Occupational Safety and Health Risk Assessment of Workers in the Hospitality Industry

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Abstract
The hospitality industry encompasses various sectors such as tourism, gastronomy, entertainment, and accommodation, including restaurants, retail and grocery stores, bars, cruises, hotels, and other industries that provide service trades to their customers and visitors. As such, hospitality workers face particular challenges that can put their safety and health at risk. Especially considering the current years of working amid a pandemic, workers could be more likely to pose a health risk from being exposed to a severe virus. Hospitality is an important sector of the tourism industry. It employs millions of people and contributes hundreds of billions of dollars to the global economy due to the popularity of upscale restaurants and fast-food outlets.

Keywords
risk, safety, health, hospitality, CIVID-19

1. Introduction
1.1 Background of the Study
The hospitality industry encompasses various sectors such as tourism, gastronomy, entertainment, and accommodation, including restaurants, retail and grocery stores, bars, cruises, hotels, and other industries that provide service trades to their customers and visitors. As such, hospitality workers face particular challenges that can put their safety and health at risk. Especially considering the current years of working amid a pandemic, workers could be more likely to pose a health risk from being exposed to a severe virus. Hospitality is an important sector of the tourism industry. It employs millions of people and contributes hundreds of billions of dollars to the global economy due to the popularity of upscale restaurants and fast-food outlets. Unfortunately, the hospitality and tourism sectors are vulnerable to the increasing frequency and severity of natural disasters and pandemics, often resulting in significant financial losses. There have been fears that the restaurant industry has been one of the hardest hits by the COVID-19 pandemic amid demands for social distancing.

The hospitality industry faces the most significant health inequalities compared to other workers. In fact, workers face high levels of psychological stress combined with low levels of control and job insecurity. Hospitality is a physically demanding job that involves many different tasks that present various risk factors such as biological, chemical, physical, and ergonomic risk factors. Hospitality workers are exposed to biological hazards when waste disposal, pathogens, broken glass, and other bodily waste are exposed to the hotel cleaning staff. When exposed to chemical cleaning agents, workers are exposed to chemical hazards that cause long-term respiratory problems. Employees face physical hazards when scrubbing bath and shower floors in bathroom floors, causing slip and fall accidents. The repetitive motions of vacuuming, scrubbing, dusting, etc., of hotel rooms, require cleaners to move their bodies in ways that can strain and even tear muscles and tendons that fall under ergonomic hazards. Excessive workload and exposure to other hazards can lead to job stress.

1.2 Literature Review

Research by Mendoza et al. (2019) entitled Occupational Hazards among Resort Hotel Workers in District IV of Batangas, Philippines, mentions that it was found that those working for ten years and above have encountered more hazards in terms of ergonomic and physical aspects. Those who belong to the other section (receptionist) faced more dangers in terms of ergonomics.

A study by Monk (2018) entitled the most significant five health hazards in hospitality are long hours, constant rush and a high-pressure environment, slips, trips, and falls. If spills aren't cleaned up straight away, they can represent a serious health risk for employees. Over one third of injuries reported in the hospitality industry result from trips and falls; making spillages the most common workplace hazard. Spreading of Germs, research has been undertaken those Menus, seats and utensil, Menus particularly encourage the spread of germs, as they're passed from person to person; with each hand depositing bacteria. Hazardous Chemicals, Bleach for instance, is a popular cleaning chemical, yet it can have harmful effects, such as burns and migraines. If mixed with an acidic substance such as vinegar, toxic fumes can be emitted into the workplace, which can be deadly. Knives are perhaps the most well-known danger within the hospitality industry, yet they still represent a serious health risk for employees. Cutting food and cleaning knives can both lead to painful cuts.

Another study by Tims, Ross (2016) entitled Six Common Safety Hazard in the Hospitality Industry includes Manual handling wherein Fifty percent of all injuries in the hotel sector are incurred while carrying out some sort of manual handling related task. They're generally musculoskeletal type injuries – trauma or pain to your back, knees, elbows, muscle tears, contusions etc. The nature of repetitive work in our industry, like moving kegs or carrying cartons, making beds or carrying luggage, can lead to muscle strain directly or over a period of time.

2.1 The Hospitality Industry in the Face of the COVID-19 Pandemic

Critical global responses to control the spread of the COVID-19 pandemic have included travel restrictions, shelter-in-place and social distancing orders. Most countries around the world have imposed partial or full border closures, with travel bans affecting the majority of the world's population. Amid sudden unemployment in the millions, uncertainty about the economic recovery and global fears of a continued spread of COVID-19 and its future waves, the hospitality industry was among the first to be affected and will be among the last to recover.

2.2 Health and safety considerations for hotel cleaners during Covid-19

Hotel housekeepers are the largest group of hospitality workers and experience the highest health inequalities compared to other workers in the industry. In addition to physical and chemical hazards at work, these workers face high levels of psychological stress coupled with poor control and job insecurity. In light of the current coronavirus (COVID19) pandemic, hotel workers, especially housekeepers, are at an increased risk of poor outcomes due to job insecurity and risk of exposure. These risks are compounded by the current discussion about using hotels as quarantine spaces for people exposed to COVID-19. While this approach (of providing quarantine space) may be justified, employers have an obligation to consider the health and safety of their employees, particularly housekeepers, during this pandemic.

2.3 Public strategies to rescue the hospitality industry following the impact of COVID-19

At the end of March 2020, almost three billion people were in some form of lockdown. In the period from March 24th to April 20th, 2020, 100% of global destinations (217) imposed different travel restrictions, and even in April 2020 there were 180 destinations that had travel restrictions in place due to the COVID-19 pandemic. of these, 107 destinations had closed their borders or suspended flights (UNWTO, 2020a, 2020b). With this in mind, hospitality is perhaps the sector most affected by the globally accepted measures to combat the virus, which include lockdowns and border closures.

2.4 Maintaining Health and Safety at Workplace: Employee and Employer's Role in Ensuring a Safe Working Environment

Health and safety is one of the very concerns when it comes to context of human workers. Employees' health and safety should always be top priority of management. According to Anthony et. Al (2007), health and safety programs

should involves concern on employees stress involvement, monitoring their safety at work environment and overall wellness.

In the study, policy implementers and implementation are unnecessary if there is not knowledge in the implemented policies. Moreover, this addresses the issue concerning their employees which should look into by management. Without proper seminars, trainings and discussion regarding employees their health and safety are at risk.

2.5 A Comparison of Safety, Health, and Well-Being Risk Factors across Five Occupational Samples

The research is increasingly recognizing that ensuring a healthy labour force necessitates an integrated assessment of each workplace's impact on employee safety, health, and well-being. Work and well-being has impact the change of work nature within America. Differences in occupation is a challenge for assessing factors that is related to the risk and overall wellness of workers. Thus differences collected within occupation could be evidences in relates to barriers in work environment. Researchers then found that getting enough sleep, having healthy diet, exercising daily, and avoid vices such as smoking are factors that can influence a healthy lifestyle that may cause less concern on health relate problems.

2.6 Occupational Health Hazards in Hospitality Industry and Their Prevention

Many of the activities in hospitality industry include manual handling. Activities like, making beds delivery or the collection of plates, tables and drink trays are common in hospitality industry. Manual handling always causes pain and discomfort and can lead to long term illness. Workers can leave their jobs. They may be unable to work at all. Manual handling poses a risk or ergonomic hazard in different activities as pushing, pulling, lifting, carrying, or moving a load, where the characteristics of the load are unfavorable. The worker must avoid or reduce the need for such manual handling when possible, especially when the manual handling of loads involves a risk of injury. Over one-third of all reported incidents in the hospitality sector are manual handling. Muscle strains and sprains in the neck and limbs represent most of the injuries. Injuries may result in surgery or lifelong disability affecting the worker's career and social life. Workers under the age of 18 are at greater risk; their bodies are still developing, so they may suffer a permanent injury. Injury usually develops gradually over a period of time (Work Safe 2014).

2.7 Biological Hazard in Hospitality Industry

Workers may be at risk of contact with body fluids such as blood, vomit or feces. Also, workers at laundry are exposed to body fluid from soiled clothes. Exposure to infected blood and body fluids occured if sharp contaminated objects puncture workers skin or during cleaning bathrooms is possible. Standards precautions assume that all bodily fluids are contaminated. Both human blood and body fluids are considered as infectious with human immunodeficiency virus (HIV), hepatitis B (HBV), and other pathogens born in the blood. Kitchen can be a source of growth of bacteria if proper food, personal hygiene and recommended food practices and procedures are not followed.

1.3 Gap of Missing Information

During the pandemic, several related studies have researched about the safety and health risk of different workers in various industries. However, these studies mainly focus on one factor like biological, chemical, physical, and ergonomic. There are few studies which made efforts to incorporate all of the aforementioned factors.

1.4 Objectives

The primary objective of the researchers is to determine the safety and health risk of hospitality industry workers in the Philippines. The researchers also intend to determine the exposure of workers to occupational risk factors (biological, chemical, physical, and ergonomic). Lastly, to determine the relationship and effect of occupational risk factor exposure to the perceived safety and health risk of workers.

1.5 Significance of the Study

This study aims to identify the safety and risk of workers in the sector of the hospitality industry. Moreover, justify the common risk encountered by the workers in this industry.

1.6 Scope and Limitation

The researchers focused on hospitality industry workers with a parameter of 100 participants. In terms of data gathered, the respondents were asked through a google form survey that includes 4 different risk factor categories namely; biological, chemical, physical, and ergonomic.

3. Methods

3.1 Conceptual Framework

The objective of this study is to determine the safety and health risk of hospitality industry workers. Given the collected data from the survey, the researchers will use analysis of variance and regression analysis. The outcome of the analysis would be measurement of safety and health risk of the hospitality industry workers in their workplace. Throughout the study, the researchers were guided by the Input-Process-Output (IPO) conceptual framework:

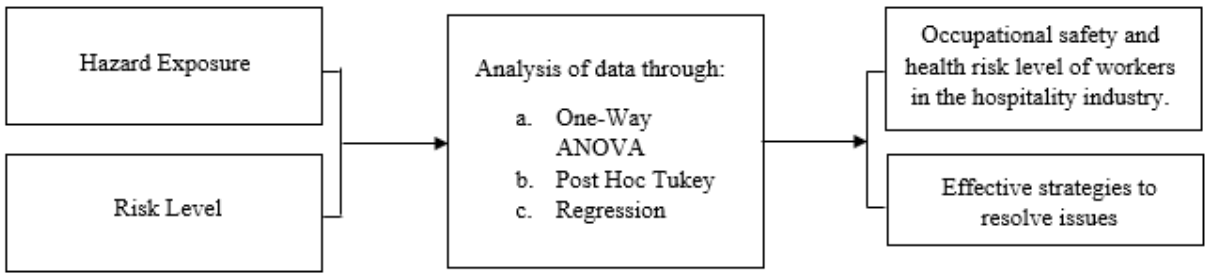

Figure 1. Conceptual Framework

3.2 Respondents of the Study

The participants for the study were 100 workers from the hospitality industry. These respondents were essential because the study concerns the occupational and safety risk level measurement of these workers especially during the time of the COVID-19 pandemic.

3.3 Ergonomic Tools

The Hazard and Risk Assessment was used to assess the workers level of hazard and risk in their workplace. The first part of the survey is the demographic profile of the respondents which includes their age, gender, area of residence, employment status, civil status, and job level. The second section of the survey assess the biological risk factors, chemical risk factors for the third section, fourth section is about the physical risk factors, fifth section is about the ergonomic risk factors, and last section is about the perceived risk of the workers in their workplace.

3.4 Statistical Treatment of Data

In this study, we used One-Way ANOVA, Post Hoc Tukey, and Regression as statistical tools to analyze the data. Using Analysis of Variance, factors will undergo through an analysis which will give the mean, standard deviation, the value for the 95% Confidence Interval, F-Value, and the P-Value. The factors will be also classified into what group they are belong. To validate the result, researchers will use the Post Hoc Tukey Test. For the safety and health risk data it will undergo into Regression Analysis. Dependent variable will be the safety and health risk while the biological, chemical, physical, and ergonomic factors will be the continuous predictors for the Regression Analysis.

4. Results and Discussion

Table 1. Summary of Demographic Profile

Respondent's Profile	Category	N	%
Gender	Male	60	60%
	Female	40	40%
Age	20 and below	4	4%

	21-30	59	59%
	31-40	28	28%
	41-50	4	4%
	51 and above	5	5%
Area of Residence	City	81	81%
	Province	19	19%
Employment Status	Casual	7	7%
	Part Time	25	25%
	Full Time	68	68%
Civil Status	Single	70	70%
	Married	30	30%
	Separated	0	0%
	Widowed	0	0%
Job Level	Rank or Clerical	62	62%
	Technical	16	16%
	Professional	11	11%
	Supervisory	4	4%
	Managerial	6	6%
	Executive	1	1%

The Table 1 above shows the demographic profile of the respondents wherein the majority of the respondents are male with the age ranges 21 to 30 years old residing in the city with a full time, rank or clerical job and with a civil status of single.

Table 2. Summary of Hazard Exposure

Hazard	Item	Mean	Std. Dev.	Range
Biological Hazard	Exposure to pathogens	2.00	1.05	1-5
	Exposure to microorganisms	2.06	1.06	1-5
	Exposure to toxins	1.53	0.81	1-5
	Exposure to virus/bacteria	3.28	0.88	1-5
	Exposure to biological waste	1.82	0.99	1-5
Chemical Hazard	Exposure to skin irritants	1.36	0.69	1-4
	Exposure to fire hazard substance	1.81	1.01	1-5
	Exposure to environmental hazard substance	1.70	0.94	1-4
	Exposure to corrosive substance	1.30	0.54	1-3
	Exposure to respiratory irritants	1.84	0.93	1-4
Physical Hazard	Exposure to vibration	1.76	0.81	1-4
	Exposure to radiation	1.38	0.62	1-4
	Exposure to high pressure	1.52	0.67	1-3
	Exposure to manual use of tools/equipment	2.40	0.96	1-5
	Exposure to electric hazard	2.82	1.20	1-5
	Exposure to falling hazard	1.75	0.86	1-5
Ergonomic Hazard	Exposure to excessive noise	2.50	0.92	1-5
	Exposure to extreme temperature	2.65	0.97	1-4
	Exposure to poor lighting	3.12	1.08	1-5
	Exposure to awkward posture	3.77	1.11	1-5

Exposure to static/stationary position	4.26	0.96	1-5
Exposure to manual material handling	3.02	1.14	1-5
Exposure to repetitive task	3.81	0.98	1-5

Table 2 shows the summary of hazard exposure of workers in different factors: biological, chemical, physical, and ergonomic. In each hazard, there are items that will measure how the workers are exposed to different hazards. The researchers also get the mean, standard deviation, and the range of scale that will be the basis of Figure 2 below.

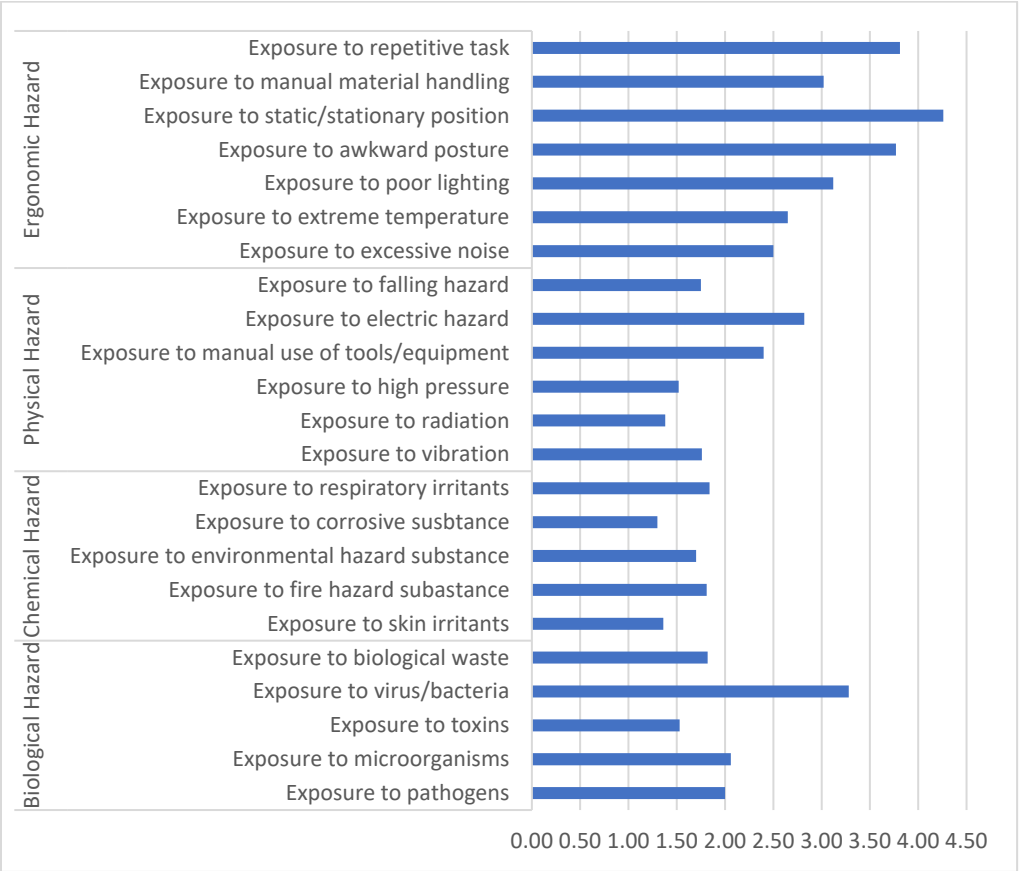

Figure 2. Hazard Exposure

Figure 2 shows that the majority of workers are exposed to ergonomic hazard specifically the exposure to static/stationary position followed by exposure to repetitive task, then exposure to awkward posture. It is because some workers in the hospitality industry are either working in the counter standing for too long or sitting for too long and has repetitive task over time just like the people who works in the fast-food chains cashier area or the hotel front desk. And since there is still a pandemic, workers are also prone to virus/bacteria that is why the figure shows that workers are also prone to biological hazard due to the COVID-19 pandemic.

Table 3. Summary of Risk Level

Risk	Level	N	%
Safety	no risk	4	4%
	low risk	42	42%
	mild risk	37	37%
	moderate	16	16%
	high risk	1	1%

	no risk	5	5%
	low risk	36	36%
Health	mild risk	41	41%
	moderate	18	18%
	high risk	0	0%

Based on the result of survey, Table 3 shows the summary of risk level based on the perceived risk of safety and health risk. To further show in what is the level of risk perceived by the workers in the hospitality industry, the researchers used a pie graph to illustrate the summary of risk level.

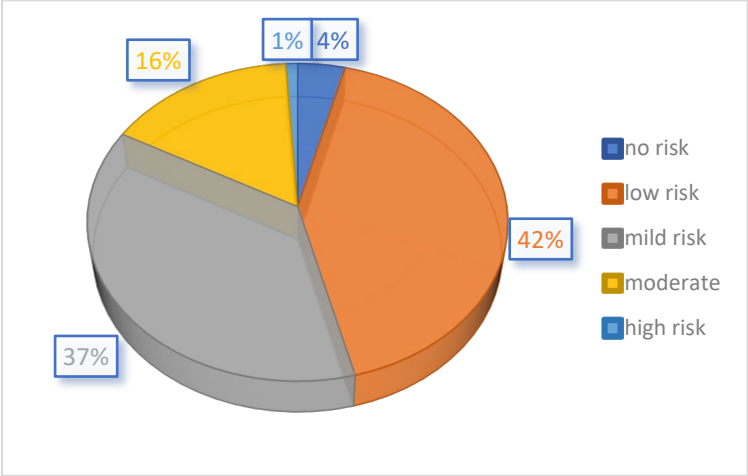

Figure 3. Safety Risk Level

Figure 3 proves that majority of the respondents in the survey have mild risk level for the safety.

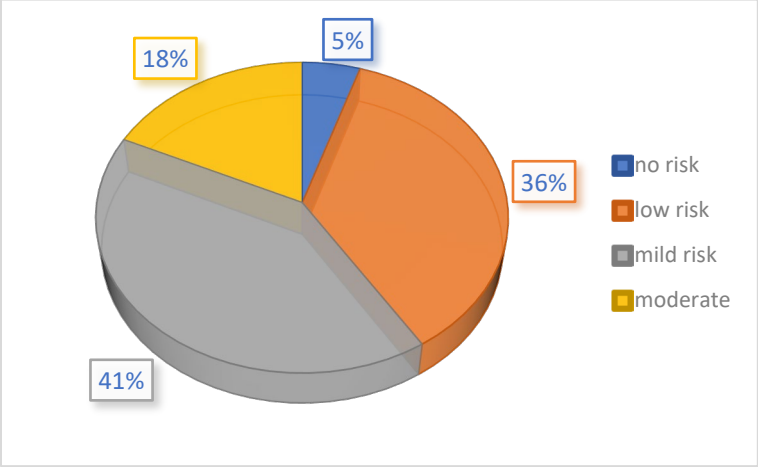

Figure 4. Health Risk Level

On the other hand, Figure 4 proves that majority of the respondents of the survey have mild risk level of the health.

Table 4. Result of Analysis of Variance

Factor	Mean	Std. Dev.	95% CI	F-value	P-value
Biological	2.138	0.7384	(2.0014, 2.2746)	113.3	<0.001
Chemical	1.602	0.6896	(1.4654, 1.7386)		
Physical	1.9383	0.6512	(1.8017, 2.0749)		
Ergonomic	3.3043	0.6974	(3.1677, 3.4409)		

Based on the result, it was proved that the exposure of the respondents on four different types of hazard are significantly different.

Table 5. Turkey Pairwise Comparison

Factor	N	Mean	Grouping		
Ergonomic	100	3.3043	A		
Biological	100	2.138		B	
Physical	100	1.9383		B	
Chemical	100	1.602			C

Based on table 4, ergonomic and chemical factors are significantly different. While biological and physical do not have significant differences.

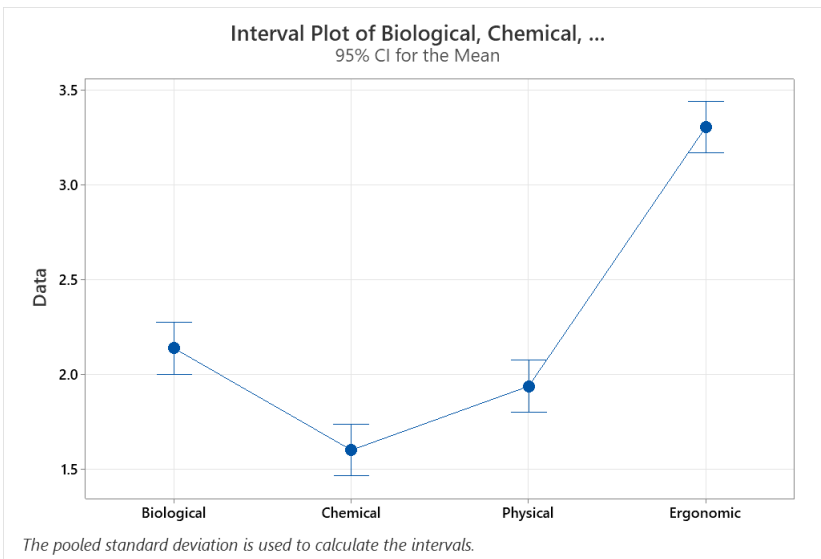

Figure 5. Interval Plot of the Factors

Since it was proved that there is significant difference in the exposure of the respondent, based on four hazards, ergonomic exposure is significantly higher compare to others. Followed by biological hence it has no significant difference with physical.

Table 6. Result of Regression Analysis (Safety Risk)

Source	**DF**	**Adj SS**	**Adj MS**	**F-Value**	**P-Value**
Regression	4	27.7870	6.9467	17.20	0.000
Biological	1	2.2116	2.2116	5.48	0.021

Chemical	1	0.3806	0.3806	0.94	0.334
Physical	1	0.8435	0.8435	2.09	0.152
Ergonomic	1	12.0420	12.0420	29.81	0.000
Error	95	38.3730	0.4039		
Lack-of-Fit	94	38.3730	0.4082	*	*
Pure Error	1	0.0000	0.0000		
Total	99	66.1600			

Table 5 shows the regression analysis of safety risk. As shown result, the regression analysis was proved that exposure in ergonomic.

Table 7. Result of Regression Analysis (Health Risk)

Source	DF	Adj SS	Adj MS	F-Value	P-Value
Regression	4	29.3526	7.33814	18.15	0.000
Biological	1	6.5289	6.52891	16.15	0.000
Chemical	1	0.0148	0.01479	0.04	0.849
Physical	1	0.1685	0.16848	0.42	0.520
Ergonomic	1	4.0570	4.05699	10.03	0.002
Error	95	38.4074	0.40429		
Lack-of-Fit	94	38.4074	0.40859	*	*
Pure Error	1	0.0000	0.00000		
Total	99	67.7600			

Based on the result of regression analysis in table 6 it was proved that exposure to biological and ergonomic hazard can contribute to higher perceive of health safety.

5. Conclusion

Based on the results and discussion, the researchers were able to do demographic profiling for the respondents in which the profile of the respondents were identified. It has been shown that 60 % of the respondents are male ages 21 to 30 years old, living in the city are most likely exposed to ergonomic hazards and biological hazards in hospitality industry. Most of the respondents were said to be exposed to static/stationary position, repetitive task, awkward posture, and exposed to bacteria/virus.

In the study, the researchers found most respondents are male with age 21 to 30 years old residing in the city with a full time, rank or clerical job and single as their civil status. Since most respondents work in hotel and restaurants, it then shows that majority of worker are exposed to ergonomic hazards such exposure to stationary position, exposure to repetitive task and exposure to awkward posture. In addition workers are more exposure to virus/bacteria, biological hazards, especially this COVID-19 pandemic.

In conclusion, the data calculated can be used as a model in assessing occupational safety of hospitality industry workers. The biological, chemical, physical and ergonomic are factors used and significantly shows and assess the level of safety of workers.

6. Recommendation

The authors of this study suggest that the statistical analysis above can be used as a model or basis in assessing their workers safety and health risk. Their management then can improve and set a standard for the safety of their workers. The authors of this study also suggested to improve this study and/or my require another research as situation such as COVID-19 and other virus/bacteria may acquire another health risk for the workers.

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