



Risk factors for musculoskeletal disorders among employees of a call center in Iran and its relation to workload

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INTRODUCTION

- Musculoskeletal disorder (MSD): a disorder of the muscles, nerves, joints, tendons, and spinal discs
- Not an acute injury, rather a chronic disease developing over time
- More than 30% of all occupational injuries are musculoskeletal injuries associated with manual tasks
- Call center employees exposed to working conditions with higher risk of developing MSD



- Important: maintaining the employee's health in the work environment and paying attention to its risk factors is important.

OBJECTIVE

- Evaluation of the risk factors of musculoskeletal disorders (MSDs) and its relation to employees' workload at a call center in Iran

METHODS

- Cross-sectional study by conducting surveys of all employees (25 women and 15 men) of a call center at Sanandaj, Iran, in 2014
- Standard Nordic Musculoskeletal Questionnaire (NMQ) used to study prevalence of musculoskeletal symptoms
- NASA Task Load Index (NASA-TLX), a subjective and multidimensional tool, used to assess employees' workload
- Rapid Office Strain Assessment (ROSA) used for evaluating the ergonomic risk factors at the workspaces
- SPSS version 16 used for analyzing data.

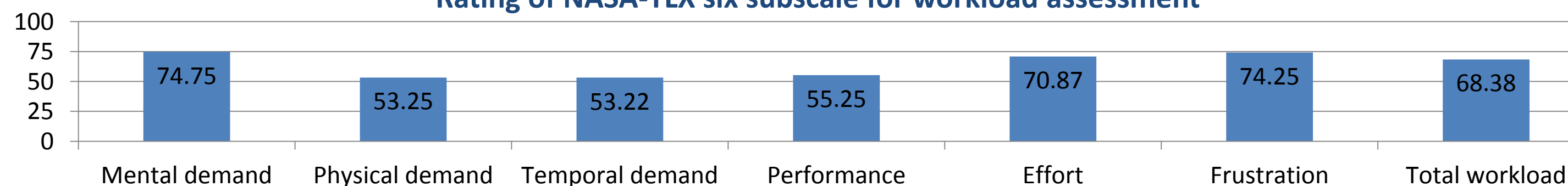
RESULTS

- Age average was 34±7, average years of service was 8±3
- 37.5% of employees worked at morning shift, 25% at afternoon/evening shift, and 37.5% at night shift
- Body mass indexes (BMI) of the employees were: 52.5% normal, 35% overweight, and 12.5% obese.
- ROSA average scores: 5±0.72. 80% in "caution zone" (3-5) and 20% in "hazard zone" (>5).

Prevalence of musculoskeletal symptoms at nine regions of the body

Region of the body	Neck	Shoulder	Elbow	Wrist	Upper Back	Lower Back	Hip	Knee	Ankle
Prevalence of symptoms (%)	77.5	60	27.5	55	67.5	72.5	35	42.5	12.5

Rating of NASA-TLX six subscale for workload assessment



Relationship between the prevalence of musculoskeletal disorders with multiple factors based on extracted p-value

	Gender	Years of service	Work shift	BMI	Rosa score	Workload risk
Neck	0.045	0.0001	0.1	0.0001	0.0001	0.0001
Shoulder	0.051	0.0001	0.02	0.0001	0.0001	0.02
Elbow	0.1	0.52	0.05	0.52	0.07	0.52
Wrist	0.25	0.02	0.45	0.4	0.15	0.12
Upper Back	0.005	0.0001	0.0001	0.02	0.0001	0.001
Lower Back	0.03	0.001	0.02	0.0001	0.0001	0.001
Hip	0.05	0.02	0.05	0.0001	0.05	0.075
Knee	0.0001	0.225	0.0001	0.1	0.02	0.2
Ankle	0.1	0.15	0.07	0.02	0.42	0.2

- Analysis of Variance (ANOVA) used to study the relation of different factors, namely, years of service, work shift, and BMI with average work load
- Meaningful relation (p-value < 0.05) between workloads of people with their BMI and years of experience
- No meaningful relation between workloads of people at different work shifts.
- t-test used to compare the workload difference between men and women: no meaningful relation

CONCLUSIONS

- High prevalence of musculoskeletal disorders seen among employees of the call center especially in lower back and neck
- Improper workplace lacking work standards (high ROSA scores)
- Higher ROSA score: higher MSDs risk
- Higher BMI : higher MSDs risk
- Women were more likely than men to develop MSDs (men-oriented workplace design)
- The risk of MSDs increased with age and years of experience: effect of cumulative exposure

Suggestions:

- Improving workplace to provide convenience for employees
- Educational workshops on ergonomics for employees with special focus on sitting posture
- Utilizing interventional strategies for reducing workload

KEY REFERENCES

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