Occupational Health and Safety Training of Personnel from Eleven Department of Health Hospitals in Metro Manila

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ABSTRACT

Objective. This study was conducted to describe areas of concern with respect to occupational health and safety (OHS) program administration at eleven (11) Metro Manila hospitals, particularly: level of OHS knowledge and skill of personnel, the nature of occupational hazards perceived to exist in the hospitals, and how these relate to OHS program staffing and implementation.

Methods. Participants were surveyed on OHS knowledge and skills, as well as perceived occupational hazards, during the pilot of the "Occupational Health and Safety for Hospital Workers" training course held last April 2009.

Results and Discussion. The participants needed improvement in many of the OHS knowledge and ability items assessed. Familiarity and mastery of some items were demonstrated, but for effectiveness to be assured, it is necessary for other areas to be improved. Occupational hazards from all categories (chemical, ergonomic, physical, biological, and safety-related) are observed in the hospitals, with the most frequently cited being chemical and ergonomic in nature. Health and safety committees and OHS programs exist, but staff abilities limit their operation and effectiveness.

Conclusion and Recommendations. Improvement of certain OHS personnel abilities in the hospitals surveyed is suggested, and may help improve administration of OHS programs.

Key Words: occupational health; employee health; staff development; hospital administration; health care facilities, manpower, and services

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Introduction

Healthcare workers (HCWs) encounter a variety of occupational hazards unique to the industry.[1,2] The range of biological (infectious and non-infectious agents), physical (temperature extremes, noise, radiation, and others), chemical (such as laboratory chemicals and housekeeping materials), ergonomic (biomechanical challenges such as lifting, physiological challenges posed by workload and shiftwork), and safety hazards (including equipment-related hazards and workplace violence) present in healthcare institutions also vary according to the way an institution is organized, with multi-departmental setups such as hospitals having probably the widest range of hazards.[3,4]

Preventing the occurrence of adverse health outcomes among hospital-based HCWs exposed to occupational hazards require a thorough and methodical approach. This can be accomplished if a relevant occupational health and safety (OHS) program, staffed by competent individuals, is in place. In the Philippines, places of work are required to have personnel organized as a Health and Safety Committee (HSC) to address workplace issues related to OHS.[5] Additionally, there may be other members of the hospital staff who are also engaged officially in OHS-related duties, who may be called OHS personnel. The provision of appropriate preventive and corrective measures through OHS programs rely heavily on the knowledge and skills of these individuals.

The Bureau of Working Conditions (BWC) is an agency of the Department of Labor and Employment (DOLE) that promotes compliance of the Philippine Occupational Safety and Health Standards (OSHS).[5] The Bureau assists companies as they implement the rules of the Standards.

Rule 1040 of the Standards state that every place of employment must plan and make policies on health and safety through an organized health and safety committee (HSC). The HSC is supposed to be chaired by the manager, and a safety man acts on the employer's behalf to implement programs that minimize occupational hazards. The execution of their plans would require an organized occupational health service, of which there is a recommended structure for staffing in Rule 1960 of the Standards. In addition, a professional in OHS practice is expected to undergo relevant training.[5] Those engaged as

OHS personnel are responsible for health and safety action within the organization, compliance to the relevant laws, and periodically report OHS data to authorities.

Training is a requisite to accreditation by the BWC as an OHS practitioner. Similarly, important OHS knowledge and skills that could only be acquired through special training are expected of designated members of a hospital HSC, in order for them to effectively function and make the workplace healthy and safe. While there are recognized providers of basic OHS training in the country, there is no known training course that is tailored to the needs of hospitals in particular.

The Department of Health–Philippines (DOH), with the support of the WHO Western Pacific Regional Office (WHO-WPRO), conceived a project to help address OHS concerns in hospitals. The Training Program on Occupational Health and Safety for Hospital Workers (OHSHW) is an initiative of the agency, through the Environmental and Occupational Health Office of its National Center for Disease Prevention and Control (EOHO-NCDPC). It aims to provide participants basic OHS knowledge and skills, as well as familiarization on best practices and experiences in the hospital setting. The Department of Environmental and Occupational Health, College of Public Health, University of the Philippines Manila (DEOH-CPH), was engaged to design and implement the initial run of the OHSHW training.

The pilot course was conducted with the participation of DOH-retained hospitals in Metro Manila. A training needs analysis (TNA) was conducted to determine what is expected of hospital personnel with OHS functions, as well as their current related knowledge and skills, in order to successfully carry out OHS programs. The first part of the TNA aimed to determine the practice and orientation of institutions toward OHS. The results of this phase were analyzed separately and are not covered in this paper. This was followed by an assessment of hospital representatives who participated in the pilot course. Their participation in the training entailed a series of evaluations, particularly on OHS skills and knowledge, the reported occupational hazards in each institution, and also staff concerns related to implementation of OHS programs.

Objectives

This study was conducted in order to describe areas of concern in OHS administration with respect to OHS program staffing at the participating hospitals, as suggested by data generated from the participant evaluations during the pilot OHSHW training. Its specific objectives are:

1. To discuss the level of knowledge of personnel on specific OHS areas
2. To discuss the skills of OHS personnel in these hospitals
3. To identify occupational hazards perceived to be existing in the hospitals, the recognition of which can help address gaps in knowledge and skills, and
4. To relate findings on the above to improvement of hospital OHS programs, particularly for staff development

Methods

A total of nineteen (19) DOH-retained hospitals in Metro Manila were invited to participate in the pilot training. This descriptive study involves hospital representatives and their institutions that were able to participate in the course proper.

A survey tool was developed to assess for OHS knowledge and skills [2,5] and occupational hazards cited by various references on hospital OHS.[1,2,4,6,7] Prior to administration, this underwent review for content and format by the training faculty, and was used en toto for the course. The grading scales of the tool had previously been used in self-assessment tools used in teaching some graduate courses in occupational health of DEOH-CPH. The participants were asked for written consent to participate in the evaluations upon commencement of the training. Altogether, the different sections of the tool yielded the following information:

a. Participants' background: profession, educational attainment, official designation in hospital, participation in the OHS committee
b. OHS training background: nature of training, date and venue; relevant certifications and accreditations
c. Skills perceived necessary to accomplish the current responsibilities of OHS personnel in the hospitals represented, and perceived level of ability in these skills
d. Knowledge areas perceived to be needing further development
e. OHS concerns encountered in their hospital

Data was encoded and analyzed using SPSS 7.5 and MS Excel. The responses to individual course assignments on occupational hazards and OHS programs of their institution were also considered in the analysis.

Results and Discussion

Thirteen participants registered on the first day of the training. All but one accomplished the knowledge and skills assessment at the start of the course. Five (5) participants had undergraduate degrees (nursing and medical technology), and seven (7) had graduate training in medicine, nursing, business administration, and hotel and restaurant management. They are officially engaged in the hospital as heads of units/supervisors (5), training and administrative officers (5), nurses (2), and medical specialist

(1). Their experience in the hospital industry ranged from five to twenty-six years.

Seven (7) participants are officially members of a group in their respective hospital that functions as an HSC. Two more claim to hold no position in such a committee, and three declared that their hospital had no organized HSC. All perform duties related to health and safety, but only four (4) in the group reported having any formal OHS training. Among those with OHS-related functions, the longest reported involvement was three years.

Only eleven (11) of the original participants successfully completed the course, with two eventually deciding not to continue with the training. Their institutions are listed in Table 1. Except for one hospital categorized as Level 2, all of these Metro Manila-based institutions were Level 4 hospitals.

Table 1. Hospitals represented in the OHSHW pilot training

Hospital	Location	Category/ Service Capability
East Avenue Medical Center	Quezon City	Level 4
National Children's Hospital	Quezon City	Level 4
Philippine Children's Medical Center	Quezon City	Level 4
Philippine Orthopedic Center	Quezon City	Level 4
Quirino Memorial Medical Center	Quezon City	Level 4
Jose R. Reyes Memorial Medical Center	Manila	Level 4
San Lazaro Hospital	Manila	Level 4
Las Piñas General Hospital and Satellite Trauma Center	Las Piñas City	Level 2
Amang Rodriguez Memorial Medical Center	Marikina City	Level 4
Research Institute for Tropical Medicine	Muntinlupa City	Level 4
Valenzuela Medical Center	Valenzuela City	Level 4

A. Level of Knowledge on Specific OHS Areas

The five-day training course covered not only content areas basic to OHS, but also areas oriented towards hospital concerns (Table 2).[2, 3, 5, 7, 8] Participants were asked to rate their level of knowledge of the content areas at the start of the course using the survey tool developed by training faculty. They were asked to assess themselves on several items using a four-point scale representing mastery, familiarity, awareness, and lack of knowledge on specific subject areas.

Table 2. Content areas for OHSHW pilot training

	Topic		Subtopics
1	Occupational health and safety laws and standards relevant to medical workplaces		
2	Principles of occupational health		
3	Occupational/Industrial hygiene		
4	(1) Occupational hazards in hospitals: health hazards	a.	Biological agents
		b.	Physical agents
		c.	Chemical agents
		d.	Ergonomic risks
	(2) Occupational hazards in hospitals: safety hazards	a.	Structural hazards
		b.	Non-structural hazards
		c.	Functional hazards
5	Occupational health and safety data analysis (epidemiology)		
6	Control of hospital occupational hazards	a.	Occupational/industrial hygiene measures (engineering, administrative, and personal protective equipment controls)
		b.	Hospital sanitation measures (facility setup, waste disposal, measures to protect surrounding communities)
		c.	Workplace safety approaches for hospitals
7	Hospital health and safety programs	a.	Health and safety committee personnel constitution
		b.	Health and safety personnel functions
		c.	Resource allocation and budgeting
		d.	Reporting, documentation, and recordkeeping
		e.	Development of health and safety programs: action or program planning

Fundamentals of OHS include relevant laws and standards of practice, principles that OHS personnel observe, and knowledge of occupational hygiene and occupational epidemiology. The foundation of OHS practice is the observance of laws and standards for health and safety. Half the group reported only familiarity with these, with the remaining half reporting awareness (Figure 1). None stated they knew OHS laws and standards very well. The result for the item "principles of occupational health" is almost similar. The items "occupational/industrial hygiene" and "occupational health and safety data analysis (epidemiology)" showed that majority had little to no knowledge of these fields.

In contrast, knowledge about hospital occupational hazards, particularly for the different categories of health hazards, was more towards familiarity and mastery (Figure 2). A number of participants reported familiarity with safety hazards, but since some participants did not answer this

item, it could not be ascertained that this made for the majority. If those who refrained from answering were presumed to be lacking knowledge of the nature of safety hazards, then about half of the group knew little to none about safety hazards.

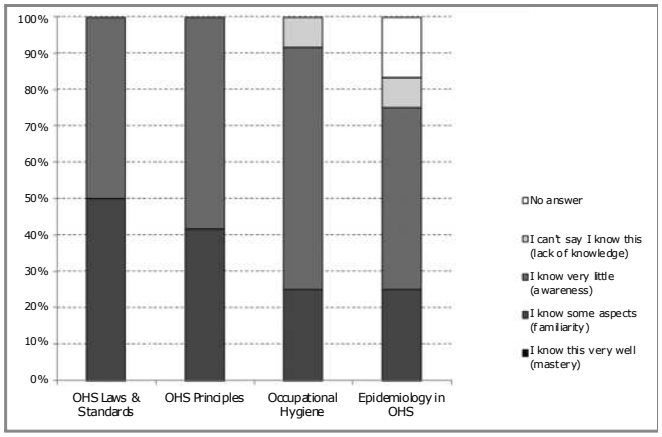

Figure 1. Participants' perceived level of knowledge on fundamentals of occupational health and safety (OHS)

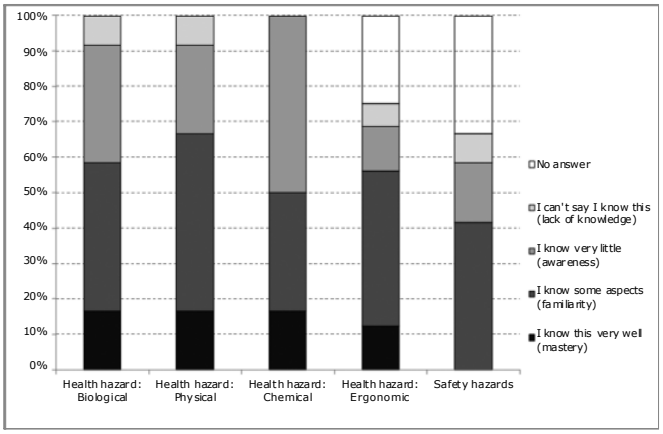

Figure 2. Participants' perceived level of knowledge on occupational hazards found in hospitals

Different hazards would require control measures to mitigate worker exposure. Occupational hygiene controls (engineering approaches, administrative measures, and personal protective equipment) address primarily health hazards.[1,9] Other controls include the observance of industry-specific sanitation measures, as well as workplace safety approaches.[4,6,9] In the evaluation of the items "occupational/industrial hygiene measures (controls)" and "hospital sanitation measures", majority showed little to no knowledge of these areas (Figure 3). Similar to the evaluation on "hospital safety hazards" (Figure 4), for "workplace safety approaches" there seems to be an equal number of those who knew a lot of the topic and those who know very little.

Health and safety programs were in place to some extent in the hospitals represented. However, the responses for items pertaining to planning health and safety programs

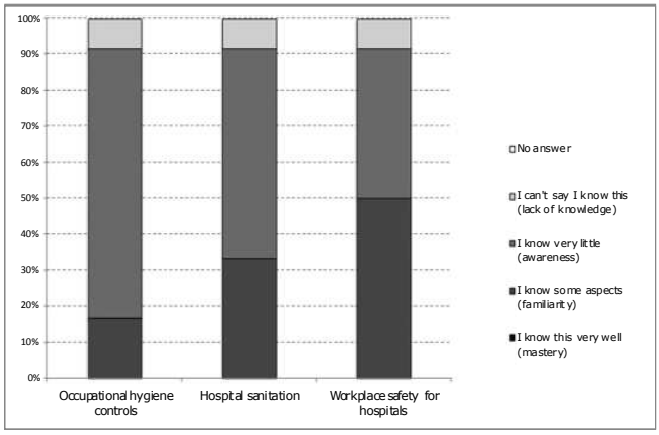

Figure 3. Participants' perceived level of knowledge on control approaches for occupational hazards in the hospital setting

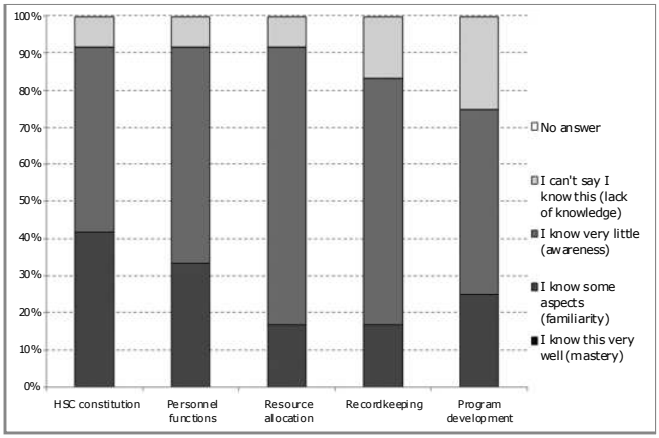

Figure 4. Participants' perceived level of knowledge on planning programs for occupational and safety in hospitals

overall indicated low knowledge level to none (Figure 5). Items include critical program elements such as standards for staffing (HSC constitution), knowledge of OHS personnel functions, resource allocation, record keeping, and program development.[2,5,9]

B. Skills of OHS Personnel

OSHS Rules 1043 and 1047 specify the qualifications of OHS personnel, as well as the duties of individuals who are part of a committee overseeing health and safety, or who have been the designated safety man or men of a workplace.[5] The participants were evaluated on the skills

needed to accomplish these duties. A four-point scale was used to represent good ability, fair ability, guided ability, and lack of ability in performing the various skills listed. Ideally, OHS personnel must be independently capable of each skill (good and fair ability), and therefore guided ability could be taken as a level that still needs more work towards confident and independent accomplishment.

Skills of HSC Members. The eight (8) skills of HSC members identified in OSHS Rule 1043 were assessed (Figure 5).[5] Guidance was required by most to perform five skills: directing accident prevention efforts, conducting safety and OHS meetings, developing and maintaining disaster contingency plans, developing accident prevention programs, and reviewing OHS reports for the purpose of planning. Data on the rest of the items suggest that the respondents do these with some level of skill sufficient for their needs. About half of the respondents indicated that they cannot perform the function of initiating OHS training for employees, which is critical to the workforce's observance of policies and programs.

Skills of the Safety Man. The safety man is a critical figure in the HSC, him/her overseeing the implementation of hazard monitoring and control. At least six (6) skills of the safety man are outlined in OSHS Rule 1047.[5] Most participants report that they could do most very well if not fairly well (Figure 6). However, about half report they need guidance or cannot do workplace inspections altogether, including doing a walk-through which is necessary for hazard identification. Almost the same level of ability was reported for the skill of maintaining records for hazard monitoring and program planning.

Skills Related to Hazard Identification and Risk Assessment. OHS personnel observe the occupational hygiene principles of anticipation, identification, and evaluation of hazards in order to assess exposure risk and magnitude.[5,10,11] These in turn determine the nature of control measures that need to be implemented. About half of the participants reportedly need guidance to conduct or assist walk-through surveys, identify necessary monitoring and surveillance approaches, assess data for planning, and analyze data for hazard patterns (Figure 7). However, it seems that most can do hazard monitoring.

Management-related Duties. A significant number of the responsibilities of OHS personnel are managerial in nature. There were more participants who reported guided ability to no ability on the following skills: devising a budget for OHS activities and projects, identifying needed expert OHS agencies, drafting OHS policies and procedures, and facilitating workmen's compensation claims (Figure 8).[5,9] It

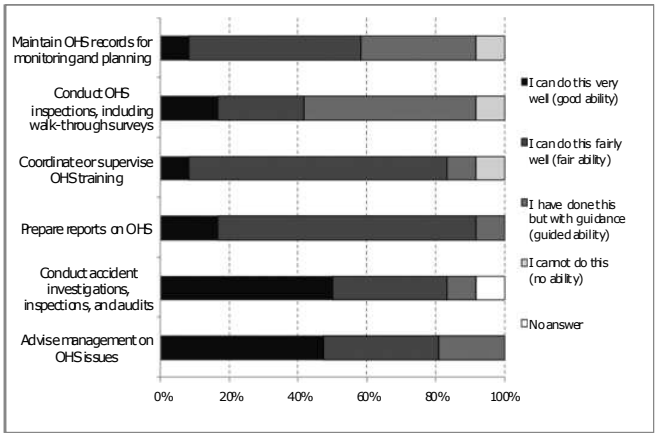

Figure 6. Participants' ability to perform the skills of the safety man as stipulated in Occupational Safety and Health Standards Rule 1043 (Philippines)

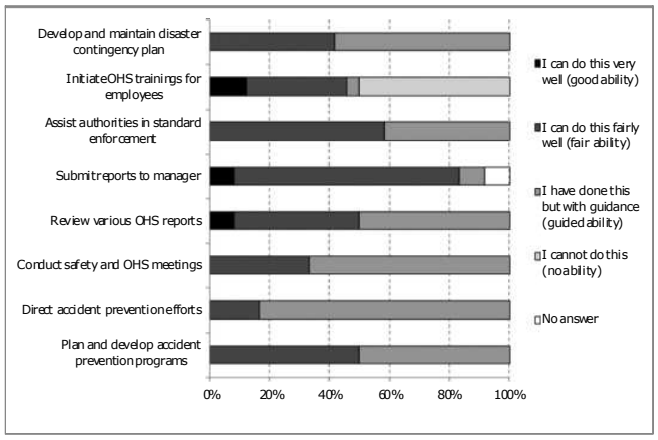

Figure 5. Participants' ability to perform skills of health and safety committee personnel, Occupational Safety and Health Standards Rule 1043 (Philippines)

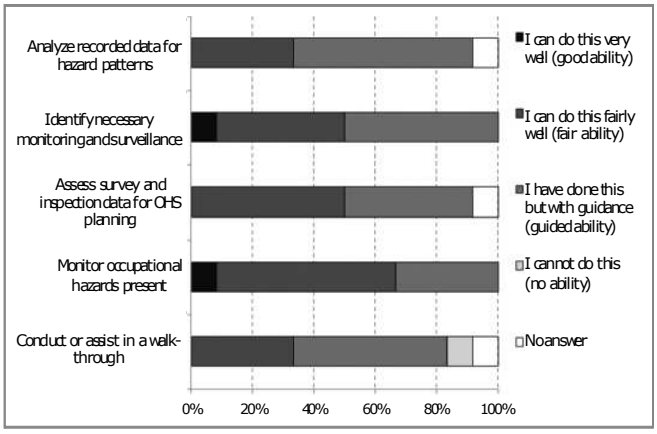

Figure 7. Participants' ability to conduct hazard identification and risk assessment in a hospital workplace setting

is worth noting that for other skill items where most reported up to fair ability, around one third of participants still require guidance.

Control of occupational hazards and evaluation of OHS programs. OHS programs are activities and measures strategically devised to control hazards and mitigate their effects.[5, 9, 10] Among the related skills assessed, it was only for conducting health promotion activities aside from training and recommending related OHS activities that more than half of the participants felt they could conduct fairly well (Figure 9). This contrasts with the earlier response that they could not initiate trainings as an HSC responsibility (Figure 5). About half of the participants reported guided ability to no ability in deciding and selecting control and prevention measures, reviewing OHS programs for effectiveness, revising OHS programs, and developing programs other than those for accidents.

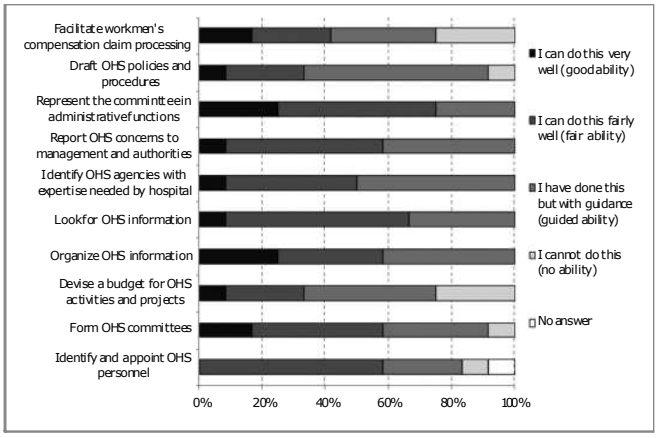

Figure 8. Participants' performace of the management duties of occupational health and safety (OHS) personnel

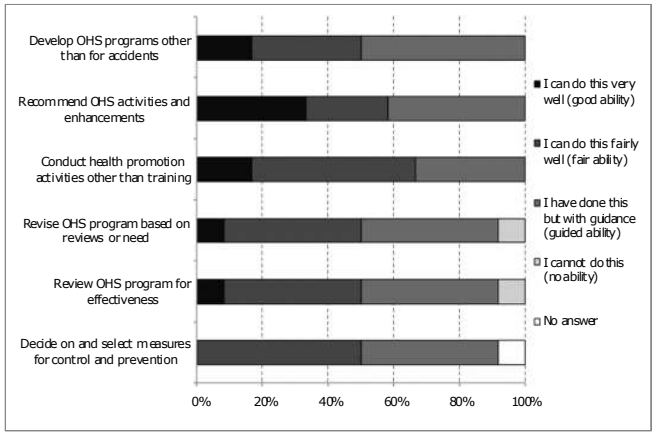

Figure 9. Participants' ability related to control of occupational hazards and evaluation of OHS program

C. Reported Occupational Hazards in the Hospitals

The participants were given assignments to identify occupational hazards present in their hospital. All were tasked to submit a list of hazards found in each major functional area of the institution.

Identified were infectious and non-infectious biological agents, six (6) forms of physical agents, at least twenty-two (22) chemical agents, eleven (11) ergonomic risk factors, and fourteen (14) items that may considered hazards to safety (Table 3). Inpatient areas had the highest average number of hazard sources identified (Figure 10). The tally of responses indicated that while chemical hazards were the most varied and most frequently observed for all work areas, ergonomic risk factors were cited as frequently as chemicals. Following in frequency were safety, physical, and biological hazards. A comparison with the nature of the occupational health programs reportedly in place at the time of the survey showed that very few of these hazards were actually being addressed.

D. Hospital OHS Programs and Need for Staff Development

Health facilities in the United States are guided in the initiation of OHS programs with the aid of a reference called the Guideline for Protecting the Safety and Health of Health Care Workers from the National Institute of Occupational Safety and Health (NIOSH).[2] It contains a checklist of tasks for the development and continuing management of OHS programs for hospitals. Aside from identifying occupational hazards in their hospital, participants were also asked to relay their realizations on the gaps or areas for improvement of OHS programs they have. Their collated responses are shown in Table 4, grouped according to item categories they may relate to in the NIOSH Guideline. The participants had responses relevant to all categories except "hazard identification".

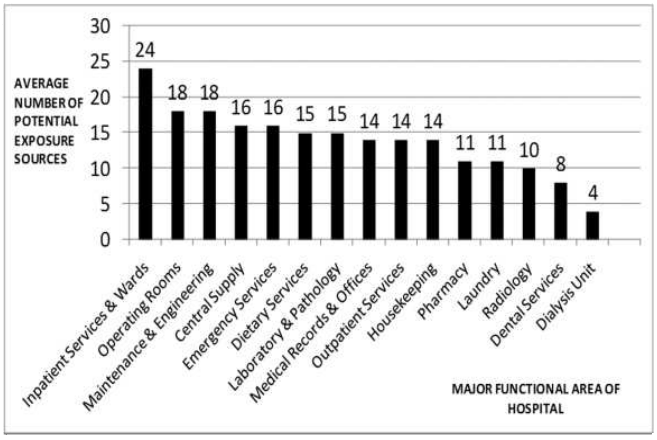

Figure 10. Average number of sources cited for various occupational hazards per major work area of the hospitals represented in the training

Table 3. Occupational hazards found in hospitals represented in the OHSHW pilot training, arranged per category from the most to least cited

Biological Agents	Physical Agents	Chemical Agents	Ergonomic Risk Factors	Safety Hazards
Infectious agents (bloodborne and otherwise)	Heat – dry	Disinfectant	Lifting	Electrical hazards
Non-infectious agents (ingredients in dietary preparations)	Noise	Dust	Repetitive movements and activities	Sharps use and disposal
	Non-ionizing radiation from various equipment	Anesthetic agents	Pushing	Slips and falls
	Ionizing radiation from medical equipment	Antiseptics	Physical strain	Lighting issues
	Heat – wet/steam	Soap	Pulling	Ventilation issues
	Vibration of tools and equipment	Detergent	Prolonged standing	Hazardous machines and tools
		Pharmaceuticals – prescription and non-prescription	Awkward positioning	Broken articles still undisposed
		Formaldehyde	Workload unevenly distributed or poorly scheduled	Hospital waste generation and handling
		Other/Unspecified toxic chemicals	Work-related stressors	Flammable agents
		Pesticides	Mental strain	Wet flooring
		Glutaraldehyde	Work system flow inefficiencies	Air quality issues
		Solvents		Use of compressed gas
		Alcohol		Inadequate PPE
		Mercury		Inadequate safety policies
		LPG		
		Reagents and solutions		
		Paint		
		Film developer		
		Chemical cleaners		
		Fumes and smoke		
		Sterilizing gases		
		Chemotherapeutic agents		

Notable are the inputs emphasizing that some institutions have yet to organize an HSC. These institutions would benefit from having prospective committee members undergo OHS training. Hospitals with existing HSC's are thought to need more administrative support, such as budget allotments and proper planning. In addition, comments related to the hazard evaluation, control, and program review, and record keeping components of OHS programs all underscore need for improvement. The participants raised the concern for improving knowledge among employees on the scope of OHS through statements related to training and education. This is a telling sign as to why an OHS initiative may not be well situated – the perceived importance of OHS and awareness at various levels of the organization may not be sufficient, and thus it is not given due attention and value by management and employees alike.[1, 10] When taken together, these comments actually reflect the principle that an OHS program should be kept relevant through continued evaluation and evolution in order to be effective.[2, 11] Such a program would require trained, capable staff in its implementation.

Conclusion and Recommendations

An occupational health and safety program relies heavily on the individuals involved and the institutional mechanisms in place to support it. For the hospitals surveyed, staffing and how staff members implement programs are areas for potential improvement.

While OHS personnel are familiar with the hazards that may be encountered in hospitals, different aspects of their OHS foundation knowledge need to be improved so that hazards are capably identified and evaluated. The participants were able to recognize occupational hazards, but formal identification and evaluation would be necessary in directing the HSC and all others concerned to enact the appropriate occupational controls and hazard minimization measures. These are also OHS areas where very limited abilities were demonstrated. OHS personnel must be encouraged and supported in the improvement of these knowledge and skill competencies through further training.

The presence of OHS programs in most of the hospitals represented is commendable, and brings to attention the assessment that for all program planning elements, the participants must also demonstrate the need for improvement in knowledge. Attention should again be given to improving competence of OHS personnel. Essential skills of HSC members such as being able to initiate OHS relevant training need to be enhanced, and the same could be said for the safety man's critical duties of hazard identification, record keeping, and participation in program

Table 4. Participants' end-of-course realizations and opinions on OHS programs related to categories of a US National Institute for Occupational Safety and Health (NIOSH) checklist of tasks for developing hospital safety and health programs

Category	Component tasks	Participants' input
Administrative support	Form a health and safety committee. Appoint a safety officer, employee health director, and other responsible personnel. Allocate time for surveys and committee meetings. Allocate funds to evaluate and monitor hazards, implement controls, and conduct health examinations.	Health and safety committee must be formed. In the absence of political will all efforts will come to naught; administration's unwavering support and commitment must precede planning, implementation, and evaluation of programs. Conduct of planning and budgeting to come up with OHS programs needed. Strong support of management needed.
Hazard identification	Conduct periodic walk-through inspections. Obtain material safety data sheets (MSDS) and other information on potential hazards. Maintain a log of hazardous chemicals and materials that are used or stored in each department.	(No comments)
Hazard evaluation	Conduct safety inspections and industrial hygiene monitoring of potential hazards and determine needs for hazard controls. Conduct medical evaluations. Select appropriate medical surveillance programs.	Further objective and detailed evaluation of specific functional areas reveal far greater hazards, the majority of which are taken for granted or lightly addressed because of their seemingly low potential to cause harm.
Training	Develop and begin a training program for workers, based on job responsibilities.	Information campaign on OHS needed. Compelling and persuasive strategies on effective training and education on the standards are needed. OHS is very important in our workplace but very few notice importance of it; continued education and information dissemination is key.
Controls	Select appropriate control measures and implement controls and medical surveillance programs, as determined in hazard evaluation.	Concrete launching of individual programs for OHS. Reinforcement of the implementation of and progress monitoring of the existing programs needed.
Program review	Preview results of periodic safety inspections, industrial/occupational hygiene monitoring, and medical surveillance programs to find patterns of hazards, to measure success of the program, and determine control effectiveness. Change the safety and health program as new materials or procedures are introduced, or as new hazards are identified in the review process.	Tedious processes of program planning are warranted. Streamlining of all existing programs and activities to make a concerted and holistic program. Re-structure committee to incorporate involvement of employees. Program must be brought to the people (workers), it cannot simply be the passion of committee members but employees themselves. Reinforcement needed for existing programs; more programs are needed.
Recordkeeping	Maintain records of results from all surveys, evaluations, monitoring, corrective actions, and worker medical examinations.	Fortify hospital documentation and reporting on health and safety issues.
Others	--	OHS must be observed. OHS must be given time to enhance our employees as to more economic and legal aspects. Importance of OHS cannot be overemphasized because the most important component of any industry is manpower. In order for an individual or institution to be healthy, safe, and happy before delivering services; management cannot close their eyes to these needs in order to make an effective facility.

planning. The aim must be that OHS personnel should have at least fair ability in skills and responsibilities in order to function efficiently and independently. While it is true that for some very technical matters, such as occupational hygiene, a consultant or an expert may be tapped by the HSC, it must be realized that the amount of resources available may often set limits as to when the HSC members can solely rely on their own capabilities. Institutions must consider investing in ways that will assure them of having their own competent personnel in the long run.

The variety of occupational hazards identified provides an approximation of the extent of OHS concerns in these

hospitals, and what must be given specific attention by their OHS personnel. While the participants' lists cannot be considered exhaustive because their responses were based on individual recall and not the ideal method of a site walk-through, it still demonstrates the presence of hazards which may be of foremost concern among the hospital workforce. This brings into question whether any established OHS programs address the hazards identified or not. The Staff should be capable of evaluating programs, as well as developing new ones.

The institutions represented in this survey may all be willing to pursue improvement in their OHS personnel, but without a supportive environment that allows them to thrive, their effectiveness would not be assured. Organizational issues the participants alluded to (particularly budget allotments, formation and/or revitalization of HSCs, continuing improvement, and promoting awareness of OHS issues and measures) also warrant further investigation in future studies since they are deemed necessary for the work of OHS personnel to be successful.

Acknowledgment and Notes on Administrative Support

This study was accomplished with material resources made available during the conduct of the "Training Program on Occupational Health and Safety for Hospital Workers", commissioned by the Environmental and Occupational Health Office, National Center for Disease Prevention and Control, Department of Health of the Philippines. The said program was funded by the World Health Organization. The project team is comprised of Professor Romeo R. Quizon, Professor Gayline F. Manalang Jr., and Dr. Renato G. Josef, faculty of the College of Public Health, University of the Philippines Manila.

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