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The Prevalence and Risk Factors of Work-Related Low Back Pain among Hotel & Restaurant Workers in Peshawar: A Cross-Sectional Study

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Abstract

Background:

Low back pain (LBP) is a major occupational health concern and a leading cause of disability, especially in low- and middle-income countries like Pakistan, where poor ergonomics and lack of awareness contribute to hazardous working conditions.

Objective:

To assess the Prevalence and risk factors of work-related low back pain (WR-LBP) among hotel and restaurant workers in Peshawar, Pakistan.

Methods:

A cross-sectional study was conducted on 377 workers using the Standardized Nordic Questionnaire and the Numerical Pain Rating Scale. Participants were selected through convenience sampling. Data were analyzed using SPSS-23 for descriptive statistics and chi-square tests.

Results:

WR-LBP was reported by 173 workers (45.9%). The highest prevalence was among chefs (12.2%), followed by waiters (11.1%), managers (8.8%), receptionists (8%), and housekeeping staff (5.8%). WR-LBP was significantly associated with gender, work experience, occupation, BMI, ergonomics training, back ergonomics knowledge, job stress, satisfaction, and ergonomic factors ($p < 0.05$). Marital status, exercise, and sleep disturbance were not statistically significant ($p > 0.05$).

Conclusion:

There is a high prevalence of WR-LBP among hotel and restaurant workers, particularly among males. Demographic, occupational, personal, and psychological factors are key contributors, highlighting the need for ergonomic training and preventive workplace strategies.

Key Words: Low Back Pain, Musculoskeletal Disorder, Work-related Low Back Pain, Work-Related Musculoskeletal Disorder, Hotel and Restaurant Personnel, Workplace Ergonomics.

Introduction

LBP is the most frequently observed work-related musculoskeletal disorder (WR-MSDs), and it exerts a significant burden on individual healthcare and social services, with the majority of the costs being pre-eminent indirectly (1). Work-related low back pain (WR-LBP) is a musculoskeletal disorder that arises from occupational exposure and is clinically analyzed to have been aggravated or caused, at least partially, by the work environment (2). Working in hotels can be challenging and exhausting at times but employees must deliver excellent service to customers (3). A substantial proportion of WR-LBP is aggravated by work-related activities. Multiple WR-MSDs, specifically WR-LBP, may be caused by faulty posture, repeated work, physical handling of the load, overuse, and poorly equipped work environments (4). Workers at restaurants are required to keep erect posture due to long shifts and repeated movements. The main trigger of sick leave from work is WR-LBP (5). Due to the modern lifestyle, LBP at work has put a heavy financial strain on the government, particularly in terms of medical expenses, reduced efficiency, absences from work, and disability (6). WR-LBP is becoming more prevalent in low and middle-income countries, burdening the occupational population worldwide. In addition to being the main cause of work-related limitations, it is also the second most common reason for work absenteeism and reduced productivity worldwide. According to the 2010 Global Burden of Disease (GBD) Study, among 291 medical conditions, WR-LBP is rated 6th internationally and 10th in South Asia in terms of total burden. According to a recent GBD study, out of 25 disorders, WR-LBP is the most common worldwide health condition. It ranks top in terms of disability, and its prevalence is accelerating at a rapid rate of 47% from 1990 to 2019 (7). The predicted range of WR-LBP prevalence in Saudi Arabia is 18.8% to 53.5%. Simultaneously, WR-LBP is regarded as a primary cause of missed workdays and lost efficient working time. In reality, in Saudi Arabia, 24.1% of employees reported decreased working, hours, 29.2% reported fewer activities performed, and 15.3% reported that they missed work as a result of WR-LBP (8). Recent studies reported that WR-LBP will cause 40% of nonattendance at job and reduce the workers efficiency (9). Continuous work is one of the causes of about 37% of WR-LBP patients. Healthcare personnel have the highest percentage of WR-LBP, ranging from 50% to 70% (10). Physical, psychological, and/or personal risk factors, as well as ergonomic stressors at work, are predictive of WR-LBP (1). Personal variables that should be considered as risk factors include age, sex, seniority, fitness routine, lifestyle, and psychological traits and capacities (11). Back pain outcomes are also influenced by certain identified risk factors, such as obesity. Stress, discomfort, mood disorders, pain behavior, cognitive functioning, job frustration, and mental strain at work are examples of psychosocial risk factors. Engaging in strenuous physical activities, flexing trunk, turning, lifting, pulling, and pushing, repeated task, static postures, and exposure to vibrations are the risk factors that are most commonly identified (12). In the clinical diagnosis process, a thorough medical history and description of symptoms is the first stage (13). To assess WR-LBP, a thorough medical history and physical-examination are necessary (14). A doctor will be able to identify the origin of the pain, based on the patient's medical history. If the cause of the pain is unknown, additional diagnostic tests may be necessary (13). Straight leg raise test (SLR) is one of the common diagnostic physical examination test for patients with back, lower back, and LE pain (15). SLR, also known as the Laseque's sign, is a simple examination in which the patient lies on their back and a doctor raises one leg without bending it at the knee. If pain typically leg pain is felt during this movement, it may indicate a sciatic radiculopathy or a probable disc bulge in the lumbar spine (Figure 1) (13).

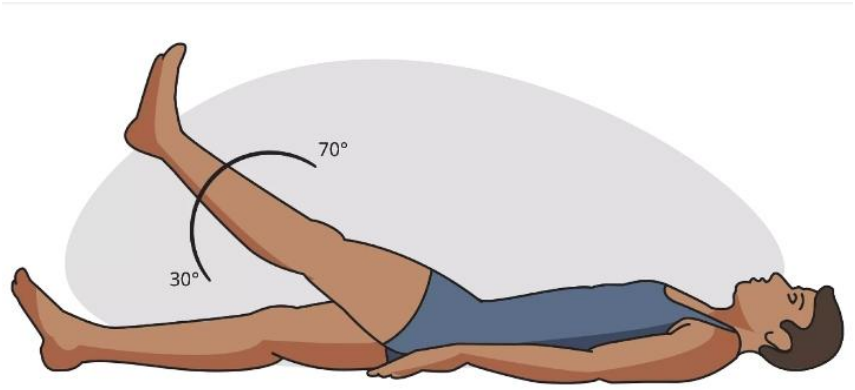

Figure 1 Showing Straight Leg Raise (SLR)

Strength, sensation, and reflex tests are all part of the neurologic evaluation of the LE, even when there is no discernible sciatica. In serious cases, magnetic resonance imaging (MRI) is the most appropriate diagnostic tool. If MRI is not available or is contraindicated, computed tomography is a viable alternative (14). Physiotherapy is crucial to the management of WR-LBP (11). For rehabilitation of WR-LBP, physical therapists frequently recommend the McKenzie approach or trunk stabilization exercises (14). For WR-LBP, flexibility and strengthening exercises and thermotherapy or cryotherapy are also beneficial. Avoiding the activities that are causing the injury is the first step in treatment of WR-MSDs. Work constraints are necessary for this. A splint can also be used for the immobilization of the injured joint or limit movement. Stretching assists in reducing muscle tone and increasing circulation (11). Resistance training contributes to an improvement in muscular tone and quality. Maintaining proper posture is much easier with sufficient torso strength. Patient education is crucial, to avoid and minimize WR-MSDs (11). For workers in hotel & restaurants, WR-MSDs, particularly WR-LBP related to their employment, were one of the most important occupational health hazards. Pain at work may prevent employees from producing high-quality work (11). Therefore, the purpose of this study was to determine the prevalence of WR-LBP among workers in hotels & restaurants and to identify the risk factors associated with their profession. The objective of this study is to evaluate the prevalence the prevalence of work-related low back pain and its associated risk factors among hotel and restaurant workers in Peshawar, Pakistan. By identifying the prevalence and key risk factors, this research aims to guide targeted population about ergonomics for reducing work-related low back pain among hotel and restaurant workers in Peshawar, ultimately promoting occupational health and enhancing workforce productivity.

Methods

A cross-sectional survey was conducted to determine the prevalence and risk factors of work-related low back pain among hotel & restaurant workers in Peshawar between May 2024 and October 2024. The study targeted all the employees working at different hotels and restaurants in Peshawar. Participants were selected based on inclusion criteria that required those to be male or female students aged 18 to 60, actively working at their respective designation. Individuals having working experience less than 6 months and were excluded. Additionally, employees with underlying medical conditions (Lumbar lordosis, scoliosis, recent spinal surgery, cancer, infections, MS) were also excluded to ensure the study focused specifically on WR-LBP as experienced by otherwise healthy workers. Data collection utilized a reliable and validated questionnaire adapted from previously established tools to gather demographic details and assess WR-LBP and its risk factors. Before data collection, participants were provided with an information sheet explaining the study, and any questions they had

were addressed. Informed consent was obtained from all participants prior to their inclusion. The Investigator administered the questionnaire verbally to ensure clarity and consistency, and responses were recorded directly. For data analysis, the Statistical Package for Social Sciences (SPSS) version 23 was employed. Continuous variables such as age, height &eight were analyzed using mean and standard deviation, while categorical variables such as gender, Marital Status, and work experience were summarized using frequencies and percentages. The chi-square test was utilized to explore associations between the categorical variables, WR-LBP prevalence, and related risk factors. Cross-tabulation was used to present frequency counts and percentages for each variable, and the results were summarized in tabular format for clarity.

Operational Definitions

Work-related Low Back Pain (WR-LBP): WR-LBP was assessed using a reliable and validated questionnaire 'Standardized Nordic Questionnaire' adopted from a previous study conducted in Gondar town, North West Ethiopia. Numerical pain rating scale (NPRS) was used to assess the severity of pain.

Risk Factors: Risk factors for WR-LBP included prolonged standing or sitting, heavy lifting, housekeeping, frequent bending, twisting, lifting, using manual instruments, faulty posture, exceeding physical limits, not getting enough rest, and psychosocial risk factors including job dissatisfaction, mental stress at work, sleep disturbance and pain behavior

Results

Sociology-demographic characteristics of the study participants

The study included 377 participants. All the 377 questionnaires were considered for analysis giving a response rate of 100%. Majority 361 (95.8%) of the study participants were male. Nearly 210 (55.7%) of respondents were married. The mean (± SD) age of the participants was 30.36 ± 9.046, height 67.29 ± 3.141 inches. Nearly 39 (10.3%) of workers had more than 15 years of work experience. Majority of the respondents were waiters, 145 (38.5%). Majority of the respondents 185 (49.1%) were of normal weight while 34 (9.0%) were obese (Table 1)

Personal Factors of Respondents

Above half 224 (59.4%) of respondents had taken the ergonomics training and the remaining, 153(40.6%) haven't taken ergonomics training. Moreover, 223 (59.2%) of workers had knowledge on back ergonomics while the rest, 154 (40.8%) had no knowledge. Of the 377 participants, 165 (43.8%) said they never exercise, 125 (33.2 %) exercise occasionally, and 87 (23.0 %) exercise regularly. (Table 1)

Psychological Factors of the Participants.

A total of 377, 109 (28.9%) workers had mental stress due to work and 268 (71.1%) workers had no mental stress due to work. 176 (46.7%) workers reported sleep disturbance due to work and 201 (53.3%) workers had no such issue. A few of workers, 10 (2.7%) were very dissatisfied with work, 25 (6.6%) were dissatisfied with work while 147 (39.0%) were satisfied with work and 195 (51.7%) workers were very satisfied with their work. (Table 1)

Prevalence of Work Related Low Back Pain

This study revealed that the prevalence of work-related low back pain among hotel and restaurant worker in Peshawar, Pakistan was 45.9% (n=173). (Fig-2)

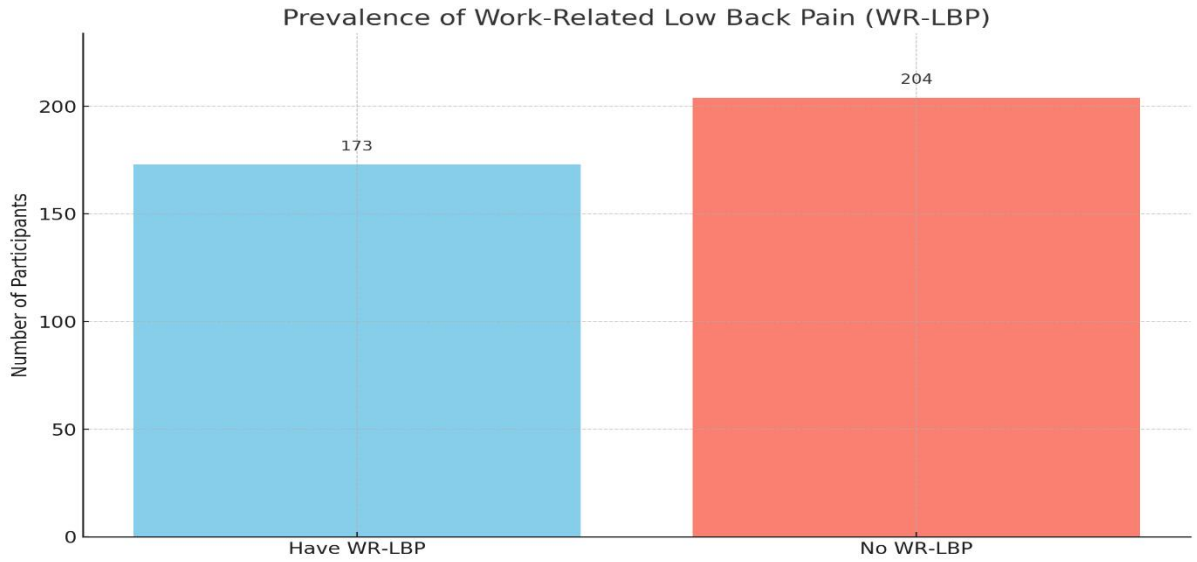

Figure 2 Prevalence of WR-LBP

Furthermore, back pain was the main culprit for absenteeism from work of 60(34.7%) workers. Among these, very few, 33 (19.1%) of study participants had changed their job due to low back pain while the rest continued. (Table 2)

Occupational & Ergonomic Factors of the Participants

Out of 173 respondents, majority 107 (61.8%) had LBP onset after work. Moreover, 56 (32.4%) workers had more LBP during the night shift. (Table 2)

Table 1 Socio-demographic and Personal factors of Participants

Variables		***f***	**%**
Gender			
Male		361	95.8
Female		16	4.2
Marital Status			
Married		210	55.7
Unmarried		167	44.3
Working experience			
6months-1 year		75	19.9
2-5 years		153	40.6
6-10 years		81	21.5
11-15 years		29	7.7
>15 years		39	10.3
Occupation			
Manager		50	13.3
Receptionist		54	14.3
Waiter		145	38.5
Chefs/cook		90	23.9
Housekeeping staff		38	10.1

BMI			
Underweight (<18.5)		20	5.3
Normal weight (18.5-24.9)		185	49.1
Over weight (25.0-29.9)		138	36.6
Obese (30.0 & >30.0)		34	9
Ergonomic Training	Yes	224	59.4
	No	153	40.6
Knowledge on Back Ergonomics	Yes	223	59.2
	No	154	40.8
Habit of Regular Exercise	Never exercised	165	43.8
	Sometimes	125	33.2
	Usually	87	23
Mental stress due to work	Yes	109	28.9
	No	268	71.1
Sleep disturbance due to Work	Yes	176	46.7
	No	201	53.3
Work satisfaction	**Very dissatisfied**	10	2.7
	Dissatisfied	25	6.6
	Satisfied	147	39
	Very satisfied	195	51.7

Table 2 Factors related WR-LBP status and Occupational/ Ergonomic factor of Participants

Variables		***f***	**%**
Absence from work due to WR-LBP	**Yes**	60	34.7
	No	113	65.3
Job changed due to WR-LBP	**Yes**	33	19.1
	No	140	80.9
LBP onset after work	**Yes**	107	61.8
	No	66	38.2
More LBP at the night shift	**Yes**	56	32.4
	No	117	67.6

A descriptive analysis of the aggravating factors associated with work-related low back pain (WR-LBP) among the 173 affected participants revealed that the most commonly reported cause was prolonged standing or sitting, accounting for 67 cases (38.7%). This was followed by physical fatigue in 35 workers (20.2%), awkward working postures in 26 workers (15.0%), and bending, twisting, or lifting activities in 29 workers (16.8%). Additionally, 15 participants (8.7%) experienced WR-LBP while performing repetitive tasks, and only 1 participant (0.6%) attributed it to other unspecified causes. (Fig-3)

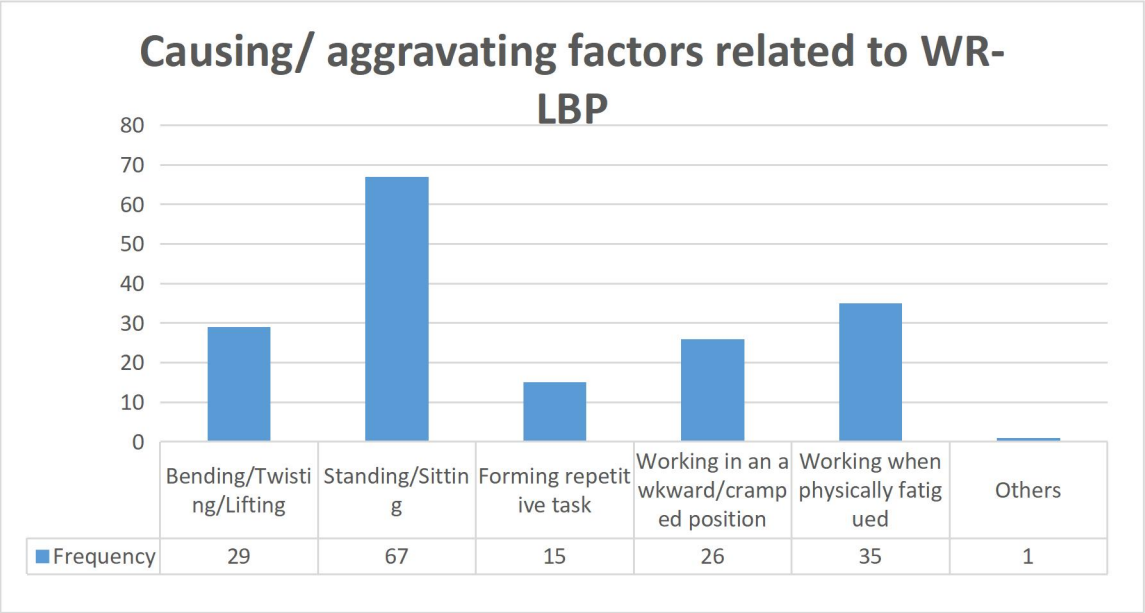

Figure 3 Causing/aggravating factors related to WR-LBP

Factors associated with low back pain

The Chi-Square test was applied which showed that gender, working experience, occupation, BMI, ergonomics training, knowledge on back ergonomics, mental stress due to work, work satisfaction and occupational and ergonomics factors are the most common associated risk factors in developing WR-LBP among hotel and restaurants workers in Peshawar ($p<0.05$). However, there is clinically but not statistically significant association between WR-LBP and marital status, habit of regular exercise and sleep disturbance due to work ($p>0.05$) (Table 3). This study showed that employees had a mild risk of developing back pain. The Chi-square test revealed statistically significant association between WR-LBP and gender ($p=0.04$) while for marital status it showed p-value 0.939. The working experience ($p=0.000$) of hotel and restaurant employees revealed a highly significant association with WR-LBP. Looking up the Designations of the employees, Chefs/cooks (46) were more prone to WR-LBP compared to waiters (42) followed by manager (33), receptionists (30) and housekeeping staff (22). The chi-square test revealed. A highly significant association between Occupation and WR-LBP. Furthermore, the test showed association between BMI & WR-LBP with a p-value 0.038 that wasn't highly significant. (Table-3) Majority of the employees had taken ergonomics training showing association with WR-LBP ($p=0.007$). Besides, of 173 respondent's half of participants required knowledge on back ergonomics and the test revealed a highly significant association between knowledge on back ergonomics and WR-LBP with a ($p=0.000$). Moreover, a few of the workers usually exercised, and tests revealed no statistically significant differences between habit of regular exercise and WR-LBP ($p>0.05$). Furthermore, respondents who were satisfied with their current job had 50% lower back pain when compared to those who were not satisfied ($p=0.000$). In addition, every second employee having WR-LBP marked sleep disturbance due to work and test revealed no statistically significant association between WR-LBP and sleep disturbance due to work. As per study the employees of hotel and restaurants have likelihood of having WR-LBP more 32% during night shifts ($p=0.000$). Additionally, 62% of the employees reported LBP onset after their joined their respective positions in hotels and restaurants ($p=0.000$). According to this study, tasks that require sitting/standing (38.7%) were a risk factor for low back pain. Moreover, respondents, working when they were physically fatigued had 20% increased odds of having low back pain than others (Table-3) Out of 377 participants, majority ($f=204$) of the workers had no pain, followed by workers with moderate pain severity ($f=98$), workers with mild pain severity ($f=48$) and workers with severe pain severity ($f=27$), respectively. The test revealed that there was statistically significant association observed between WR-LBP and NPRS ($p<0.05$)

Table 3 The Cross tabulation of risk factors associated with work related low back pain among hotel and restaurant workers in Peshawar.

		WR-LBP		Total	P value
		WR-LBP	No WR-LBP		
Occupation	**Manager**	33	17	50	0
	Receptionist	30	24	54	
	Waiter	42	103	145	
	Chefs/ Cooks	46	44	90	
	Housekeeping	22	16	38	
LBP onset after work	**Yes**	107	0	107	0
	No	66	204	270	
Work activities causing/ aggravating LBP	**Bending/Twisting/Lifting**	29	0	29	0
	Standing/Sitting	67	0	67	
	Forming repetitive task	15	0	15	
	Working in awkward position	26	0	26	
	Working when physically fatigued	35	0	35	
	Others	1	0	1	
	No LBP	0	204	204	

Discussion

The aim of our study is to determine the prevalence of WR-LBP and its associated risk factors among hotel and restaurants workers in Peshawar. The main findings of our study revealed that in a total of 377 hotel and restaurant workers, 45.9% (f=173) have WR-LBP whereas 54.1% (f=204) have no WR-LBP with the mean age 30.36 ± 9.046 years, height 67.29 ± 3.141 inches and weight 72.50 ± 11.108 kg. Thus, the study revealed that WR-LBP is highly prevalent among male workers than female workers, specifically, the highest prevalence of WR-LBP was observed among chefs/cooks (12.2%), followed by waiters (11.1%), managers (8.8%), receptionists (8%) and housekeeping staff (5.8%), respectively. Also, our study showed that the highest prevalence of WR-LBP was found among workers with working experience of 2-5 years (17.5%), followed by 6-10 years (8.2%), > 15 years (8.0%), 6 months to 1 year (7.4%), and 11-15 years (4.8%), respectively. Also, the highest prevalence of WR-LBP was found among workers with normal weight (22.3%), followed by overweight (16.4%), obese (5.8%), and underweight (1.3%), respectively. A study conducted by ES Yalew et al. in 2022 reported that 184 (43.8%) of the 420 restaurant wait employees had **WR-LBP** at some point during their careers. 12.4% of respondents who reported having WR-LBP in the previous six months missed work because of their condition. Furthermore, among various BMI categories of staff, the lowest BMI

category (< 25) had a higher prevalence of WR-LBP. 28.1% of workers were aware of lower back ergonomics (2). Our study showed similar findings that 45.9% of workers had experienced WR-LBP while working and 34.7% of workers were absent from work due to WR-LBP. Additionally, the higher percentage (23.61%) of workers with WR-LBP had lowest BMI (<25). 22.3% of workers had knowledge about lower back ergonomics. In the same study, ES Yalew et al., reported that one of the factors linked to WR-LBP was performing repeated activity. They also found that 84.5% of participants experienced WR-LBP while bending or twisting, and 69.3% of individuals experienced WR-LBP while standing. Additionally, 39.7% of individuals had never exercised regularly, and 69.1% of workers with WR-LBP experienced sleep disruption (2). In contrast to this our study showed that out of 173 workers with WR-LBP, 16.8% felt WR-LBP while bending, twisting or lifting and 38.7% felt pain during standing and sitting and 8.7% experienced pain while performing repetitive tasks. Moreover, 22.3% of workers with WR-LBP had sleep disturbance due to work. 17.78% of workers had never exercised before. Nilesh C. Gawde in 2018 reported that back pain was the most prevalent (27.0%) among hotel staff. The frequency of pain was higher in housekeeping than in other hotel departments (16). In contrast, our study found that WR-LBP prevalence among hotel restaurant staff is 45.9%, among them prevalence was less in housekeeping staff (5.8%). The reason might be due to our sample size (n=377) having less no. of housekeeping staff (n=38). Moreover, Nilesh C. Gawde reported that men were far more likely than women to suffer from LBP. Key variables are the type of labor and the stress of lifting objects. This study indicated an association between reduced mental well-being and LBP (16). A similar finding was found by our study that a higher number (42.4%) of males reported hotel WR-LBP as compared to females. This study also supported our study in terms of WR-LBP association with occupational groups and the stress of lifting objects. Moreover, our analysis revealed similar findings in-terms of the association between mental stress and WR-LBP ($P<0.05$). Ab Hamid Abas et al. in 2023 reported that In Malaysia, the frequency of LBP varied from 12.4% to 84.6% across different segments of the occupational community. In terms of BMI, obesity was identified as a considerable determinant for LBP in three Malaysia articles. In terms of occupational characteristics, three studies demonstrated a correlation between carrying heavy loads and the prevalence of LBP. Posture during work activities, such as extended sitting or prolonged standing, was also strongly linked to LBP. Additionally, mental health was one of the additional risk factors for LBP (17). Our study found similar findings that showed WR-LBP is prevalent in 45.9% of hotel and restaurant workers. Also, BMI, working postures, lifting, twisting, bending, sitting and standing and mental stress were significantly associated with WR-LBP ($P<0.05$). Habtamu Tegenu et al. in 2020 reported that WR-LBP was common in 53.8% of restaurant staff. Furthermore, 17.56% of employees engaged in physical activity at least twice a week, and 23.87% of employees undertook ergonomic training (18). Our study found a similar finding that WR-LBP was prevalent in 45.9% of workers. Additionally, 16.18% of respondents reported exercising sometimes and 23.87% of workers had taken ergonomic training. Furthermore, according to Habtamu Tegenu et al., 82.35% of restaurant employees were discontented with their employment. However, 90.42% of restaurant employees experienced distress at work (18). Unlikely their findings, our study found that 6.9% of workers were dissatisfied with their job and 17.7% had mental stress due to work. According to a study conducted by Mehmet Oguzhan Ilban in 2013, 26% of Turkish restaurant personnel reported having WR-LBP (19). In contrast to this study, our study showed that the prevalence of WR-LBP is 45.9% among workers. Furthermore, according to Mehmet Oguzhan Ilban, 34% of the participants had experienced pain-related absenteeism (19). Similar findings were reported by our study that 34.7% of workers had been absent from work due to WR-LBP.

Limitations

This study presents several notable limitations that should be considered when interpreting the findings. Firstly, the sample size was limited to 377 participants, which may restrict the generalizability of the results. Additionally, although both male and female workers were included,

there was significant gender disproportionality, with female participants being underrepresented. The data collection process also encountered challenges, particularly in obtaining access and permission from various hotels and restaurants, which may have limited the diversity of the sample. Furthermore, the occupational distribution of participants was uneven, with a higher proportion of chefs and waiters compared to other roles, such as housekeeping staff, potentially introducing bias in the representation of different job categories.

Conclusion

This study concluded that WR-LBP is highly prevalent among the Hotel and Restaurant workers particularly male population in Peshawar. Moreover, Demographic variables such as gender, working experience, occupation, Personal factors such as BMI, ergonomic-training & knowledge on back ergonomics, Psychological factors such as mental stress due to work & work satisfaction and Occupational and ergonomic factors such as onset of LBP after work, aggravating activities related to LBP & LBP at night shifts are the most common associated risk factors with WR-LBP among hotel and restaurant workers of Peshawar.

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