



A Study of Musculoskeletal Pain among Hotel Employees, India

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Abstract

Background: Musculoskeletal disorders are leading cause of ill-health globally and workers are disproportionately affected due to repetitive tasks and postures. Little is known about these disorders among hotel employees in India. **Objective:** The study aims to find prevalence of musculoskeletal disorders among workers in luxury hotels and identify their determinants. **Materials and Methods:** A cross-sectional study design was employed. The study sites included eight hotels across other four cities. A pre-designed, pilot tested semi-structured questionnaire was self-administered by study respondents. Main outcome variable was self-reported musculoskeletal pain/discomfort. Data on predictor variables including socio-demographic, physical and psychosocial environment was collected. Prevalence of musculoskeletal pain/discomfort was estimated. Chi-square test was used for bi-variate analysis. Binary multiple logistic regression method was used to identify factors associated with the outcome variable 'Any chronic musculoskeletal pain' and site-specific subtypes. **Results:** Out of 1183 respondents, 526 (45%) reported having musculoskeletal pain/discomfort which chiefly included backache 320 (27%), pain in legs 206 (17%), joint pain 157 (13%) and neck pain 88 (7%). 'Chronic musculoskeletal pain' was associated with four variables; namely, years of service (OR = 1.018; 1.002–1.034), heavy stress of lifting objects (OR = 1.908; 1.289–2.825), psychological wellbeing (GHQ-12 item) (OR = 1.214; 1.135–1.299) and type of work (desk workers had lower odds (OR = 0.355; 0.178–0.709) than housekeepers). **Conclusion:** Prevalence of musculoskeletal pain/discomfort is high among hotel workers. Stress of lifting objects, psychosocial well-being, duration of service and type of work are key determinants.

Keywords: Hotel Workers, Musculoskeletal Pain, Physical Stressor, Psycho-Social Stressor

1. Introduction

Musculoskeletal disorders are leading cause of morbidity globally with prevalence of 8.4% and are ranked sixth in terms of disability burden^{1,2}. Musculoskeletal disorders include injuries as well as disorders that affect the locomotive systems including chiefly the bones, joints, muscles, tendons, ligaments and nerves. While the musculoskeletal conditions could be both related to and not related to occupation of individuals, the evidence highlights that significant proportion of this burden is work-related³. A worker as part of her/his job responsibilities conducts various tasks such as bending, sitting, lifting, etc. These tasks involve biomechanical hazards which may either result in or aggravate musculoskeletal issues. Most of the empirical evidence with respect to prevalence, risk factors, and interventions comes from high income countries⁴. The musculoskeletal conditions have not received much attention in low income countries.

Globally, most of earlier literature on musculoskeletal conditions was concentrated on manufacturing industry⁴. Recently, the focus has moved to service industry as well.

There is evidence that employees in hotels and restaurants are at higher risk of musculoskeletal disorders. In the United States, musculoskeletal risk factors are highest in manufacturing sector and second highest in the hotel and catering industry⁵. In Denmark, age-standardised hospitalisation ratios were significantly higher among workers in hospitality compared with all working population⁶. The hospitality industry involves various hazards, predominantly ergonomic in nature associated with body postures, body movements and repetitive tasks.

It is important to note that hotels have various departments and tasks performed by employees varies greatly by the departments. The biomechanical risk factors vary by the jobs and hence the musculoskeletal conditions may also vary by occupations. For example, housekeeping is associated lifting weights and thus with low back pain and desk-work with neck pain^{4,7,8}. Lee et al. (2013) notes that research on work-related musculoskeletal disorders among hotel workers has targeted only kitchen and housekeeping departments and not investigated the entire range of hotel workers⁵.

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There is dearth of literature on prevalence of musculoskeletal conditions among hotel workers in India. In fact, there are only a few research papers on health of hotel workers or on musculoskeletal disorders⁹⁻¹¹. This study was therefore undertaken to find prevalence of symptoms related to musculoskeletal conditions among hotel workers and to identify risk factors associated with the musculoskeletal conditions.

2. Subjects and Methods

This paper is part of a larger study of morbidity, mental well-being and risk factors among hotel employees. This section covers methods relevant to musculoskeletal conditions. Since, the study objective was to find out prevalence of musculoskeletal conditions, cross-sectional study design was adopted. We listed key variables within the domains of psychosocial well-being, physical stress, work hours, etc. based upon a musculoskeletal health model¹² and looked for their association with presence or absence of musculoskeletal conditions.

2.1 Study Variables and Tools

Socio-demographic variables included age, sex, education, marital status, income and type of house. Data on years in service, type of occupation (housekeeping, food preparation, etc.), stress of lifting objects at workplace and average number of extra-hours of work per week was collected for assessing physical working conditions. Psychosocial well-being were measured by 12-item General Health Questionnaire (GHQ-12)¹³. Body mass index was also included. For these musculoskeletal conditions, self-reported data on musculoskeletal pain was collected. With respect to musculoskeletal pain, variables included 'site of musculoskeletal pain', 'duration of pain' (less than or more than 15 days), 'whether pain reported to supervisor', and 'reasons for not reporting to supervisor'. Clinical examination or confirmation was not part of the study protocol. A pre-designed self-administered tool was prepared in English by two researchers and modified with comments from academicians and practitioners. A draft tool was prepared in discussion with faculty from occupational health sciences as well as the human resource managers in the hotels. The draft tool was pilot tested with 14 employees in one of the hotels; these 14 did not participate in the final survey. With respect to musculoskeletal conditions, pilot highlighted need to collect pain data site wise and that on hospitalization and chronic conditions due to musculoskeletal conditions. Relevant questions were added to the questionnaire based on the results of pilot test.

2.2 Study Settings and Sampling

The data of this study has been collected from luxury hotels. A chain of hotels had three luxury hotels in Mumbai and all employees from these three hotels (approximately 2500)

were invited to participate. In order to reflect situation from other hotels in the chain, two luxury hotels from Delhi, one luxury hotel from Kochi and one semi-luxury hotel from Delhi and Nasik were also included. However for these, only a total of 300 employees were randomly selected given feasibility constraints. Data from all these hotels has been analysed together.

2.3 Data Analysis

Data was collected by self-administered questionnaires in Hindi and English. Research staff checked all the questionnaires manually first and then entered data in IBM spss version 16. The questions had option 'Don't know', 'Can't say' and if the respondent did not want to respond she/he could keep the field blank. Data was cleaned and analysed with frequency and percentages. Occupation was coded into one of the seven categories; namely housekeeping, desk workers, food preparation, food service, engineering and security (as single category), front office and others. Stress of lifting objects depends upon number of times object/s is/are lifted and weight of the objects. For the purpose of this study, we operationally defined stress as low, moderate or heavy based upon these two criteria (Figure 1). Body Mass Index was categorised into four categories; less than 18.5 as underweight, 18.5 to 24.9 normal, 25 to 29.9 as overweight and more than 30 as obese.¹⁴ Bi-variate analysis was conducted for musculoskeletal pain at any site and then specifically for back, neck, leg and joints. Multivariate analysis (multiple binary logistic regressions) was performed for musculoskeletal pain (any) and subgroups (site-specific musculoskeletal pain such as pain in back, neck, leg and joints) to find adjusted odds ratios. While performing multivariate analysis; GHQ score, years of service and hours of overtime per week were taken as continuous variables whereas others continued to be categorical. Age was not included in bi or multi-variate analyses as it had high collinearity with years of service.

Number of times object/s is/are lifted every day	0-5 Kg	5-10 Kg	11-20 Kg	21-30 Kg	> 30 Kg
One or two times	L	L	L	M	H
Three to five times	L	L	M	H	H
Six to ten times	L	M	M	H	H
More than ten times	M	H	H	H	H

L: Light stress, M: Moderate stress, H: Heavy stress

Figure 1. Classification of Stress of lifting objects.

2.4 Ethical Considerations

The study followed ethical principles of Declaration of Helsinki. Being of observational nature, the study did not involve major ethical concerns. Permission to conduct was sought from all hotels. A written informed consent was obtained before participation from the respondents. The rights to privacy and confidentiality were explained to the eligible respondents.

3. Results

Out of estimated eligible respondents (2800) in sampling frame, 1183 (42.3%) participated in the study. Out of the 1183 hotel employees, 526 (44.5%) reported chronic musculoskeletal pain for at least two weeks during past six months (Table 1). Pain in the back was most common (320; 27.0%) followed by that in legs (206; 17.4%), joints (157; 13.3%) and neck (88; 7.4%). More than half (297 out of 519; 57.2%) of the workers who had chronic musculoskeletal pain had not reported same to their supervisors or physicians. Most common reasons of not reporting were that 'the workers thought that it would get better on its own' (204; 68.7%)

and that 'they did not know that they should report to supervisor' (81; 27.3%). Other common reasons included 'Supervisor is not empathetic to him/her and reporting won't be useful' (52, 17.5%), 'too many steps in reporting' (49; 16.5%), 'Fear that career will get affected although job will be retained' (34; 11.4%), etc.

Table 2 shows that among various departments within hotel, housekeeping and restaurant had higher prevalence of any chronic pain and most of the site-specific musculoskeletal pains. Males were significantly more likely to have musculoskeletal pain than females. Proportion of individuals with pain increased as the years of service and stress of lifting objects increased. Mental wellbeing was negatively associated with having chronic musculoskeletal pain or having any site-specific pain. Among specific musculoskeletal pain subgroups, back pain was associated with occupational group and stress of lifting objects. Pain in neck was associated with lifting heavy objects. Pain in legs was associated with years of service. Pain in joints was associated with both lifting heavy objects and with years of service. Body mass index and doing overtime were not found to be associated with any of the pain.

Table 1. Chronic musculoskeletal pain among hotel workers and their access to healthcare.

	Number (%)
Chronic musculoskeletal pain (n = 1183)	
Any chronic musculoskeletal pain	526 (44.5)
Site-wise musculoskeletal pain	
Back	320 (27.0)
Neck	88 (7.4)
Joint	157 (13.3)
Leg	206 (17.4)
Reporting musculoskeletal pain to supervisor (n = 519)*	
Reported pain to supervisor	222 (42.8)
Did not report pain to supervisor	297 (57.2)
Reasons for not reporting pain to supervisor or physician (n = 297)	
Thought that it would get better	204 (68.7)
Did not know that he/she should report to supervisor	81 (27.3)
Supervisor is not empathetic to him/her and reporting won't be useful	52 (17.5)
Too many steps in reporting	49 (16.5)
Fear that career will get affected although job will be retained	34 (11.4)
Fear of getting into trouble if pain is reported#	28 (9.4)
She/he did not want to take a test or medicines	26 (8.8)
Fear of loosing the job	16 (5.4)
Co-worker told her/him not to tell supervisor	9 (3.0)
Other reasons	12 (4.0)

* Seven respondents did not respond to question about reporting pain to supervisor

This is exclusive of fear of loosing job or career advancement within the hotel

Table 2. Musculoskeletal pain among hotel workers according to socio-demographic characteristics and working conditions#.

Socio-demographic characteristics and working conditions	Any chronic musculoskeletal pain	Musculoskeletal Pain at specific sites			
		Back	Neck	Leg	Joints
Sex	($\chi^2 = 7.079$)*	($\chi^2 = 2.765$)	($\chi^2 = 2.347$)	($\chi^2 = 3.242$)	($\chi^2 = 0.490$)
Male	477 (45.9)	290 (27.9)	73 (7.0)	189 (18.2)	140 (13.5)
Female	48 (34.0)	30 (21.3)	15 (10.6)	17 (12.1)	16 (11.3)
BMI	($\chi^2 = 2.548$)	($\chi^2 = 2.058$)	($\chi^2 = 0.575$)	($\chi^2 = 3.761$)	($\chi^2 = 4.317$)
Underweight	30 (50.8)	21 (35.6)	4 (6.8)	7 (11.9)	6 (10.2)
Normal	221 (42.7)	139 (26.9)	39 (7.5)	83 (16.1)	61 (11.8)
Overweight	150 (46.0)	93 (28.5)	26 (8.0)	66 (20.2)	51 (15.6)
Obese	51 (48.6)	29 (27.6)	10 (9.5)	18 (17.1)	18 (17.1)
Years of service	($\chi^2 = 22.798$)*	($\chi^2 = 3.881$)	($\chi^2 = 6.309$)	($\chi^2 = 19.830$)*	($\chi^2 = 30.917$)*
<5 years	138 (37.6)	91 (24.8)	21 (5.7)	48 (13.1)	32 (8.7)
5 to <10 years	85 (39.7)	56 (26.2)	14 (6.5)	31 (14.5)	17 (7.9)
10 to <20 years	136 (48.7)	79 (28.3)	23 (8.2)	50 (17.9)	43 (15.4)
20 to <30 years	43 (46.2)	24 (25.8)	6 (6.5)	17 (18.3)	17 (18.3)
30 or more years	116 (56.3)	66 (32.0)	23 (11.2)	56 (27.2)	47 (22.8)
Stress of lifting weights at workplace	($\chi^2 = 42.969$)*	($\chi^2 = 36.246$)*	($\chi^2 = 7.905$)*	($\chi^2 = 11.545$)	($\chi^2 = 30.849$)*
Low	140 (32.8)	72 (16.9)	21 (4.9)	54 (12.6)	28 (6.6)
Moderate	54 (45.4)	41 (34.5)	13 (10.9)	23 (19.3)	15 (12.6)
Heavy	169 (57.3)	104 (35.3)	28 (9.5)	65 (22.0)	60 (20.3)
Occupational group	($\chi^2 = 26.503$)*	($\chi^2 = 20.753$)*	($\chi^2 = 5.435$)	($\chi^2 = 11.190$)	($\chi^2 = 14.025$)*
Housekeeping	107 (52.5)	67 (32.8)	17 (8.3)	42 (20.6)	37 (18.1)
Desk workers	38 (31.1)	19 (15.6)	12 (9.8)	14 (11.5)	9 (7.4)
Front office	28 (44.4)	17 (27.0)	5 (7.9)	6 (9.5)	6 (9.5)
Restaurant	167 (48.1)	109 (31.4)	30 (8.6)	69 (19.9)	51 (14.7)
Kitchen and bakery	146 (46.1)	85 (26.8)	19 (6.0)	59 (18.6)	45 (14.2)
Others	17 (27.0)	10 (15.9)	2 (3.2)	8 (12.7)	5 (7.9)
Security and engineering	23 (34.8)	13 (19.7)	3 (4.5)	8 (12.1)	4 (6.1)
Psychological wellbeing (General Health Questionnaire – 12 score)	($\chi^2 = 40.022$)*	($\chi^2 = 33.926$)*	($\chi^2 = 10.702$)*	($\chi^2 = 16.816$)*	($\chi^2 = 6.117$)*
0-2	249 (36.7)	140 (20.6)	36 (5.3)	92 (13.5)	76 (11.2)
3-12	277 (55.2)	180 (35.9)	52 (10.4)	114 (22.7)	81 (16.1)
Overtime	($\chi^2 = 0.974$)	($\chi^2 = 0.014$)	($\chi^2 = 0.581$)	($\chi^2 = 0.951$)	($\chi^2 = 1.100$)
At least once a week	133 (41.8)	86 (27.0)	27 (8.5)	51 (16.0)	36 (11.3)
Rarely	353 (45.1)	209 (26.7)	56 (7.2)	145 (18.5)	107 (13.7)

The data was collected by a self-administered tool and some respondents had left certain fields blank. Hence, the total may not add up to 526.

Table 3. Multi-variate regression analysis of musculoskeletal pain by socio-demographic characteristics and working conditions (n = 543)#.

Socio-demographic characteristics and working conditions	Any chronic musculoskeletal pain	Musculoskeletal Pain at specific sites			
		Back	Neck	Leg	Joints
Sex					
Male	Reference	Reference	Reference	Reference	Reference
Female	0.684 (0.368 – 1.270)	0.911 (0.452 – 1.836)	2.556 (0.935 – 6.986)	0.836 (0.366 – 1.905)	1.318 (0.484 – 3.589)
BMI					
Normal	Reference	Reference	Reference	Reference	Reference
Underweight	1.487 (0.703 – 3.147)	1.615 (0.752 – 3.470)	0.572 (0.124 – 2.638)	1.017 (0.388 – 2.666)	1.037 (0.329 – 3.267)
Overweight	1.186 (0.816 – 1.725)	1.233 (0.816 – 1.864)	1.231 (0.631 – 2.400)	1.206 (0.756 – 1.923)	1.392 (0.814 – 2.378)
Obese	1.344 (0.771 – 2.343)	1.109 (0.600 – 2.049)	1.501 (0.597 – 3.777)	0.940 (0.455 – 1.943)	1.377 (0.638 – 2.973)
Years of service	1.018* (1.002 – 1.034)	1.001 (0.984 – 1.018)	1.022 (0.995 – 1.049)	1.025* (1.005 – 1.044)	1.034* (1.012 – 1.056)
Stress of lifting objects at workplace					
Low	Reference	Reference	Reference	Reference	Reference
Moderate	1.424 (0.853 – 2.378)	2.178* (1.289 – 3.680)	3.622* (1.458 – 9.001)	1.266 (0.671 – 2.389)	1.925 (0.880 – 4.211)
Heavy	1.908* (1.289 – 2.825)	2.505* (1.649 – 3.806)	2.515* (1.132 – 5.586)	1.065 (0.645 – 1.758)	2.902* (1.577 – 5.341)
Occupational group					
Housekeeping	Reference	Reference	Reference	Reference	Reference
Desk workers	0.355* (0.178 – 0.709)	0.549 (0.248 – 1.215)	0.741 (0.202 – 2.711)	0.466 (0.194 – 1.119)	0.732 (0.258 – 2.077)
Front office	1.214 (0.530 – 2.780)	1.077 (0.437 – 2.652)	1.877 (0.538 – 6.557)	0.358 (0.097 – 1.322)	0.918 (0.268 – 3.145)
Restaurant	0.817 (0.486 – 1.375)	1.031 (0.583 – 1.822)	1.112 (0.445 – 2.778)	0.702 (0.373 – 1.323)	0.928 (0.450 – 1.914)
Kitchen and bakery	0.870 (0.519 – 1.457)	0.924 (0.528 – 1.619)	0.948 (0.376 – 2.393)	0.877 (0.472 – 1.630)	1.160 (0.578 – 2.328)
Others	0.588 (0.258 – 1.338)	0.688 (0.269 – 1.758)	0.564 (0.109 – 2.920)	0.729 (0.262 – 2.030)	0.857 (0.257 – 2.857)
Security and Engineering	0.663 (0.300 – 1.466)	0.966 (0.387 – 2.407)	0.426 (0.050 – 3.617)	0.635 (0.218 – 1.850)	0.371 (0.078 – 1.767)
Psychological Wellbeing (General Health Questionnaire – 12- score)	1.214* (1.135 – 1.299)	1.161* (1.082 – 1.247)	1.146* (1.026 – 1.281)	1.142* (1.054 – 1.237)	1.060 (0.964 – 1.166)
Hours of overtime	1.010 (0.991 – 1.029)	1.022* (1.002 – 1.043)	1.015 (0.983 – 1.048)	1.008 (0.985 – 1.033)	0.987 (0.956 – 1.018)
Constant	0.287	0.105	0.015	0.110	0.042

Only 543 respondents had completed the entire questionnaire; hence multiple regression analysis was limited to this number.

Multivariate analyses (Table 3) showed that with increasing years of service, chances of any chronic pain, pain in legs and joints increased. Adjusted odds of having all types of pain (except neck pain) were significantly higher among those who had heavy load of lifting objects. After adjusting for other variables, occupational group was not found to be significantly associated with any site-specific pain. However, housekeeping still had higher odds than desk workers when all types of pain were combined (any chronic pain). Lack of mental well-being had consistently and significantly higher odds of all types of pain.

4. Discussion

This is first Indian study which documents prevalence of musculoskeletal conditions among hotel employees. The prevalence is undoubtedly high affecting nearly half of the employees. The findings are important because most of previous research was among specific occupational types such as housekeeping or restaurant^{5,15}. The prevalence was highest among the housekeeping staff followed by restaurant and kitchen and bakery staff. The prevalence was higher among men, those with more number of service years, heavy physical work involving lifting of objects and poor psychosocial well-being. A previous study from South Korea also showed that heavy physical work was associated with higher prevalence of musculoskeletal disorders; however, that study found prevalence to be higher among men⁵. Differences across gender could be because there is division of labor based on gender in India which results in differential exposures of the two genders to the ergonomic and psychosocial risk factors⁵. After adjusting for the stress of lifting objects and psychosocial well-being, there was no gender-wise difference indicating that the difference may be due to such physical or psychosocial factors.

As seen in this study, more than half did not report pain to supervisor or physician. This is similar to the findings from high income countries¹⁶. Most common reasons in literature, 'I thought it would get better' and 'I did not know I should' were found in this study as well. Other reasons that were found to contribute to poor access to health care include 'too many steps in reporting', 'fear of getting in trouble', 'fear of losing job' and 'supervisor did not understand me'. It is important to sensitise the workers about importance and benefits of early reporting.

Recent literature has attempted to identify the specific biomechanical factors that lead to musculoskeletal conditions. A recent meta-analysis which pooled data from various studies found that biomechanical risk factors with at least reasonable evidence include excessive repetition, awkward postures, and heavy lifting⁴. In the present study also, heavy lifting was found to be associated with musculoskeletal pain; however, we did not assess specific biomechanical factors such as bending, carrying, awkward postures, etc. Similar to previous studies^{6,17}, the

association between stress of lifting weight and musculoskeletal pain persisted to be significant even after controlling for other variables.¹⁶ Literature also documents role of years of service, housekeeping job and psychosocial well-being in causing musculoskeletal disorders as reported in this study.⁴ For each anatomical sites of pain, there are some specific ergonomic factors that play a role. Therefore, we discuss site specific pains in detail in next paragraphs.

In this study, back pain was most commonly reported site of pain which is consistent with existing literature^{7,18}. Among all hotel workers, housekeeping staff had higher prevalence of backache and this again is consistent with existing literature¹⁸. However, after adjusting for heavy workload and other factors, odds of musculoskeletal pain among various occupational groups within the hotel were not significantly different in this study. A systematic review documented association of backache with lifting heavy weights¹⁹ and this study shows similar finding. Prevalence of low back pain was high (one fourth) even among those with less than five years of service. The increase in prevalence thereafter was not significant which has also been documented in past^{20,21}. The point of concern here is that the back pain sets in early among sizeable number of workers and needs priority attention.

The risk factors associated with neck pain are much different from that of back pain. Female gender has been documented risk factor for neck pain⁴; this study's findings also show high (although not significantly higher) neck pain prevalence among women workers. There is insufficient evidence of heavy physical work or lifting causing neck pain. However, in the present study, the stress due to lifting objects was found to be associated with neck pain. This may be because lifting of objects within hotel settings often involve arm or hand movements which affect the neck/shoulder musculature and generate loads on the neck/shoulder area. Daily sitting time has strong correlation with pain in neck is daily sitting time⁸. Although in this study, we did not measure the sitting time, prevalence of neck pain was highest among the desk workers.

This study included all joint pains as single category. The anatomical position and physiological function of joints vary and a particular physical stress may affect one joint but not the other. It is possible that specific joints have specific stressors but the absolute number of specific joint pains were smaller which prevented advanced statistical analysis of the joint sub-groups (knee, shoulder, etc.). In the present study, we found that lifting heavy weight was associated with joint pain. There is some evidence regarding this with respect to knee joint⁴. Lifting heavy objects may also affect the joints of upper extremity especially the shoulder joint.

With respect to pain in legs, previous studies have not identified specific biomechanical risk factor⁴. Standing time is associated with pain in legs⁹; however, we did not measure

standing time in this study which may be associated with pain in leg. Among the factors studied, only years of service and mental well-being were associated with having pain in legs.

Psychological well-being was found to be associated with most types of chronic musculoskeletal pain in this study. Psycho-social factors have been incriminated in musculoskeletal conditions in past^{22,23}. Being a cross-sectional study, it is difficult to determine temporality and thereby causality. It is also possible that the scores on GHQ-12 were higher due to musculoskeletal pain affecting psychological well-being.

It is important to look for possible means of reducing musculoskeletal pain. The interventions can include change in physical structures which could reduce the instances of lifting weights²⁴. Design of equipment such as trolleys will determine the push-pull force needed to move them and appropriate design can reduce forces and avoid lifting of heavy objects. In addition to these, ergonomic training has been found to be useful¹⁸.

The study had certain limitations. Self-reported musculoskeletal pain was the chief outcome measure which has a possibility of underestimation. With respect to physical work, stress due to lifting objects was assessed. However, static loads such as prolonged standing, sitting, carrying/holding objects was not measured. Detailed ergonomic study is required to understand various physical stressors that are peculiar to each department. Similarly psychosocial factors were studied by GHQ but specific psychosocial factors such as job control, job demand, and social support were not studied. Nevertheless, the study highlights neglected burden of musculoskeletal conditions and physical and psychosocial factors responsible for same.

5. Conclusion

The hotel workers have high burden of musculoskeletal conditions. The musculoskeletal pain is associated with physical stress of lifting objects and mental well-being after adjusting for other variables indicating that these conditions are related to work stressors. In order to improve health of the hotel workers, intervention studies are needed where ergonomic as well as psychosocial factors are addressed in a holistic manner.

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