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Awareness And Preparedness Level Among Faculty & Staff Towards Physical and Biological Hazards

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Abstract — The occurrence of hazards in the workplace is undeniably inevitable for potential damage and harm to the workforce. This study determined the relationship between the level of awareness and level of preparedness among the faculty and staff of a selected private institution. The questionnaire on workplace hazard level of awareness and level of preparedness survey was the research instrument utilized. Weighted Mean, Standard Deviation, Paired t-test and Pearson Product Moment Correlation Coefficient were the statistical tools used. Total Population Sampling was applied in the study. Results showed high level of awareness in Biological and Physical Hazards. Result revealed that the level of awareness and preparedness varies significantly. Furthermore, a significant relationship was determined between the level of awareness and preparedness. Hence, creating workplace safety plan or program within the workplace is suggested in order to elevate safety mechanism among the faculty and staff.

Keywords — Workplace Hazard, Physical Hazard, Biological Hazard

I. Introduction

The presence of vulnerabilities in the workplace is undeniable and inescapable, creating a fear of potential damage, harm, or bad health impacts on the organization's most valuable asset, the human resource. The accidents often come suddenly, often accompanied by the dangers of everyday business activities. For employees to function properly in their daily transactions, health, safety, and security must be prioritized. Workplace dangers must be addressed to avoid organizational issues (Pinder, 2017). However, looking at scenarios without considering employee hazard awareness and preparedness raises concerns about workplace sanity and security. According to Maurer (2022), there are numerous hazards at work that can harm an employee's health or safety. Sprains and strains, poor workstation ergonomics, indoor air quality issues, inadequate or excessive illumination, noise, electrical hazards, and random acts of violence are among more office hazards. The first step in removing these risks and decreasing the likelihood of injuries occurring is becoming aware of them. To develop a firm foundation of workplace security, it is essential to implement appropriate occupational health and safety procedures (United States Department of Labor, 2019). This study aimed to measure secondary education professors' and

office staff's awareness and preparedness for occupational dangers. Using the study's data, the researchers hoped to assess the faculty and staff's level of knowledge and readiness for occupational dangers. Using the researchers' findings, management would be aware of current workplace experiences and better equipped to respond to potential workplace hazards.

The presence of hazardous components typically threatens employees' safety or health. Biohazards are organisms that can cause occupational sickness, mainly infections, when exposed to them. Pathogens are such organisms. Biological risks include organisms like fungus and materials like enzymes used in detergents that might cause allergies. Occupational infections occur when a pathogen from the job enters the body and multiplies, causing sickness. Physical hazards, on the other hand, are things in the environment that might hurt the body without necessarily contacting it, and are present in most workplaces at some point. Unsafe conditions can lead to damage, disease, and death (known as safety hazards). These risks can affect the employees' ability to complete particular activities, wherever they are in the workplace. It is an employer's responsibility to offer a safe and prepared workplace (Lovering, 2019). A well-planned and flawlessly executed plan ensures safe and secure workplaces. It will be built into a strategic method that will be executed across all administrative levels. However, today's workplaces need go beyond safety standards to ensure the workforce safety (Welle, 2019).

In the Philippine workplace conditions, of the 38.8 million people employed in the country, 17 out of 18 do not have access to decent working conditions. According to studies, there are risks and hazards associated with OSH conditions in microfirms and the unorganized sector. Academic and university workers are exposed to a variety of occupational hazards and dangers, including ergonomic, chemical, physical, and psychosocial problems. Employees were exposed to ergonomic risks due to physical handling, workplace design, and visual display devices, according to the study (VDUs). Repetitive strain injuries (RSIs) and work-related musculoskeletal disorders (MSDs) were among the illnesses that were reported, along with adverse health symptoms like asymmetric shoulders/poor posture, tingling at the tips of the fingers, joint restriction, visual fatigue, and pain in the upper extremities and digits, among others. Back discomfort was a common complaint among elementary and secondary educators in the Philippines and Brazil, where musculoskeletal diseases were common among instructors. Positive correlations between lower back pain and female identity, prior back injuries, awkward arm positions, and high work demands were found. Negative correlations between lower back pain and frequent exercise were found. Additionally, it was discovered that workload and extrinsic job satisfaction had an impact on a person's chance of developing work-related musculoskeletal diseases (WMSD), with those who are less content with their jobs and have heavier workloads being more likely to develop WMSDs (Lu, 2022; Florante, Rivera, & Relente, 2017; Saong, Gacayan, & Marcelino, 2016). Indeed, hazard immunity policies should be strengthened with proactive steps to ensure maximum employee safety, as natural and man-made risks might strike at any time. The above-mentioned conditions have led the pursuit of this study.

This study aimed to measure secondary education professors' and office staff's awareness and preparedness for occupational dangers. The study then helps to inform its employees on the current state of an academic institution's hazard mitigation protocols for untoward events like falling debris from the ongoing construction of the new school buildings, and the work continuity of its workers despite bad weather and predetermined natural calamity.

Workplace dangers are unavoidable and can affect the workers' sanity and well-being in a variety of ways. Workplace dangers are unpredictable and might arise at any time, jeopardizing employee safety. These issues have been a serious worry for many years and have been addressed in several research studies, but they continue to threaten the safety and sanity of employees and members of any organization.

Hazard Classification

The Occupational Health and Safety Act defines occupational risks as conditions that expose people to physical, chemical, or biological agents that disrupt normal physiological processes and harm their health (Ontario, 2015). There are risks in every workplace, but they vary depending on the type of organization. Workplace hazards are classified into physical, ergonomic, chemical, and biological hazards. To summarize, physical hazards include slips and falls, which cause physical harm; ergonomic hazards include repetitive movement, manual handling, and poor body positioning; chemical hazards include substances that can harm the body when inhaled or ingested; and biological hazards include bacterial and viral infections that can harm the body. These risks can cause health issues include respiratory issues, skin irritation, muscle, bone, and joint damage, hearing loss, and general malaise (Fit for Work Team, 2017a). The intensity of an increasing danger is classified in order to reduce it. Hazards are identified to learn how to reduce them (SKYbrary, 2018).

Effects of Hazards in the Workplace

Both surroundings can alter an employee's attitude and motivation, affecting their performance and productivity. However, accidents, calamities, and risks are unavoidable in the workplace, causing harm to individuals. Workplaces with inadequate security, depreciated furniture, disorderly workstations, poor managerial contact, lack of information systems, unplanned emergency safety processes, and lack of protective equipment are likely to negatively impact employee morale and motivation. Ensuring a healthy, productive, and high-performing workforce is a big managerial task (Edem, Akpan & Pepple, 2017). The World Health Organization [WHO] (2011) concluded that bad working circumstances add to the burden of occupational illnesses. Statistics showed that 40% of workplace risks were related to injuries, 22% to noise disturbances, 8% to carcinogens, 17% to airborne infections, and 3% to ergonomic hazards. In addition, the International Labor Organization (ILO) reported 2.3 million deaths owing to industrial risks and illnesses. Work-related mortality accounted for 350,500 deaths, 313 million non-fatal injuries, and 160 million non-fatal and work-induced diseases. In a single day, 6,400

people died from occupational accidents, while 860,000 were injured in the course of normal company activities (World Day for Safety and Work, 2015).

The Integrated Survey on Labor and Employment (ISLE), one of the regular establishment-based surveys of the Philippine Statistics Office (PSA), produced valuable data inputs to studies on industrial trends and practices that are potential bases for the formulation of17 policies on employment, conditions of work, and relations. According to the data, occupational accidents increased from 44,739 in 2005 to 47,440 in 2015, and then increased from 49,118 in 2013 to 50, 961 in 2015. (Philippine Statistics Authority [PSA], 2019). That represents 69 percent of the country's social expenditures due to weather-related disasters (Alcayna et al., 2016). Occupational risks are undesirable because they can significantly impact employee and community morale, productivity, organizational schedules, project costs, stakeholder relations, and business reputation. Before any undesirable event occurs, a comprehensive risk assessment, mitigation, and intervention should be used and adapted (Kark, Khan, & Gambatese, 2018).

Effective Mechanisms in Mitigating Hazard Occurrences

The best way to protect the organizational structure from risks is to identify them and take preventative measures to avoid potential harm. Employers should identify dangers, determine how they will effect employees, evaluate hazards and record and analyze hazardous emergences annually or sooner if there are revisions (Fit for Work Team, 2017). Adapting a hazard control plan initiates, the selected control to be performed, especially in serious and hard-to-communicate risks. Temporarily, it can also help ensure the effectiveness of risk control. It is also critical to track the progress of a control plan and evaluate its effectiveness on a regular basis. An efficient hazard control plan should safeguard personnel from injuries, illnesses, and accidents. This plan also reduces and eliminates health concerns, allowing companies to keep workers happy and healthy.

The Global Summit of Research Institute for Disaster Risk Reduction acknowledged considerable progress in some areas of risk hazard reduction and resilience spanning. For example, infrastructure research, risk analysis, social adaptation, and local setting environments. Achievable plan, past encounters in terms of strategy building, local group-centered solution and superior information can potentially limit the hazards available at any type of business workplace (Collins, 2017). There are eight major categories of DRR procedures according to Aghaei, Seyedin, and Sanaeinasab (2016) namely, educational strategies thru imparting knowledge, educational assessment, strategic planning, development of approaches, educational content and tools, involved organizations, and being acquainted to educational learning barriers and challenges. In order to raise educational awareness in DRR activities throughout the community, these are essential. UNESCO suggests that while natural and man-made disasters are unavoidable, every community should establish a plan for disaster risk reduction, preparedness, and mitigation.

Awareness and Preparedness towards Hazards

Employees should be adequately trained in emergency preparedness, response, and recovery. Also, developing a framework, testing and exercising disaster plans, and communicating with the public and others about the methods in overcoming dangers are all part of preparedness (Afedzie and McEntire, 2015). Disaster preparedness also provides a solution by focusing on organizational awareness, preparedness, and contingency planning. Risk information from preventive and mitigation is a driving force for preparedness actions to be responsive to employee demands and conditions (Danster, 2017).

Effective disaster preparedness and awareness can mitigate the effects of an unforeseen crisis. It is critical to have a plan in place so that the staff is completely aware of their job. This specific plan is regularly monitored. After a disaster, the organization is likely to quickly recover and resume normal operations (Ferry, 2017). 24 Public awareness and education are important tools in reducing natural catastrophe mortality and losses. People should automatically consider the coordinated activities to be taken before and after an event to reduce casualties, injuries, and damages (National Academy of Sciences, 2019). Risk reduction minimizes the severity of disaster losses and is essential for a more equal future. It assesses the school's risk reduction and disaster preparedness program. However, issues including lack of school disaster risk reduction management training and inadequate school training material were observed. The schools also continue to conduct disaster preparedness trainings and seminars, distribute training materials, and budget for distribution to schools (Lopez et al., 2018).

II. Methodology

The study was correlational in nature. This research design was intended to assess the relationship between two variables, Level of Awareness and Level of Preparedness, and the domains of Biological and Physical Hazards. No intervening variable influences the relationship between the variables in this study. Descriptive-correlational research design focuses on observing behavior patterns on occurrences. This design will need published theories to understand behavior (Harcourt, 2016) The research design also addresses the interaction of variables. So, if one variable changes, it is assumed that other variables would change as well. The research design was utilized to find out what the high school faculty and staff think about workplace hazards now.

The respondents were secondary education faculty and staff of a selected private education institution. The researchers used Total Population Sampling, which includes the whole High School Department faculty and staff. This method was suited for the study because all employees were directly influenced by workplace dangers. The data collection processes included 41 faculty and staff members.

The research tool was a researcher-made survey checklist questionnaire used to collect data from study participants. To gauge attitudes, preferences, opinions and intentions of a given sample

size, a survey-checklist format was judged to be the most successful and efficient method of data collecting (McLeod, 2018). The questionnaire was validated by three industrial organization experts before the study began. The Cronbach's Alpha reliability result was 0.80. The study's respondents' responses to the questionnaire were analyzed. So, 10 items were posed for awareness and ten for preparedness. The instrument was used to measure scale or test item dependability. Cronbach's alpha is one means of assessing the strength of that consistency (Goforth, 2015).

The researchers used both descriptive and inferential statistics for analyzing and interpreting the data. The study used descriptive statistics for preliminary analysis. The 4-point Likert Scale range scores were then aggregated using central tendency to achieve the weighted mean. In addition, the treated data allowed the final average number to reflect the relative importance of each observation. For each statement in the questionnaire, the average weighted mean was derived, indicating the level of awareness and preparedness. The frequency perceived the level of awareness as the level of preparation. These two items were computed primarily to address. The researchers employed the paired samples t-test to see if two variables were statistically different. The researchers used inferential statistics, specifically the Pearson Product Moment Correlation Coefficient, to analyze the statistical relationship between two continuous variables, namely awareness and preparation.

Scoring procedures of a 4-point Likert Scale presentation of the questionnaire where the respondents were asked to put a check mark on the scale that appropriately fits their present level of awareness and preparedness:

Responses	Continuum	Interpretation	
		Level of Awareness	Level of Preparedness
4	2.37-4.00	Completely Aware	Completely Prepared
3	2.52-3.26	Somehow Aware	Somehow Prepared
2	1.76-2.51	Somehow Unaware	Somehow Unprepared
1	1.00-1.75	Completely Unaware	Completely Unprepared

III. Results and Discussion

Level of Awareness of Faculty and Staff in Biological and Physical Hazards

Table 1. The mean scores of the domains under the awareness statements and its corresponding interpretation.

Domain	Mean Score	Interpretation	Std. Deviation
Biological Hazards	3.9268	*Completely Aware*	*0.15334*
Physical Hazards	3.8858	*Completely Aware*	*0.28016*

The domain of Biological Hazards scored 3.9268 on the continuum of Completely Aware after aggregating and averaging the means per item under the Awareness Statements (3.5-4.0).

This implies that employees are completely aware of the workplace's biological dangers. The Physical Risks domain has a mean score of 3.8858, which also falls on the Completely Aware continuum, indicating that the faculty and staff are acutely aware of the physical hazards in the area. As a result of the two domains' analogy, the level of awareness of occupational dangers among High School faculty and staff is high. The table also shows that the standard deviations of the domains of biological and physical hazards are 0.15334 and 0.28016, respectively. Both of these values were chosen as low since they are close to 1. Considering the results of the study, workers should be educated about workplace safety and hazards. Only a strong awareness of existing hazards and necessary safety measures ensures safety and a sound health protection during work (Berger & Reise, n.d.) This is to make sure that the employees understand the fundamentals of workplace safety. Thus, risk perception and awareness motivates individuals to adopt protective and precautionary measures (Wolf et al., 2011; O'Neill et. al, 2016).

Level of Preparedness of Faculty and Staff towards Biological and Physical Hazards

Table 2. The mean scores of the domains under the preparedness statements and its corresponding interpretation.

Domain	Mean Score	Interpretation	Std. Deviation
Biological Hazards	3.4098	Somehow Prepared	0.46250
Physical Hazards	3.0829	Somehow Prepared	0.72522

By comparison, the standard deviation of the Biological Hazards category of preparation is 0.46250, which deviates from 1 and indicates that the data are tightly packed around the mean (see image above). The collected data suggests that the respondents' feedback is similar. A 0.72522 Standard Deviation suggests data that are significantly distributed from the mean in the second area - Physical Hazard. The individuals' responses are widely dispersed from the mean, the result shows. This means that on average, respondents are Somewhat Prepared, since the mean score falls between 2.5 and 3.49. A mean score of 3.078 on the Physical Hazard domain is also on the Somewhat Prepared spectrum. Perception of preparedness is mostly attributed to the respondents' limited knowledge of both biological and physical hazards. Based on the findings, Burke et al (2006) claim that individual training interventions can lead to position effects in nurturing one's knowledge on safety and safe work behaviors and practices. Some factors may boost the effectiveness of safety and health training interventions, although this is still hypothetical in reducing worker injury or illness. Results acquired confirm that disaster preparedness is an action that comprises strategic approach, resources, and capabilities to ensure hazard readiness. Preparation is a significant aspect of preventative development, but its usage is only judged by the amount of awareness of those directly exposed to risk. This means that disaster preparedness is dependent on prior knowledge (Raneses et al., 2018). Similarly, Benitez and Olmogues (2021) had found importance having adequate knowledge on hygiene practices in order to avoid related biological risks. The most common causes of these are contaminated drinking water, improper disposal of human waste, unsanitary practices, and unsafe food handling and preparation.

Relationship between Level of Awareness and Level of Preparedness towards Biological and Physical Hazards

Table 3. Correlation between the Level of Awareness and the Level of Preparedness thru Pearson R.

Correlation		r	P value	Interpretation
Level of Awareness	**Level of Preparedness**	0.708	.000	Ho is rejected

"Correlation between the Level of Awareness and Preparedness using Pearson R" indicates a strong link between the variables Level of Awareness and Preparedness with a correlation of r (41) = 0.708 and p=0.000. Given that a specific amount of preparedness corresponds to enough awareness about dangers, the domain on Knowledge has shown an important positive link with perceived level of preparedness in disaster cues. Knowledge is seen to correspond to increased confidence in one's ability to prepare for disasters, but this does not always translate to actual readiness. However, Scolobig et al (2012) questioned the idea that "preparedness is the product of risk awareness" in their study. To the contrary, Finnis et al (nd) found that employees who participate in hazard education programs had higher understanding of safety practices and that hazard education greatly improves students' danger awareness and risk perceptions for particular risks. According to the University of Oregon, being aware of these threats, planning ahead of time, using personal protection equipment, and adhering to fundamental safety regulations can all help to prevent workplace mishaps. It is the administration's job to guarantee that employees and students receive proper training and knowledge about the physical risks prevalent in their laboratories. Moreover, governing bodies or administrators may take continuous precautionary measures to improve awareness and preparedness employees toward hazards by creating essential infrastructures such as washrooms, portable water supplies, containers, and a good drainage system available (Benitez & Olmogues, 2021).

Significant Difference on the Level of Awareness and Level of Preparedness towards Biological and Physical Hazards among Faculty and Staff of Secondary Education

Table 4. The paired differences between the variables: Awareness and Preparedness.

Mean			Std. Deviation	t	df	Sig. (2 tailed)-
Biological Hazards	a. Awareness & b. Preparedness	.51707	.49189	6.731	40	.000
Physical Hazards	a. Awareness & b. Preparedness	.77561	.73375	6.768	40	.000

The table illustrates the paired differences of the independent variable, awareness, and the dependent variable, preparation, from each domain. The knowledge and preparedness for biological risks generated a tabular value (t) of 6.731 and a p-value smaller than the margin of error: 0.05. This implies that the two variables differ significantly and should be statistically examined and analyzed. The mean scores of each domain are near together when developing descriptive statistics, which is required before performing inferential statistics. As a result, the researchers needed to use Paired Samples T-test to see if there was any significant difference throughout the domain. Physical Hazards, awareness, and preparedness variables generated a tabular value (t) of 6.768, and a p-value less than the margin of error. This also implies that the variables show meaningful impacts among faculty and staff awareness and preparedness. However, awareness is an important aspect of emergency planning. Evidence shows that prior attitudes, past experiences, and emergency management affect community preparation (Kapucu et. al, 2013). Accordingly, Acuram et al. (2021) suggested school owners and/or administrators with technical educational background has better experience and strategic in dealing with business issues such as occupational/workplace hazards.

IV. Conclusion

High school instructors and staff are fully aware of the biological hazards. In general, they are fully aware of the biological threats described in the study. Similarly, the responders are aware of the potential environmental hazards. These actual evidences show that the study's focus group is well-versed in recognizing workplace dangers. They are also aware of the underlying circumstances they would face in coping with these challenges. The level of readiness for biological and physical risks revealed a similar result. This shows that high school teachers and staff are only partially equipped in terms of preventing, practicing, and coping with the types of workplace dangers described.

It is proved that there is a strong association between teacher and staff awareness and preparation. This implies that academic institution staff are aware of the challenges and are

partially prepared to minimize, discuss, and take preventive measures to overcome them. Since the pre-treatment outcomes of the two variables are so similar, it is imperative to test the difference. As a result of the two variables' significant variance, both variables are evaluated.

Since it was found out the significant relationship of the variables tested and analyzed in the study, administration of the education institution along with Disaster Risk Reduction, Human Resource Office, and among others may implement a workplace safety and hazards awareness program such as seminars, symposiums, and other fora to better inculcate hazard prevention and mitigation mechanisms among its employees. Actual trainings and hazard prevention plans are part of program execution. It is strongly suggested to post signs, posters, or infographics in high-risk locations of the workplace to remind and warn staff. Employees may use PPE such as hard helmets, gloves, goggles, and masks to protect themselves from hazards. The administrators may seek consultancy support and training on how to use preventive measures and safety precautions. The management may set criteria for faculty and employees to follow.

There were also certain gaps in the study which have not fully undertaken by the researchers, thus it is highly recommended for the future researchers who would partake same course of study to:

1. Conduct the study in a larger population and or bigger communities in order to generate more reliable data and results; and

2. Extend the area of concentration of the study to an entire academe to generate a more generic appropriateness of the findings.

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