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Knowledge, attitude and practices of construction workers of Barangay Lapasan Cagayan de oro city on work –related hazards

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Key words: Barangay Lapasan, construction hazards, construction workers, socio-economic.

Abstract

Philippine construction industries have risen significantly these days. Even though this boom of the economy is motivating, reports of negative side to the issue of occupational hazards have become very alarming to the employers and their workers. Thus, a stratified cross-sectional study aimed to assess the knowledge, attitude and practices of construction workers of Barangay Lapasan, Cagayan de Oro City, Philippines, on work-related hazards in consideration of their varying socio-demographic and socio-economic background. Out of 962 (10%) of the population surveyed, 52 of which were construction workers. Based on the analysis of data, the construction workers' levels of knowledge were significantly higher among 46 years old and above with more than 5 years of experience in the construction and working for more than 8 hours in a day. The construction worker levels of attitude were significantly higher to those who were already working for more than 5 years in the construction. Finally, the construction workers' practices with regards to work-related hazards were significantly higher to those who were earning 318 pesos and above. From the results and findings of this study, it is recommended to conduct seminars and trainings for construction workers especially to the younger ones with less experience and low level of education to enhance their knowledge, attitudes and practices on the hazards they encounter during onsite operations.

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Introduction

The Philippine construction industry sector to economic progress has risen significantly these days. The share of Gross Domestic Product (GDP) from construction increased to 200,089 million pesos in the fourth quarter of 2015 from 165,954 million pesos in the third quarter of 2015 (Philippines GDP, 2014). The uptrend of this indicator were attributed to the private sector construction activities with a continued demand for physical and social infrastructure facilities. Even though this boom of the economy is motivating, there has been reports of negative side to the issue to some problems that can be alarming to the employers and their workers. This has been proven to the fact that there are reported cases of accidents to the workers during construction activities. Safety performance in Philippine construction industries had deteriorated from best, in 1993, to worst, in 1997 with a safety performance quotient of 3.36 (OSHC, 2002).

Construction is a high hazard industry that comprises a wide range of activities involving alteration and repair. These include residential and commercial constructions, bridge erection, roadway paving, excavations, demolitions, and large scale painting jobs. Construction workers who are engage in such activities may expose themselves to serious hazards, such as falling from rooftops, unguarded machinery, being struck by heavy construction equipment, electrocutions, and silica and asbestos exposure (OSHA, 2002). Excessive exposure to these substances or agents such as asbestos, lead, silica dust, organic solvents, sewer gases, welding fumes, radiation, noise and vibration may result in acute injury, chronic illness, permanent disability or even death. Most every worker is familiar with the ever-present health risks that come with the trade. Unfortunately, the Occupational Safety and Health Administration (OSHA) ranks construction among the most hazardous industries in the United States (OSHA, 2002).

Cagayan de Oro is a first class highly urbanized city. It is the provincial capital of Misamis Oriental in Mindanao, southern part of the Philippines. Also, the city serves as the regional center and business hubs for Northern Mindanao. As part of the development, Cagayan de Oro is currently facing the challenges of urbanization. Several infrastructure developments are already taking place and many will still be constructed in the future. Projects include bridges, flyovers, malls, high rise buildings and other similar structures (Cabahug, 2014). Specifically, this study took place in Barangay Lapasan where most of the businesses are located such as banks, Lim Ket Kai malls and hotels, Puregold Price Club Inc., Market City, gasoline stations and among others. Moreover, there are still on-going constructions like malls, road widening and other infrastructures. With this kind of rising economy, the need for construction workers is highly demandable.

To ensure the protection and welfare of the workers and other vital resources in the construction industry, the Department of Labor and Employment (DOLE), through the Bureau of Working Conditions (BWC), has developed guidelines in the implementation of Department Order No. 13, series of 1998. It provides an overview of the legal bases for the issuance of the guidelines, and outlines the role of the different government and private organizations in the implementation of Occupational Health and Safety in the industry (Zeng *et al.,* 2008). To protect the construction workers as well as their health welfare, this generally study aims to assess the knowledge, attitude and practices of construction workers in terms of work-related hazards. The vital interest of this study is to help workers realize that they play an important role in contributing safety in the accomplishment of construction activities. Specifically it aims to (a.) assess the socio-demographic backgrounds of the construction workers, according to age,gender, civil status, educational attainment and job category; (b.) determines socio-economic backgrounds of the construction workers in terms of duration of work in years, working hours per day, and income per day; (c.) assess health complaints of the respondents within the last six months; (d.) determines significant difference between the variables in various socio-demographic and economic backgrounds of the

respondents in terms of their knowledge, attitude and practices towards the different hazards in construction activity.

Materials and methods

Research Design

The study used the cross-sectional-descriptive method of research where variables are stratified. The study involves the analysis of the differences between the various socio-economic and socio-demographic backgrounds of the respondents in terms of their knowledge, attitude and practices towards the different hazards of the construction activity where the data collected through survey are carried out over a short period of time. The study also conducted to describe the socio-demographic, economic and health backgrounds of the construction workers.

Research Setting

The study was conducted in Lapasan, Cagayan de Oro City (Fig. 1). This place is situated in Misamis Oriental, Region 10, Philippines, its geographical coordinates are 8° 28' 58" North, 124° 40'0" East.

Fig. 1. Map showing the study area: Lapasan, Cagayan de Oro City.

Sampling Scheme

Researchers conducted a house-to-house survey in a selected study area of Barangay Lapasan, Cagayan de Oro City, where there are 9,624 number of households (PSA, 2010), 962 of them (10%) were selected as respondents of the study. A purposive sampling method was used. Out of 962 household, the researchers gathered 52 construction workers. Among them are twenty (20) laborers, fourteen (14) carpenters, nine (9) masons, three (3) welders, two (2) electricians, one (1) painter, two (2) steel men, and one (1) lead man.

A survey questionnaire is developed after reading some related studies. The questionnaire was written in English with a Cebuano translation. A pre-test study was conducted with 5 construction workers to check appropriateness of the questionnaire and to identify unclear items. As a result of conducting the pre-test study, the following items of the questionnaire were corrected:

- Wearing Safety helmet while on duty was included on the questions about practices.
- The response of "Yes or No" on the statements about knowledge on construction hazards was changed to "Strongly Agree, "Agree", "Neutral", "Disagree", and "Strongly Disagree".

The revised questionnaires after pre-test were approved by the panel members. The respondents

were then personally interviewed within 10 minutes using the validated and pre-tested survey questionnaire. Some of the respondents were assisted by the researchers (due to some of the respondents were illiterate) to ensure that all questions are properly answered. The results of the survey were then used for analysis.

Data Collection Method

Data concerning on the respondent's knowledge, attitudes and practices towards hazards encountered in construction activity was collected through personal interview using a survey questionnaire as basis. A well-structured questionnaire for the purpose of primary data collection was used in the study. The survey questionnaire was consisting of the following:

- Demographic and socio-economic background
- Health history and health care information
- Knowledge (statements about problem cause by the construction hazards)
- Attitudes toward construction hazard
- Practices (statement regarding self-protective behaviors)

Data Analysis Procedure

To answer the problems and hypothesis of this study, the data gathered were organized and subjected to statistical treatments as basis for analysis and interpretation.

A descriptive statistics of frequency count, percentage, mean and standard deviation are use in the study. Frequency count and percentage is applied to describe the socio-demographic economic and health background of the respondents.

The abstract or continuous variable is divided into categories of descending degree of quality and each degree of quality is given a weight. Statements on knowledge and attitudes are assign score of Strongly Disagree (1), Disagree (2), Neutral (3), Agree (4) & Strongly Agree (5) while on the practices, an assign score of Never (1), Sometimes (2) and Always (3). To determine the partitioning value of items, the maximum of each of the nominal values was divided by 2. Thus, the midpoint set of knowledge and attitude was put at 2.50, while for practices is put at 1.50. For the purposes of data interpretation, mean values of 2.50 and above are deem to indicate high knowledge and favorable attitude while mean below 2.50 are regarded as low knowledge and not favorable. Mean values of 1.50 and above are consider as good practice while mean values of below 1.50 are consider as poor practice.

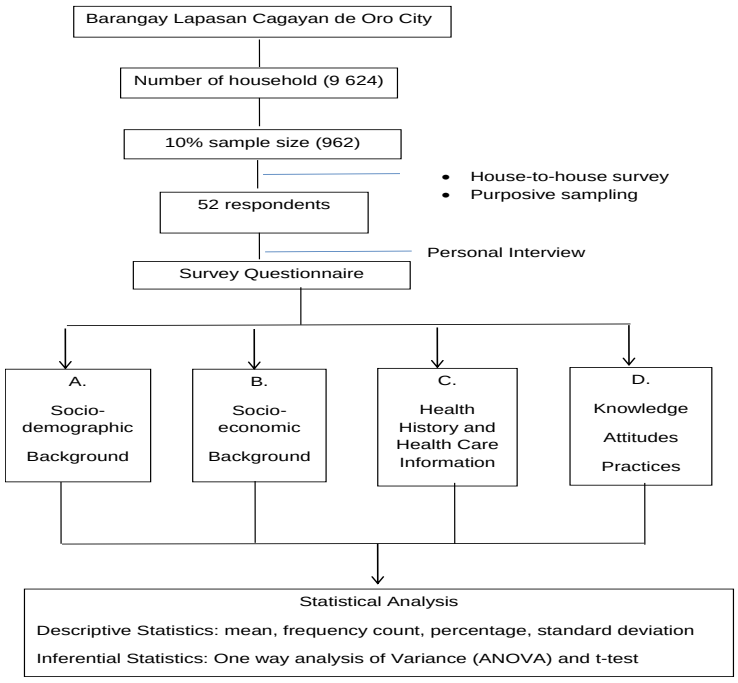

Fig. 2. Schematic diagram of Sampling, Data Collection and Data Analysis Procedure.

Other statistical method employed was one way analysis of variance (ANOVA) to determine if there is significant difference between respondent's knowledge, attitudes and practices towards the construction hazards in relation to varying the socio-demographic background variables (age, civil status, educational attainment and job category) of the respondents. T-test was used to determine if there is significant difference between respondent's knowledge, attitudes and practices towards the construction hazards in relation to varying the socio-economic background variables (no. of years working, working hours per day, and income) of the respondents. All statistical analysis are two-tailed, and a P-value of 0.05 which was considered to be statistically significant. Shown in Fig. 2 is the schematic diagram of the sampling, data collection and data analysis procedure of the study.

Ethical Consideration

Consent Letter was given to the Barangay captain of Lapasan Cagayan de Oro City for the approval to conduct a study on the construction workers in their barangay. A simple token was given to each of the respondents for participating in the said study.

Results and discussion

A total of 962 households were visited during the survey. Researchers were able to find 52 construction workers and willingly responded to the survey. These construction workers were daily laborers, carpenters, masons, welders, electricians, painters, steel men and lead men.

Socio-Demographic and Economic Backgrounds of Construction Workers

This study constitutes the various socio-demographic and socio-economic characteristics of the construction workers understudied. The socio-demographic characteristics of the target respondents include information about their age, gender, civil status, educational attainment, and job category. On the other hand, the socio-economic characteristics include the basic information of the respondents' number of years working as a construction worker, number of hours working per day and income per day.

Age

As shown in Fig. 3, the age of the construction workers was mainly composed of middle-aged that is between 22-46 years old (75%). Middle-aged workers have good muscle power, stronger than younger and older ones, and are more motivated to do the job to gain income. A similar study by Muena, *et al.,* (2015) & Siu *et al.,* 2003 found that construction works were commonly accepted by the middle-aged because of the need to feed their families. Younger workers normally take their time in searching for white collar jobs but, in the end, take construction works when there are no other choices.

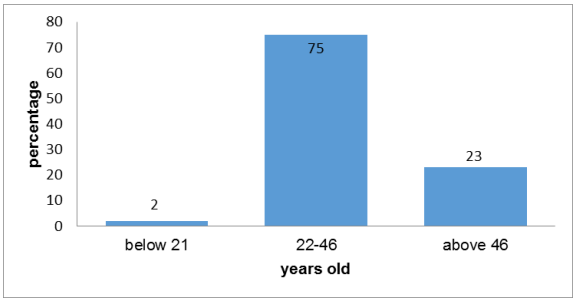

Fig. 3. Age groups of Construction worker of Barangay Lapasan, Cagayan de Oro City.

Gender

The data from the survey revealed that all of the respondents were males (Fig. 4). Work done in construction sites requires strength and masculinity. This is the reason why males commonly accept this kind of job than females. Hard work with high occupational risk is always done by men according to the International Labor Organization (2007) and the World Health Organization (2010).

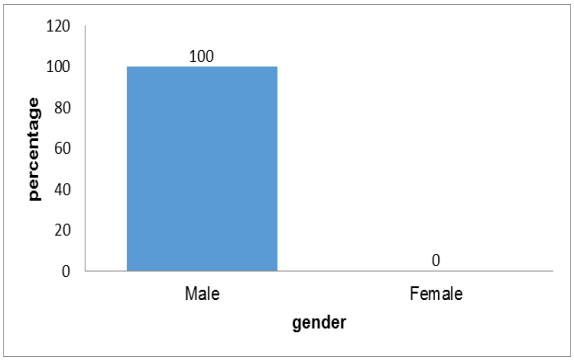

Fig. 4. Gender distribution of construction workers of Barangay Lapasan Cagayan de Oro City.

Civil Status

Gathered data, as shown in Fig. 5, revealed an equal percentage of single (48%) and married construction workers (48%) under survey. This implies that employers in construction projects are not biased in terms of civil status, whether they are single, married or widowed.

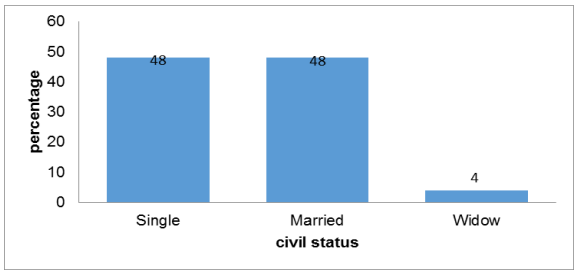

Fig. 5. Civil Status of the construction worker of Barangay Lapasan Cagayan de oro City.

Educational Attainment

The respondents, as shown in Fig. 6, are at least high school level (37%) while very few graduated high school (10%) and proceed to higher grades. Data suggests that construction projects provide work for low-skilled or entry-level workers. This result slightly contradicts with the study of Muena, *et al.* (2015) where majority of the respondents were literate with above secondary level of education. Very few of the workers were illiterate and semi-literate. In normal circumstances for developing countries, people seeking employment in the construction industries were mostly undergraduates whose skills are not necessary learned in formal education but can rather be learned from experience. However, trainings and seminars are still essential to enhance their learning on the do's and don'ts in construction operations.

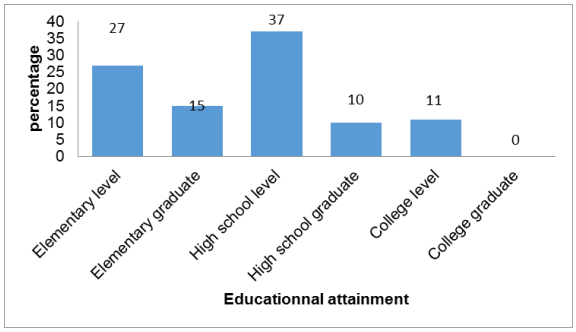

Fig. 6. Educational Attainment of Construction worker of Barangay Lapasan Cagayan de Oro City.

Job Category

Fig. 7 shows the percentage of respondents based on job category. Results revealed that most of the respondents are daily laborers (38%) and carpenters (27%). This explains why most of them have low levels of education and, thus, being a daily laborer is their only chance of getting hired, other job category can undergo training and seminars to enhance their skills.

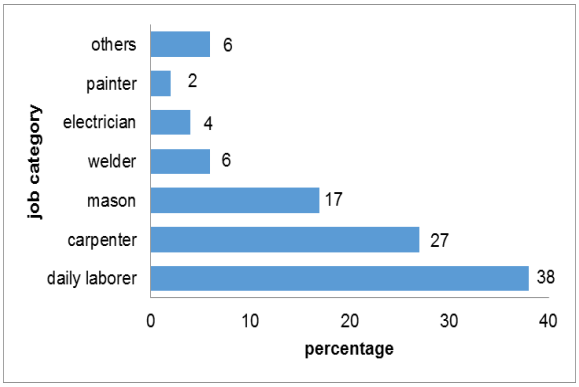

Fig. 7. Job category of the construction worker of Barangay Lapasan, Cagayan de Oro City.

No. of years working as a construction worker

As shown in Fig. 8, majority of the construction workers are working for already 5 years and above (75%). Hafiz and Mark (2010) carried out a cross sectional study on 153 workers in United Arab Emirates and found that majority of the workers had a current duration of work of more than 20 years. Construction projects are highly demandable these days and hiring is very rampant. Also, their skills are enriched in this field of work and, thus, their interest of seeking other jobs is lessened especially if the pay is satisfying.

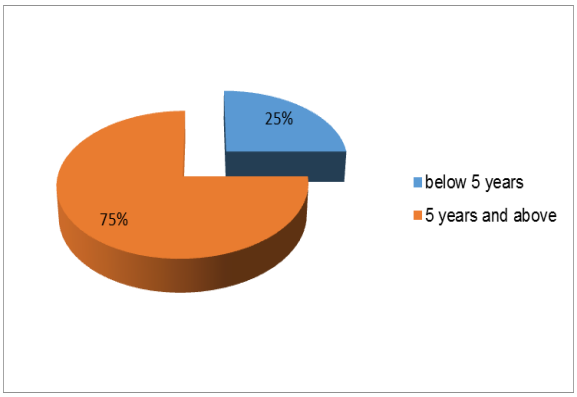

Fig. 8. No. of years of construction worker working in construction.

Working hours per day

Fig. 9 shows the respondent's working hours per day. It shows that most of these construction workers work for 8 hours and above in a day (83%). The 8-hour work in a day is the standard normal number of hours of work under the labor code in the Philippines. This has been a practice since working overtime or longer hours can decrease alertness and increase fatigue among the workers. It may also decline vigilance on task measures. This, in turn, may increase the occurrence of injuries in the workplace.

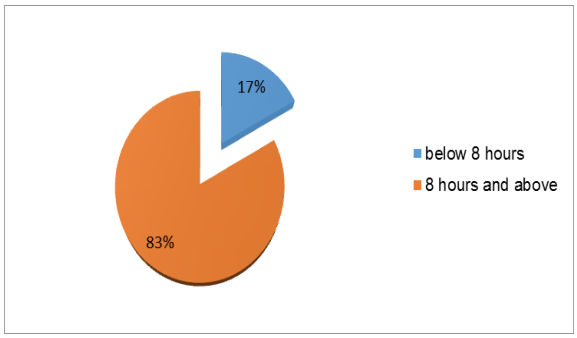

Fig. 9. Respondent's working hours per day.

Income per Day

As shown in Fig. 10, the collected data revealed that majority of the construction workers earned an income of 318 pesos and above in a day (54%). This implies that they are employed in the medium to large scale construction companies. Currently, the minimum wage for construction workers in Region X per day is 318 pesos (Category I & 2), 308 pesos (Category III), and 303 pesos (Category IV) (DOLE, 2015). The minimum wage rates for agricultural and non-agricultural employees and workers in each and every region of the country shall be those prescribed by the Regional Tripartite Wages and Productivity Boards, as amended by section 3 of the Republic Act No. 6727, June 9, 1989. Medium to large scale construction companies usually follow these standard wage schemes under the order of law.

Health Status and Health Care Information

Health Complaints

Fig. 11. Reported health complaints experienced by respondents. Most of the respondents reported health problems such as cough, running nose, fever, sinusitis, skin itching, asthma, nausea, blurred vision, and high blood pressure .This could be attributed to their potential exposure from dust during construction operations. Construction workers are exposed in air polluted with dusty environment and in different climatic conditions they are prone to allergic and respiratory problems (Tiwary *et al.,* 2011; Gurav, *et al.,* 2005; Adsul, *et al.,* 2011; Phoya, 2012 & OSHA, 2007). Likewise, in the study of Mariammal *et al.,* (2012), 14.5 percent of building workers had reported respiratory complaints due to increased indoor pollution, exposure to dust, paints and allergens. A review of literature identified health risks associated with the use of cement. Cement consists of chromate, cobalt that produce irritant contact dermatitis and lime which is corrosive (Shah & Tiwari 2010; Adsul *et al.,* 2011; Sharma *et al.,* 2008; Mahapatra, 2002; and Park, 2002).

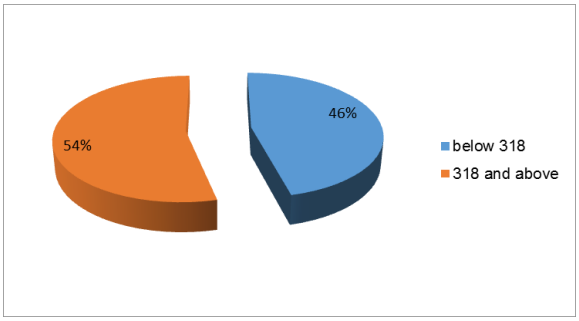

Fig. 10. Respondents Income per day of the construction workers.

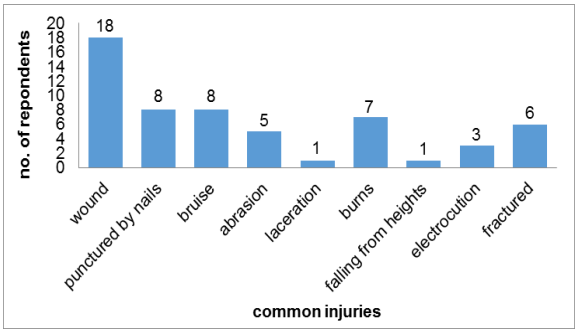

Fig. 11. shows the reported health complaints experienced by the construction workers under survey.

Common Injury

As shown in Fig. 12, the common injuries of the construction workers in the past six months include wounds, punctured nails, bruises, burns and

fractures. Other injuries reported were abrasion, laceration, electrocution and falling from heights. In the study of Cabahug (2014) & Chaun *et al.,* 2002, most common injuries were punctured nails (79.73%), abrasion (74.13%), wounds or cuts from sharp objects or tools (72%) and bruises due to hitting hard objects at the worksite (61.60%). Some reported laceration, burns and electrocution. These injuries are commonly caused by not properly using personal protective equipment's while working onsite. On the other hand, fractures usually happen during a fall accident. These injuries were experienced by the workers who did not use personal protective equipment while working on the site. It should be noted that several cases of injuries have been observed, especially when workers were allowed to work without proper protective equipment (PPE).

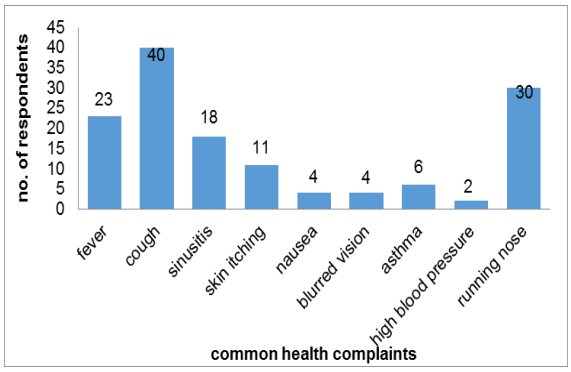

Fig. 12. Reported injuries experienced by respondents.

Health Care Institution

Fig. 13 shows the respondents' preferred health care institutions for advice and consultation with regards to health complaints. Results revealed that majority of them preferred to avail medical services in barangay health centers due to its free medical consultations, medicines and accessibility of the area. Barangay Health Centers are essential health care made universally acceptable to individuals and families in the community by means acceptable to them through full participation at a cost that the community can afford at every stage of development. This shows that barangay health centers have a great role in responding health problems of workers, especially those working in the construction.

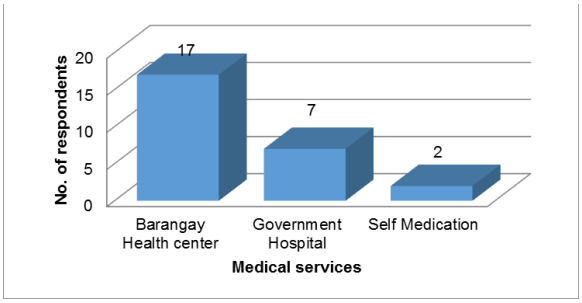

Fig. 13. Respondents preferred Health Care Institutions.

Respondents, knowledge, attitude and practices according to socio-demographic backgrounds

Table 1 shows the respondents' socio-demographic backgrounds and the average scores of their levels of knowledge, attitude and practices about the hazards encountered in construction activities. In the analysis of data, there are no significant differences observed in the construction workers' level of knowledge according to their civil status, educational attainment and job category. However, there is statistically significant difference between the average scores of knowledge among the age groups of the respondents ($p=0.05$). Results suggest that older workers with ages 46 years old and above has a significantly higher level of knowledge ($\mu = 4.46$) than younger workers with ages 22-45 years old ($\mu = 4.38$) and below. This result implies that elder workers can learn self-protecting knowledge from experiences in their work. This is straightened by the study of Sui (2003) that older construction workers could be more knowledgeable and experienced more than younger workers.

In terms of the construction workers' levels of attitude, there is no significant difference observed in their age, civil status, educational attainment and job category. Results suggest that the construction workers' preconceived ideas about the hazards encountered in construction activities may not matter on the socio-demographic backgrounds.

In terms of the construction workers' practices, there is no significant difference observed according to their age, civil status, and job category. However, there is statistically significant difference between the groups of construction workers according to

their educational attainment (p=0.03). In other words, high school graduate workers has significantly higher level of practices (μ=2.48) compared to elementary level workers (μ=1.80). This implies that the level of education has shown to provide the appropriate skills needed to achieve social status and make healthy lifestyle choices. Hence, a high level of education increases ones' awareness of occupational safety. These findings collaborate to the study of Akintayo (2013), about 87.4 percent of workers with post-secondary education had good occupational safety practices.

Table 1. The level of knowledge, attitude and practices in terms of hazards among construction workers in Barangay Lapasan, Cagayan de Oro City.

Socio-demographic Backgrounds	Knowledge		Attitude		Practices	
Age	Mean	Sig.	Mean	Sig.	Mean	Sig.
Below 21 yrs. Old	3.00		3.50		1.50	
22-45 yrs. Old	4.38	0.05*	4.27	0.29	2.25	0.35
Above 46 yrs. Old	4.46		4.35		2.11	
Civil Status						
Single	4.29		4.18		2.23	
Married	4.40	0.29	4.30	0.08	2.19	0.85
Widow	4.94		5.00		2.00	
Educational Attainment						
Elem. Level	4.09		4.19		1.80	
Elem. Grad.	4.56		4.33		2.39	
HS Level	4.42	0.30	4.23	0.87	2.34	0.03*
HS Grad	4.45		4.33		2.48	
College Level	4.52		4.44		2.27	
Job category						
Daily laborer	4.24		4.18		2.07	
Carpenter	4.55		4.20		2.06	
Mason	4.28		4.31		2.41	
Welder	4.33	0.70	4.39	0.70	2.58	0.41
Electrician	4.75		4.66		2.50	
Painter	4.13		4.83		2.63	
Others	4.50		4.50		2.42	

*Significant at 0.05 level

Respondents, knowledge, attitude and practices according to socio-economic backgrounds

Table 2 shows the respondents' socio-economic backgrounds and the average scores of their levels of knowledge, attitude and practices about the hazards encountered in construction activities. In the analysis of data, there is no statistical difference between the groups of construction workers in terms of their income per day received. However, there is statistically significant difference between the levels of knowledge among the group of workers in terms of their number of years working (p=0.005). Those who work as a construction worker for 5 years and above got the significantly highest level of knowledge (μ=4.50) compared to those who work for 5 years and below (μ=3.99). This result coincides with the study of Hafiz & Mark (2010) that the variable years of service had a statistically significant effect on the knowledge of the workers. The longer period of work experience for workers, the better are the self-reported practices. This also aligns with the study made by Tadesse (2007) & Dat (2008) that workers with 5 years or less in the present job played a role in work-related injuries due to lack of experience, less knowledge in the operation of machines and tools, and lack of awareness about the surrounding hazards. Moreover, result suggests that there is statistically significant difference between the level of knowledge among the construction workers in terms of their working time (p=0.004). Those who work 8 hours and above have statistically higher level of knowledge (μ=4.47) compared to those who work 8 hours and below (μ=3.88). Result implies that respondents working 8 hours and above in a day were more knowledgeable about the hazards in construction activities than those working shorter

time in a day. Construction workers working 8 hours and above can be more familiar about the possible hazards in the workplace as they always expose their work all day.

Table 2. The level of knowledge, attitude and practices in terms of hazards among construction workers in Barangay Lapasan, Cagayan de Oro City.

Socio-economic Backgrounds	Knowledge		Attitude		Practices	
No. of yrs. Working	Mean	Sig.	Mean	Sig.	Mean	Sig.
Below 5 yrs.	3.99	0.005*	3.96	0.01*	2.13	0.560
5 yrs. and above	4.50		4.38		2.23	
Working hrs. per day						
Below 8 hrs.	3.88	0.004*	3.98	0.06	2.11	0.59
8 hrs. and above	4.47		4.33		2.23	
Income per day (pesos)						
Below 318	4.26	0.22	4.21	0.46	1.98	0.006*
318 and above	4.46		4.32		2.40	

*significant at 0.05 level

In terms of the levels of attitude, there is no significant difference between the groups of construction workers in terms of their working hours and income per day. However, there is statistically significant difference observed on the number of years working as a construction worker (p=0.01). Those who work as a construction worker for more than 5 years had significantly highest level of attitude (μ=4.38) compared to those who work for 5 years and below (μ=3.96). This outcome runs parallel with the findings of Tiwary *et al.,* 2012 who mentioned that the way a person perceives any situation is significantly influenced by his or her past experiences. A person learns from his past experiences by being aware of any danger that he may encounter. Also, construction workers will be more cautious of any risk that may threaten their lives. Through their past experiences, a person learns from his actions and attitude toward the hazards and it has helped to increase awareness and safety.

On other hand, there is no significant difference in the construction workers' practices in terms of their number of years working as a construction worker and working hours per day. However, there is significant difference between the groups of construction workers in terms of their income (p=0.006). Those who earned an income of 318 pesos and above have a higher level of practices (μ=2.40) compared to those who earned an income of below 318 pesos and below the minimum wage. High income earners had better practices in safeguarding themselves when onsite. Medium to large construction employers can provide standard personal protective equipment (PPE) for their field workers as well as trainings and seminars. Strict implementations in the use of personal protective equipment can motivate construction workers to wear them for protection against hazards. The result was supported by Dat (2008) who conducted a study to rattan craftsmen. The study reported that craftsmen earning more may consider paying for their PPE and are willing to raising their awareness on work to protect themselves from risks.

Construction workers aged 46 years old and above, working for more than 5 years and 8 hours in a day knowledgeably recognizes that noise damages hearing, prolong work under sunlight without precautions causes heat rashes and heat stroke, poor manual lifting posture causes injury, and working scaffolds and roofs has the possibility of fall normally causes disabling injury. Furthermore, they know that cement mixes causes skin diseases and respiratory diseases, chemicals used in construction causes some form of dermatitis-skin dryness, cracking, redness and blisters, chemicals affects the body via inhalation, ingestion and skin absorption, and using PPE's while on duty prevent various types of diseases and injuries.

Construction workers who are already exposed in the industry for more than 5 years were aware that there

is a need to use respiratory equipment for protection against dust, vapors or gases, protective clothing such as boots and gloves for protection against irritating and corrosive substances, abrasion and vibration, wearing of eye protectors for protection against chemicals splashes, such as goggles or face visors, and not using metal ladders near overhead power lines can cause electrocution. Also, eating, drinking and smoking were not allowed onsite where hazardous work is performed and they should go to a doctor if they feel ill or uncomfortable with their health conditions. They also practice on using personal protective equipment such as facemask, shoe covers or boots, safety helmet, gloves and eye protection and safety belt while on duty.

Conclusion and recommendations

Based on the results and analysis of the data, most of the respondents under survey were male with ages 22-45 years old. Their jobs as construction workers include laborers, carpenters, masons, welders, electricians, painters, steel men and lead men. Most of them work for more than 5 years and above and work for more than 8 hours in a day. Construction workers were equally single and married individuals whose income reaches 318 pesos and above.

The construction workers' levels of knowledge were significantly higher among 46 years old and above with more than 5 years of experience in the construction and working for more than 8 hours in a day. The construction worker levels of attitude were significantly higher to those who were already working for more than 5 years in the construction. Finally, the construction workers practices with regards to work-related hazards were significantly higher to those who were earning 318 pesos and above.

In view of these results, it is recommended that government agencies as well as policy makers and enforcers must be concerned about the health and safety of construction workers by strictly monitoring the implementation of the Department Order No. 13 of the Department of Labor and Employment (DOLE). There must be a continuous development of construction safety trainings and seminars to safeguard the health of the workers of construction industries. Also, nationwide information dissemination must be fully exercised to promote safety and health of workers in the construction industries. Specifically, there is a need to monitor and focus these seminars and trainings to younger construction workers with less experience and low level of education. Moreover, construction industries must follow the minimum wage set by the Department of Labor and Employment as amended in Republic Act No. 6727. Construction industries must be conscious in providing and implementing the use of PPE especially during onsite operations. Finally, future studies may include actual measurements of known air chemical and pollutants onsite and relate these to the health of the construction workers.

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