

# State and Trends of Occupational Health and Safety in the Philippines

Jinky Leilanie Lu, MOH, PhD

*National Institutes of Health, University of the Philippines Manila*

## ABSTRACT

**Introduction.** In the Philippines, industries began to recognize the importance of workers' health after occupational safety and health were introduced in the early 1900s. Ever since, several legal bases have existed to protect the people's welfare. However, data regarding this matter is limited in the country.

**Objective.** This paper aimed to develop a comprehensive review of occupational safety and health data, including hazard exposures and occupational diseases for various Filipino occupational groups.

**Methods.** A comprehensive analysis of the latest records and statistics from various government agencies, non-government organizations, academe, and research institutions was done. Data analysis was completed through a critical appraisal of the Philippines' current occupational health and safety regarding occupational diseases, injuries, accidents, and existing occupational health and safety policies. Data were also extracted from reviews of literature and other related research studies. Data analysis was done through a critical appraisal of the Philippines' current occupational health and safety in terms of occupational diseases, injuries, accidents, and existing occupational health and safety policies.

**Results.** Most of those working in the informal sectors do not have enough social protection in the Philippine context. Others in the same situation involve construction workers, farmers, miners, and waste or garbage pickers. Child labor was also seen to be prevalent, risking these children's health and safety. Another issue is on gender, and wherein women were found to have lesser protection than their counterparts. Among the industries present in the country, administrative and support service activities, manufacturing, wholesale and retail trade, financial and insurance activities, education except for public education, and agriculture, forestry, and fishing were seen to have a high prevalence of occupational diseases. The study has shown occupational safety and health among various occupational groups and categories, the profile of occupational diseases in Philippine industries, and the OSH programs implemented in industries.

**Conclusion.** Analysis of available data confirmed the presence of threats of unsafe and unhealthy conditions in various jobs and workplaces. To keep up with other nations, the country should strive more with its local developments.

*Key Words: Occupational Safety and Health, occupational diseases and injuries*

## INTRODUCTION

The introduction of occupational safety and health in the Philippines dates back to 1903 where industries provided health services to treat their employees' injuries and diseases.<sup>1</sup> From then on, establishments and the government have started to recognize the importance of the health of their workers for them to be more productive at work. For instance, in 1936, the Commonwealth Act No. 104, also known as the First Industry Safety Law, aimed to protect and ensure the safety of workers in mines, quarries, and metallurgical operations. In 1954, the Republic Act 1054, also known as the Free Medical and Dental Law, mandated that emergency

Corresponding author: Jinky Leilanie Lu, MOH, PhD  
National Institutes of Health  
University of the Philippines Manila  
623 Pedro Gil St., Ermita, Manila 1000, Philippines  
Email: jdllu@up.edu.ph / jinky\_lu@yahoo.com

health interventions must be provided to workers. To protect the welfare of Filipino workers, there must exist a legal basis of occupational safety and health laws. Thus, Presidential Decree No. 442, otherwise known as the Labor Code of the Philippines, integrating occupational safety and health was promulgated.

According to the latest estimates of the International Labor Organization in 2017, there are around 2.78 million people who die annually due to occupational diseases and accidents, and 2.4 million of which are caused by occupational diseases. Also, almost 374 million are affected by non-fatal occupational accidents.<sup>2</sup> On the other hand, the World Health Organization (WHO) estimated that 12.2 million people, especially those in developing countries, die from non-communicable diseases (NCDs) while still belonging to the productive or working age. Many occupational risks and hazards exist worldwide in different industries, such as injuries, noise, carcinogens, airborne particles, ergonomic hazards, and others.<sup>2</sup> These contribute to the burden of chronic diseases, including back pain (37%), hearing loss (16%), chronic obstructive pulmonary disease (13%), asthma (11%), injuries (8%), lung cancer (9%), leukemia (2%), and depression (8%).<sup>3</sup> Meanwhile, work-related accidents and injuries likely occur in high-risk jobs involving mining, construction, agriculture, and manufacturing activities.<sup>4</sup> It was also found that Asia (65%)—where the Philippines is situated has the most significant number of mortality and morbidity related to work, followed by Africa (11.8%), Europe (11.7%), America (10.9%), and Oceania (0.6%).<sup>2</sup> These occupational accidents and diseases negatively affect the economy. In 2017, four percent of the total GDP of around US\$ 3 trillion was lost every year because of lost working time, interruptions in production, treatment of occupational injuries and diseases, rehabilitation, and compensation to injured workers.<sup>5</sup>

In the Philippine setting, it is only estimated that 2.2 million Filipino workers in medium and large enterprises enjoy effective occupational safety and health (OSH) protection and services. This means that 17 of 18 persons in the nation's workforce of 38.8 million do not have acceptable working conditions and are exposed to hazards that predispose them to occupationally related diseases and injuries.<sup>6</sup> Labor and employment statistics show that a significant proportion of the population engaged in productive work. The total population of the Philippines reached 100,981,437 by 2015.<sup>7</sup> However, it was expected by POPCOM to increase up to 110.8 million at the onset of the year 2021).<sup>8</sup> The Philippines has a GDP of US\$ 313.6 billion with recent annual growth of 6.0% in 2019.<sup>9,10</sup> The country's labor force declined by 2.7% from 61.4% in 2019 to 58.7% in 2020. The employment rate decreased by 4.1% from 95.4% in 2019 to 91.3% in 2020, whereas the unemployment rate increased from 4.6% (2019) to 8.7% (2020). The underemployment rate increased by 1.6% from 12.8% in 2019 to 14.4% in 2020, warranting a national concern.<sup>11</sup> The Philippines has a relatively young population and a young workforce. As of

2020, 27.6% of the total number of employed persons were 25-34 years old. This was followed by ages 35-44 years old at 24.0% and 45-54 years old at 19.3%.<sup>12</sup> In January 2021, the number of employed males (73.9%) dominated the females (46.9%). The same is true regarding the underemployment rate, and wherein there is a 4.2% gap between males (17.6%) and females (13.4%).<sup>13</sup>

Occupational health and safety in the Philippines are enshrined in the Philippine Constitution as its legal framework, which embodies the rights of employees to gainful, participatory, healthy, safe, and just employment.<sup>6</sup> Labor Code, on the other hand, ensures that the rights of the workers are protected. The Labor Code of the Philippines has seven (7) books, and Book 4 embodies the regulations and guidelines on health and safety at work in the Philippines.<sup>7</sup> The national framework for Occupational Safety and Health in the Philippines includes the constitution, labor code, department orders, and company policy and program bipartite (Table 1). Based on the principles and stipulations of the Constitution and the Labor Code, there are corresponding administrative and department orders to facilitate tripartite dialogue among management, labor, and government. The company policy and occupational health and safety program focused on the bipartite dialogue between management and labor-management councils and the OSH committee.<sup>8</sup>

Occupational Health and Safety in the Philippines is a mandate of various government agencies based on the four structures of occupational safety in the Philippines. Occupational Safety and Health Center (OSHC) through EO 307 is concerned with the preventive aspect of OSH. The enforcement of OSH and its related standards is under DOLE Regional Officers' mandate through Admin Code 1987. The same code governs the development and updating of OSH policies mandated under the DOLE Bureau of Working Conditions. Lastly, PD 626 created the Employees Compensation Commission for the compensation and Rehabilitation structure of OSH.<sup>8</sup>

**Table 1.** National Framework for Occupational Safety and Health in the Philippines

	Origin	Enforcement
Constitution	Constitutional Convention	Supreme Court
Labor Code Specific Laws (OSH standards)	Congress	NLRC, DOLE, Courts
Department Orders (Construction, drugs, TB, HIV/AIDS, Hep B, maritime, etc.)	Tripartite Dialogue (management, labor, government)	DOLE, Courts
Company Policy and Program (bipartite)	Management, Labor Collective bargaining agreements, labor-management councils, OSH committees	Internal Monitoring (Bipartite) Joint Labor-Management Grievance Procedure

DOLE = Department of Labor and Employment; NLRC = National Labor Relations Commission

This paper aimed to show a comprehensive review of data on occupational safety and health in the Philippines.

## METHODOLOGY

The study also extracted data sources and statistical records from government agencies, academe and research institutions, and non-government organizations. The methodology consists of a comprehensive analysis of the latest documents and statistics on occupational safety and health and related variables from the Integrated Survey of Labor and Employment (ISLE) under the Philippine Statistics Authority (PSA), which is a new government authority created from four former national agencies namely the National Statistics Office (NSO), National Statistical Coordination Board (NSCB), Bureau of Agricultural Statistics (BAS), and Bureau of Labor and Employment Statistics (BLES); as well as from the Occupational Safety and Health Center (OSHC), International Labor Organization (ILO); World Health Organization (WHO), and non-government organizations. Data were also extracted from reviews of literature and other related research studies. Data analysis was done through a critical appraisal of the Philippines' current occupational health and safety in terms of occupational diseases, injuries, accidents, and existing occupational health and safety policies.

This paper aimed to develop a comprehensive review of data on occupational safety and health in the Philippines. A complete data on occupational safety and health in the Philippines, including hazard exposures and occupational diseases for various occupational groups, can provide an understanding to stakeholders, both private industries and the government bodies, to improve the health and safety conditions of the workers. This will also enable concerned industries and entities where the gaps in OSH are, and corollary intervention measures can be crafted and implemented.

This study deals with online resources, grey literature, and various statistics from government agencies. A sampling of population or sampling frame was not warranted. All study covers 2012-2017 (latest data and statistics available on OSH in the Philippines). This has its merit as a descriptive analysis of the status of OSH in the Philippines. The research question being pursued in this paper is- What is the quality of Occupational Safety and Health in the Philippines, covering three domains of variables- 1.) OSH of various occupational groups and categories; 2.) Occupational Diseases and Hazards in Industries in the Philippines; and 3.) Occupational Safety and Health Standards and Programs in Philippine Industries.

## RESULTS

### OSH of various Occupational Groups and Categories

#### *The Informal Sector*

The majority of workers belong to the informal sector in many countries, especially developing countries. The informal

sector is characterized by minimal social protection, including non-provision of proper health care and the enforcement of occupational health and safety standards. ILO stated that independent, self-employed small-scale producers and goods and services distributors comprise the informal economy.<sup>14</sup> According to the National Statistical Coordination Board (NSCB) Resolution No. 15 in the Philippines, the informal sector is officially referred to as “household unincorporated enterprises which consist of both own-account enterprises and enterprises of informal employers.” Own-account enterprises are household enterprises owned by own-account workers, alone or in partnership with member/s of the same or other households. They employ occasionally or seasonally hired workers but not continually.

On the other hand, enterprises of informal employers are almost the same as the own-account enterprises except that the latter employs one or more workers frequently. Employees in corporations, quasi-corporations, units with more than ten employees, corporate farms, commercial livestock raising, and commercial fishing are excluded in the informal economy.<sup>15</sup> Labor relations in this sector are under the basis of casual employment, kinship, or personal and social relations instead of formal or contractual arrangements.<sup>16</sup> A study under OSHC showed that the working conditions of jeepney drivers, market vendors, and tricycle drivers – self-employed workers – are poor, with exposure to extreme heat, air pollutants, biological agents, and ergonomic risk factors.

#### *Farmers*

Farming is considered one of the critical and most prevalent income-generating activities in the Philippines; it is even supposed to be a generational occupation because almost all family members are involved in farming and its related activities. The agriculture and fishing sector is vital in the Philippines's economy as it contributed 8.49% to the country's Gross Domestic Product, registering a 4.01% increase in the year 2017.<sup>17</sup> It also has contributed to 25% of the country's total employment employing about 10.26 million workers out of the 40.33 million total workers in 2017.<sup>18</sup> This, however, dropped to 24.4% in January 2021.<sup>13</sup> The Filipinos are inclined to get into farming, a fishing job or both which needs stricter monitoring of occupational safety and health conditions because this sector presents different types of occupational risks and hazards. There is extensive use of pesticides among Filipino farmers; in fact, the Philippines is one of the Southeast Asian countries recorded with the highest usage of pesticides for farming.<sup>19</sup> Two different studies by Lu showed that farmers are exposed to pesticides and their harmful effects. Farmers in Benguet and Pangasinan showed adverse health effects of pesticide exposure, including easy fatigability, decreased appetite and weight, dermal itchiness, eye redness, muscle pains, headaches, and abnormal laboratory findings.<sup>20,21</sup> There were even death reports in the country caused by pesticide poisoning.<sup>19</sup> In addition to these, this sector is dangerous as it requires long working hours,

exposing farmers to cuts, injuries, and harmful chemicals such as pesticides.<sup>22</sup> In response to observations of farmers having lung problems after using commercial fertilizers and pesticides, a city in Ilocos Sur mobilized farmers to shift to organic farming and eliminate the use of chemicals.<sup>23</sup>

Other occupational risks associated with farming are biological risks such as parasitic infections. Schistosomiasis is considered endemic in the Philippines, and farmers have acquired these diseases from water-contaminated farm areas.<sup>24,25</sup> Lymphatic Filariasis is also prevalent among male adults who farm in abaca plantations as the disease's vectors breed and inhabit the axilla of abaca plants.<sup>26</sup> Besides this, farmers may contract skin infections such as dermatitis because of exposure to certain tropical plants with an irritant or allergic properties.<sup>27</sup>

### Miners

Miners, especially those employed in small-scale or artisanal mining, face several hazards and risks associated with their job. This industry is characterized by laborious work, simple and traditional tools, and dangerous working conditions. Inadequate lighting and ventilation and exposure to toxic chemicals like mercury and cyanide are examples of workplace hazards that miners encounter.<sup>28,29</sup> A study by Lu showed that small-scale miners were exposed to dangerous chemicals, including mercury and cyanide. The most-reported health problems of small-scale miners were hypertension and heart diseases. Dermatitis and peripheral neuropathy, which were typical symptoms of cyanide poisoning, were also reported. Risks of falls due to the absence of scaffolds, manual extraction activities, handling of explosive tools, dark underground areas, and exposure to noise and dust were some of the unsafe conditions that miners have to deal with while working.<sup>30</sup> For large-scale miners, the most common accidents were contusions and lacerations, while respiratory infections and skin irritations are the most common disease diagnoses.<sup>31</sup> An accident in one of the largest coal-producing mining companies in the Philippines became an issue as some of their miners were buried alive when one of their mining pits collapsed.<sup>32</sup>

### Waste or Garbage Pickers

In many developing countries such as the Philippines, waste or garbage pickers handling solid wastes are faced with several work-related health hazards and risks associated with the type and content of materials handled, equipment and tools used, and the harmful substances emitted by things they managed. Some of these are neglected medicine, hospital and healthcare wastes, and dead animals.<sup>33,34</sup> The risk further increased during the COVID-19 pandemic, wherein the percentage of healthcare waste generated dramatically increased by 496% compared to its pre-pandemic counterpart.<sup>34</sup> Adverse health effects are likely to occur secondary to these workers' unhygienic and unsafe working conditions. The workers are exposed to materials

with inadequate personal protective equipment like gloves, facemasks, goggles, and safety attire.<sup>35</sup> These risks may be adequately managed by developed countries; however, the opposite is happening in developing countries as there is low saliency and limited resources available for solid waste improvement.<sup>36</sup>

In the Philippines, thousands of Filipino workers informally collect, segregate, and sell solid wastes. Most garbage or waste pickers are included in the informal waste sector, and they are primarily found in dumpsites and collect trash from neighbors and households. The majority of these informal waste or garbage pickers are migrants who lack opportunities and properties. They often are found in informal settlements trying to make ends meet by engaging in jobs with little and unstable income, such as waste picking, handling, and/or collecting.<sup>37</sup> The most common hazard encountered by waste pickers is the presence of sharp objects.<sup>36,38</sup> Osteomuscular disorders, arboviruses, intestinal diseases like diarrhea and constipation, hypertension, bronchitis, intestinal worms, breathing issues, sore throat, and diabetes are the usual diseases of the said population and that some of which can be linked to their poor living and working conditions (such as the minimal access to clean water supply).<sup>33,38</sup> Light wounds, insect bites, and eye irritation were the most common injuries reported by waste pickers. Due to their laborious work, discomfort is most commonly felt in their shoulders, hips/buttocks, and thighs. The workers are also at a very high risk of developing musculoskeletal disorders (MSD) due to their posture in grabbing waste.<sup>35</sup>

### Child Labour

Child labor has been a serious problem in the Philippines. Child labor is defined as the illegal employment of children below 15 to 18 years old in dangerous occupations.<sup>39</sup> This may also refer to any economic activity of children under 18 years old that predisposes them to exploitation and is harmful to their health and safety and physical and psychological development.<sup>40</sup> According to the Annual Poverty Indicator Survey results of PSA in 2019, around 7.6% (1.19 million) of the 15.64 million families with members aged 5 and 17 years old had a working child.<sup>41</sup> In the latest 2017 data on Philippine child labor, the total working children are 1.3 million, which is relatively lower than the figures in 2011; still, the age group of 15 to 17 has the most significant population of working children (894,000 children) (Tables 2 and 3).<sup>42</sup> In terms of residence, rural areas (9.5% or 745,000 households) have a higher rate of families with working children than urban areas (5.7% or 442,000 households). Child laborers are common in agriculture, services, and industry sectors.<sup>43</sup> According to a recent ILO report, around 152 million are in child labor globally, and 73 million of them do hazardous work.<sup>44</sup> Hazardous work is defined as work wherein a child laborer is exposed to occupational risks threatening children's health, safety, and moral values.<sup>44</sup> In addition, due to the economic and social crisis brought by the COVID-19



**Table 2.** Child Labor in the Philippines according to Sex and Age, 2017

Sex and Age Group	Total household population of children (000)	Total working children (000)	Economic activity rate of children as a percentage of children population (%)	Working children not currently attending school (000)	Percentage (%)
Both Sexes	29,398	1,344	4.6	526	39.1
5-9	11,448	57	0.5	1	1.8
10-14	11,289	393	3.5	56	14.2
15-17	6,661	894	13.4	569	52.5
Male	15,153	907	6.0	425	46.9
5-9	5,883	30	0.5	1	3.3
10-14	5,808	241	4.1	47	19.5
15-17	3,462	636	18.4	378	59.4
Female	14,245	438	3.1	101	23.2
5-9	5,566	27	0.5	1	3.7
10-14	5,480	152	2.8	9	5.9
15-17	3,199	258	8.1	92	35.7

Source: Adapted from Philippine Statistics Authority, *Statistics on Working Children, 2019*

**Table 3.** Percent Distribution of Working Children 5-17 Years Old by Major Industry Group and Sex, Philippines: 2017 (In Percent)

Industry	Both Sexes (%)	Male (%)	Female (%)
Agriculture, Hunting, and Forestry	42.3	50.8	24.5
Fishing	4.8	6.7	0.9
Mining and Quarrying	0.7	0.9	0.5
Manufacturing	5.4	5.4	5.5
Construction	4.2	6.2	—
Wholesale and Retail Trade	28.5	19.7	46.8
Other Service Activities/ Activities of Household as Employers	6.7	2.5	14.2
Other Industries Not Elsewhere Classified	7.7	7.7	7.8

Source: Adapted from Philippine Statistics Authority, *Statistics on Working Children, 2019*

pandemic started in 2019, around 42-66 million children are estimated to fall under the category of extreme poverty in the next coming years.<sup>45</sup> These numbers can be attributed to the massive education disruption, household job loss, and health shocks. In a review about child labor in developing countries, including the Philippines, it was found that around 200 million were in child labor, and 20 million of them were subjected to forced labor. The primary concerns identified in the review were physical exposures such as ergonomic hazards, chemical hazards, and absenteeism at school.<sup>46</sup> Chemical hazards include possible mercury poisoning in gold mining. During an investigation in Camarines Norte and Masbate, 65 child miners were interviewed, and they described experiencing back pain, skin infections, and muscle spasms which are usual symptoms of mercury poisoning.<sup>47</sup>

### Gender Issues-Women Laborers

According to the latest employment situation in the Philippines, there are 41.2 million Filipinos employed as of January 2021. Of these employed Filipinos, a total of 46.9% (19.3 million) were women.<sup>48</sup> Even though there is increased participation of women in the labor force, gender issues still exist, such as wage gap, discrimination, and work-related health and safety issues. Four sectors were mentioned by the ILO to be significantly affected by the COVID-19 pandemic, namely accommodation and food services; real estate, business, and administrative activities; manufacturing; and the wholesale/retail trade. These are represented by 527 million women (41% of the world's total female employment), higher than their male counterparts suggesting more hits to them. This is especially felt in the low-income countries regarding the reduced working hours and cuts to wages and layoffs.<sup>48,49</sup> The impositions of lockdowns and curfews and limited to no access to essential needs further worsen their living conditions. Furthermore, the said outbreak led the world to see the importance of the sectors providing critical services like health care, maintenance of communication and utilities, and emergency services participated by 96 million women.<sup>45</sup>

In the Philippines, a study among women workers in the business process outsourcing (BPO) sector showed women workers face general and specific health concerns. Public health issues include monotony of work, stress, negative work culture, and lack of promotion and career growth opportunities. On the other hand, specific health issues include eye strain, back pain, headache, and musculoskeletal and sleeping problems. Women workers, especially those employed in private households, also face a lack of social protection and are more likely to be exposed to verbal, physical, or sexual harassment. Moreover, women in the manufacturing sector experience occupational difficulties

as they have lesser representation through unionization. Maintaining their work after childbirth also is a challenge.<sup>50</sup>

**Occupational Diseases and Hazards in Industries in the Philippines**

The Philippines had a total of 101,851 cases of occupational diseases across all industries in 2017. The sector with the highest cases of occupational diseases was administrative and support service activities (31.8%, 32,344). This is followed by manufacturing (28.9%, 29,458) and wholesale and retail trade industry with 9,733 cases (9.6%). The sector with the least cases of occupational diseases, on the other hand, is the repair of computers and personal household goods (0.1%, 138)<sup>15</sup> (Table 4).

According to the Philippine Business and Industry Census in 2017, the administrative and support service sectors had 8,471 establishments in the formal economy. Encompassed in this sector were activities related to employment placement agencies, call centers, and travel agency and tour operator activities. Employment placement agencies garnered the most significant number of establishments comprising 24.8%

**Table 4.** Distribution of Occupational Diseases according to Major Industry Group, 2017

Major Industry Group	2017	Percent share (%)
All Industries	101,851	100.00
Agriculture, Forestry, and Fishing	2,066	2.00
Mining and Quarrying	1,660	1.60
Manufacturing	29,458	28.90
Electricity, Gas, Steam, and Air Conditioning Supply	894	0.90
Water Supply; Sewerage, Waste Management, and Remediation Activities	366	0.36
Construction	2,886	2.80
Wholesale and Retail Trade; Repair of Motor Vehicles and Motorcycles	9,733	9.60
Transportation and Storage	2,379	2.30
Accommodation and Food Service Activities	2,388	2.30
Information and Communication	2,431	2.40
Financial and Insurance Activities	4,311	4.20
Real Estate Activities	566	0.60
Professional, Scientific, and Technical Activities	964	0.90
Administrative and Support Service Activities	32,344	31.80
Education Except for Public Education	4,201	4.10
Human Health and Social Work Activities Except for Public Health Activities	3,523	3.50
Arts, Entertainment and Recreation	1,542	1.50
Repair of Computers and Personal and Household Goods; Other Personal Service Activities	138	0.10

Note: Details may not add up to totals due to rounding.  
 Source: Adapted from Philippine Statistics Authority, 2017/2018 Integrated Survey on Labor and Employment, 2020

of the total percentage, followed by call centers and other related activities (14.9%).<sup>51</sup>

This sector generated 1,430,520 employees in 2018. Call centers employed the highest number of workers at 631,400. Followed by temporary employment agency activities with 384,600 workers, then private security agencies with 124,028 workers (11.8%).<sup>51</sup>

The call center industry has boomed since 2007, making the Philippines the call center hub of the world. However, occupational health and safety concerns also emerged, including computer-related health disorders, hearing and voice problems associated with calls, prolonged night work or shift work, and work stress.<sup>52</sup> Among all industries in the Philippines, call center activities had the highest number of cases (31,270) of occupational diseases in 2015. By type of disease, workers in call centers usually suffer from back pain (23.8%), followed by occupational lung disease (16.8%), occupational asthma (13.8%), work-related musculoskeletal disorders (12%), neck-shoulder pain (10.9%), essential hypertension (10.0%), and other occupational diseases (12.8%) (Table 5). The nature of the job among call center agents, including prolonged sitting and repetitive work resulting in physical and psychological stress, may be associated with increased occupational diseases.<sup>53</sup> To provide services to international clients with different time zones, it is not uncommon for Filipino call center workers to work at graveyard shifts. This consequently affects their health, by which sleep disturbances or disorders and fatigue are commonly reported. Besides this, safety is also a concern, especially when commuting to and from work at late hours since many are being mugged during their commute.<sup>54</sup>

**Manufacturing**

The manufacturing industry, consisting of about 28,968 establishments in 2018, is one of the significant contributors to the Philippines' economy. It is one of the leading industries generating employment across the country as it employs 1,260,512 workers as of 2018. Manufacturing

**Table 5.** Cases of Occupational Diseases in Call Center Activities according to Type, 2015

Type of Occupational Diseases in Call Center Activities	Number	Percentage
Total	31,270	100.0
Back pain	7,428	23.8
Occupational lung diseases	5,266	16.8
Occupational asthma	4,305	13.8
Other work-related musculoskeletal diseases	3,745	12.0
Neck-shoulder pain	3,410	10.9
Essential hypertension	3,124	10.0
Other occupational diseases	3,992	12.8

Source: Adapted from Philippine Statistics Authority, Integrated Survey on Labor and Employment, 2018

establishments with the highest number of employed workers were the manufacture of food products (151,514 workers), Manufacture of electronic components (142,340 workers), and Manufacture of wearing apparel, except fur apparel (98,868 workers) amongst others.<sup>55</sup>

As employment increases in the manufacturing industry, the health and safety of workers must still be kept in mind, especially that there will be higher chances of it being overlooked since the focus of management would be on meeting the increasing demands of a global and competitive market. A local study in the country described the healthy work environment and health concerns among workers (n = 275) in an electronic manufacturing company. Said study showed that workers have health concerns in areas of illumination (i.e., eye fatigue), noise (i.e., tinnitus), temperature, and ventilation (i.e., dehydration). Some of the workers even reported occupational stress and occasional accidents such as slips and falls.<sup>56</sup> In a review done by OHSE, it was found that the manufacturing sector has the highest number of medical reimbursements claims from 2012-2017, and the majority of them are from the laborers with usual reports of end-stage renal (genitourinary diseases).<sup>57</sup>

### *Wholesale and retail trade*

The administrative and support service activities sector held 137,674 establishments. Encompassed in this sector were activities related to the retail sale of other goods in specialized stores and retail sale of other household equipment in specialized stores. Retail sale of other goods in specialized stores garnered the most significant number of establishments comprising 28.8% (n=39,585) of the total percentage. This was followed by the retail sale of other household equipment in specialized stores at 12.6% or 17,389 establishments and retail sales in non-specialized stores at 9.8% or 13,478 establishments. This sector generated 1,410,967 employees in 2018. Retail sale of other goods in specialized stores employed the highest number of workers at 276,442. Followed by retail sales in non-specialized stores with 245,299 workers, then the retail sale of other household equipment in specialized stores with 170,220 workers.<sup>58</sup> Workers in the sales industry usually stand during their entire shift; this is also the same case in factory workers.<sup>59</sup> In a study regarding the relationship of prolonged standing and musculoskeletal symptoms, prolonged standing is experienced by 70% of the respondents; 86% of all respondents also have musculoskeletal symptoms and commonly associated with the upper back, shoulders, and lower back.<sup>60</sup>

### *Education*

All private education establishments by industry subclass held 14,576 establishments. This sector encompasses private general secondary education, private pre-primary/pre-school and primary/elementary education for children without special needs, private higher education, and other private education-related industries. A little less than a

quarter of this is on secondary/high school education (23.4%; n=3,409), followed by private primary/elementary education at 21.4% or 3,125 establishments. Third on the list is the pre-primary/pre-school education at 20.8% or 3,025 establishments.<sup>61</sup> This sector generated 412,077 employees in 2018. Higher education employed the highest number of workers at 186,373. This was followed by secondary/high school education with 110,142 workers, then private primary/elementary education with 32,738 workers.<sup>61</sup>

A local study showed that employees in the academe or universities suffer from several occupational hazards and risks, including ergonomic, chemical, physical, and psychosocial hazards. The study found that employees experienced ergonomic hazards from manual handling, workplace structure, and visual display units (VDUs). Among the reported health illnesses were repetitive strain injuries (RSIs) and work-related musculoskeletal disorders (MSDs) accompanied by adverse health symptoms such as asymmetric shoulders/poor posture, tingling sensation at fingertips, joint restriction, visual fatigue, and pain in upper extremities and digits, amongst others.<sup>62</sup> Musculoskeletal disorders were prevalent among schoolteachers; back pain was a frequent complaint of primary and secondary educators in the Philippines and Brazil.<sup>63</sup> Lower back pain was positively correlated with being female, having a previous back injury, awkward arm position, and high work demand, while it was negatively associated with regular physical activity.<sup>64</sup> It was also found that workload and extrinsic satisfaction in their job influence the likelihood of having work-related musculoskeletal disorders (WMSD), with those less satisfied and have more workload more likely to have WMSDs.<sup>65</sup>

### *Agriculture, forestry, and fishing industry*

The agriculture, forestry, and fishing sector held 3,285 establishments. This sector encompassed activities in animal production, growing of perennial and non-perennial crops, fishing, aquaculture. Animal production garnered the most number at 48.5% or 1,593 establishments. This is followed by growing of non-perennial (15.2%; n=500) and perennial crops (10.4%; n=341).<sup>66</sup> This sector generated 154,910 employees in 2018. Growing perennial crops employed the highest number of workers (n=59,644), followed by growing animal production with 37,618 workers, then growing non-perennial crops with 25,351 workers (16.7%).<sup>66</sup> Workers in agriculture, forestry, and fishing experience a wide array of occupational hazards compromising their health. These economic activities are one of the most hazardous jobs in the country. They are usually informal and characterized by poor working conditions that threaten the health and safety of workers. As of late, 59.1% of workers in this sector acquired occupational injuries due to stepping on, striking against, or being struck by objects. Usage of hand tools (37.9%) also increased their prevalence of acquiring work-related injuries.<sup>15</sup> In a study by Lu, Filipino farmers reported their common health complaints, which were headaches (69.4%)

and dizziness (41.0%) usually experienced after pesticide exposure.<sup>20</sup> Respiratory health was also compromised, and related health symptoms reported were cough (39.4%), difficulty breathing (15.6%), breathlessness (14.9%), and presence of pulmonary secretions (13.3%). Among the hazards and risks of agriculture are occupational injuries (that may cause permanent or temporary incapacity and even death), occupational respiratory diseases, noise-induced hearing loss, dermal diseases, or even cancer that may be due to acute or chronic exposure from biological, chemical, physical, and extreme temperature hazards.<sup>67</sup> Not only are the workers of agriculture affected but their families and communities as well. This is so because pesticide residues were seen in crops in the country, and some of them even exceeded the maximum residue limits (MRLs) set by the European Union.<sup>21</sup> Heat stroke is also likely to happen due to prolonged exposure of farmers under the sun.<sup>68</sup> With the continuous increase of environmental temperature due to climate change, farmers and fisherfolks also have increased vulnerability to "climate-sensitive" illnesses, such as heat stress and heat stroke, because of their prolonged exposure to the heat of the sun.<sup>69</sup>

Back pain was the leading occupational disease in 2017. It was prevalent among workers engaged in manual labor and prolonged sitting, such as administrative and support services and manufacturing. Other common occupational diseases in 2017 were essential hypertension (15.5%, 15,809), neck and shoulder pain (11.4%, 11,576), occupational asthma (5.4%, 5,506) and other infections (5.3%, 5,394). The least common occupational diseases were occupational kidney disease (0.3%), cataract (0.3%), and chilblain, frostbite, and freezing (0.2%)<sup>15</sup> (Tables 6 and 7).

### Occupational Safety and Health Standards and Programs in Philippine Industries.

Almost all of the establishments in 2017 (31,675 out of 32,288; 98.1%) conducted several preventive and control

**Table 6.** Distribution of Cases of Back Pain by Industry Type, 2017

Rank	Type of industry with complaints of back pain	Number	Percent share (%)
	Total cases of back pain	31,903	100.0
1	Administrative and support service activities	10,156	31.8
2	Manufacturing	9,456	29.6
3	Wholesale and retail trade; repair of motor vehicles and motorcycles	3,941	12.4
4	Education except for public education	1,433	4.5
5	Accommodation and Food Service Activities	1,031	3.2
6	Other industries	5,886	18.4

Note: Details may not add up to totals due to rounding.  
Source: Adapted from Philippine Statistics Authority, 2017/2018 Integrated Survey on Labor and Employment, 2020

measures or activities in the interest of protecting their employees from preventable occupational hazards. Posting of safety signages or warnings (86.4%) in the establishment was the most common preventive and control measure practiced. This was followed by smoke-free workplace (85.4%), emergency preparedness and response activities for earthquake, fire, chemical spills, etc. (84.2%), appointed safety or health officers, first aiders (81.3%) or both, and regular inspection and maintenance of equipment (80.4%)<sup>15</sup> (Table 8).

Out of the total 32,288 establishments, 30,770 or 95.3% implemented occupational safety and health policies and programs to ensure compliance and protection of employees. Most establishments conducted fire prevention and control programs at 82.6%, followed by drug-free workplace policy and programs at 77.0%, and emergency response preparedness programs at 75.1%. Other prioritized OSH-related policies and programs were the accident prevention program (68.4%) and monitoring or surveillance of occupational and work-related injuries (63.5%)<sup>26</sup> (Table 8). There were 22,303 out of the 32,288 total establishments (69.1%) that conducted OSH-related training or seminars. The top OSH-related training or seminar conducted among establishments was the fire safety training at 51.9%. This

**Table 7.** Distribution of Occupational Diseases according to Type of Disease, 2017

Type of Disease	2017	Percent share
Total	101,851	100.0
Back Pain	31,903	31.3
Essential Hypertension	15,806	15.5
Neck-shoulder Pain	11,576	11.4
Occupational Asthma	5,506	5.4
Other Infections	5,394	5.3
Occupational Dermatitis	5,349	5.3
Other Work-Related Musculoskeletal Diseases	5,188	5.1
Other Diseases	4,748	4.7
Tuberculosis	3,466	3.4
Shoulder Tendinitis	3,244	3.2
Other Diseases Caused by Chemicals	2,570	2.5
Carpal Tunnel Syndrome	1,982	1.9
Heat, Stroke, Cramps, Exhaustion	1,309	1.3
Occupational Lung Diseases	1,309	1.3
Cardiovascular Disease	987	1.0
Deafness	596	0.6
Occupational Kidney Disease	351	0.3
Cataract	313	0.3
Chilblain, Frostbite, Freezing	253	0.2

Note: Details may not add up to totals due to rounding.  
Source: Adapted from Philippine Statistics Authority, 2017/2018 Integrated Survey on Labor and Employment, 2020



was followed by 40-hour basic occupational safety and health training (41.9%), emergency preparedness and response (32.3%), drug-free workplace training (24.6%), and smoke-free or tobacco-controlled workplace (21.5%). The Bureau of Fire Protection (BFP) conducted several OSH-related training or seminars in 45.1% or 14,562. On the other hand,

39.2% of the establishments which conducted OSH training were started by their own company. Other functioning agencies were the OSHNet (24.5%), DOLE accredited safety training organization (14.9%), and DOLE regional or provincial office (14.6%)<sup>15</sup> (Table 8).

**Table 8.** Distribution of OSH Programs in Industries and Establishments, 2017

Rank	Preventive & control measure/ activities	Number of establishments	Percent share (%)
	Total establishments	32,288	100.0
	Total establishments that conducted preventive and control measures or activities	31,675	98.1
1	Posting of safety signages or warnings	27,897	86.4
2	Smoke-free workplace	27,574	85.4
3	Emergency preparedness & response activities for earthquake, fire, chemical spills, etc.	27,186	84.2
4	Appointed safety or health officers and/or first aiders	26,250	81.3
5	Regular inspection and maintenance of equipment	25,960	80.4
Rank	OSH policies or programs implemented	Number of establishments	Percent share (%)
	Total establishments	32,288	100.0
	Total establishments that implemented OSH policies or programs	30,770	95.3
1	Fire prevention and control program	26,670	82.6
2	Drug-free workplace policy and program	24,862	77.0
3	Emergency response preparedness program	24,248	75.1
4	Accident prevention program	22,085	68.4
5	Monitoring/surveillance of occupational and work-related injuries and illnesses	20,503	63.5
Rank	OSH training or seminars	Number of establishments	Percent share (%)
	Total establishments	32,288	100.0
	Total establishments with OSH training or seminars	22,303	69.1
1	Fire safety training	16,756	51.9
2	40-hour basic occupational safety and health training	13,527	41.9
3	Emergency preparedness and response	10,413	32.3
4	Drug-free workplace training	7,937	24.6
5	Smoke-free workplace or tobacco control in the workplace	6,958	21.5
Rank	Conducting agency	Number of establishments	Percent share (%)
	Total establishments	32,288	100.0
	Total establishments with OSH training or seminars	22,303	69.1
1	Bureau of Fire Protection (BFP)	14,562	45.1
2	Own company	12,657	39.2
3	Occupational Safety and Health Center/OSHNET	7,911	24.5
4	DOLE Accredited Safety Training Organizations	4,811	14.9
5	DOLE Regional/Provincial Office	4,714	14.6
Rank	Designated personnel	Number of establishments	Percent share (%)
	Total establishments	32,288	100.0
	Total establishments with designated health and safety personnel	27,671	85.7
1	Trained first-aiders	26,250	81.3
2	Safety officer	14,917	46.2
3	Occupational health nurse	8,072	25.0
4	Occupational health physician	5,231	16.2
5	Dentist	2,002	6.2
6	Industrial Hygienist	226	0.7

Source: Philippine Statistics Authority, Integrated Survey on Labor and Employment, 2020

Out of the 32,288 total establishments, 27,671 or 85.7% provided designated health and safety personnel to protect the welfare of their employees. The majority of establishments hired trained first-aiders (81.3%), followed by safety officers (46.2%), occupational health nurses (25.0%), occupational health physicians (16.2%), dentists (6.2%), and industrial hygienists (0.7%).<sup>15</sup> (Table 8) In a study done under OSHC, 3 of 4 participating television and broadcasting networks have their respective safety and health committees with occupational health personnel. The personnel include first aiders, nurses, and physicians.<sup>70</sup> In a separate study, only 45% of responding supermalls and supermarkets in NCR have safety and health committees and rely on Human Resource departments to create health programs for contractors and sub-contractors.<sup>71</sup>

## DISCUSSION

The study has shown that threats to the health and safety of workers in the Philippines exist in various sectors. Informal, marginalized workers or both are even disproportionately threatened due to multiple factors putting them at risk of occupational diseases and accidents. Globally, an estimated 2.78 million people die due to occupational diseases and accidents, while nonfatal ones leave around 374 million workers injured every year.<sup>2</sup> These statistics are alarming and should be given more attention as occupational hazards affect not only workers and employers but also a country's productivity.

### OSH of various Occupational Groups and Categories

According to the study results, there are specific occupational groups vulnerable to occupational hazards and risks. These are the workers in the informal sector and/or the marginalized groups such as construction workers, farmers, miners, and waste or garbage pickers. Occupational hazards exist in both formal and informal workers; however, the latter are more vulnerable because laws and policies protecting the safety and health of workers are almost nonexistent in the informal sector. They are also more prone to unknowingly violate basic health and safety precautions as they do not have enough workplace facilities (e.g., inaccessible basic services such as clean water and sanitation) and health education, unlike in the formal sector.<sup>72,73</sup> These results are consistent with other studies stating that informal workers are more vulnerable to occupational accidents and diseases. For instance, informal waste workers were at high risk of acquiring work-related injuries due to unsafe work practices in Nepal. Some even acquire diseases that can be prevented through vaccinations showing their lack of protection towards preventable occupational diseases.<sup>74</sup> In Pakistan, informal workers, particularly in the manufacturing and construction industries, were seen working in poor and unsafe conditions adjunct with exposure to noise, chemical, and ergonomic hazards. It was also realized that both employers and employees

were not aware of maintaining a safe working environment.<sup>75</sup> A mere well-established safety system does not work independently as safety knowledge and training are also essential in increasing occupational safety and health literacy.<sup>76-78</sup>

Another issue in the Philippines that needs to be tackled is the high prevalence of working children. The latest data on child labor revealed that around 1.3 million or 13.4% of the total Filipino children aged 5-17 years old were recorded to be engaged in different types of jobs, commonly in the agriculture, service, and industry sectors.<sup>42</sup>

Among the Philippine industries where child labor is rampant are mining and agricultural farming.<sup>79,80</sup> One explanation of this is that agriculture and mining are considered familial jobs in the country where family members, including children, are expected to participate while their parents are working to help increase their family's income.

Wide gender gaps are also important matters to be discussed, especially in this modern era in which women's participation in work settings is increasing. This study cited examples of women workers under the threat of unsafe, unhealthy, and indecent work conditions. In the Philippines, there are multiple reports of women experiencing dangerous circumstances in their occupations. For instance, one report was about a woman working at a call center who was robbed, abused, and slain after getting off from work.<sup>81</sup> In several studies on women workers, health illnesses were correlated with occupational risks, including unsafe work practices, overtime, and work environment stress, among others;<sup>82,83</sup> women workers in the informal sector have it even worse as they were more vulnerable to exploitation.<sup>84</sup>

### Occupational Diseases and Hazards in the Philippines

This study revealed that the top five industries with a high prevalence of occupational diseases were (1) administrative and support service activities, (2) manufacturing, (3) wholesale and retail trade; repair of motor vehicles and remediation activities, (4) financial and insurance activities, and (5) education except for public education. This can be backed up by the employment rates in January 2021, showing the sectors of services (57.2%) and agriculture (24.4%) to have some of the most significant numbers.<sup>13</sup> It was also reported that 61.4% of the employed population work about 40 hours per week, resulting in various health and safety issues.<sup>13</sup> The most common occupational diseases experienced by workers were back pain, essential hypertension, neck-shoulder pain, other musculoskeletal disorders, and occupational asthma.

Philippine manufacturing industries are associated with several occupational hazards, and even abroad, the manufacturing sector has a reputation of being dangerous in which workers need to take extra caution. For instance, in an international study on a rice mill manufacturing establishment, airborne hazards were caused by rice grain dust and noise hazards caused by rice mill machinery, ranging from 78-92 dBA. Rice grain dust may lead to adverse health symptoms

affecting the visual (eye pain and irritation), integumentary (allergies), and respiratory systems. Occupational accidents commonly occur through slips and trips from rice grain dust, inadequate lighting, uncovered cables, obstructed view, and uneven walking paths. Being hit by falling objects may also be experienced by workers as objects are often stored above head level.<sup>85</sup>

### Occupational Safety and Health Standards and Programs in Philippine Industries

With the presence of the COVID-19 pandemic, several standards and frameworks were made available to aid in the development of suitable policies in each country, like the Philippines, to prevent further risk exposure in the workplace. This includes the Occupational Safety and Health Convention, 1981 (No. 155), the Occupational Health Services Convention, 1985 (No. 161), the Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187).<sup>86</sup> Specifically in the Philippines, the Department of Trade and Industry (DTI) and Department of Labor and Employment (DOLE) released a joint interim guideline to control and prevent the spread of COVID-19 in workplaces. This includes the proper usage of personal protective equipment, disinfection, and COVID-19 testing.<sup>87</sup> With this, the Philippine Overseas and Employment Administration (POEA) also released Governing Board Resolution No. 13, Series of 2020, which includes guidelines for establishing “Green Lanes” to facilitate seafarers' fast and safe travel during the height of the pandemic.<sup>88</sup>

### CONCLUSION

The study attempted to show a comprehensive review of available data on occupational safety and health in the Philippines, considering that there is limited data in the country regarding this subject. The study has shown that there are hazard exposures and illnesses among various occupational are beset with occupational diseases and injuries; and that the OSH programs in the industries in the country fall below the standard, and this necessitates the need for more aggressive crafting of policies and programs by both national government and the industries. The study further showed that different population groups and industries are threatened with unsafe and unhealthy conditions of the nature of their job and workplaces.

Countries worldwide are starting to recognize the importance of occupational safety and health, thus, integrating safety and health in many major industries. The Philippines must push harder to keep up with the development of other countries.

### Statement of Authorship

The author conceptualized the work; acquisition and analysis of data; drafting and revising; and approved the final version to be published.

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