriorating changes in knee joint causing knee pain among females with middle age group. While in general population the main factor causing knee related problems is obesity.[12]

Fast and wide spreading industrial development puts man at risk of developing various health hazards. In, Pakistan, there has been found a problem of managing heavy traffic due the increased number of transport facilities which puts increased work pressure on traffic wardens. Traffic wardens are facing ergonomic hazards and psychological stress while managing the traffic. The aim of the study is to identify specifically the frequency of knee pain among the traffic wardens of Faisalabad and its associated factors.

Methodology

From May 2018 to February 2019, a cross-sectional observational study was done on 100 traffic wardens in Faisalabad utilizing face-to-face interviews and a self-structured questionnaire. The sample size was computed at a 95% confidence level and adjusted for a 10% dropped rate.[5] Traffic wardens gave their informed approval. During data gathering, convenient sampling was used. Individuals between the ages of 20 and 70 who worked as traffic wardens for more than 5 years were included. Individuals with respiratory issues, cardiac issues, auto immune inflammatory joint diseases, rheumatology diseases, poliomyelitis, malignancies, amputations, and disorders and conditions that require proper supervised training fitness and rehabilitation programme and cannot participate in general fitness programme were excluded from the study. All data was analyzed with SPSS version 21. For quantitative variables, mean standard deviation was determined, whereas for qualitative variables, frequencies and percentages were calculated. The Chi square test was done to see if there was a link between pain and associative factors. A p-value of less than 0.05 was deemed significant. The ethical review committee at Riphah International University in Faisalabad gave their clearance.

Results

A modified assessment questionnaire containing closed ended questions was used to collect data about the prevalence of knee pain in traffic wardens of Faisalabad. Questions were asked about their profession details, working hours, activities and feeling of any kind of knee pain in traffic wardens. According to the data collected, 38% belonged to the age group of 21-35 years of age, while 52% were of 36-50 years and 10% were from 51-65 years of age group. 96% of them were males. 61% wardens were obese while 39% were healthy. 53% wardens said that they work for 6-10 hours, 43% said they work for 10-14 hours and 4% said 14-18 hours.

71% had a standing period of 8-10 hours per day, 26% had 0-5 hours per day and 3% had 10-15 hours per day. 68% traffic wardens had static standing posture routine at work, 22% had dynamic standing and 10% had sitting posture.

20% traffic wardens said that they had to do lifting and carrying activities during work, while 80% denied it. When we asked them, 81% wardens had no knee twisting movements and 19% had knee twisting movements. According to the analysis, 57% traffic wardens said that they feel knee pain and 43% said they don't feel pain in the knee. According to the results, 48% traffic wardens said that they do not suffer from chronic and recurring knee pain and 52% said that they suffer. According to visual analog scale, 10% wardens felt mild pain, 32% felt moderate, 15% felt severe pain.

The study showed that there is association of knee pain with age as 52% were of 36-50 years and 10% were from 51-65 years with $P<0.05$. The results of the study showed that only 61% traffic wardens were obese and association of BMI with knee pain found to be $P<0.05$. 68% traffic wardens had static standing posture routine at work, 22% had dynamic standing and 10% had sitting posture and association of static posture with knee pain found to be $P<0.05$. Study results showed significant association of pain with working hours as 53% wardens worked for 6-10 hours, 43% worked for 10-14 hours and 4% worked for 14-18 hours. (Table III)

Discussion

According to the results of this study, 57% traffic wardens had mild to severe knee pain. Another study was conducted to find the frequency of knee symptoms and radiographic and symptomatic knee OA in African Americans and Caucasians. According to its results, 43% individuals had symptoms of knee pain, 8% had severe radiographic knee OA, 28% had radiographic knee OA and 16% individuals had symptomatic knee pain.[13] According to another study knee pain was found more in concrete workers, carpenters, shipyard workers and miners.[14] Psychological stress is also a contributing factor for knee pain. As in this study, 37% traffic wardens had stress during work.[15]

Age: The study showed that there is association of knee pain with age as 52% were of 36-50 years and 10% were from 51-65 years. While another study conducted to find the knee pain in older adults in Tasmania. 500 men and women participated in this study and the frequency of knee pain was 48%.[16] Similar findings exposed that age, bad posture and repetitive movements puts various hazards to back, shoulder and wrist joint.[14]

Body Mass Index (BMI): The results of the study showed that only 61% traffic wardens were obese and there was frequency of knee pain in them. As another study conducted in Boston to fine out frequency of knee pain and radiographic knee osteoarthritis, showed that with increasing age, BMI and obesity, the prevalence of knee pain increased by 65% among African American and Mexican men and women. After adjustment of BMI and overweight, the result was 10-25% decrease in knee pain.[17] Another study showed similar results in which a strong association was found between the workers BMI and presence of MSK symptoms.[18] Obese workers also showed higher odds ratio (OR) than the overweight workers which suggests an increased positive relation between MSK symptoms and BMI.[19]

Static Postures: 68% traffic wardens had static standing posture routine at work, 22% had dynamic standing and 10% had sitting posture. According to a study conducted between Chinese subject of Beijing and White subject of Framingham, old Chinese in Beijing suffered more from knee pain because of the prolonged squatting during their meet and greet times.[9] When joints are made to work outside the neutral position again and again for longer period of time without proper

Table I: Frequency and Intensity of Knee Pain among traffic wardens

Pain	Frequency	Percentage
Mild(1-4)	10	10%
Moderate(4-7)	32	32%
Severe(7-10)	15	15%

Table II. Frequencies of traffic wardens with and without pain

Pain	Frequency	Percentage
Yes	57	55.9
No	43	42.2
Total	100	98.0

Table III: Association of Age, BMI, Working Hours and Static Posture with Pain

			VAS				Total	Sig(p value)
			Mild pain	Moderate pain	Severe pain	No pain		
Age	21-35	N	10	28	0	0	38	0.000
		%	3.8	12.2	5.7	16.3	38.0	
	36-50	N	0	4	15	33	52	
		%	5.2	16.6	7.8	22.4	52.0	
	51-65	N	0	0	0	10	10	
		%	1.0	3.2	1.5	4.3	10.0	
BMI	Healthy	N	10	12	9	8	39	0.000
		%	3.9	12.5	5.9	16.8	39.0	
	Obese	N	0	20	6	35	61	
		%	6.1	19.5	9.2	26.2	61.0	
Working Hours	6-10	N	10	32	11	0	53	0.000
		%	5.3	17.0	8.0	22.8	53.0	
	10-14	N	0	0	4	39	43	
		%	4.3	13.8	6.5	18.5	43.0	
	14-18	N	0	0	0	4	4	
		%	0.4	1.3	0.6	1.7	4.0	
Static Posture	Static Standing	N	10	32	15	11	68	0.000
		%	6.8	21.8	10.2	29.2	68.0	
	Dynamic Standing	N	0	0	0	22	22	
		%	2.2	7.0	3.3	9.5	22.0	
	Sitting	N	0	0	0	10	10	
		%	1.0	3.2	1.5	4.3	10.0	

rest intervals, the risk of musculoskeletal disorders is increased.[20] Another study concluded that the static posture for longer duration of working hours results in muscular stress and strain in shoulders and wrists.[21]

Prolonged Standing: The results showed that 71% had a standing period of 8-10 hours per day, and 3% had 10-15 hours per day. These long standing postures cause tiredness and fatigue in the legs. Long duty hours in standing position also make the traffic wardens prone to the working environment problems.[22]

Repetition of Movement: According to the results of study, 20% traffic wardens were involved in activities of lifting and carrying objects. Another study was conducted to find the knee pain and OA in soccer players, weight lifters, former runners and shooters, and out of all of these, the highest prevalence of OA and knee pain was reported in weight lifters.[23] Another study was held in Lahore to find out different musculoskeletal disorders in traffic police wardens, which showed that the MSK pain is also caused by repetitive strains and overuse. Moreover, the pain may occur in any area of body such as, shoulders, leg, knee, foot etc. the severity of pain may be mild, moderate or severe.[5]

Cigarette Smoking: Out of 100, 66% said that they are smokers and the study showed association with knee pain supported by results of another study which stated that the pain in legs, back and neck increases by 60% in smokers and ex-smokers.[24]

Sickness absenteeism: 55% traffic wardens reported for sick leave due to knee pain. Another study reported that among different occupation related hazards, the important reasons of unable to perform duties are work-related musculoskeletal disorders that leads to sickness absenteeism in traffic wardens.[25] Other reasons that contribute to the sickness absenteeism include long duty hours without rest periods, increased strain on joints which causes musculoskeletal discomfort, and repetitive movements of hands while giving signals.[26]

Conclusion

There is increased frequency of knee pain among traffic wardens and is associated with age, obesity, static posture and working hours.

Future Directions: Health education regarding healthy life style, change of posture during working hours and physical activity motivation may reduce knee pain among traffic wardens. Different training programs should be designed for traffic police wardens who include stress management, development skills and knowledge about different areas.

Recommendations: It is suggested that more research be done on traffic cops, as this study just looks at traffic wardens. Because the sample size is minimal because only Faisalabad is involved, more cities might be included to enhance the sample size

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