

## **Description of Wound Patterns on the Bodies of Murder Victims Due to Blunt Violence at the Bhayangkara Tk General Hospital. I East Jakarta Police Health Center for the 2021 – 2022 period**

### **Abstract**

Murder is the behavior of a person or group of people that results in the loss of another person's life. Murder incidents can be motivated by various reasons so that someone plans or executes the murder of another person. Blunt trauma is a condition caused by mechanical violence from a blunt object. Blunt trauma can cause abrasions, contusions, lacerations, and fractures. This study aims to determine the pattern of wounds on the bodies of murder victims resulting from the blunt force at the Bhayangkara General Hospital Tk. I, PusdokkesPolri, East Jakarta, for the period 2021 – 2022. This research uses a retrospective descriptive research method with a total sampling method using data from application letters for post-mortem and repertum and post-mortem et repertum for murder victims at the PusdokkesPolri Hospital. The data results showed that there were 55 victims of murder due to blunt force, with the largest age distribution in the 31-40 years age group with 17 victims (30.9%). Based on gender, the highest number of victims were men - 28 victims (50.9%), while there were 27 victims (49.1%) for women. Based on the time group, the most incidents were found in 06.01-12.00 with 22 victims (40%). Based on the injury location group, the largest number of victims with injuries to the head and face was 51 victims (29.1%). Based on the type of violence, 41 victims (39.4%) had the most bruises on the head and face, 11 victims (47.8%) had the most bruises on the neck, and five victims had bruises on the shoulder (55.6%), at the chest location, the most abrasion wounds were found, namely ten victims (41.7%), at the back location there were nine victims (56.3%), at the stomach location the number of bruises was found at seven victims (58.3%), at the pelvic location there were abrasions and fractures each with one victim (50.0%), at the upper extremity location the most were bruises with 18 victims (40.9%), and at the location of the lower extremities found the highest number of bruises, namely 14 victims (41.2%).

**Keywords:** *murder, blunt force, bruises, abrasion, compression abrasion, tear, fracture.*

## **Introduction**

Murder is the behavior of a person or group of people that results in the loss of another person's life. Murder incidents can be motivated by various reasons so that someone plans, decides, and executes the murder of another person. When someone has become a victim of murder, he will certainly die. [1] Taking a life means eliminating the life of a human being, which is generally called murder. Murder is a manifestation of a person's aggressive behavior towards another person. This aggressive behavior is defined as actions to injure or harm other people, both physically and psychologically, which cause harm or danger or damage other people's property. [2]

Based on the Criminal Code (KUHP), murder is an intentional or unintentional act that can take the life of another person. The murder is considered a material offense if the perpetrator completes the offense and results in consequences that are prohibited or undesirable by law. In the Criminal Code, criminal provisions regarding crimes aimed at other people's lives are regulated in the Book II chapter and unintentionally (negligent). Deliberation is an act that can occur pre-planned or unplanned. However, the important thing about an event is that an intention is realized through actions carried out until completion. [3; 4]

The crime of murder has several forms of qualification, including the crime of murder and the crime of premeditated murder. The crime of murder is regulated in Article 338 of the Criminal Code, namely, "Whoever deliberately takes the life of another person, is threatened, for murder, with a maximum imprisonment of fifteen years." Meanwhile, the crime of premeditated murder is regulated in Article 340 of the Criminal Code, namely, "Anyone who deliberately and with premeditation takes the life of another person, is threatened, because of premeditated murder (moord), with the death penalty or life imprisonment or for a certain period, a maximum twenty years." [5]

The definition of trauma in the medicolegal aspect is knowledge about tools or objects that can cause problems with a person's health. Meanwhile, in a medical context, trauma is injury or loss of tissue continuity. Medicolegal trauma is applied in forensic medicine services to provide clarity on an act of violence that occurred to a person. [6] In traumatology, violence can be divided into blunt trauma and sharp trauma. Blunt trauma is a condition caused by mechanical violence from a blunt object where the object has a blunt, hard, or rough surface, such as stone, wood, hammer, fist, nails, etc., to body tissue that causes injury, injury, or traumatized. [7] Blunt trauma is a common method of killing, and it can be carried out in three different ways such as using body force, assault with various types of blunt objects, and falling from a height. [8] Blunt trauma can cause abrasions (abrasions) where there is damage to the epithelial cells of the epidermis or mucous membranes, contusions (bruises) where blood clots occur in the tissue, lacerations (torn wounds) due to tension on the body surface beyond its elastic limit and fractures (fracture). [9]

Sharp trauma is a force that results in injuries to the surface of the body due to sharp objects such as knives, axes, razors, and others. These objects cause minor injuries and even death to individuals involved in the violent process. In sharp trauma, the wound patterns that can be found are incised wounds, stab wounds, and slash wounds. Injuries resulting from sharp violence are generally easily distinguished from injuries caused by blunt objects. [10] Injuries resulting from sharp and blunt trauma have different injury patterns that can indicate a tool used to cause the injury and the degree of trauma. According to Sharyn et al. in the National Violent Death Reporting

System, deaths due to sharp and blunt trauma are the second and third highest causes of violent death, respectively, after deaths due to gunshot wounds. [11]

According to the United Nations Office on Drugs and Crime, as many as 464,000 people were estimated to have been victims of intentional homicide in 2017. An average global homicide rate of 6.1 victims per 100,000 population was estimated in 2017. About 90% of all recorded homicides throughout the world, male perpetrators commit, and men are also the victims of most murders, almost 80% of all murder victims recorded throughout the world. The most common means of murder involved in more than half of murders worldwide in 2017 was a firearm. [12]

In Indonesia, according to data from the Indonesian National Police (POLRI), more than 3,000 people have been murdered in the last four years. They became victims of murder with various motives, such as robbery, romantic relationships, and many more. Data obtained from e-MP (Electronic Investigation Management System) RobinopsnalBareskrimPolri, which was accessed on Friday, 13 January 2023, shows the number of murder victims from 2019 to 2022 reached 3,335 people. As many as 63% of the victims were male, while 22% were female, and the rest were invalid data.

The number of cases handled by the police in the last four years was 3,347, of which the most murders occurred in 2021, 1,076 cases. At that time, the government was implementing the Covid-19 pandemic status in Indonesia. However, in 2022, the number of criminal acts of murder is likely to decrease to 843 cases. Data on e-MP shows that the most murders occurred between 08.00 and 11.59 throughout Indonesia. Police data shows 583 cases or 17.42 percent of the total criminal acts in that period.

Based on the background description above, the formulation of the problem in this research is how to describe the pattern of wounds on the bodies of murder victims resulting from the blunt force at the Bhayangkara Tk General Hospital. I National Police Health Center, East Jakarta for 2021 – 2022"? This research aims to explain the location, shape, and type of wounds produced in blunt force murder incidents and see whether there are similarities or perhaps differences in the patterns of these wounds. It is hoped that this research will be able to provide knowledge, especially to doctors, to assess and recognize the injury patterns of murder victims due to blunt force. Because of the above, the author is interested in researching "Description of Wound Patterns on the Bodies of Murder Victims Due to Blunt Violence at the Bhayangkara Tk General Hospital. I National Police Health Center, East Jakarta Period 2021 – 2022".

Meanwhile, the specific objectives of this research are: a) To determine the pattern of wounds on the bodies of murder victims resulting from blunt force at the Bhayangkara Tk General Hospital. I National Police Health Center, East Jakarta, for the period 2021 – 2022 based on age group; b) To determine the pattern of wounds on the bodies of murder victims resulting from blunt force at the Bhayangkara TK General Hospital. I National Police Health Center, East Jakarta, for the period 2021 – 2022 based on gender; c) To determine the pattern of wounds on the bodies of murder victims resulting from blunt force at the Bhayangkara TK General Hospital. I National Police Health Center, East Jakarta, for the period 2021 – 2022 based on the time group of the incident; and d) To determine the pattern of wounds on the bodies of murder victims resulting from blunt force at the Bhayangkara TK General Hospital. I National Police Health Center, East Jakarta, for the period 2021 – 2022 based on groups of types of violence.

After this research is completed, several research benefits will be obtained: a) This research was carried out to provide an overview and information to the public regarding

the most common injury patterns in murder cases due to blunt force, which can cause death; b) This research can increase knowledge and information regarding injury patterns caused by murder due to blunt force. Other medical students can use this knowledge to study further the forms and types of injuries caused by murder due to blunt force; c) This research can increase and deepen researchers' insight and knowledge in medical science to be able to determine the pattern of injuries to victims resulting from murder with blunt force; d) This research is expected to be able to provide data information and descriptions of injury patterns of victims resulting from blunt violence murders so that it can illustrate for handling the bodies of victims of blunt force murders; and d) This research can provide data and information to the Bhayangkara Tk General Hospital. I PusdokkesPolri, East Jakarta, regarding the most common injury patterns found in murder victims due to blunt force based on age, gender, time of incident, location of injury, and cause of death.

### **Research Method**

The research method used in this research is descriptive research. Namely, research is carried out with the main aim of creating an objective picture or describing a situation. This study used a retrospective content study design. Retrospective is research that attempts to look into the past. Data collection starts from the consequences that occur, and then from them, it is traced back to determine the causes or variables that can influence the consequences. The type of data in this research is secondary data sourced from a collection of medical records of corpses, which include post-mortem et repertum reports of patients who died due to murder due to blunt force from January 2021 to December 2022. The location of this research will be the Bhayangkara Tk General Hospital area. I, PusdokkesPolri, East Jakarta, used secondary data in the form of medical records, post-mortem application letters, and post-mortem reports of patients who died as a result of murder with blunt force. This research will be carried out starting in September 2023. The target population in this research is all victims of murder cases due to blunt force at the Bhayangkara Tk General Hospital. I National Police Health Center, East Jakarta, from January 2021 to December 2022. The research sample will be taken from the population that will be studied. Data collection comes from a collection of medical records and post-mortem reports of victims of murder due to blunt force from January 2021 to December 2022, and sampling will be carried out using total sampling, namely a sampling method where all members of the population are sampled in this study. This sampling is based on a previously known characteristic or characteristic of the population. The sample criteria consist of inclusion criteria and exclusion criteria. Inclusion criteria are the general characteristics of research subjects from a target population to be studied. The inclusion criteria in this study are as follows: a) Medical records of the corpse and post-mortem report recorded at the Bhayangkara Tk General Hospital. I National Police Health Center, East Jakarta, for the period 2021 to 2022; b) The victim died as a result of a murder case; c) Murder victims resulting from blunt force; d) Based on all ages and genders; d) Based on all times of murder incidents; e) Based on all types of injuries resulting from homicide; and f) Based on all wound locations causing death. Meanwhile, exclusion criteria are inclusion criteria that cannot be taken as a sample because they do not meet the study's inclusion criteria for certain reasons. The exclusion criteria in this study were incomplete post-mortem et repertum reports.

The data used in this research is secondary data. Secondary data is a source of research data obtained and collected by researchers indirectly but through documents or intermediaries from other parties. The method of collecting data in this research is collecting information regarding murder incidents at the Bhayangkara Tk General Hospital. I National Police Health Center, East Jakarta. In this study, data was used in the form of medical records, post-mortem et repertum reports containing doctors' statements regarding post-mortem examinations, and written statements at the Bhayangkara Tk General Hospital. I National Police Health Center, East Jakarta. In processing data in research, several stages are carried out: editing, coding, tabulating, and cleaning. This process involves entering data that has been obtained with a computer program. The program used is Statistical Product and Service Solutions (SPSS) software.

Data collected through medical records and post-mortem reports resulting from autopsies will then be grouped based on certain variables and analyzed. The data analysis technique in this research is univariate analysis, which functions to determine and explain each variable in the research related to the injury patterns of murder victims due to blunt force at the Bhayangkara Tk General Hospital. I National Police Health Center, East Jakarta. The data analysis technique used in this research is SPSS software. Next, the data will be presented in table form based on relevant categories.

### Result and Discussion

Based on research that has been carried out, there were 55 victims of murder caused by blunt force in the period January 2021 to December 2022. The total sample used in this study was based on the completeness of the post-mortem et repertum post-mortem application letter and also fulfilled the inclusion and exclusion criteria of as many as 55 bodies. Below are the results obtained from this research.



Figure 1. Distribution of the Number of Blunt Violence Murder Victims 2021

Based on the results of research on the number of bodies of victims of murder due to blunt force at the Bhayangkara Tk General Hospital. I, PusdokkesPolri, East Jakarta,

in the period January to December 2021, obtained results as in the table above, namely the number of samples obtained was 21 victims. Based on the highest number of victims, in August, there were five victims (23.8%); in June and October, there were four victims each (19%); in May and July there were two victims each (9.5%), in January, March, April and September there was one victim per month (4.8%).



Figure 2. Distribution of Blunt Violence Murder Victims 2022

Comment [RFT1]: Please use English di every picture

Based on the results of research on the number of bodies of victims of murder due to blunt force at the Bhayangkara Tk General Hospital. I, PusdokkesPolri, East Jakarta, obtained results from January to December 2022, as shown in the table above. Namely, 34 victims were obtained from the samples. Based on the highest number of victims, in July, there were seven victims (20.6%); in December, there were five victims (14.7%); in February and October, there were four victims each (11.8%). In April, May, and November, there were three victims each (8.8%); in January and August, there were two victims each (5.9%), and in June, there was one victim (2.9%).

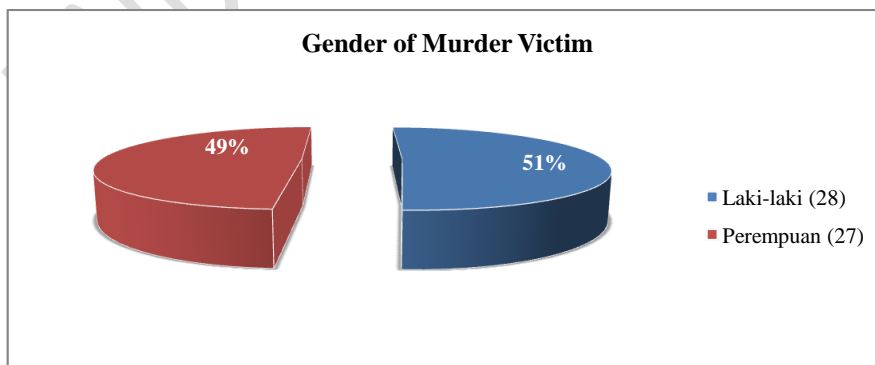


Figure 3. Gender Distribution of Murder Victims

Based on the results of research on the gender groups of the bodies of murder victims resulting from the blunt force at the Bhayangkara Tk General Hospital. I

PusdokkesPolri, East Jakarta, in the period January 2021 to December 2022, obtained the results in the table above; the number of samples obtained was 55 victims. Based on the highest number of victims, in the male gender group, there were 28 victims (50.9%), and in the female gender group, there were 27 victims (49.1%).

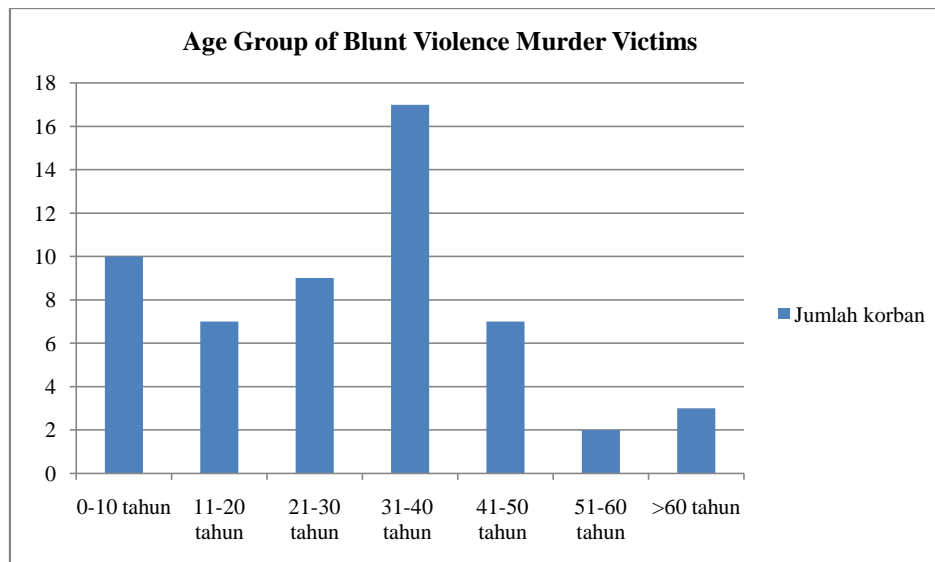


Figure 4. Age Distribution of Murder Victims

Based on the results of research on the age group of the bodies of murder victims due to blunt force at the Bhayangkara Tk General Hospital. I PusdokkesPolri, East Jakarta, in the period January 2021 to December 2022, obtained the results in the table above; the number of samples obtained was 55 victims. Based on the highest number of victims, in the 31-40 years age group, there were 17 victims (30.9%); in the 0-10 years age group, there were 10 victims (18.2%); in the 21-30 year age group, there were nine victims. (16.4%), the 11-20 years age group had seven victims (12.7%), the 41-50 year age group had seven victims (12.7%), the >60 year age group had three victims (5.5%), and the age group 51-60 years found two victims (3.6%).

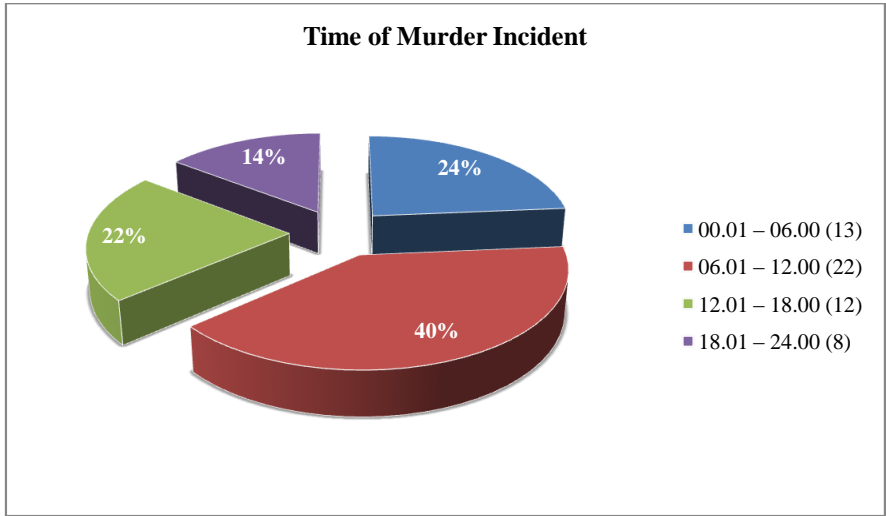


Figure 5. Time distribution of murder incidents

Based on the results of research on the time group of murder incidents due to blunt force at the Bhayangkara Tk General Hospital. I PusdokkesPolri, East Jakarta, in the period January 2021 to December 2022, obtained the results in the table above; the number of samples obtained was 55 victims. Based on the highest number of victims, in the 06.01-12.00 time group, there were 22 victims (40%); in the 00.01-06.00 time group, there were 13 victims (23.6%); in the 12.01-18.00 time group, there were 12 victims (21.8%), and the time group 18.01-24.00 had eight victims (14.5%).

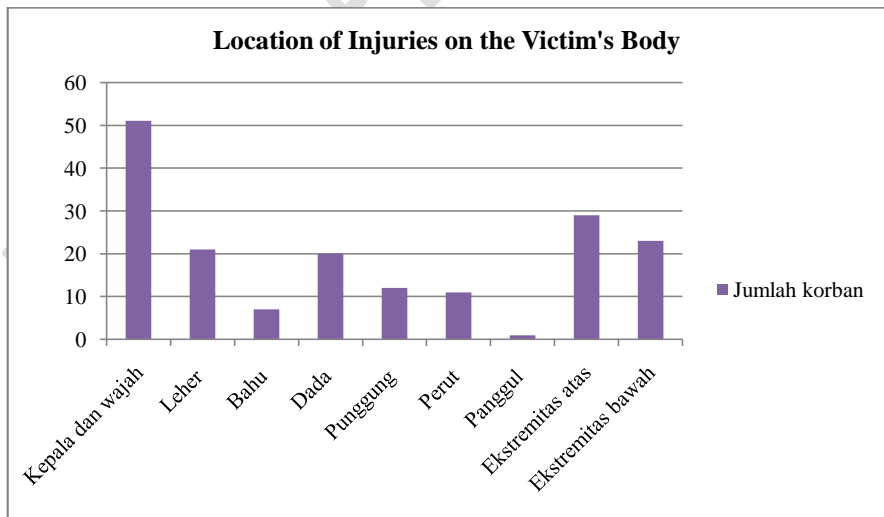


Figure 6. Distribution of Injury Locations on the Victim's Body

Based on the results of research on a group of injury locations on the bodies of murder victims due to blunt force at the Bhayangkara Tk General Hospital. I PusdokkesPolri, East Jakarta, for the period January 2021 to December 2022, obtained the results in the table above; the number of samples obtained was 55 victims. Based on the highest number of victims, in the head and face injury location group, there were 51 victims (29.1%); in the upper extremity injury location group, there were 29 victims (16.6%); in the lower extremity injury location group there were 23 victims (13.1%), the neck injury location group had 21 victims (12%), the chest injury location group had 20 victims (11.4%), the back injury location group had 12 victims (6.9%), the location group Abdominal injury was found in 11 victims (6.3%), in the shoulder injury location group there were seven victims (4%). In the pelvic injury location group, there was one victim (0.6%).

Based on the results of research on the location of head and facial injuries on the bodies of murder victims due to blunt force at the Bhayangkara Tk General Hospital. I, PusdokkesPolri, East Jakarta, for the period January 2021 to December 2022, obtained the results in the table above; the number of samples obtained was 55 victims. Based on the highest number of victims, in the bruise group, there were 41 victims (39.4%); in the abrasion group, there were 29 victims (27.9%); in the laceration group, there were 18 victims (17.3%); in the fracture group. There were 12 victims (11.5%), and the pressure abrasion injury group had four victims (3.9%).

**Table 1. Distribution of Wound Patterns for Blunt Violence Murder Victims Based on Location of Neck Injuries**

		Frequency	Percentage	Cumulative Percentage
<b>Location of Neck Injury</b>	Bruises	11	47.8%	47.8%
	Abrasion	8	34.8%	82.6%
	Wounds			
	Pressure	4	17.4%	100.0%
	Abrasion Wounds			
<b>Total</b>		<b>23</b>	<b>100.0%</b>	

Based on the results of research on the location of neck injuries on the bodies of murder victims due to blunt force at the Bhayangkara Tk General Hospital. I PusdokkesPolri, East Jakarta, for the period January 2021 to December 2022, obtained the results in the table above; the number of samples obtained was 55 victims. Based on the highest number of victims, in the bruise group, there were 11 victims (47.8%); in the abrasion group, there were eight victims (34.8%); and in the pressure abrasion group, there were four victims (17.4%).

**Table 2. Distribution of Injury Patterns for Blunt Violence Murder Victims Based on Location of Shoulder Injuries**

		Frequency	Percentage	Cumulative Percentage
<b>Location of Shoulder Injury</b>	Bruises	5	55.6%	55.6%
	Abrasion	3	33.3%	88.9%
	Wounds			
	Torn Wounds	1	11.1%	100.0%

Total	9	100.0%
-------	---	--------

Based on the results of research on the location of shoulder injuries on the bodies of murder victims due to blunt force at the Bhayangkara Tk General Hospital. I PusdokkesPolri, East Jakarta, for the period January 2021 to December 2022, obtained the results in the table above; the number of samples obtained was 55 victims. Based on the highest number of victims, in the bruise group, there were five victims (55.6%), the abrasion group had three victims (33.3%), and the laceration group had one victim (11.1%).

**Table 3. Distribution of Wound Patterns for Blunt Violence Murder Victims Based on Location of Chest Injuries**

		Frequency	Percentage	Cumulative Percentage
<b>Location of Chest Injuries</b>	Bruises	7	29.2%	29.2%
	Abrasion Wounds	10	41.7%	70.9%
	Pressure Abrasion Wounds	1	4.2%	75.1%
	Torn Wounds	1	4.2%	79.3%
	Fracture	5	20.7%	100.0%
	Total	24	100.0%	

Based on the results of research on the location of chest injuries on the bodies of murder victims due to blunt force at the Bhayangkara Tk General Hospital. I PusdokkesPolri, East Jakarta, for the period January 2021 to December 2022, obtained the results in the table above; the number of samples obtained was 55 victims. Based on the highest number of victims, in the abrasion group, there were ten victims (41.7%); in the bruise group, there were seven victims (29.2%); in the fracture group, there were five victims (20.7%); in the abrasion group pressure found one victim (4.2%), and the laceration group found one victim (4.2%).

**Table 4. Distribution of Wound Patterns for Blunt Violence Murder Victims Based on Location of Back Injuries**

		Frequency	Percentage	Cumulative Percentage
<b>Location of Back Injuries</b>	Bruises	6	37.5%	37.5%
	Abrasion Wounds	9	56.3%	93.8%
	Pressure Abrasion Wounds	1	6.2%	100.0%
	Total	16	100.0%	

Based on the results of research on the location of back injuries on the bodies of murder victims due to blunt force at the Bhayangkara Tk General Hospital. I PusdokkesPolri, East Jakarta, for the period January 2021 to December 2022, obtained the results in the table above; the number of samples obtained was 55 victims. Based on the highest number of victims, in the abrasion injury group, there were nine victims

(56.3%); in the bruise group, there were six victims (37.5%); and in the pressure abrasion group, there was one victim (6.2%).

**Table 5. Distribution of Wound Patterns for Blunt Violence Murder Victims Based on Location of Abdominal Injury**

		Frequency	Percentage	Cumulative Percentage
<b>Location of Stomach Injury</b>	Bruises	7	58.3%	58.3%
	Abrasion	4	33.3%	93.8%
	Wounds			
	Fracture	1	8.3%	100.0%
	Total	12	100.0%	

Based on the results of research on the location of abdominal injuries on the bodies of murder victims due to blunt force at the Bhayangkara Tk General Hospital. I PusdokkesPolri, East Jakarta, for the period January 2021 to December 2022, obtained the results in the table above; the number of samples obtained was 55 victims. Based on the highest number of victims, in the bruise group, there were seven victims (58.3%), the abrasion group had four victims (33.3%), and the fracture group had one victim (8.3%).

**Table 6. Distribution of Wound Patterns for Blunt Violence Murder Victims Based on Location of Pelvic Injury**

		Frequency	Percentage	Cumulative Percentage
<b>Location of Pelvic Injury</b>	Abrasion	1	50.0%	50.0%
	Wounds			
	Fracture	1	50.0%	100.0%
	Total	2	100.0%	

Based on the results of research on the location of pelvic injuries on the bodies of murder victims due to blunt force at the Bhayangkara Tk General Hospital. I PusdokkesPolri, East Jakarta, for the period January 2021 to December 2022, obtained the results in the table above; the number of samples obtained was 55 victims. Based on the number of victims, in the abrasion group, there was one victim (50.0%), and in the fracture group, there was one victim (50.0%).

**Table 7. Distribution of Wound Patterns for Blunt Violence Murder Victims Based on Location of Upper Extremity Injuries**

		Frequency	Percentage	Cumulative Percentage
<b>Location of Upper Extremity Injury</b>	Bruises	18	40.9%	40.9%
	Abrasion	17	38.6%	79.5%
	Wounds			
	Pressure	4	9.1%	88.6%
	Abrasion Wounds			

Torn Wounds	4	9.1%	97.7%
Fracture	1	2.3%	100.0%
Total	44	100.0%	

Based on the results of research on groups of upper extremity injury locations (including the upper arms, forearms, hands, and fingers) on the bodies of murder victims due to blunt force at the Bhayangkara Tk General Hospital. I PusdokkesPolri, East Jakarta, for the period January 2021 to December 2022, obtained the results in the table above; the number of samples obtained was 55 victims. Based on the highest number of victims, in the bruise group, there were 18 victims (40.9%), the abrasion group had 17 victims (38.6%), the pressure abrasion group had four victims (9.1%), There were four victims (9.1%) in the fracture group and one victim (2.3%) in the fracture group.

**Table 8. Distribution of Injury Patterns for Blunt Violence Murder Victims Based on Location of Lower Extremity Injuries**

		Frequency	Percentage	Cumulative Percentage
<b>Location of Lower Extremity Injury</b>	Bruises	14	41.2%	41.2%
	Abrasion	14	41.2%	82.4%
	Wounds			
	Pressure	3	8.8%	91.2%
	Abrasion			
	Wounds			
	Torn Wounds	3	8.8%	100.0%
Total	34	100.0%		

Based on the results of research on groups of upper extremity injury locations (including the upper limbs, lower limbs, feet, and toes) on the bodies of murder victims due to blunt force at the Bhayangkara Tk General Hospital. I PusdokkesPolri, East Jakarta, for the period January 2021 to December 2022, obtained the results in the table above; the number of samples obtained was 55 victims. Based on the highest number of victims, in the bruise group, there were 14 victims (41.2%), the abrasion group also had 14 victims (41.2%), the pressure abrasion group had three victims (8.8%), and in the laceration group there were three victims (8.8%).

Based on data from research results on the bodies of murder victims resulting from blunt force at the Bhayangkara Tk General Hospital. I PusdokkesPolri, East Jakarta, for the period January 2021 to December 2022, the number of cases obtained was 55 victims; in 2021, there were 21 victims, and in 2022, there were 34 victims.

The results of research on the gender group showed that the highest number of victims was in the male gender group, namely 28 victims (50.9%), while in the female gender group, there were 27 victims (49.1%). It is in line with the United Nations Office on Drugs and Crime report, where it was reported that as many as 464,000 people were estimated to have been victims of intentional murder in 2017, and around 80% of all murder victims recorded throughout the world, the majority of whom were male, while the rest are female. [12] It is also similar to research by Bill et al. at RSUP. Prof Dr. R. D. Kandou found that the most murder victims in the city of Manado in 2015 were male, namely 30 victims (88%) and only four female victims (12%). [14]

In the results of research on age groups, it was found that the highest number of victims was in the 31-40 year age group, with 17 victims (30.9%), namely adults. It is also in line with research by Bill et al. at RSUP Prof Dr. R. D Kandou, where, based on age data, it was found that the highest number of murder victims were in the adult age group, namely 26-45 years with a total of 13 victims (38%). [14]

The research results based on the time group of the incident showed that the highest number of victims was in the 06.01-12.00 time group, namely 22 victims (40%). It is by the e-MP (Electronic Investigation Management) RobinopsnalBareskrimPolri data report regarding murder cases in the 2019-2022 period, which shows that most murders occurred in the morning to afternoon time frame, namely 08.00 to 11.59 in all regions of Indonesia. Based on the e-MP data, it was found that 583 cases, or 17.42% of all murder crimes, occurred during that period.

In research based on injury location groups, the highest number was found in the head and face injury location group, with 51 samples (29.1%). It is in line with research by Cavalcanti et al. in 2015-2018 in Paraiba, Brazil; looking at the areas of the body affected, victims were more affected in 2 areas, namely head injuries identified in 68.3% of victims and facial injuries in 35.3% of victims. [14] According to Ambade and Hemant's research, it was explained that in murders involving sharp violence, the chest area is most commonly affected by sharp objects. In contrast to murders due to blunt violence, the area most often affected is the head. [15]

Head injury or traumatic brain injury is generally defined as an injury involving the scalp, skull bones, and the bones that form the face or brain. [16] Based on the anatomy of the head, the outermost layer is the scalp, which has soft tissue but great protective power. If the scalp does not protect the skull, it can only withstand a blow of 40 pounds/inch, but if the scalp protects it, it can withstand a blow of 425-900 pounds/inch. [17]

After the scalp, there is also the skull bone, which protects the inner contents, namely the brain. The most important part is the brain, which is the center of all parts of the body. The use of blood by the brain is also very large compared to other organs in the body. No less than 15-20% of blood from the heart goes to the brain. Oxygen consumption by the brain is between 20-25%, making the brain very sensitive if it experiences a lack of oxygen. [18]

Factors that can influence death due to head injury include age, gender, hypotension, and hypoxia. The causes of head injuries can come from various sources, namely blunt force; in this case, the most common are accidents, murder, or can also be suicide. [19] It probably underlies the distribution of the most victims in the group of injury locations, namely in the head and face area, because murder victims will find it difficult to fight back if one of the most important organs of the body has been attacked.

Based on the variable distribution of 9 injury locations, namely the head and face, neck, shoulders, chest, back, stomach, pelvis, upper extremities, and lower extremities, it was found that the six areas with the most injury patterns were bruises. On the head and face, 41 victims (39.4%) had bruises, 11 victims (47.8%) had bruises on the neck, and 5 victims (55.6%) had bruises on the shoulders, on the stomach, bruises were found in 7 victims (58.3%), in the upper extremities, there were 18 victims (40.9%) in the upper extremities, and in the lower extremities, there were 14 victims (41.2%).

It is in line with research by Lestari et al. at Bhayangkara Hospital in Palembang in the 2016-2018 period, which showed that the type of injury most often found in blunt trauma was bruises with a percentage of 31.65%. [20]

Bruises occur due to a blunt impact on the body, which causes blood vessels to rupture in the area of impact, resulting in blood seeping into the tissue while the tissue surface remains intact. [21] These bruises are often an indication of the shape of the object causing it, especially if death occurs immediately after the injury. Some patterns of bruising include blows from solid objects such as hammers or closed fists, which can produce round bruise patterns, objects which have a spiral weave or webbing which can produce patterned bruises such as rope entanglements, bite marks, and nail grips. The neck can also produce elliptical pattern bruising.

### **Conclusion**

Based on the results of research conducted regarding the wound patterns of corpses of murder victims resulting from the blunt force at the Bhayangkara Tk General Hospital. I PusdokkesPolri, East Jakarta, in the 2021-2022 period for a sample of 55 victims, it can be concluded that: a) Based on the group of months in 2021, in August the highest number of victims was found, namely five victims (23.8%), and in 2022 in July, the most victims were found, namely seven victims (20.6%); b) Based on gender and age groups, the most victims were male, namely 28 victims (50.9%), while for the age group the most victims were in the adult age range (31-40 years), there were 17 victims. (30.9%); c) Based on the time group of murder incidents, the highest number was found between 06.01-12.00 with 22 victims (40%); d) Based on the group of injury locations, the highest number of injuries were found on the head and face, namely 51 victims (29.1%); and f) Based on the type of violence, at the location of the head and face, there were the most bruises, 41 victims (39.4%), at the neck location, there were the most bruises, 11 victims (47.8%), at the shoulder location, there were bruises there were five victims (55.6%), at the chest location the most abrasion wounds were found, namely ten victims (41.7%), at the back location there were nine victims (56.3%), at the stomach location the number of injuries was found. Seven victims had bruises (58.3%); at the pelvic location, there were abrasions and fractures at one victim each (50.0%); at the upper extremity location, the most were bruises with 18 victims (40.9%), and at the location of the lower extremities, the highest number were bruised, namely 14 victims (41.2%). Thus, on the results obtained through this research, several things are recommended: a) It is hoped that this research can become a reference for further development and can analyze the relationships between variables for each existing variable; b) It is hoped that it can increase the completeness of data collection in medical records and post mortem reports so that the data obtained is more complete and can be used as material for future evaluation; and c) It is hoped that every community can be more alert to every crime, especially murder which can occur at any time and anywhere regardless of gender, age or time.

### **References**

- [1] Daly M, Wilson M. Homicide: Foundations of human behavior. Routledge; 2017 Jul 12.
- [2] Sopromadze S, Tsiskaridze A. Violent behavior. Neurologic-Psychiatric Syndromes in Focus-Part II. 2018;42:106-21.

- [3] Naibaho CJ. Analysis of the Judge's Decision in the Case of the Crime of Murder Committed Deliberately (Study of the Decision of PnKabanjahe No. 63/Pid. B/2022/PnKbj) (Doctoral dissertation, QUALITY UNIVERSITY BERASTAGI).
- [4] Halawa M, Munawir Z, Hidayani S. Application of the Law to the Crime of Murder by Deliberately Taking the Life of Another Person (Case Study Decision Number 616/Pid. B/2015/PN. Lbp). *JUNCTO: Legal Scientific Journal*. 2020 Jul 6;2(1):9-15.
- [5] Marquat M. ACCOUNTABILITY OF PEOPLE OF THE CRIME OF PLANNING MURDER IN THE CIBINONG STATE COURT (case study number 327/pid. b/201/PN. Cbi). *Khatulistiwa: Journal of Education and Social Humanities*. 2022 Aug 26;2(2):09-26.
- [6] World Health Organization. Strengthening the medico-legal response to sexual violence. World Health Organization; 2015.
- [7] Karwur B, Siwu J, Mallo JF. Wound Patterns in Victims Who Died Due to Sharp Violence Who Were Autopsied at Prof. Hospital. Dr. RD Kandou 2014. *Medical Scope Journal*. 2019;1(1).
- [8] Devi NN, Kep M, An SK, Antari GA, Kep M, Kep S, Abidin Z, Kep AM, Pratiwi NM, Puspita NL, Kep M. Exploring the Essence of Wounds: Recognition, Assessment and Appropriate Treatment. Kaizen Media Publishing; 2023 Nov 27.
- [9] Devey JJ, Linklater A, Kirby R. Wounds and bandages. Monitoring and Intervention for the Critically Ill Small Animal: The Rule of 20. 2016 Dec 21:373-87.
- [10] de Siqueira A, Norris P. Sharp Force Trauma. In *Veterinary Forensic Medicine and Forensic Sciences* 2020 Jul 19 (pp. 145-155). CRC Press.
- [11] Lestari CE. Wound Patterns Due to Blunt Trauma Based on VeR Results at Bhayangkara Hospital, Palembang for the 2016-2018 Period. *Unsri Medical Thesis*. 2019;1.
- [12] Yashar DJ. States and Homicidal Ecologies. *State and Nation Making in Latin America and Spain: Volume 3: The Neoliberal State and Beyond*. 2023 Aug 17:175.
- [13] Karwur B, Siwu J, Mallo JF. Wound Patterns in Victims Who Died Due to Sharp Violence Who Were Autopsied at Prof. Hospital. Dr. RD Kandou 2014. *Medical Scope Journal*. 2019;1(1).
- [14] Cavalcanti AL, de Sousa FJ, Laureano IC, Cavalcanti AF. Head and face injuries in brazilian homicide victims—A retrospective study. *Annals of maxillofacial surgery*. 2021 Jan 1;11(1):103-7.
- [15] Ambade VN, Godbole HV. Comparison of wound patterns in homicide by sharp and blunt force. *Forensic science international*. 2006 Jan 27;156(2-3):166-70.
- [16] OMMAYA AK. Head injury mechanisms and the concept of preventive management: a review and critical synthesis. *Journal of neurotrauma*. 1995 Aug;12(4):527-46.
- [17] MS EK. HEAD INJURY CASE WITH BLUNT FORCE TRAUMATIC: CASE REPORT. *New Armenian Medical Journal*. 2022 Jan 1;16(1).
- [18] Lutz PL, Nilsson GE, Prentice HM. The brain without oxygen: causes of failure-physiological and molecular mechanisms for survival. Springer Science & Business Media; 2003 Feb 28.

- [19] Popernack ML, Gray N, Reuter-Rice K. Moderate-to-severe traumatic brain injury in children: complications and rehabilitation strategies. *Journal of Pediatric Health Care*. 2015 May 1;29(3):e1-7.
- [20] Lestari CE. Wound Patterns Due to Blunt Trauma Based on VeR Results at Bhayangkara Hospital, Palembang for the 2016-2018 Period. *Unsri Medical Thesis*. 2019;1.
- [21] Black HI. Investigation into the relationship between blunt impacts and bruising.

UNDER PEER REVIEW