Adherence to Safety Practices in Engineering Workshop: NCAM as a Case Study.

[1]Farounbi, A.J, [1]Opadotun, O.O, and [1]Bamidele, B.L

[1]National Centre for Agricultural Mechanization (NCAM), PMB 1525, Ilorin, Kwara State.

Corresponding author's email: hopeopa@yahoo.com.

Abstract

Engineering practices expose workers to injuries in the course of execution of any project. Mishap which causes some injury to the person, damage to machines, tools and equipment, which results in loss of production, may be prevented by adherence to proper safety precautions. It involves all stakeholders within and outside the workshop. A good safety practice in an engineering workshop takes process that is aimed at a continuous improvement in health, environment and safety performance. The National Centre for Agricultural Mechanization (NCAM) was chose for this survey judging by the various fabrication and engineering activities going on in their workshops (ESS AND FPM). Fifty respondents were selected for this survey (13-Engineers, 7-Technologists, 14-Technicians and 16-Craftsmen). The survey was able to establish that there is safety practice in place in NCAM workshops; the adherence is close to average which can be improved upon. 84% reported non-availability of safety signage while 16 % reported lack of awareness about it, 88% said there is no functioning first aid facility while 12% think otherwise, 10% rated the first aid facility as efficient, 2% average, 2% below average, 14% poor and 72% very poor, Larger percentage reported high adherence to the use of PPE in the protection of their body, face/eyes and respiratory organ while there was low adherence in the protection of head, hand, ear and foot.

Keywords: *Adherence, Engineering, Hazards, Personnel, Safety and Workshop.*

1.0 INTRODUCTION

Safety is a concept covering hazard identification, risk assessment and accident prevention (Heikkilä, 1999). Safety goes with costs and should always come first. The best known measure for safety is risk, which is defined as the possibility of loss (Taylor, 1994).

Safety in workplaces has improved in most industrialized countries over the past 20 to 30 years (ILO, 2013). However, Olagbegi et al (2013) reported that the situation in developing countries is relatively unclear largely because of inadequate accident and disease recognition, record-keeping and reporting mechanisms. It is estimated that at least 250 million occupational accidents occur every year worldwide while 335,000 of these accidents are fatal. Since many countries do not have accurate record-keeping and reporting mechanisms, it can be assumed that the real figures are much higher. Industrialised countries pay more attention to safety in work place than developing countries; this is seen in better health and safety programmes, improved first-aid and medical facilities in workshops, and active participation of workers in the decision-making process on health and safety issues.

A good safety practice in an engineering workshop takes process that is aimed at a continuous improvement in health, environment and safety performance. It involves all stakeholders within and outside the workshop. Considering the human sufferings and economical loss due to accidents, it becomes imperative on the part of everyone to prevent such by removing or controlling the hazards in workshops.

Despite advances in accident prevention techniques and providing safety and healthy working environment to workers, safety at work still needs to find a complete solution. Accident prevention does not lie on devising safe machines alone but also on improving the knowledge, skill, attitude and morale of the

workers. Accident prevention programs must concentrate both on unsafe conditions in the workshop and unsafe acts committed by the workers.
Some of the industries with the highest risk of accidents worldwide include mining, agriculture (forestry, logging and processing) and construction (Wolska, and Switula, 1999). Accidents are often indirectly caused by negligence on the part of the employer who may not have provided adequate worker training, or a supplier who gave the wrong information about a product, etc. (Workerscover, 2013).
Generally, engineering practices expose workers to injuries in the course of execution of any project. Mishap which causes some injury to the person, damage to machines, tools and equipment, which results in loss of production, may be prevented by worker's precautions (Khurmi and Ghupta, 2010).
Successful safety services and practices improve the outcome of engineering works; add quality and years to workers life and equipment lives. Proper evaluation of various risks involved in job specifications in the workshop, and appropriate implementation and adherence to the correct safety rules by instructors and all workshop users is a determinant factor in achieving an absolutely safe workshop.
NCAM as a Centre saddled with the responsibility of mechanizing agriculture has fabrication workshops (Engineering and Scientific Services and Farm Power and Machinery) where various machines and equipment are used for different purposes of fabrication. Visibly present are no safety signs. This calls for great concern since the safety of personnel and visitors in the workshop is of importance to the overall success of the workshop; the more reason why this research was conducted to ascertain the rate of safety adherence in these workshops in a way to recommend useful way forward in improving them.

2.0 MATERIALS AND METHOD

Questionnaire was administered to selected fifty (36 from ESS and 14 from Farm Power) workshop personnel in the National Centre for Agricultural Mechanization (NCAM) for the survey. For right representation, a team of

professionals namely, Engineers, Technologists, Technicians and Craftsmen involved at various levels and stages of fabrication process made up the survey respondents. The questionnaire was structured to know the availability and level of compliance to safety practices through: Safety signage and protective wears such as Head Gear, Hand Gloves, Body Wear (Overall), Foot Wear, Eye/Face Wear, Respiratory or Nose Wear, etc. and first aid facilities.

3.0. RESULTS AND DISCUSSIONS

The results are discussed as follow:

3.1 Socio-economic Characteristics of the Respondents

The distribution of the respondents shows that 98% are Male and 2% Female participated in the survey (table 1a). 82% of them are married and 18% single (table 1b). 26% are Engineers, 14% Technologists, 28% Technicians and 32% Craftsmen participated in the survey (table 12a). Majority of the respondents (74%) were be the ages of 35 and below while 26% are 36 years and above (table 1c). This implies that respondents are matured to master the use of workshop facilities and are no doubt familiar with safety practices.

Table 1a: Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	49	98.0	98.0	98.0
	Female	1	2.0	2.0	100.0
	Total	50	100.0	100.0	

Table 1b: Marital status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Single	9	18.0	18.0	18.0
	Married	41	82.0	82.0	100.0
	Total	50	100.0	100.0	

Table 1c: Age of Respondent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	≤30	16	32.0	32.0	32.0
	31-35	21	42.0	42.0	74.0
	36-40	4	8.0	8.0	82.0
	>40	9	18.0	18.0	100.0
	Total	50	100.0	100.0	

3.2 Safety Practices

3.2.1: Safety Signage

84% of the respondents reported non-availability of safety signage while 16 % reported lack of awareness about safety signage in the two workshops (table 2).This portends serious danger to workshop personnel and visitors as the availability of safety signage such as accident prevention tags, location tags, wall chats, floor stand signs, flash lights, exit signs, caution signs, etc. could prevent workshop related avertable accidents and mitigate against hazardous situations.

Table 2: **Respondent area of specialization * Reason of respondent for not using safety sign in the workshop.**

			Reason of respondent for not using safety sign in the workshop		
			Lack of awareness	Not available	Total
Respondent area of specialization	Engineer	Count	0	13	13
		% within Respondent area of specialization	0.0%	100.0%	100.0%
		% within Reason of respondent for not using safety sign in the workshop	0.0%	31.0%	26.0%
		% of Total	0.0%	26.0%	26.0%
	Technician	Count	4	10	14
		% within Respondent area of specialization	28.6%	71.4%	100.0%
		% within Reason of respondent for not using safety sign in the workshop	50.0%	23.8%	28.0%
		% of Total	8.0%	20.0%	28.0%
	Craftsman	Count	0	16	16
		% within Respondent area of specialization	0.0%	100.0%	100.0%
		% within Reason of respondent for not using safety sign in the workshop	0.0%	38.1%	32.0%
		% of Total	0.0%	32.0%	32.0%
	Technologist	Count	4	3	7

	% within Respondent area of specialization	57.1%	42.9%	100.0%
	% within Reason of respondent for not using safety sign in the workshop	50.0%	7.1%	14.0%
	% of Total	8.0%	6.0%	14.0%
Total	Count	8	42	50
	% within Respondent area of specialization	16.0%	84.0%	100.0%
	% within Reason of respondent for not using safety sign in the workshop	100.0%	100.0%	100.0%
	% of Total	16.0%	84.0%	100.0%

3.2.2. Protective Wears

3.2.2.1. Head Protection

The study shows (table 3) that 6% use Hard Hart, 32% Casual Cap, 12% Welding Helmet and 50% do not protect their head while working in the workshops. This a poor practice as larger percentage of the personnel are not protected from any head injuries that can occur as a result of falling or flying objects and bumping the head against fixed objects.

Table 3: Responses of respondent on type of head protection

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Hard hat	3	6.0	6.0	6.0
	Casual cap	16	32.0	32.0	38.0
	None	25	50.0	50.0	88.0
	Welding Helmet	6	12.0	12.0	100.0
	Total	50	100.0	100.0	

3.2.2. Hand Protection

Table 4 shows that 30% of the respondents use welding gloves, 2% use anti-vibration gloves, 2% use hand warmer while 66% use no hand protection in the workshops; this is a poor safety practice and shows that larger percentage of the workers are exposed to avoidable hand injuries in the workshop. This can slow down the pace of work and affect the quality of job done.

Table 4: **Respondent area of specialization * Responses of respondent on type of hand protection used in the workshop**

			Responses of respondent on type of hand protection used in the workshop				
			Welding gloves	Anti-vibration gloves	Hand warmers	None	Total
Respondent area of specialization	Engineer	Count	3	0	1	9	13
		% within Respondent area of specialization	23.1%	0.0%	7.7%	69.2%	100.0%
		% within Responses of respondent on type of hand protection used in the workshop	20.0%	0.0%	100.0%	27.3%	26.0%
		% of Total	6.0%	0.0%	2.0%	18.0%	26.0%
	Technician	Count	6	0	0	8	14
		% within Respondent area of specialization	42.9%	0.0%	0.0%	57.1%	100.0%
		% within Responses of respondent on type of hand protection used in the workshop	40.0%	0.0%	0.0%	24.2%	28.0%
		% of Total	12.0%	0.0%	0.0%	16.0%	28.0%
	Craftsman	Count	0	0	0	16	16
		% within Respondent area of specialization	0.0%	0.0%	0.0%	100.0%	100.0%
		% within Responses of respondent on type of hand protection used in the workshop	0.0%	0.0%	0.0%	48.5%	32.0%
		% of Total	0.0%	0.0%	0.0%	32.0%	32.0%
	Technologist	Count	6	1	0	0	7
		% within Respondent area of specialization	85.7%	14.3%	0.0%	0.0%	100.0%
		% within Responses of respondent on type of hand protection used in the workshop	40.0%	100.0%	0.0%	0.0%	14.0%
		% of Total	12.0%	2.0%	0.0%	0.0%	14.0%
Total		Count	15	1	1	33	50
		% within Respondent area of specialization	30.0%	2.0%	2.0%	66.0%	100.0%
		% within Responses of respondent on type of hand protection used in the workshop	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	30.0%	2.0%	2.0%	66.0%	100.0%

3.2.2.3. Body Protection

30% of the respondents wear welding jacket, 2% other protective clothing, 2% use apron/overall while 66% use safety reflective wears (table 5). There is significant difference in the result. This shows that respondents protect their body well during workshop operations which is a good safety practice. It averts avoidable injuries and enhance the productivity of personnel.

Table 5: Respondent area of specialization * Responses of respondent on type of body protection used in the workshop

			Responses of respondent on type of body protection used in the workshop				
			Welding jackets	Protective clothing	Apron / overall	Safety reflective wear	Total
Respondent area of specialization	Engineer	Count	3	0	1	9	13
		% within Respondent area of specialization	23.1%	0.0%	7.7%	69.2%	100.0%
		% within Responses of respondent on type of body protection used in the workshop	20.0%	0.0%	100.0%	27.3%	26.0%
		% of Total	6.0%	0.0%	2.0%	18.0%	26.0%
	Technician	Count	6	0	0	8	14
		% within Respondent area of specialization	42.9%	0.0%	0.0%	57.1%	100.0%
		% within Responses of respondent on type of body protection used in the workshop	40.0%	0.0%	0.0%	24.2%	28.0%
		% of Total	12.0%	0.0%	0.0%	16.0%	28.0%
	Craftsman	Count	0	0	0	16	16
		% within Respondent area of specialization	0.0%	0.0%	0.0%	100.0%	100.0%
		% within Responses of respondent on type of body protection used in the workshop	0.0%	0.0%	0.0%	48.5%	32.0%
		% of Total	0.0%	0.0%	0.0%	32.0%	32.0%
	Technologist	Count	6	1	0	0	7
		% within Respondent area of specialization	85.7%	14.3%	0.0%	0.0%	100.0%
		% within Responses of respondent on type of body protection used in the workshop	40.0%	100.0%	0.0%	0.0%	14.0%
		% of Total	12.0%	2.0%	0.0%	0.0%	14.0%
Total		Count	15	1	1	33	50
		% within Respondent area of specialization	30.0%	2.0%	2.0%	66.0%	100.0%
		% within Responses of respondent on type of body protection used in the workshop	100.0%	100.0%	100.0%	100.0%	100.0%
		% of Total	30.0%	2.0%	2.0%	66.0%	100.0%

3.2.2.4. Foot Protection

Table 6 shows that 16% use safety boots, 32% sneakers and 52% do not wear protective foot ware while working. This shows a significant asymptotic in the analysis. This means that larger percentage of the personnel are at risk of hurting their foot while working in the workshop; this is a poor practice.

Table 6: **Respondent area of specialization * Responses of respondent on type of foot protection used in the workshop.**

			Responses of respondent on type of foot protection used in the workshop			
			Safety boot	Sneakers	None	Total
Respondent area of specialization	Engineer	Count	0	7	6	13
		% within Respondent area of specialization	0.0%	53.8%	46.2%	100.0%
		% within Responses of respondent on type of foot protection used in the workshop	0.0%	43.8%	23.1%	26.0%
		% of Total	0.0%	14.0%	12.0%	26.0%

	Technician	Count	0	3	11	14
		% within Respondent area of specialization	0.0%	21.4%	78.6%	100.0%
		% within Responses of respondent on type of foot protection used in the workshop	0.0%	18.8%	42.3%	28.0%
		% of Total	0.0%	6.0%	22.0%	28.0%
	Craftsman	Count	8	1	7	16
		% within Respondent area of specialization	50.0%	6.3%	43.8%	100.0%
		% within Responses of respondent on type of foot protection used in the workshop	100.0%	6.3%	26.9%	32.0%
		% of Total	16.0%	2.0%	14.0%	32.0%
	Technologist	Count	0	5	2	7
		% within Respondent area of specialization	0.0%	71.4%	28.6%	100.0%
		% within Responses of respondent on type of foot protection used in the workshop	0.0%	31.3%	7.7%	14.0%
		% of Total	0.0%	10.0%	4.0%	14.0%
Total		Count	8	16	26	50
		% within Respondent area of specialization	16.0%	32.0%	52.0%	100.0%
		% within Responses of respondent on type of foot protection used in the workshop	100.0%	100.0%	100.0%	100.0%
		% of Total	16.0%	32.0%	52.0%	100.0%

3.2.2.5. Ear Protection

Larger percentage of the respondents do not protect their ears while working (62%) while only 38% use ear protective wares (table 7). This is a poor safety practice; there is high risk of hearing problems in future due to exposure to high altitude sounds.

Table 7: Respondent area of specialization * Responses of respondent on type of ear protection used in the workshop

			Responses of respondent on type of ear protection used in the workshop		
			Ear plugs / mufflers	None	Total
Respondent area of specialization	Engineer	Count	6	7	13
		% within Respondent area of specialization	46.2%	53.8%	100.0%
		% within Responses of respondent on type of ear protection used in the workshop	31.6%	22.6%	26.0%
		% of Total	12.0%	14.0%	26.0%
	Technician	Count	3	11	14
		% within Respondent area of specialization	21.4%	78.6%	100.0%
		% within Responses of respondent on type of ear protection used in the workshop	15.8%	35.5%	28.0%
		% of Total	6.0%	22.0%	28.0%
	Craftsman	Count	5	11	16
		% within Respondent area of specialization	31.3%	68.8%	100.0%
		% within Responses of respondent on type of ear protection used in the workshop	26.3%	35.5%	32.0%

		% of Total	10.0%	22.0%	32.0%
	Technologist	Count	5	2	7
		% within Respondent area of specialization	71.4%	28.6%	100.0%
		% within Responses of respondent on type of ear protection used in the workshop	26.3%	6.5%	14.0%
		% of Total	10.0%	4.0%	14.0%
Total		Count	19	31	50
		% within Respondent area of specialization	38.0%	62.0%	100.0%
		% within Responses of respondent on type of ear protection used in the workshop	100.0%	100.0%	100.0%
		% of Total	38.0%	62.0%	100.0%

3.2.2.6. Respiratory protection

Table 8 shows that 94% use dust mask and 6% respirator while working in dusty environments in the workshop. This is a good safety practice as respiratory problems that can arise from exposure to dust and other pungent materials is guarded against.

Table 8: Respondent area of specialization * Responses of respondent on type of Respiratory protection used in the workshop

			Responses of respondent on type of Respiratory protection used in the workshop		
			Respirators	Dust masks	Total
Respondent area of specialization	Engineer	Count	1	12	13
		% within Respondent area of specialization	7.7%	92.3%	100.0%
		% within Responses of respondent on type of Respiratory protection used in the workshop	33.3%	25.5%	26.0%
		% of Total	2.0%	24.0%	26.0%
	Technician	Count	2	12	14
		% within Respondent area of specialization	14.3%	85.7%	100.0%
		% within Responses of respondent on type of Respiratory protection used in the workshop	66.7%	25.5%	28.0%
		% of Total	4.0%	24.0%	28.0%
	Craftsman	Count	0	16	16
		% within Respondent area of specialization	0.0%	100.0%	100.0%
		% within Responses of respondent on type of Respiratory protection used in the workshop	0.0%	34.0%	32.0%
		% of Total	0.0%	32.0%	32.0%
	Technologist	Count	0	7	7
		% within Respondent area of specialization	0.0%	100.0%	100.0%
		% within Responses of respondent on type of Respiratory protection used in the workshop	0.0%	14.9%	14.0%

	% of Total	0.0%	14.0%	14.0%
Total	Count	3	47	50
	% within Respondent area of specialization	6.0%	94.0%	100.0%
	% within Responses of respondent on type of Respiratory protection used in the workshop	100.0%	100.0%	100.0%
	% of Total	6.0%	94.0%	100.0%

3.2.2.7. Face/eye Protection

Table 9 shows that 4% use welding shield, 16% protective hoods and 80% safety glasses. This is a good practice as personnel are not exposed to dangerous welding light in the workshop. This would in turn help the span of their eyes and enhance their productivity.

Table 9: **Respondent area of specialization * Responses of respondent on type of face/eye protection used in the workshop**

			Responses of respondent on type of face/eye protection used in the workshop			
			Welding shield	Protective hoods	Safety glasses	Total
Respondent area of specialization	Engineer	Count	0	2	11	13
		% within Respondent area of specialization	0.0%	15.4%	84.6%	100.0%
		% within Responses of respondent on type of face/eye protection used in the workshop	0.0%	25.0%	27.5%	26.0%
		% of Total	0.0%	4.0%	22.0%	26.0%
	Technician	Count	2	0	12	14
		% within Respondent area of specialization	14.3%	0.0%	85.7%	100.0%
		% within Responses of respondent on type of face/eye protection used in the workshop	100.0%	0.0%	30.0%	28.0%
		% of Total	4.0%	0.0%	24.0%	28.0%
	Craftsman	Count	0	5	11	16
		% within Respondent area of specialization	0.0%	31.3%	68.8%	100.0%
		% within Responses of respondent on type of face/eye protection used in the workshop	0.0%	62.5%	27.5%	32.0%
		% of Total	0.0%	10.0%	22.0%	32.0%
	Technologist	Count	0	1	6	7
		% within Respondent area of specialization	0.0%	14.3%	85.7%	100.0%
		% within Responses of respondent on type of face/eye protection used in the workshop	0.0%	12.5%	15.0%	14.0%
		% of Total	0.0%	2.0%	12.0%	14.0%
Total		Count	2	8	40	50
		% within Respondent area of specialization	4.0%	16.0%	80.0%	100.0%
		% within Responses of respondent on type of face/eye protection used in the workshop	100.0%	100.0%	100.0%	100.0%
		% of Total	4.0%	16.0%	80.0%	100.0%

3.2.3. Availability of Safety Wares

Larger percentage of the respondents personally source their protective wares (80%) while 20% got theirs from the workshop management or borrow (table 10). 90% of the respondents said there is no provision of safety wares by workshop management while 10% said there is (11). This may discourage use of proper protective gears and could in turn lead to poor safety of personnel in the work place because there will be no uniformity of quality in the safety wares.

Table 10: Respondent area of specialization * Opinion of respondent on availability of safety wears as a staff

			Opinion of respondent on availability of safety wears as a staff		
			Yes	No	Total
Respondent area of specialization	Engineer	Count	1	12	13
		% within Respondent area of specialization	7.7%	92.3%	100.0%
		% within Opinion of respondent on availability of safety wears as a staff	10.0%	30.0%	26.0%
		% of Total	2.0%	24.0%	26.0%
	Technician	Count	5	9	14
		% within Respondent area of specialization	35.7%	64.3%	100.0%
		% within Opinion of respondent on availability of safety wears as a staff	50.0%	22.5%	28.0%
		% of Total	10.0%	18.0%	28.0%
	Craftsman	Count	1	15	16
		% within Respondent area of specialization	6.3%	93.8%	100.0%
		% within Opinion of respondent on availability of safety wears as a staff	10.0%	37.5%	32.0%
		% of Total	2.0%	30.0%	32.0%
	Technologist	Count	3	4	7
		% within Respondent area of specialization	42.9%	57.1%	100.0%
		% within Opinion of respondent on availability of safety wears as a staff	30.0%	10.0%	14.0%
		% of Total	6.0%	8.0%	14.0%
Total		Count	10	40	50
		% within Respondent area of specialization	20.0%	80.0%	100.0%
		% within Opinion of respondent on availability of safety wears as a staff	100.0%	100.0%	100.0%
		% of Total	20.0%	80.0%	100.0%

Table11: **Respondent area of specialization * Responses on reason for not using other protection**

Crosstab

			Opinion of respondent on availability of safety wears as a staff		
			Yes	No	Total
Respondent area of specialization	Engineer	Count	0	13	13

		% within Respondent area of specialization	0.0%	100.0%	100.0%
		% within Opinion of respondent on availability of safety wears as a staff	0.0%	28.9%	26.0%
		% of Total	0.0%	26.0%	26.0%
	Technician	Count	0	14	14
		% within Respondent area of specialization	0.0%	100.0%	100.0%
		% within Opinion of respondent on availability of safety wears as a staff	0.0%	31.1%	28.0%
		% of Total	0.0%	28.0%	28.0%
	Craftsman	Count	5	11	16
		% within Respondent area of specialization	31.3%	68.8%	100.0%
		% within Opinion of respondent on availability of safety wears as a staff	100.0%	24.4%	32.0%
		% of Total	10.0%	22.0%	32.0%
	Technologist	Count	0	7	7
		% within Respondent area of specialization	0.0%	100.0%	100.0%
		% within Opinion of respondent on availability of safety wears as a staff	0.0%	15.6%	14.0%
		% of Total	0.0%	14.0%	14.0%
Total		Count	5	45	50
		% within Respondent area of specialization	10.0%	90.0%	100.0%
		% within Opinion of respondent on availability of safety wears as a staff	100.0%	100.0%	100.0%
		% of Total	10.0%	90.0%	100.0%

3.2.4. First Aid Facilities

88% of the respondents said there is no functioning first aid facility in the workshops while 12% think otherwise (table 12). 10% rated the first aid facility as efficient, 2% average, 2% below average, 14% poor and 72% very poor (table 2). This is an overall poor rating of a facility that can save lives in case of accident and hazardous situations.

Table 12a: Respondent area of specialization * Opinion of respondent on access to functioning first aid Cross tabulation

			Opinion of respondent on access to functioning first aid		
			Yes	No	Total
Respondent area of specialization	Engineer	Count	1	12	13
		% within Respondent area of specialization	7.7%	92.3%	100.0%
		% within Opinion of respondent on access to functioning first aid	16.7%	27.3%	26.0%
		% of Total	2.0%	24.0%	26.0%
	Technician	Count	0	14	14
		% within Respondent area of specialization	0.0%	100.0%	100.0%

		% within Opinion of respondent on access to functioning first aid	0.0%	31.8%	28.0%
		% of Total	0.0%	28.0%	28.0%
	Craftsman	Count	5	11	16
		% within Respondent area of specialization	31.3%	68.8%	100.0%
		% within Opinion of respondent on access to functioning first aid	83.3%	25.0%	32.0%
		% of Total	10.0%	22.0%	32.0%
	Technologist	Count	0	7	7
		% within Respondent area of specialization	0.0%	100.0%	100.0%
		% within Opinion of respondent on access to functioning first aid	0.0%	15.9%	14.0%
		% of Total	0.0%	14.0%	14.0%
Total		Count	6	44	50
		% within Respondent area of specialization	12.0%	88.0%	100.0%
		% within Opinion of respondent on access to functioning first aid	100.0%	100.0%	100.0%
		% of Total	12.0%	88.0%	100.0%

Table 12b : Respondent area of specialization * Responses on rate of satisfaction of first aid facility in the workshop Cross tabulation

			Responses on rate of satisfaction of first aid facility in the workshop					
			Efficient	Average	Below average	Poor	Very poor	Total
Respondent area of specialization	Engineer	Count	0	1	1	4	7	13
		% within Respondent area of specialization	0.0%	7.7%	7.7%	30.8%	53.8%	100.0%
		% within Responses on rate of satisfaction of first aid facility in the workshop	0.0%	100.0%	100.0%	57.1%	19.4%	26.0%
	Technician	Count	0	0	0	0	14	14
		% within Respondent area of specialization	0.0%	0.0%	0.0%	0.0%	100.0%	100.0%
		% within Responses on rate of satisfaction of first aid facility in the workshop	0.0%	0.0%	0.0%	0.0%	38.9%	28.0%
	Craftsman	Count	5	0	0	0	11	16
		% within Respondent area of specialization	31.3%	0.0%	0.0%	0.0%	68.8%	100.0%
		% within Responses on rate of satisfaction of first aid facility in the workshop	100.0%	0.0%	0.0%	0.0%	30.6%	32.0%
	Technologist	Count	0	0	0	3	4	7
		% within Respondent area of specialization	0.0%	0.0%	0.0%	42.9%	57.1%	100.0%
		% within Responses on rate of satisfaction of first aid facility in the workshop	0.0%	0.0%	0.0%	42.9%	11.1%	14.0%
Total		Count	5	1	1	7	36	50
		% within Respondent area of specialization	10.0%	2.0%	2.0%	14.0%	72.0%	100.0%
		% within Responses on rate of satisfaction of first aid facility in the workshop	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 Conclusions

The following conclusions were drawn from the survey, that:

i. There is an existing observance of safety practices in NCAM workshops;

ii. There is low adherence to the use of safety signage in the workshops;

iii. There is a good adherence to the use of personal protective equipment (PPE) in the areas of body, face/eyes and respiratory protections;

iv. There is low adherence to the use of personal protective equipment (PPE) in the areas of head, hand, ear and foot protection;

v. Most of the personnel personally source for their PPE; and

vi. There is no functional first aid facility in the workshops.

4.2. Recommendations

From the aforementioned, the following are recommended to improve the safety practices in NCAM workshops:

i. Provision of PPE: The management of the workshop should provide quality PPE for personnel to boost safety practices and encourage use of proper PPE;

ii. A functioning first aid facility should be revamp; and

iii. Safety training and awareness should be included in the schedule of operation of the workshop to create mental alertness for personnel.

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