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Original Research Article

Prevalence of work-related musculoskeletal disorder in sitting professionals

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ABSTRACT

Background: Modern workplaces have shifted the nature of occupations from active to sedentary and promote lengthy sitting behaviour. It has been reported that people sit more than 8 hours per day. Musculoskeletal disorders are amongst the main occupational health challenges in today's world and exist in numerous occupations. The objective of the present study is to determine the prevalence and pattern of MSD among sitting professionals.
Methods: The study was a cross sectional. The inclusion criterion was both male and females working with desktop/ laptop for more than 4 hours daily for the past one year. The sample size was 100. Subjects who met the inclusion and exclusion criteria, informed consent was obtained. The participants were later instructed to fill up the questionnaire.
Results: The common prevalence of work related MSD reported during last 12 months based on their body location was; neck 45%, shoulders 5%, upper back 38%, wrist/hand 8%, lower back 52%, knees 23% ankle/feet 4% respectively, where the highest suffered region of the body was lower back. The prevalence of work related MSD reported during last 7 days based on their body locations were neck 32%, upper back 13% and lower back 18% where the highest suffered body part was neck.
Conclusions: The study suggested that the prevalence of MSD is there in population who have to sit for a long duration of time, affecting low back and neck regions the most.

Keywords: Musculoskeletal disorder, Prolong sitting, Nordic musculoskeletal questionnaire, Occupational health

INTRODUCTION

Since the middle of the last century the physical, economic and social environments in which modern humans sit or move within the contexts of their daily lives have been changing rapidly. The demand for physical activity has been significantly reduced due to the changes in transportation, communications, workplace and domestic-entertainment technologies. Sedentary behaviours (typically in the contexts of TV viewing, computer and game-console use, workplace sitting, and time spent in automobiles) have emerged as a new focus for research on physical activity and health. The sedentary modern employment lifestyle encourages greater use of computers and subsequent longer periods of sitting.[1]

Modern workplaces have shifted the nature of occupations from active to sedentary and promote lengthy sitting behaviour. One cause of this change is the transition from paper-based work to computerized and paperless work.[2,3] It was estimated that about 40.7% of the global population was surfing the computers in the year 2012 as compared to 2006 of only 26.2%. Human beings were not made to sit in a chair for 8 hours per day, yet with the commonplace "desk job," sitting in front of a computer has become a way of life. It has been reported that people sit more than 8 hours per day.[4] For about two-third of their working hours, these people remain in a sitting posture and their bouts of sitting periods typically last at least 30 minutes.[5]

Rapid technological development in the use of electronic data has affected both the employees and workplace. In recent years rapid use of computers has changed the work environment drastically. Various factors like personal factors, work related factors (WRF), psycho-social factors (PSF) can result in many health hazards like musculoskeletal disorder (MSD). From the literature review it is observed that the musculoskeletal disorder is very common among computer user's bank office employees.[6] Work-related musculoskeletal disorders have been investigated and reported for workers from various sectors in India. These include computer operators/keyboard users, goldsmiths, stone carvers and workers from shoe factory and woollen textiles. Studies have evaluated the general ergonomic risk factors and influence of psychosocial workplace risk factors on occurrence of musculoskeletal discomfort and other systemic problems.[7]

Musculoskeletal disorders (MSDs) are amongst the main occupational health challenges in today's world and exist in numerous occupations.[8-10] These disorders comprise one of the major issues in the field of health.[11] In many working populations, work related musculoskeletal disorders is responsible for morbidity and is known as an important occupational problem with huge compensation and health costs, decreased productivity, and lower quality of life.[12] According to the international labour organizations (ILO) report, out of the nearly 160 million work-related disorders occurring around the world annually, MSDs have been found to be the second most common occupational disease.[13-15] MSDs have been defined as inflammatory and degenerative conditions that affect muscles, tendons, ligaments, joints, peripheral nerves, and supportive structures like intervertebral discs.[16] These problems consist of a wide variety of disorders that differ in intensity and symptoms and can result in mild and moderate symptoms or chronic and disabling conditions.[17,18]

Objectives

The objective of the present study is to determine the prevalence and pattern of MSD among sitting professionals and hence create awareness amongst all as it is rightly stated that prevention is better than cure.

METHODS

The study was a cross sectional with professionals who have to sit for a long time at work as the study population. The inclusion criterion was both male and females working with desktop/laptop for more than 4 hours daily for the past one year. The exclusion criterion were those subjects not willing to participate in the study, subject with previous history of musculoskeletal injury, incomplete questionnaire and pregnant women. The sample size was 100.

The sampling method used for the survey was non probability purposive sampling. Using the available data , the subjects were contacted and explained about the study. Among those who met the inclusion and exclusion criteria, informed consent was obtained. The participants were later instructed to fill up the questionnaire. The survey questionnaire had two parts, part 1 contained personal details such as age, gender, job details like working hours per day, experience in years. Part 2 contained Nordic musculoskeletal questionnaire (NMQ). This is a standardize questionnaire that includes information on musculoskeletal complains affecting the body regions namely: neck, shoulders, upper back, elbow, wrist/hands, lower back, hip/thighs, knees, ankle/feet.

RESULTS

The data entry and analysis was performed with SPSS version 16. The final data was summarized into percentage and analysed by cross tabulation for different variables. The total numbers of sitting professionals studied were 100. The overall mean age were 34.62±2.45 years ranging from 22 to 51 years. The participants worked in the company for an average of 8.22±3.28 hours per day. Their average experience was 4.55±1.66 years, ranging from 1 to 6 years. The summary of demographic variables collected from study participants are presented in (Table1).The study population had 72% (72/100) were males and 28% (28/100) were females.

Table 1: Descriptive statistics for demographic variables collected from study participants.

Variables	Minimum	Maximum	Mean±SD
Age (years)	22	51	34.62±2.45
Experience (years)	1	6	4.55±1.66
Working hours per day	7	11	8.22±3.28

According to the results of NMQ prevalence of work related MSD in last 12 months and during last 7 days was calculated. The common prevalence of work related MSD reported during last 12 months based on their body location was; neck 45%, shoulders 5%, upper back 38%, wrist/hand 8%, lower back 52%, knees 23% ankle/feet 4% respectively, where the highest suffered region of the body was lower back. The prevalence of work related MSD reported during last 7 days based on their body locations were neck 32%, upper back 13% and lower back 18% where the highest suffered body part was neck. Details of work related MSD prevalence based on the body location (Table 2).

DISCUSSION

Amongst different occupational groups and across national borders there is a variation in prevalence of work related musculoskeletal disorders. In a study by Saleem et al the prevalence of work related MSD among software

professionals were found to be 69% during last 12 months which implies that almost 3 out of every 4 professionals suffer from this condition and 49.2% during last 7 days and annual disability was 16.6%.[19]

Table 2: Details of work related MSD prevalence based on the body location.

Human body location	Prevalence of work related MSD during last 12 months		Prevalence of work related MSD during last 7 days	
	N	%	N	%
Neck	45	45	32	32
Shoulder	5	5	0	0
Upper back	38	38	13	13
Elbows	0	0	0	0
Wrist/hand	8	8	0	0
Lower back	52	52	18	18
Hip/thigh	0	0	0	0
Knees	23	23	0	0
Ankle/feet	4	4	0	0

Very few studies on prevalence of work related MSD in sitting professionals have been done in the general population. Study by Sharma et al in Delhi reported prevalence of work related MSD ranging from 20- 93.3% in the studies population.[20] The prevalence of MSD had been reported in many previous studies with female predominance in the general population. This may be due to the cultural factor that females, in addition to the software job, have to look after the family and kids at home. The present study did not found such prevalence as the female population was less than that of male population. Professionals with long years of exposure to computer sitting have been found as a risk factor for MSD, the study by Kirhonrn et al showed an association between MSD and experience but the present study did not find any association between experience and MSD.[21,22]

Daneshmandi report revealed that neck (53.5%) lower back (53.2%) and shoulder (51.6%) symptom were the most widespread disaster among the office works in past 12 months due to prolong sitting.[23] These data correlated with our study where in past 12 months the body region where the participants felt pain and discomfort was lower back 52% followed by neck; 455, upper back 38%, knee 23%, hand 8%, shoulders 5% and ankle and feet 4%.

One of the major reasons for lower back and neck to be the most prevalent area is poor sitting posture. Working with a computer requires maintaining a seated posture for a long time, and therefore, it is very difficult to maintain correct posture.[24] People tend to change their posture according to habits, such as slouching and crossing the legs, and they maintain a bad posture regardless of their recognition of incorrect posture and desire to maintain correct posture. If incorrect postures become a habit at an early age, individuals maintaining those postures may adapt and consider them comfortable, and this can cause strain on the spine, pelvis, muscles, tendons, joints, bones, and discs, which can lead to fatigue and deformation.[25] Thus, incorrect habits, such as excessive use of computers, use of desks and chairs without proper height, lack of health care education, lack of exercise, carrying heavy school bags, and inappropriate postures when studying or watching television, affect the shape of muscles, deform the skeleton, and cause abnormal development, which prohibit the maintenance of correct posture.[26,27] Incorrect posture has many negative effects on the spine. Moreover, such a posture indicates an incomplete relationship among body parts, and it creates inefficient balance owing to stress on the supporting structures of the body and prevents proper functioning of the structures of the body.[27,28] To prevent these health problems, the sitting behaviour of office workers must be improved, interventions used to treat ergonomic MSDs which includes, ergonomic modification, rest breaks, and workplace exercise.

Limitations

Limitations of current study were; the purposive sampling limits the generalizability. Causation cannot be infested with this design. More research, especially longitudinal studies is needed to find the strength of association between MSD and demographic factors.

CONCLUSION

The study suggested that the prevalence of MSD is there in population who have to sit for a long duration of time, moreover affecting low back and neck regions the most. To prevent this MSD incorporation of ergonomics in the working environments is the best option. Also strategies to modify life style and work style should be implemented to reduce the risk of MSD. Therefore, appropriate prevention and intervention strategies must be emphasized to ensure a healthier working atmosphere in order to improve their productivity from the organizations point of view. The present study is thus a wakeup call for professionals. It is recommended that awareness education and training programs on prevention and coping strategies for MSD must be made mandatory for professionals who need to sit for a long duration.

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