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Original Research Article

Assessment of musculoskeletal problems among desk job employees of a tertiary care hospital in Goa

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ABSTRACT

Background: Musculoskeletal disorders (MSDs) are a leading cause of disability and the most frequent cause of all health-related absence from work. There is lack of information about MSDs among desk job employees.
Methods: A cross sectional study, carried out among desk job employees engaged in administrative work at a tertiary care hospital in Goa involved, data collection on MSDs using Standardised Nordic Musculoskeletal Questionnaire (NMQ) and workstation ergonomics assessment using NIH (National Institute of Health) checklist.
Results: Among 110 respondents, 50 males and 60 females, majority (42.7%) were from age group 31-40 years. As per the NMQ, one-year prevalence of MSDs was highest in lower back (55.5%), followed by neck (48.2%); and the lowest in ankles (4.5%). Regular postural breaks were not taken by 59 (53.6%) of the total participants, of which 41(37.3%) complained of at least one MSD and the association was statistically significant (p=0.001). On ergonomic assessment, 62 (56.4%) had chairs with poor lower back support, of which 44 (40%) complained of lower backache; 20 (18.2%) were uncomfortable during keyboard use and 18 (16.4%) with desk setup. Of the 40 participants with continuous computer use for 4-5 hours, 27 complained of neck pain and there was a significant association found between continuous computer use and neck pain (p=0.003).
Conclusions: Based on the findings, ergonomic training workshops should be conducted, and the workstation design needs to be improved to reduce the burden of work-related MSDs.

Keywords: Desk job employees, Ergonomics, Musculoskeletal disorders

INTRODUCTION

Musculoskeletal Disorders (MSDs) are a leading cause of disability and the most frequent cause of all health-related absence from work. With low back pain being the single leading cause of disability globally. MSDs significantly limit mobility and agility, leading to early retirement from work, reduced accumulated income and reduced ability to engage in social roles. Musculoskeletal conditions affect people across all age groups, globally. While the prevalence of musculoskeletal conditions increases with age, it has been observed that younger people are also affected, mostly during the peak of their income-earning years.

As per the Global Burden of Disease (GBD) study, there is evidence of the impact of musculoskeletal conditions, emphasizing the significant disability burden associated with the same. In the 2016 GBD study, MSDs were the second highest contributor to global disability, and lower back pain was the single leading cause of disability since it was first measured in 1990.[1]

MSDs are associated with high costs to employers such as sickness absenteeism, decreased productivity, and increased health care, disability, as well as worker's compensation costs.[2]

There is lack of information about MSDs among desk job employees. Hence this study was undertaken to assess the MSDs among desk job employees of a tertiary care hospital in Goa.

METHODS

A cross sectional study was conducted over a period of three months (August 2019 - October 2019) in an occupational setting (tertiary care hospital- Goa Medical College) among desk job employees involved in administrative work.

Inclusion criteria

Desk job employees >21 years, males and females, worked for minimum 6 months in current place were included in the study.

Exclusion criteria

Any pre-existing postural deformities, history of recent trauma, Spinal surgery, recovering from any severe illness, pregnant women and those who do not give consent for the study were excluded from the study.

Study tools

Predesigned semi-structured Questionnaire for socio-demographic details, medical history, computer use, work hours etc inspired from existing literature.[3-5] Standardized nordic musculoskeletal questionnaire was used to assess musculoskeletal problems.[6,7] National Institute of Health (NIH), checklist for workstation ergonomics assessment.[8]

Data was entered in excel worksheet and analysed using SPSS version 22. Results were tabulated using frequency distribution and chi square test was used to determine statistical significance ($p<0.05$ was considered statistically significant).

RESULTS

Out of 163 desk-job employees involved in administrative work, 110 participated in the study, thus the response rate was 67.4%. Among the 110 respondents, 50 were males and 60 were females, majority (42.7%) were from age group 31-40 years (Figure 1). There was no significant association between gender and prevalence of work-related MSDs in the study.

As per the NMQ, one-year prevalence of MSDs was highest in lower back (55.5%), followed by neck (48.2%); and the lowest in ankles (4.5%) (Table 1).

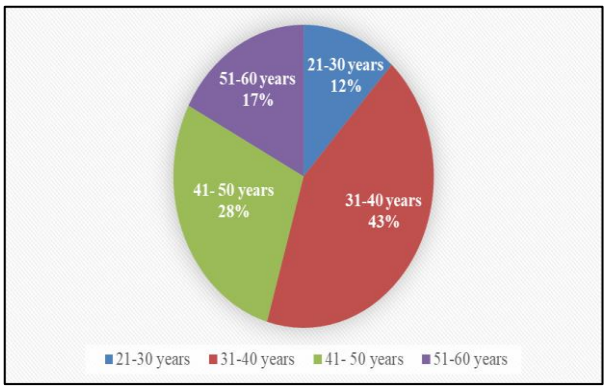

Figure 1: Distribution of study participants according to age.

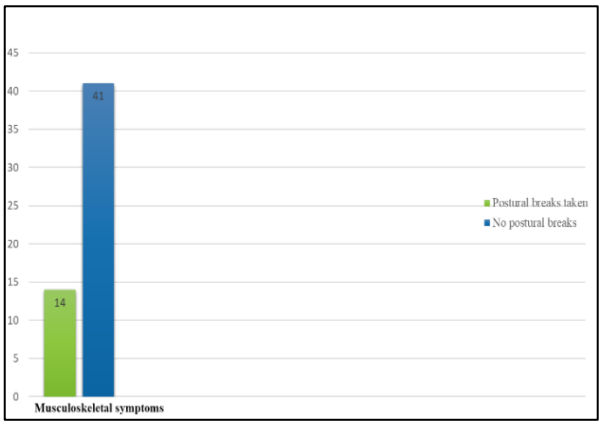

Figure 2: Prevalence of work-related musculoskeletal symptoms depending on postural breaks.

Table 1: Distribution of the study subjects as per musculoskeletal pain/discomfort/ numbness (last year) (based on standardised NMQ).

Part of the body involved	Present	Absent
	N (%)	N (%)
Lower back	61 (55)	49 (45)
Neck	53 (48)	57 (52)
Shoulder	34 (31)	76 (69)
Upper back	27 (25)	83 (75)
Wrists/hands	20 (18)	90 (82)
Elbow	20 (18)	90 (82)
Knees	08 (7)	102 (93)
Hips/thighs/buttocks	07 (6)	103 (94)
Ankles/feet	05 (5)	105 (95)

Similarly, it was found that the prevalence of MSDs symptoms during the last week and presence of severe MSDs symptoms during the last year were highest in the lower back and neck (Table 2) (Table 3).

Most of the study participants 59 (53.6%) did not take regular postural breaks; of which 41 (37.3%) complained

of at least one MSD and the association was statistically significant (p=0.001) (Figure 2).

Table 2: Distribution of the study subjects as per musculoskeletal pain/discomfort/numbness (last week) (based on standardised NMQ).

Part of the body involved	Present	Absent
	N (%)	N (%)
Lower back	33 (30)	77 (70)
Neck	27 (24.5)	83 (75.5)
Shoulder	17 (15.5)	93 (84.5)
Upper back	15 (13.6)	95 (86.4)
Wrists/Hands	07 (6.4)	103 (93.6)
Elbow	05 (4.5)	105 (95.5)
Knees	07 (6.4)	103 (93.6)
Hips/thighs/buttocks	01 (0.1)	109 (99.1)
Ankles/feet	03 (2.7)	107 (97.3)

On ergonomic assessment, 62 (56.4%) had chairs with poor lower back support, of which 44 (40%) complained of lower backache.

Table 3: Distribution of the study subjects as per severe musculoskeletal pain/discomfort/numbness (last year) (based on standardised NMQ).

Part of the body involved	Present	Absent
	N (%)	N (%)
Lower back	08 (7.3)	102 (92.7)
Neck	05 (4.5)	105 (95.5)
Shoulder	04 (3.6)	106 (96.4)
Wrists/hands	02 (1.8)	108 (98.2)
Elbow	01 (0.9)	109 (99.1)
Upper back	0 (0)	110 (100)
Knees	0 (0)	110 (100)
Hips/thighs/buttocks	0 (0)	110 (100)
Ankles/feet	0 (0)	110 (100)

Also, 20 (18.2%) were uncomfortable during keyboard use and 18 (16.4%) were uncomfortable with the desk setup. Of the 40 (36.4%) participants with continuous computer use for 4-5 hours, 27 (24.5%) complained of neck pain and there was a significant association found between continuous computer use and neck pain (p=0.003) (Table 4).

Table 4: Ergonomic assessment based on National Institute of Health (NIH) checklist.

Variable (n=110)		Frequency N (%)	MSD		
			Present	Absent	
			N (%)	N (%)	
Posture	Good	30 (27)	13 (43.3)	17 (56.7)	χ^2=2.453
	Poor	80 (73)	48 (60)	32 (40)	p=0.089
Feet support	Good	91 (83)	01 (1.1)	90 (98.9)	χ^2=14.424
	Poor	19 (17)	04 (21.1)	15 (78.9)	p=0.003
Lower back support	Good	48 (44)	17 (35.4)	31 (64.6)	χ^2=13.842
	Poor	62 (56)	44 (71)	18 (29)	p=0.000
Pressure over knees while seated	Present	12 (11)	08 (66.7)	04 (33.3)	χ^2=38.824
	Absent	90 (82)	0 (0)	90 (100)	p=0.0001
Computer set up (keyboard use, mouse use, monitor height)	Comfortable	59 (54)	04(7)	55 (93)	χ^2=38.089
	Uncomfortable	20 (18)	13 (65)	07 (35)	p=0.0001
	Not applicable	31 (28)	03 (9.7)	28 (90.3)	

DISCUSSION

The results of this study showed that the desk-job employees had a high level of MSDs as well as considerable amount of ergonomic risk factors.

According to the present study, one-year prevalence of MSDs was highest in lower back (55.5%), followed by neck (48.2%); and the lowest in ankles (4.5%). The findings of this study were consistent with that of similar studies done by Darivemula et al, Mohammadipour et al and Das et al.[3-5]

However, there was no significant association found between gender and musculoskeletal disorders nor age and MSDs. The difference in result between the studies could be due to differences in study populations, working posture, different ergonomic settings and duration of job hours.

Of the 40 (36.4%) participants with continuous computer use for 4-5 hours, 27 (24.5%) complained of neck pain and there was a significant association found between continuous computer use and neck pain. This is possibly because of continuous computer use, with the person adopting poor posture which ultimately puts pressure on the cervical spine and results in neck pain.

This study highlighted various work-related factors such as importance of taking regular postural breaks, maintaining the right posture during work hours, good lower back support, comfortable desk setup as

independent determinants of preventing musculoskeletal problems among desk job workers. Various studies done in India reported association of poor sitting posture at the workplace with MSDs.[9]

CONCLUSION

Based on the findings of the present study, ergonomic training workshops should be conducted for employees, to sensitize them about preventive ergonomic measures such as regular postural breaks, rearrange workstation as per comfort and postural adjustments. Also, the workstation design needs to be improved to provide a comfortable work environment for desk-job employees to reduce the burden of work-related MSDs.

An ergonomically well-designed office allows the employee to work comfortably without needing to over-reach, sit or stand too long, or use awkward postures. This will help improve the health status, improve the quality of life, and increase efficiency of the employee, thus also increasing the productivity of the institute.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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