

## **THE SITUATION OF SHARPS INJURIES AMONG IN MEDICAL STAFFS AT DUC GIANG GENERAL HOSPITAL IN 2022**

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### **ABSTRACT**

The study aimed to: (1) Describe the situation of damage caused by sharp waste in medical staffs and (2) Identify association factors at Duc Giang General Hospital in 2022. The study is a cross-sectional descriptive research on 121 health care workers. The results showed that 24,8% of healthcare workers injured by medical sharp waste, of which the wounds on finger and hand accounted for the most with 96,7%, the skin and mucous lesions wounds accounted for the majority with 63,3%, the damage related to patients who may have HIV, hepatitis B other infectious diseases accounted for 16,7%, 13.3% and 30%, respectively. Factors associated with sharp waste injury in healthcare workers include age, training in medical solid waste, and knowledge of medical solid waste management ( $p < 0.05$ ). Conclusion: The rate of damage caused by sharp waste among healthcare workers is still high, especially among young people, those who have not been trained in medical waste, and those with poor knowledge of medical waste management.

**Keywords:** *Injuries, sharps, medical staffs.*

### **I. QUESTIONING**

Medical waste is waste generated from the operation of a medical facility [5]. Medical waste are in liquid, gaseous and solid form. Medical waste in solid form is also

known as medical solid waste, may contain hazardous components such as: sharp objects; pathogenic bacteria, viruses, fungi, parasites; radioactive substances and pressured vessels, potentially toxic, incendiary and explosive gases [9], [1]. Persons at risk to health due to medical waste include: healthcare workers, medical waste management and disposal staff, patients, patients' family members [1], [6].

Medical solid waste-related injuries are estimated at 16 million people each year. These lesions caused 33,800 new HIV infections, 1,7 million hepatitis B infections, and 315,000 hepatitis C infections [9].

In order to understanding the vulnerability of acute waste and identifying relevant factors is essential in finding interventions to reduce the risk of occupational diseases among healthcare workers. Therefore, we conducted a study with the topic: "The situation of sharps injuries among in medical staffs at Duc Giang general hospital in 2022", the study with 2 objectives:

1. *Describe the situation of injuries by sharp waste in medical staff at Duc Giang General Hospital in 2022.*

2. *Identify associated factors related to damage caused by sharp waste in medical staff at Duc Giang General Hospital in 2022.*

### **II. RESEARCH METHOD**

**2.1. Subjects of study:** Medical staff including clinical and administrative staff related to medical solid waste management.

**2.2. Time and place of study:**

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- Time: March 5<sup>th</sup> to 28<sup>th</sup>, 2022
- Location: Duc Giang General Hospital

**2.3. Research design**

Cross-sectional description, with analysis, quantitative research

**2.4. Sample size:** The sample size was calculated with the sample size formula:

$$n = Z^2_{(1-\alpha/2)} \frac{p(1-p)}{d^2}$$

In details:

- n: The minimum number of health workers required for the study

- Z(1-α/2): The level of statistical significance, with α= 0.05, the coefficient Z1-α/2=1,96

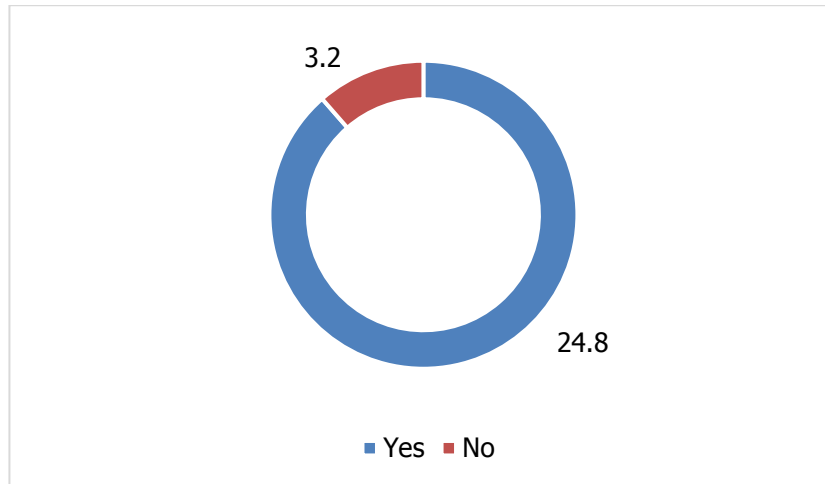
- p: The presumption rate of health care workers achieving good knowledge p=50%=0,5

- d: Expected error, select d=0,1

Substituting the data into the formula n = 96, we actually collected 121 health care workers.

**2.5. Data processing:** Data is processed by SPSS 20 software

**III. RESEARCH RESULTS**



**Figure 1.** Incidence Healthcare workers with sharps lesions (n=121) Healthcare workers damaged by sharp waste was accounted for 24,8%.

**Table 1.** Prevalence of injury by medical solid waste

Content	Amount (n=30)	Proportion (%)
<b>Body parts</b>		
Fingers, hands	29	96,7
Feet, toes	1	3,3
Face/head	1	3,3
Torso	1	3,3
<b>The level of sharps injuries</b>		
Scratches without blood	11	36,7
Scratching of the skin, mucous membranes, with blood	19	63,3
Transdermal bleeding wounds	4	13,3

Content	Amount (n=30)	Proportion (%)
<b>Type of medical solid waste causing sharps injuries</b>		
Waste with HIV risk	5	16,7
Waste with hepatitis B risk	4	13,3
Waste with other infectious diseases risk	9	30,0
Waste containing drugs and chemicals	14	46,7
Other	10	33,3

Among healthcare workers wounded by medical sharp waste, the most regularly damaged parts were fingers and hands, which happened at 96,7% of the staff. The highest level of damage is skin abrasions, bloody mucous membranes, that was the most popular, accounting for 63,3%. The most popular waste causing healthcare workers' wounds is waste containing drugs and chemicals. The items suspected of being infected with HIV, Hepatitis B, other infectious diseases accounted for 16,7%; 13,3%, and 30%; respectively.

**Table 3. Associated factors to injury by medical solid waste in healthcare workers**

Factors		Injury by sharp waste				OR (95%CI)
		Yes		No		
		n	%	n	%	
Gender	South	7	28,0	18	72,0	1,23 (0,46-3,32)
	Female	23	24,0	73	76,0	
Age	<30	11	42,3	15	57,7	<b>2,93</b> <b>(1,16-7,41)</b>
	≥30	19	20,0	76	80,0	
Profession	Doctors and nurses	23	25,6	67	74,4	1,18 (0,45-3,09)
	Different	7	22,6	24	77,4	
Education	<University	19	29,2	46	70,8	1,69 (0,72-3,95)
	≥University	11	19,6	45	80,4	
Years of experience	≤5 years	13	36,1	23	63,9	2,26 (0,95-5,36)
	>5 years	17	20,0	68	80,0	
Job positions	Clinical	21	26,3	59	73,8	1,27 (0,52-3,09)
	Other	9	22,0	32	78,0	
Training on medical solid waste	Not yet	11	55,0	9	45,0	<b>5,27</b> <b>(1,92-14,52)</b>
	Already	19	18,8	82	81,2	
Medical solid waste management knowledge	Not good	27	30,3	62	69,7	<b>4,21</b> <b>(1,18-15,02)</b>
	Good	3	9,4	29	90,6	

The analysis showed that age, training on medical solid waste management, knowledge on medical solid waste management were associated with sharps lesions (p<0.05).

#### IV. DISCUSSION

Our study showed that 30 healthcare workers were wounded by sharps, accounting for 24,8%. Averagely, one medical staffs experience  $0,6 \pm 1,5$  times of getting injuries. The results in this study were lower than the previous study at the National Pediatric Hospital with 149 nurses having occupational accidents caused by sharp objects with a total number of occupational accidents are 399. Averagely, one staffs in the study at National Pediatric Hospital got over than 2 wounds; one time - wounded staffs accounted for the highest rate with 36,24% 2 times accounting for 23,49%, 3 times accounting for 15,44%, 4 times accounting for 10,74%, 5 times accounting for 6,04% and over 5 times accounting for 8,05% [2]. Our study was also lower than one of Duong Khanh Van et al., lesions by medical sold waste happened in 64,8% medical staffs [3].

The body positions, that were the most damaged by sharps, were fingers and hands with 96,7%, other positions including feet, toes, face/head, torso accounted for 3,3%. The sharps wound with abrasions of the skin, mucous membranes, and bleeding was the most popular, with 63,3 staffs experienced. Other levels of damage: scratches without blood accounted and transdermal bleeding accounted for 36,7% and 13.3%, respectively. The risk assessment showed that waste involved people with HIV accounted for 16,7%, people who may have hepatitis B accounted for 13,3%, other infectious diseases accounted for 30%, that illustrates high risk of infection towards healthcare worker staffs. The most popular type of waste causing injuries was substances

containing drugs and chemicals, accounting for 46,7%.

Percutaneous lesions that pose a risk of HBV, HCV and HIV have been documented by a number of foreign studies. U.S. study found 57 out of 143 staffs got HIV exposures when experiencing got occupational incidents related to hazardous stuffs [7].

The analysis showed that age, training in medical solid waste, and knowledge of medical solid waste management were statistically significantly associated with experiencing lesions by medical solid waste in medical staffs ( $p < 0.05$ ). In particular, medical staffs under the age of 30 is 2,93 times more likely to get damaged by medical solid waste than the age of  $\geq 30$  (95% CI 1,16-7,41). Medical staffs that has not been trained in CTRYT management has a 5,27 times higher risk of injury than trained (95%CI 1,92-14,52). Medical staffs with poor knowledge is 4,21 times more likely to get damaged by medical solid waste than medical staffs with acquired knowledge (95%CI 1,18-15,02). In comparison with research by Makeen et al. (2021), the factors causing damage caused by needles and sharp objects in medical staffs included occupational knowledge, nationality, experience, hospital types, training on safe injections and medical waste, proper classification of medical solid waste management [4].

#### V. CONCLUSION

The cross-sectional, quantitative study of sharps injuries on 121 medical staff at Duc Giang General Hospital in 2022 showed that the rate of staffs experiencing sharps injuries caused by sharp waste is quite high with 24,8%. Factors associated with sharps injury

in healthcare workers include age, medical solid waste training, and knowledge of medical solid waste management ( $p < 0.05$ ).

The results of the study showed that interventions are needed including good implementation of professional procedures, personal protection and training for health workers in the prevention of damage caused by sharp waste. Special attention should be paid to groups of health workers with a young age, have not been trained in medical waste and have poor knowledge of medical waste management.

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