



Impacts of Occupational Health and Safety Hazards on Quality of Work life in Food Industry of Pakistan

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ARTICLE INFO

Submission:

August 31, 2026

Revised:

September 28, 2026

Accepted:

October 05, 2026

Available Online:

October 16, 2026

Keywords:

Occupational Health and Safety (OHS), Quality of Work Life (QWL), Physical Hazards, Chemical Hazards, Biological Hazards, Ergonomic Hazards, Psychological Hazards, Mechanical Hazards, Electrical Hazards, Food Processing Organization, Work Safety, Employee Wellbeing & Satisfaction, Work Life Balance, Workers Health, Productivity Improvement.

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ABSTRACT

The impact of Occupational Health and Safety (OHS) hazards on the Quality of Work Life (QWL) of the employees of the food industry in Pakistan has been studied. Food manufacturing operations are often dangerous, and workers are likely to be exposed to physical, chemical, biological, ergonomic, psychological, mechanical and electrical hazards. A quantitative research method was followed with a cross-sectional survey design, and 121 total employees of food processing organisations of Pakistan participated in the study to collect data across the various departments of these food processing organisations. The relationships between OHS hazards and QWL were analyzed by using SPSS using correlation and multiple regression analyses. The results indicate that the chemical and ergonomic hazards are the most important factors influencing QWL, followed by psychological hazards, physical hazards, mechanical hazards and electrical hazards, with biological hazards not being statistically significant. The findings reflect the multi-faceted impact of work safety on employees' wellbeing, satisfaction, and work-life balance. This study adds to the very few studies conducted on the OHS of food industry workers in Pakistan and offers implications for improving worksite safety, optimizing worker health, and improving organizational productivity.

Introduction

Occupational Health and Safety (OHS) is an important concern in developing countries, especially in Pakistan, where the growth of industries has not been accompanied by the provision of proper safety measures. The International Labour Organization (2024) estimates that 2.93 million people are killed each year from their work, and 374 million suffer a non-fatal injury. The majority of these fatalities and injuries occur in developing economies. However, in Pakistan, the situation is more worrying due to poor enforcement of labour laws, lack of awareness about safety and inadequate institutional monitoring.



Figure 1: Work-related Annual Deaths

Source: (International Labour Organization, 2024)

Industry plays a vital role in the GDP of Pakistan, with a share of about 19.6%, and accounts for a large share of employment (Pakistan Bureau of Statistics, 2025). But the safety in the workplace is not well developed. Research has revealed that more than 60% of all industrial workers in Pakistan are facing unsafe working environment conditions, either due to inadequate provision of personal protective equipment (PPE) or poor hazard control measures, or lack of training (Saad et al., 2025). Moreover, weak reporting systems and fear of job insecurity often result in underreporting of workplace accidents, further exacerbating the level of OHS problems in the country.

The food industry is one of the fastest-growing manufacturing industries in Pakistan, contributing to exports and employment. Although the sector is economically vital, workers face several conditions that are hazardous, including physical risks like slips, noise and extremes of temperatures, chemical risks arising from cleaning agents and preservatives, biological risks resulting from food contamination and ergonomic risks from repetitive tasks (Ahmed & Chandani, 2020). Food processing workers are more vulnerable to occupational hazards as they are at high risk of injuries from handling machinery and a lack of safety measures (Atiq & Akhlaq, 2022). Such hazardous conditions are of great concern in the employees' Quality of Work Life (QWL), which encompasses overall job satisfaction, workplace wellbeing, mental health and work-life balance (Anwar, 1995). Poor working conditions have been associated with higher levels of stress, fatigue, and employee dissatisfaction, which, in turn, can impact an organization's performance and productivity (Conceicao & Palma-Moreira, 2025). Unsafe working conditions tend to lead to increased absenteeism, reduced morale and greater turnover intentions among workers.

In addition, the industrial sector, including the food sector, is characterized by high levels of psychosocial risks like job insecurity, long working hours and low organizational support in Pakistan. These factors can play a big role in the development of mental health problems like stress, anxiety and burnout. Although OHS and QWL are growing concerns, there is no focused research that has explored the correlation between OHS and QWL in the food industry in Pakistan. Existing studies have focused on overall manufacturing industries rather than specific food sectors, so there is a lack of knowledge about the industry-specific risks. Moreover, there is a lack of studies and research on some issues, like low incident reporting rates, poor safety culture, poor safety regulation enforcement, etc. Hence, the objectives of this study were to find out the effect of Occupational Health and Safety hazards on the Quality of Work life of the employees of the food industry in Pakistan. This study aims to offer empirical insights into hazard exposure, its impact, and the potential for creating safe strategies, workplace improvements, and employee wellbeing, to aid both the policy and industry levels in decision-making.

Theoretical Framework

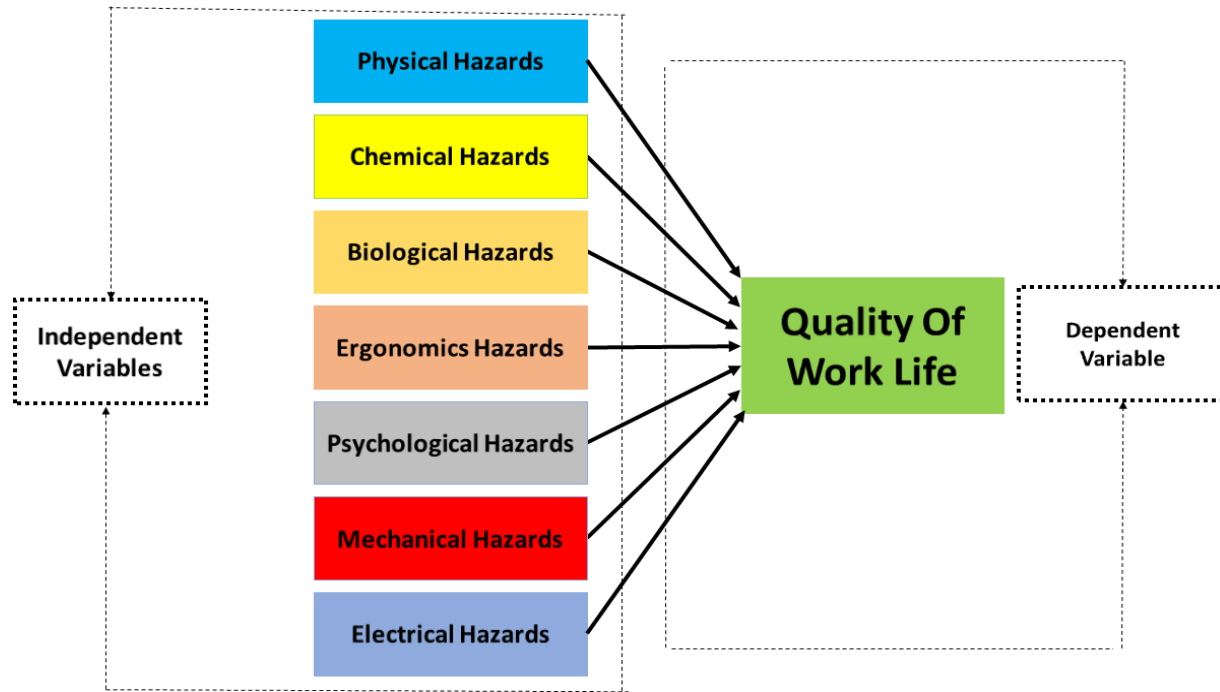


Figure 2: Theoretical Framework

Theoretical Stance

The Job Demands–Resources (JD-R) theory is the theoretical framework used to support this study, which helps in understanding how work demands and the availability of resources affect employee wellbeing and work outcomes. Bakker and Demerouti (2007) define job demand as physical, psychological, social or organizational components of a job that necessitate sustained exertion and can lead to strain if they exceed the capabilities of the employees. Job demands are considered as occupational health and safety hazards in this research including physical, chemical, biological, ergonomic, psychological, mechanical and electrical hazards. These hazards can contribute to fatigue, stress, health issues, discontent, and employees' Quality of Work Life. The JD-R Theory is appropriate because the study examines the impact of unsafe and unhealthy working conditions on employee wellbeing in the food sector in Pakistan. In addition, job satisfaction, safety, wellbeing, and work-life balance are all components of QWL that can be directly affected by the demands of the workplace. Thus, this theory is well suited to explain the relationship between OHS hazards and QWL.

Literature Review

Physical Hazards

Physical hazards are one of the most prevalent workplace hazards in the food sector and a significant contributor to work injuries and chronic health issues. Food production areas are frequently wet and slippery with uneven surfaces, which increases the risk of slips, trips, and falls, leading to fractures, sprains, and lost productivity (Robertson, 2021; Ali & Kamat, 2017). The work environment in cold stores and areas subjected to high heat processing is also often characterized by high temperature, causing heat stress, dehydration or cold-related illness (Gaspar, Lima & Lourenço, 2019). Moreover, chronic exposure to high levels of noise produced by machinery and production equipment also leads to employee fatigue, hearing impairment and stress (Gaspar, Lima & Lourenço, 2019). Amponsah-Tawiah et al. (2014) emphasized that such physical hazards have a negative impact on employees' Quality of Work Life (QWL) on their health and safety, absenteeism and job satisfaction. Exposure to unsafe physical conditions, over time, can make workers feel insecure, which leads to lower morale, motivation and engagement in their work.

H₁: Physical Hazard have significant impact on the Quality of Work Life

H₀: Physical Hazard do not have significant impact on the Quality of Work Life

Variable	Unstandardized Coefficients		Standardized Coefficients		t
	B	Std. Error	Beta	Sig	
(Constant)	.766	.180			4.265
Physical Hazards	.810	.052	.817	0.016	15.439
R ²	.667				
F	238.355				

a. Dependent Variable: Quality of Work Life

b. Predictors: (Constant) Physical Hazards

Chemical Hazards

Hazardous chemicals pose a significant challenge to occupational health in food processing industries since the employees come into contact with chemicals such as cleaners, disinfectants, and preservatives during production processes. Repeated contact with such chemicals exposes employees to skin irritation, respiratory complications, allergies, and various health risks. Gaspar et al. (2019) noted that exposure to chemicals is one of the occupational risks facing food processing industries because of the regular use of cleaners and disinfectants. Additionally, Takala et al. (2023) have stated that exposure to hazardous substances in the workplace accounts for the majority of occupational health issues and poor employee well-being. Improper handling, lack of Personal Protective Equipment (PPE), and absence of safety training further endanger the health of employees from hazardous chemicals. These factors might bring about work-related stress, employee dissatisfaction, and low Quality of Work Life (QWL).

H₂: Chemical Hazard have significant impact on the Quality of Work Life

H₀: Chemical Hazard do not have significant impact on the Quality of Work Life

Variable	Unstandardized Coefficients		Standardized Coefficients		t
	B	Std. Error	Beta	Sig	
(Constant)	1.157	.214			5.414
Chemical Hazards	.728	.066	.711	0.003	11.043
R ²	.506				
F	121.948				

a. Dependent Variable: Quality of Work Life

b. Predictors: (Constant) Chemical Hazards

Biological Hazards

The importance of biological hazards has been more and more emphasized in occupational health literature as important issues that can impact the employees' Quality of Work Life (QWL), especially in food processing factories where employees are continuously exposed to bacteria, fungi, viruses and airborne microorganisms. Previous research suggests that these exposures are linked to gastrointestinal diseases, respiratory infections, allergies, and other work-related diseases, which have adverse effects on workers' physical and mental health (Chadolia et al., 2017; Takala et al., 2023). Furthermore, Huerta-Franco et al. (2013) pointed out how occupational illness and biological exposure further add to the psychological stress and emotional exhaustion, resulting in poorer job functioning and higher levels of absenteeism. Likewise, Huerta-Franco (2013) reported that unhealthy workplaces have a significant relationship with the incidence of gastrointestinal and respiratory disorders in industrial workers. In addition to physical diseases, biological hazards also cause the perception of insecurity and vulnerability, thus reducing morale, satisfaction with the job, and organizational commitment (Mokarami et al., 2016). Importantly, the literature indicates that poor hygiene and poor occupational health protection still increase these risks in occupations where workers are physically active.

H₃: Biological Hazard have significant impact on the Quality of Work Life

H₀: Biological Hazard do not have significant impact on the Quality of Work Life

Variable	Unstandardized Coefficients		Standardized Coefficients	Sig	t
	B	Std. Error	Beta		
(Constant)	.750	.183			4.101
Biological Hazards	.799	.052	.813	0.074	15.230
R ²	.661				
F	231.964				

a. Dependent Variable: Quality of Work Life

b. Predictors: (Constant) Biological Hazards

Mechanical Hazards

Food manufacturing industries still have significant mechanical hazards associated with their workers interacting with automated equipment such as conveyors, slicers, mixers, or packaging equipment. Studies show that in recent years, cuts, crushing injuries, entanglement and amputations are common and that the risk of these injuries occurring is high among employees from inadequate machine guarding, poor equipment maintenance, and lack of training and safety procedures (Howe et al., 2024). The psychological and organizational effects of mechanical hazards are increasingly reported in the literature, in addition to physical injuries. Ji et al (2018) stated that unsafe machinery and industrial equipment can cause stress, anxiety and reduce the quality of life of employees. Likewise, Satapathy et al. (2023) determined that occupational accidents caused by hazards related to machinery impact the mental health of employees, satisfaction and engagement at work. Importantly, the prevalence of mechanical hazards is a sign of poor compliance with occupational safety regulations and poor investment in preventive technologies, thereby continuing to impact the Quality of Work Life (QWL), productivity and general health and wellbeing of employees.

H₄: Mechanical Hazard have significant impact on the Quality of Work Life

H₀: Mechanical Hazard do not have significant impact on the Quality of Work Life

Variable	Unstandardized Coefficients		Standardized Coefficients	Sig	t
	B	Std. Error	Beta		
(Constant)	.761	.217			3.504
Mechanical Hazards	.786	.062	.758	0.042	12.659
R ²	.574				
F	160.241				

a. Dependent Variable: Quality of Work Life

b. Predictors: (Constant) Mechanical Hazards

Ergonomic Hazards

Ergonomic hazards are well documented in the occupational health literature as a significant factor in the development of musculoskeletal disorders and loss of quality of work life, especially in the food processing and manufacturing industry. In the food sector, repetitive movements, extended periods of standing, manual labor, awkward body positions, and physically strenuous duties such as sorting, cutting, lifting, and packaging are common among workers, making them susceptible to back pain, neck strain, joint injuries, and upper limb disorders (Dapari et al., 2023). More recent research shows that poor workstation design, insufficient ergonomic intervention and less organizational focus on worker comfort exacerbate employee physical fatigue and long-term musculoskeletal problems (Lee et al., 2020). Most importantly, ergonomic hazards are still found in manufacturing despite a lack of implementation of occupational ergonomics and proactive workplace strategies. These conditions not only affect employees' physical wellbeing, but also may lead to employees' burnout, decrease in job satisfaction, decrease in productivity, and poor work-life balance, which in turn have a negative impact on employees' wellbeing and the organization's performance (Satapathy et al., 2023).

H₅: Ergonomic Hazard have significant impact on the Quality of Work Life

H₀: Ergonomic Hazard do not have significant impact on the Quality of Work Life

Variable	Unstandardized Coefficients		Standardized Coefficients	Sig.	t
	B	Std. Error	Beta		
(Constant)	.771	.210			3.668
Ergonomic Hazards	.794	.061	.768	0.021	13.062
R ²	.589				
F	170.603				

a. Dependent Variable: Quality of Work Life

b. Predictors: (Constant) Ergonomic Hazards

Psychological Hazards

Increasingly, psychological hazards are recognized as being important in the literature of occupational health, as important factors affecting employees' wellbeing and Quality of Work Life (QWL), especially in high-stress industries like food manufacturing. Occupational stress is a common problem among workers in this industry, which can be caused by work pressure, physically demanding work, excessive production goals, job insecurity, and inadequate organizational assistance (Jacobs, 2024). More recent research also indicates that, in the industrial sector, weak work conditions, low pay and limited career prospects increase emotional strain and employee dissatisfaction with the job (Siotto et al., 2026). Chronic exposure to these psychosocial risks is linked with anxiety, depression, emotional exhaustion and burnout, which in turn have a negative impact on employees' productivity and engagement in the workplace (Mokarami et al., 2016). Most importantly, the prevalence of psychological hazards is indicative of the lack of organizational involvement in the promotion of employee mental health and psychosocial safety. As a result, these factors can lead to absenteeism, lower organizational commitment, and lower morale, which can have a negative impact on employees' wellbeing and organizational effectiveness.

H₆: Psychological Hazard have significant impact on the Quality of Work Life

H₀: Psychological Hazard do not have significant impact on the Quality of Work Life

Variable	Unstandardized Coefficients		Standardized Coefficients	Sig.	t
	B	Std. Error	Beta		
(Constant)	.362	.192			1.890
Psychological Hazards	.926	.056	.834		16.485
R ²	.695				
F	271.745				

a. Dependent Variable: Quality of Work Life

b. Predictors: (Constant) Psychological Hazards

Electrical Hazards

Electrical hazards are an important workplace hazard in food manufacturing because so many food manufacturing processes require the use of electrically powered machinery and equipment, automated processing systems, and cleaning using water. Common hazards for workers include electric shock, burns, electrocution, and electric fires caused by poor maintenance of equipment, wet surfaces, and poor grounding (Takala et al., 2023). Recent occupational safety studies have shown that electrical accidents are less common than other industrial accidents, but are severe due to their high energy exposure and often result in permanent disability and death (Satapathy et al., 2023). Most importantly, the ability to detect electrical hazards in manufacturing facilities indicates that workplace safety laws are not being enforced and that there is not a sufficient focus on preventive electrical maintenance and electrical safety training. In addition to the physical dangers, electric hazards foster a constant feeling of risk and insecurity for employees, which can lead to stress, anxiety, diminished job satisfaction and decreased engagement. Thus, electrical hazards have a negative impact on the employees' Quality of Work Life (QWL), their wellbeing, and the productivity of the organization.

H₇: Electrical Hazard have significant impact on the Quality of Work Life

H₀: Electrical Hazard do not have significant impact on the Quality of Work Life

Variable	Unstandardized Coefficients		Standardized Coefficients	Sigs	t
	B	Std. Error	Beta		
(Constant)	.355	.161			2.210
Electrical Hazards	.916	.046	.876	0.031	19.802
R ²	.767				
F	392.122				

a. Dependent Variable: Quality of Work Life

b. Predictors: (Constant) Electrical Hazards

OHS Hazards and Quality of Work Life (QWL)

In the occupational and organizational literature, Quality of Work Life (QWL) is generally defined as workers' subjective evaluation of their working environment, which includes their physical safety, psychological health, satisfaction and contentment with their job, organizational support, and work-life balance. Previous studies have consistently shown that workplace conditions or situations that present risks to the health and safety of workers (known as occupational hazards) have a negative effect on the quality of work life (QWL), as poor health and safety conditions in jobs negatively impact the wellbeing of workers and the performance of the organization (Mokarami et al., 2016). In addition, physical, ergonomic and psychological hazards are found to be significantly related to fatigue, stress, emotional exhaustion and loss of job satisfaction among industrial workers, as found in the studies (Satapathy et al., 2023). For labor-intensive industries like the food sector, heavy workloads, repetitive jobs, and unsafe conditions can negatively impact employees' work-life balance and engagement in the workplace (Dapari et al., 2023). Importantly, unsafe working conditions are a sign of the lack of organizational commitment to workers' safety and welfare. Long-term exposure to OHS hazards, therefore, increases absenteeism, staff morale, organizational commitment, and mental health issues; and leads to decreased employees' overall QWL and productivity.

H₈: OHS Hazards have a significant impact on the Quality of Work Life

H₀: OHS Hazards do not have a significant impact on the Quality of Work Life

Variable	Unstandardized Coefficients		Standardized Coefficients	Sig	t
	B	Std. Error	Beta		
(Constant)	.175	.171			1.022
OHS Hazards	.988	.050	.874	0.020	19.576
R ²	.763				
F	383.231				

a. Dependent Variable: Quality of Work Life

b. Predictors: (Constant) OHS Hazards

Methodology

Research Approach and Design

The research uses quantitative methods to study the impact of Occupational Health and Safety (OHS) hazards on the Quality of Work Life (QWL) of employees in the food industry of Pakistan. This study employed the deductive research approach and was related to the positivist paradigm of data analysis in the form of statistics (Creswell & Creswell, 2018). The deductive approach is used to test the relationships between phenomena in the light of the existing theories, and the inductive approach is used to build a new theory from the observation of phenomena. The study was carried out to investigate previously found relationships between workplace hazards and the wellbeing of employees in such workplaces. A quantitative research approach was chosen to undertake the analysis. The data were collected using a cross-sectional research design, which is common in the field of organizational and social science research (Babbie, 2021).

Sample Technique and Size

The research used a purposive sampling technique to identify the respondents who have exposure to the occupational health and safety conditions. This approach is suitable for explanatory research because it allows the participants to have adequate knowledge

and experience in relation to the workplace hazard (Etikan et al., 2016). The population of this study was the employees of the food manufacturing and processing units in Pakistan. A total of 121 questionnaires were completed, and all of these were used in the analysis. The employees (participants) are from various departments, including production, administration, packaging, quality control, and maintenance, and hygiene, thereby ensuring diversity in the data. Data was gathered through an instrument in the form of a structured survey that was sent to workers in these industrial environments.

Data Collection and Analysis

Data were gathered from the respondents using a structured questionnaire, which was designed after a comprehensive literature review on Occupational Health and Safety hazards and Quality of Work Life (Neuman, 2019). Reliability assessments were carried out to evaluate the quality of the study, which involves the ability to assess consistency between the items (Taber, 2018). Each measurement scale was tested for reliability using Cronbach's alpha. The questionnaire adopted a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) to assess the perceptions of employees with regard to hazards in the workplace and how they would rate the Quality of Work Life. (Joshi et al., 2015). The collected data were analyzed using SPSS. Descriptive statistics were used to summarize demographic characteristics, and correlation and multiple regression analyses were used to evaluate relationships between OHS hazards and QWL as the dependent variable. According to Siedlecki (2020), descriptive research design is a common data collection method in describing the conditions occurring at the present time. Descriptive and explanatory research designs were used in descriptive research to study the causal relationship between the study variables.

Results

Demographic Characteristic

Respondent Profile

Variables	Demographics	Total (N=121)	Frequency (%)
Gender	Male	101	83.5
	Female	20	16.5
Age	Less than 20 Years	1	0.8
	21-30 Years	43	35.5
	31-40 Years	62	51.2
	41-50 Years	12	9.9
	More than 50 Years	3	2.5
Qualification	Matriculation or less	8	6.6
	Intermediate	20	16.5
	Bachelors	51	42.1
	Masters	32	26.4
	Others	10	8.3
Designations	Supervisor or below	42	34.7
	Engineer / Coordinator / Officer or Equal	38	31.4
	AM / DM / Manager or Sr. Manager	33	27.3
	DGM / GM	4	3.3
	Top Management	4	3.3

Table 1: Respondents Profile

The above table provides demographic characteristics of the respondents in the study. It is important to understand these characteristics because employee perceptions of Occupational Health and Safety (OHS) hazards and their effect on Quality of Work

Life (QWL) could be influenced by gender, age, education, or job position. Male participants predominated in the sample, as 101 out of 121 respondents were males (83.5%), and 20 of the respondents were females (16.5%), which is a common trend in the food manufacturing sector in Pakistan. As far as age is concerned, the majority of the respondents were of the age 31-40 years (51.2%), followed by the age of 21-30 years (35.5%), which showed that most of the respondents were of prime working age. Less than 10% were in the 41-50 years and 50+ year's groups.

When it came to educational qualifications, most of the respondents had at least a bachelor's degree (42.1%), with master's degree holders (26.4%) coming next, indicating a moderately educated workforce. With regard to job designation, respondents were fairly equally spread throughout the organization, with 34.7% at the supervisory level or below, 31.4% at the officer level, and 27.3% at the managerial level. This diversity will provide a broad range of information regarding workplace safety and QWL at various levels of the hierarchy.

Reliability Analysis

Variables	N	Valid	Cronbach's Alpha	N of Items
Physical Hazards	121	100%	.932	7
Chemical Hazards	121	100%	.859	5
Biological Hazards	121	100%	.893	4
Ergonomics Hazards	121	100%	.940	8
Psychological Hazards	121	100%	.853	6
Mechanical Hazards	121	100%	.918	7
Electrical Hazards	121	100%	.874	5
Quality of Work life	121	100%	.933	6

Table 2: Scale Reliability

Prior to an analysis of all variables at the inferential level. The reliability of the measurement scale was assessed for internal consistency using Cronbach's alpha. As seen from the above table, all variables had good reliability levels, with Coefficients above the suggested value of 0.70. All the variables obtained alpha value greater than 0.85 and this indicated that the questionnaire items measuring the variables had a very strong to excellent internal consistency.

Correlation Analysis

Descriptive Statistics and Correlation Analysis											
V	n	M	SD	1	2	3	4	5	6	7	8
PH	121	3	1.2375	1							
CH	121	3.0132	1	.770**	1						
BH	121	3.2562	1.2498	.757**	.713**	1					
EH	121	3.249	1.1869	.775**	.758**	.865**	1				
PsH	121	3	1.1057	.872**	.812**	.828**	.854**	1			
MH	121	3.2963	1	.730**	.721**	.873**	.902**	.809**	1		
ETH	121	3.2694	1.1738	.789**	.732**	.835**	.818**	.846**	.815**	1	
QWL	121	3.3512	1.2281	.817**	.711**	.813**	.768**	.834**	.758**	.876**	1.00

**Correlation is significant at the 0.01 level (2-tailed).

Table 3: Descriptive Statistics and Correlation Analysis

All the Occupational Health and Safety (OHS) hazard variables are significantly and positively correlated with Quality of Work Life (QWL) at a 0.01 significance level, as identified by the correlation analysis. This indicates that shifts in work environment risks have a strong correlation with changes in workers' perceptions of quality of work life. The results of the Pearson correlations among the variables with the QWL showed that psychological hazards ($r = .834$) and electrical hazards ($r = .876$) have the highest correlation with the QWL, meaning that they have the greatest association with workers' QWL in this study. The findings underscore the significance of psychosocial stressors and the electrical safety conditions on employees' wellbeing.

In addition, there are strong positive correlations between other hazard types and QWL. These include physical hazards ($r = .817$), chemical hazards ($r = .711$), biological hazards ($r = .813$), ergonomic hazards ($r = .768$), and mechanical hazards ($r = .758$). All of these correlations are statistically significant and are within a good range of correlation. The overall results indicate that there is a strong relationship between the exposure of the employee to the hazards of occupational health and safety and the change in the QWL of employees. This highlights the need for good hazard management and safety procedures to enhance the wellbeing, satisfaction and working environment of employees in the food sector.

Regression Analysis

Variable	Unstandardized Coefficients		Standardized Coefficients	Sig	t
	B	Std. Error	Beta		
(Constant)	.157	.156		.316	1.008
Physical Hazards	.252	.840	.254	.003	2.997
Chemical Hazards	-.012	.073	-.011	.874	-.159
Biological Hazards	.219	.093	.223	.021	2.340
Ergonomics Hazards	-.103	.112	-.100	.359	-.921
Psychological Hazards	.142	.122	.128	.247	1.164
Mechanical Hazards	-.036	.107	-.035	.735	-.339
Electrical Hazards	.524	.090	.501	.000	5.799
R ²	.822				
F	74.377				

a. Dependent Variable: Quality of Work Life

b. Predictors: (Constant), ETH Scale, CH Scale, MH Scale, PH Scale, BH Scale, EH Scale, PsH Scale

Table 4: Regression Analysis

The regression analysis was carried out to analyze the effects of physical, chemical, biological, ergonomic, psychological, mechanical, and electrical hazards on employees' Quality of Work Life (QWL). Multiple regression analysis model suggests that occupational health and safety hazards significantly affect employees' QWL. The Model Summary table reveals a very strong relationship between the independent variables and QWL ($R = 0.906$). The value of R^2 of 0.822 signifies that the independent variables account for 82.2% of variation in employees' Quality of Work Life, while the adjusted R^2 value (0.811) ensures that the model explains the dependent variable reliably after accounting for the number of predictors. ANOVA table shows that the regression model is statistically significant ($F = 74.377$, $p < 0.001$). The constant is statistically insignificant ($B = 0.157$; $t = 1.008$; $p = 0.316$). It shows that the baseline value of QWL does not matter when all predictor variables equal zero. Physical hazards ($B = 0.252$; $\beta = 0.254$; $t = 2.997$; $p = 0.003$), biological hazards ($B = 0.219$; $\beta = 0.223$; $t = 2.340$; $p = 0.021$), and electrical hazards ($B = 0.524$; $\beta = 0.501$; $t = 5.799$; $p < 0.001$) were identified as factors which significantly predict Quality of Work Life. Electrical hazards turned out to be the most predictive factor due to the highest standardized coefficient ($\beta = 0.501$).

In contrast, chemical hazards ($B = -0.012$; $\beta = -0.011$; $t = -0.159$; $p = 0.874$), ergonomic hazards ($B = -0.103$; $\beta = -0.100$; $t = -0.921$; $p = 0.359$), psychological hazards ($B = 0.142$; $\beta = 0.128$; $t = 1.164$; $p = 0.247$), and mechanical hazards ($B = -0.036$; $\beta = -0.035$; $t = -0.339$; $p = 0.735$) were not found to have statistically significant influence on QWL. While all these factors had positive or negative correlations, none of them individually was able to make a significant difference in explaining changes in the QWL of employees. In general, the analysis results prove that workplace hazards have a considerable effect on the QWL of employees, especially electrical, physical, and biological hazards. In conclusion, the hypothesis is partially proven since some workplace hazards have statistically significant predictive relationship with QWL.

Discussion

The results of this study indicate that Occupational Health and Safety (OHS) hazards play a significant role in the Quality of Work Life (QWL) of the employees in Pakistan's food industry. The results of the regression analysis show that chemical and ergonomic hazards have the greatest influence on the QWL, followed by psychological, physical, mechanical and electrical hazards, while biological hazards did not show statistically significant influence. The results indicate that both the physical and psychosocial environment of the workplace have a significant impact on employees' health, job satisfaction and engagement with their work. The major role played by chemical hazards is in line with previous studies that revealed that chemical exposure was one of the main

factors responsible for industrial illnesses, stress and employee dissatisfaction (Takala et al., 2023). Prolonged contact with cleaning agents, preservatives and toxic agents that have a negative effect on physical health and overall wellbeing is a constant occurrence for workers in food manufacturing. Again, the ergonomic hazards that played a significant role were in line with the results of Lee et al. (2020) and Dapari et al. (2023), which highlighted the importance of repetitive tasks, bad posture, and poor workstation design in causing MSDs, fatigue, and diminishing QWL among industrial workers.

The study also revealed that psychological hazards have a significant impact on employees' QWL, which confirmed the findings of Mokarami et al. (2016) and Satapathy et al. (2023) that occupational stress, job insecurity and too high workloads contribute to emotional exhaustion, burnout and anxiety among employees. These psychosocial stressors are higher in food processing industries of Pakistan, where workers are subjected to high production pressure and long working hours, and are thus more detrimental to morale at work and organizational commitment. In addition, physical and mechanical hazards were observed to have a significant impact on QWL, though lesser when compared to chemical and ergonomic hazards. The findings of this study align with the results of Gaspar et al. (2019), which noted that injuries at work, unsafe machinery, noise at work and industrial accidents negatively impacted employee productivity and satisfaction with work. Howe et al. (2024) confirmed this finding. The smaller effect sizes could be due to a lack of awareness of such hazards as being routine parts of industrial work environments.

Unlike the previous studies that highlighted the negative effects of biological exposure in the food sector, no significant biological hazards were found to affect the QWL in this study (Chadoli et al., 2017; Takala et al., 2023). One reason may be that biological risks may be less apparent or less imminent than risks from chemicals or physical risks. In addition, food organizations can have existing hygiene and sanitation programmes to help alleviate employee concerns about biological exposure. The overall result of the findings corroborates the current literature in the field of occupational health, which is that poor work contexts have negative consequences for employees' wellbeing, productivity and organization. Concurrently, in the context of the food manufacturing industry in Pakistan, the study adds to the scarce literature on food manufacturing industry OHS hazards and pinpoints the most influential OHS hazards that are present in the workplace, which impact the QWL of the food manufacturing industry workers.

Conclusion

This study investigated the effect of Occupational Health and Safety (OHS) hazards on the Quality of Work Life (QWL) of the workers working in the food industry of Pakistan. The results showed that several types of hazards had a significant effect on the employees' health, with chemical and ergonomic hazards being the most predictive hazards, followed by psychological, physical, mechanical, and electrical hazards. These findings support the significant role of physical and psychosocial working conditions in employees' perceptions of their work environment. The study highlights the need for effective hazard management practices to enhance employee satisfaction, health, and productivity in food industry settings. The study has some limitations, however. Firstly, the cross-sectional design limits the capacity to determine cause-and-effect relationships between OHS hazards and QWL. Secondly, the findings of the study are limited to a small sample size ($N = 121$), which makes it difficult to generalize the results across the entire food industry in Pakistan. Longitudinal, larger sample sizes, and objective safety measures are recommended for future research to allow for more reliable and generalizable findings.

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