

Prevalence of Work Related Psychological and Musculoskeletal Problems among Business Process Outsourcing Workers

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Background: Musculoskeletal disorders are mainly caused due to static work which includes sitting and standing for a prolonged time and sedentary unhealthy lifestyle lead to physical related health problems and may affect one's psychosocial, physical and mental health. The purpose of the study is find out the prevalence of work related psychological and musculoskeletal problems among business process outsourcing workers.

Methods: An observational study in which 100 participants were included according to the inclusion and exclusion criteria with 50 males and 50 females. Participants with age of 20-35 years and minimum 1 year of work experience with alternative working shifts were selected for the study. Stress and burnout questionnaire, Cornell musculoskeletal discomfort questionnaire and body mass index calculator were used as an outcome measure in the study.

Results: Musculoskeletal problem was higher in neck region and wrist region and 2% participants had burnout stress syndrome.

Conclusion: High prevalence of musculoskeletal disorder found over neck region, hip/buttocks, wrist and low back and 2% of the population had burnout stress syndrome and no significance correlating body mass index and musculoskeletal disorder.

Key Words: Burnout stress syndrome, Cornell musculoskeletal discomfort questionnaire, Business process outsourcing workers

INTRODUCTION

Business process outsourcing (BPO) workers are a subset of workers that involves the contracting of the operations and responsibilities of a specific business process to a third-party service provider [1]. Business process outsourcing is categorized into back office outsourcing and front office sourcing [2]. It is also known as the "Sunshine sector" in India. As these workers were subjected to prolonged static work and sitting for a prolonged time leads to an increased prevalence of musculoskeletal pain and psychological problems. In India, very few studies have been conducted between the relationship of workplace psycho-

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logical stress and musculoskeletal disorders and also described about the quality of life. Studies using telecommunication workers evaluated through questionnaire has shown prevalence on musculoskeletal issues and various psychosocial variables.

Work related musculoskeletal disorders includes repetitive strain injuries to bones, tendon and tendon sheath that gradually develop over weeks or months or even years [3]. Bio-mechanical factors includes prolonged static muscular overload, repeated movements causes risk factors including work related musculoskeletal disorder and psychosocial risk factors of work [3]. Among business process outsourcing workers there is often complaints of musculoskeletal disorders such as pain over cervical region, fatigue and psychological distress. Risks of neck shoulder symptoms were associated with high job strain. Improper posture causes musculoskeletal disorders mainly includes use of arms, wrists and fingers and viewing more time in computer screen and lack of forearm support and not sufficient working space [4].

Due to the nature of job of the workers they have to face the stressful consequences called the “burn out syndrome” which is characterized by chronic fatigue, insomnia, and alternative of the 24 hours biological rhythm. Sleep deprivation is found in major group of night duty workers and this may lead to depression and poor cognitive functioning and burnout is usually caused due to psychological fatigue [5]. Sedentary unhealthy lifestyle lead to volley of problems that affect one’s psychosocial, physical and mental health [6]. Improper BMI (body mass index) may tend to produce musculoskeletal discomfort and occupational psychological stress. Improper sitting and using wrong chairs for a prolonged time in front to the computer may tend to produce stiffness, headache and backache and may cause inflamed muscles and tendons and overuse injuries to hands and wrists [7].

There were 2 questionnaires used in this study: Stress and burnout questionnaire, Cornell musculoskeletal discomfort questionnaire. Stress and burnout questionnaire has been used for assessing burnout stress syndrome and Cornell musculoskeletal discomfort questionnaire was used for assessing musculoskeletal disorders. The aim of the study is find out the prevalence of work related psychological and musculoskeletal problems among business process outsourcing

workers.

Even though several studies has been mentioned about business process outsourcing workers and their lifestyle pattern and less number of studies has been mentioned about the psychological and musculoskeletal problems among business process outsourcing workers. And very few study has been mentioned about the body mass index of the workers and the relationship between the musculoskeletal problems and body mass index. It is important to know the occurrence of the problems, for further more studies and which would provide precaution for the workers and this could definitely improve their quality of life in a better way. So this study is been done to work related psychological and musculoskeletal problems among business process workers.

MATERIALS AND METHODS

A Non experimental, Observational type of study was done in Erfolg techno solutions, T Nagar, Chennai on 100 subjects for a duration of 4 weeks. The samples were selected by method of Convenient sampling who met the inclusion and exclusion criteria.

The participants who were between the age group of 20-35 years of age, both male and female and those who had been working for more than a year in business process outsourcing for more than 9 hours/day were included in the study. While individuals with a History of any injury to the upper and lower extremities, History of any injury to spine and Pregnant women were excluded from selection. Two questionnaire and BMI calculator application were used as an outcome measure for obtaining values.

The subjects were selected based upon the inclusion and exclusion criteria and the consent form is obtained from the subjects and the procedure was explained. The subjects were randomly selected among the business process outsourcing workers in Chennai. The evaluation was taken through stress and burnout questionnaire that has been used to assess the burn out syndrome. The Cornell musculoskeletal discomfort questionnaire has been used to assess the region wise musculoskeletal problem. Since Cornell musculoskeletal discomfort questionnaire had no scoring it was assumed to be scored as respective numbers and it was evaluated and body mass index was evaluated through the height, weight

and age of each subject and evaluated through body mass index calculator application. The ranges of body mass index were evaluated as 1 - Underweight (17.0-18.4), 2- Normal (18.5-24.9), 3 - Overweight (25.0-29.9). And correlation between body mass index and musculoskeletal problem was been done.

The data was analyzed using IBM SPSS statistics version 22. The descriptive and chi-square test has been used to analyze the data.

RESULTS

At Table 1 and Fig. 1 represents the “Cornell musculoskeletal discomfort” showed following results. Question 1 explains that the high incidence of ache, pain, discomfort was found over neck 51%, hip/buttocks 51%, lower back

46%, wrist 44%, shoulder 37%, and low incidence of ache, pain, discomfort was found over forearm 9%, upper arm 5%, upper back 4%, thigh 1%, knee 1%, lower leg 1%. Question 2 explains that the ache, pain, discomfort experience made more uncomfortable over hip/buttocks 50%, neck 49%, lower back 45%, wrist 40% shoulder 35%, and less uncomfortable over upper arm 5%, forearm 4%, knee 4%, upper back 3, thigh 1%, lower leg 1%. Question 3 explains that ache, pain, discomfort, interfere with the inability to work was found high incidence over hip/buttocks 45%, lower back 40%, wrist 38%, neck 31% and low incidence over shoulder 11%, upper back 10%, upper arm 4%, forearm 2%, thigh 1%, lower leg 1%, and knee 0%.

At Table 2 and Fig. 2 represents “Stress and burnout” explains about burnout stress syndrome among business process outsourcing workers. Individual stress percentage scores,

Table 1. Cornell musculoskeletal discomfort questionnaire

No.	Region	Question 1* (%)	Question 2† (%)	Question 3‡ (%)
1	Neck	51	49	31
2	Shoulder	37	35	11
3	Upper back	4	3	0
4	Upper arm	5	5	4
5	Lower back	46	45	40
6	Forearm	9	4	2
7	Wrist	44	40	38
8	Hip/Buttock	51	50	45
9	Thigh	1	1	1
10	Knee	1	1	0
11	Lower leg	1	1	0

*Explains the region wise musculoskeletal pain among business process outsourcing workers.

†Explains how pain causing uncomfortable among business process outsourcing workers.

‡Explains how pain interferes with work among business process outsourcing workers.

Table 2. Stress and burnout questionnaire

People reported	%
10	20
6	22
11	24
11	26
6	28
8	30
7	32
10	34
5	36
10	38
3	40
2	42
3	44
1	46
1	48
2	50
2	52
2	54

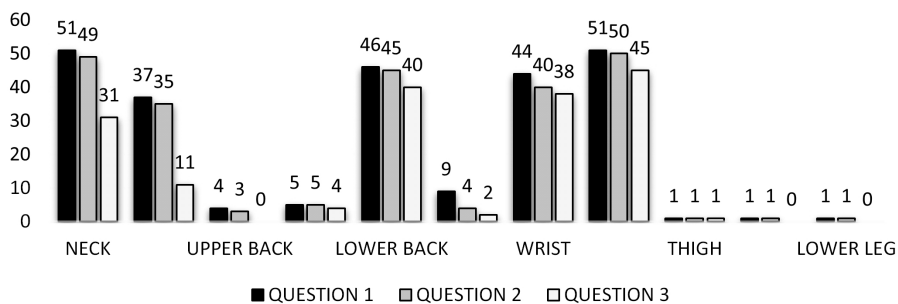


Fig. 1. Musculoskeletal pain-region wise.

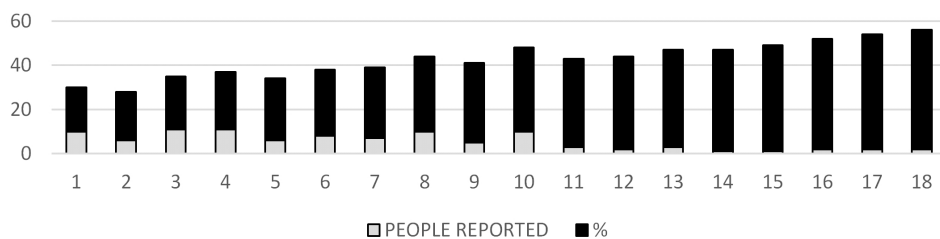


Fig. 2. Stress and burnout percentage calculation.

Table 3. Chi square analysis

NO	Region	X ²	df	p-value
1	Neck	14.008*	8	.082
2	Shoulder	9.214*	6	.162
3	Upper back	5.164*	6	.523
4	Upper arm	8.704*	4	.069
5	Lower back	8.085*	8	.425
6	Forearm	3.671*	4	.452
7	Wrist	7.152*	8	.520
8	Hip/Buttocks	2.837*	6	.829
9	Thigh	5.997*	4	.199
10	Knee	5.997*	4	.199
11	Lower leg	11.752*	6	.068

*Deviation.

of stress and burnout questionnaire with 25 questions in which total score is 50 are followings. Over the population of 100, 2 people reported 54%, 2 people reported 52%, 2 people reported 50%, 1 person reported 48%, 1 person reported 46%, 3 people reported 44% , 2 people reported 42%, 3 people reported 40%, 10 people reported 38%, 5 people reported 36%, 10 people reported 34%, 7 people reported 32%, 8 people reported 30%, 6 people reported 28%, 11 people reported 26%, 11 people reported 24%, 6 people reported 22% and 10 people 20%. For each question score from 0 to 2 was done by the individuals, score 0- for experiencing this only occasionally, score 1- this true quite frequently (weekly), score 2- true often (usually daily).

Table 3 shows the chi-square analysis of correlation between body mass index and musculoskeletal pain. There is no significant correlation between body mass index and musculoskeletal pain with $p > 0.05$ with correlation between body mass index and musculoskeletal pain in neck region with $p = 0.082$; in shoulder region with $p = 0.162$; in upper back with $p = 0.523$; in upper arm with $p = 0.069$; in lower back with $p = 0.425$; in forearm $p = 0.452$; in wrist $p = 0.520$; in hip and buttocks with $p = 0.829$; in

thighs with $p = 0.199$; in knees with $p = 0.199$; in lower leg $p = 0.06$.

DISCUSSION

The objective of the study was to find out the work related psychological and musculoskeletal problems among business process outsourcing workers. According to several studies, business process outsourcing workers are more prone to musculoskeletal problem [8]. They tend to get psychological problems also. This study is done to show that the prevalence of musculoskeletal problems and psychological problems among business process outsourcing workers.

This study mentions that musculoskeletal pain accounts for about neck 51%, shoulder 37%, upper back 4%, upper arm 5%, lower back 46%, forearm 9%, wrist 44%, hip/buttocks 51%, thigh 1%, knee 1%, lower leg 1%. And neck, hip/buttocks accounts for about 51% and is the maximum of the musculoskeletal pain. Upper limb has high prevalence of musculoskeletal symptoms especially in neck- shoulder region [9]. The symptoms of neck 39%, shoulder 22%, hand and wrist 10%. Stress and burnout questionnaire has been used to assess the psychological status of the subjects and in this study only 2% of the population has been affected with the psychological issues. This study mentions that Burnout stress syndrome accounts for about 54% and that too it is found in 2% of the population [10-12]. The results were in controversy with high frequency of psychological distress and the health impact of working conditions were found in the survey of over 2000 call Centre workers.

The study shows that the subjects with the psychological issues or the workers suffering from stress exhibit absenteeism, decreased productivity have a higher number of accidents, have lower morale and greater interpersonal conflict with colleagues and superiors [13]. Long hours of work,

night shifts, high work targets and loss of identity are some of the concerns of the call Centre industry in India [14]. The study concluded that improved workstation design, thermal comfort environment, well-scheduled work rest regime and realistic production goals are the preventive measures for musculoskeletal disorders (MSD) among call center. When correlating body mass index and musculoskeletal problems, there is not much significance [15]. The results were in controversy with major effect of body mass index in increasing work related musculoskeletal disorders and occupational psychosocial stress and sedentary office workers in a stressful job with high body mass index will have more eating behavior, thereby they are more prone to have a weight gain which leads to obesity adding further occupational stress. In contrast, the weak association also has been seen between body mass index and Occupational stress of aggravated scores [16-18]. Since this study correlates the influence of body mass index with the musculoskeletal pain and hence the study shows there is no influence of body mass index with the musculoskeletal pain. The sleep deficit in night shift workers can lead to serious disruption in their daily life routine, including excessive sleepiness during the day, poor quality of sleep and chronic fatigue [19].

CONCLUSION

The study concluded that there is a higher prevalence of work related musculoskeletal disorders including neck region, hip/buttock, wrist and low back region with the highest rates and less prevalence of burnout stress syndrome among business process outsourcing workers . There is no significance while correlating body mass index with the musculoskeletal problems. Burnout stress syndrome accounts for about 54% and that to it is found in 2% of the population and musculoskeletal problems mainly neck accounts for about 51%. Some of the limitations of the study were small sample size and different working environment. For future studies recommendation such as Specification of women business process outsourcing workers can be included for the future study and Future study can be included as such as work site modification which can reduce musculoskeletal discomfort risk factors, psychological counseling, ergonomic setup among the workers for better results

and prevention.

CONFLICTS OF INTERESTS

None to declare.

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