Prevalence Of Mechanical Trauma And Characteristics Of Victims Of Dead Injury In RSUD dr. Pirngadi Medan City Year 2019-2021

Said Muzani[a], Adriansyah Lubis, Dessy Darmayani Harianja, Doaris Ingrid Marbun

[a]zali.doctor46@gmail.com

Department of Forensic and Medicolegal, Faculty of Medicine, Universitas Sumatera Utara / RSUP H. Adam Malik, Jl. Bunga Lau No 17 Medan 20136 Indonesia

Abstract

Violence against victims of homicide and abuse of living victims can occur in various forms of violence/trauma where victims of mechanical trauma are victims who are mostly served in clinical forensic medicine services. According to data and information obtained from the Central Statistics Agency in 20201 there were 898 cases of crimes against life or homicide that occurred in Indonesia in 2020. Violence is the fifth leading cause of death in the world, and in people underthe age of 40, it is the leading cause of death. This study uses a descriptive research study with a research design cross sectional retrospective, where data retrieval is carried out only once using secondary data originating fromVisum et Repertum of dead victimsforensic installation at RSU Dr. Pirngadi Medan. Population and sample 83 victims died (total population). Based on this study, it was found that the proportion of victims who died due to mechanical trauma was mostly at the age of 46-55 years as many as 18 people (21.7%), man68 people (81.9%), work61 people (783%), the highest prevalence of mechanical trauma was blunt mechanical trauma as many as 80 people (96.4%), the types of mechanical trauma injuries were tears, abrasions, bruises and fractures as many as 24 people (28.9%), the location of the wound on the head was 22 people (26.5%), the TKP area is in the Medan Labuhan Sector as many as 52 people (62.7%), the combination of mechanical trauma is only 3 people (3.6%).
Keywords : Mechanic trauma; Victim death body; Violence

1. Introduction

Violence against victims of murder and abuse of living victims can occur in various forms of violence/trauma, can be in the form of blunt violence, sharp violence or other forms of trauma, either jointly or independently. Mechanical trauma victims are victims who are mostly served in clinical forensic medicine services, in cases of mechanical trauma victims generally experience bruises, abrasions and lacerations. Wounds are a disruption of the normal condition of the skin. In conducting examinations of people who suffer injuries due to violence, doctors are essentially required to be able to provide clarity on the problem of the type of injury that occurred, the type of violence that caused the injury, and the qualifications of the wound. Based on the nature or characteristics of the injury or negligence on the victim's body, it can be determined the type of violence that caused the injury or the tool used by the perpetrator of the crime where this can be useful for investigations in conducting investigations. Over the last five years, the number of incidents of crimes against life (homicide) in Indonesia has tended to decline. In 2015 there were 1,491 incidents (the highest in the last five years). This figure decreased in 2016 to 1,292 events, in 2018 to 1,024 events, and fell back to 964 events in 2019. According to data and information obtained from the Central Statistics Agency in 2021 there were 898 cases of crimes against life or homicide that occurred in Indonesia in 2020. North Sumatra is the province with the highest number of homicide cases in Indonesia, with 99 cases of murder and 98 cases of disclosure. Every year, 1.4 million people worldwide lose their lives as a result of violence. Violence is the fifth leading cause of death in the world, and in people under the age of 40 it is the leading cause of death. Victims who died as a result of violence, 56% died by their own hands, and 33% inflicted by others. More than 90% of violence-related deaths occur in low- and middle-income countries. Based on the above background, the formulation of the problem in this study is to determine the prevalence of mechanical trauma and the characteristics of injured victims who were examined at RSUD Dr. Pirngadi, Medan city in 2019-2021. In general, this study aims to determine the prevalence of mechanical trauma and the characteristics of injured victims in RSUD Dr. Pirngadi, Medan city in 2019-2021.

2. Research Method

This study used a descriptive research study with a retrospective cross sectional research design, where data collection was carried out only once using secondary data from Visum et Repertum of dead victims. his research was conducted at the forensic installation of RSUD Dr. Pirngadi city of Medan. This location was chosen based on the consideration that RSUD Dr. Pirngadi Medan City is a hospital owned by the Medan City government which directly handles cases of violence that occurred in Medan City and its surroundings. The time of this research was carried out between January 2022 to March 2022 which included submission of titles, literature study, reading proposals, data collection, data processing, as well as writing and presenting research results. The variables in this study were the type of mechanical trauma, the pattern of the injury, the location of the trauma, gender, age, occupation, the area where the incident occurred and the number of combined traumas. The population in this study was the archives of Visum et Repertum corpses handled by the forensic installation of Dr. RSU. Pirngadi Medan on January 1, 2019 – December 31, 2021. The sample used is part of the population obtained from secondary data (total sampling), namely the VeR of the bodies of victims of mechanical trauma on January 1, 2019 - December 31, 2021 as many as 83 cases. Data collection was carried out using secondary data, namely all VeR files of dead/deceased patients obtained from recordings on Visum et Repertum at Dr. Hospital. Pirngadi Medan city since January 1, 2019 - December 31, 2021. The VeR lists the variables to be studied according to the specific objectives of this study. VeR was collected and recorded and tabulated with the types of variables to be studied. The data obtained were processed using the Statistical Product and Service Solution (SPSS) computer program. The research has received approval from the Health Research Ethics Committee, University of North Sumatra No: 485/KEPK/USU/2022.

3. Results

Table 1. Frequency Distribution of Age, Gender and Occupation

No	Characteristics of Research Sample	Frequency	Percentage
1	Age (Year)		
	0-5 Years	1	1,2
	6-15 Years	3	3,6
	16-25 Years	17	20,5
	26-35 Years	16	19,3
	36-45 Years	14	16,9
	46-55 Years	18	21,7
	56-65 Years	10	12,0
	>65 Years	4	4,8
2	Gender		
	Female	15	18,1
	Male	68	81,9
3	Occupation		
	Doesn't work	22	26,5
	Working	61	73,5
	Total	83	100.0

In terms of age, the results showed that from 83 research samples, 1 person (1.2%) was between 0-5 years old, 3 people (3.6%) was between 6-15 years old, 17 people (20.5%) were between 16-25 years old. years, 16 people (19.3%) were between 26-35 years old, 14 people (16.9%) were between 36-45 years old, 18 people (21.7%) were between 46-55 years old and 10 people (12.0.0%) were aged between 56-65 years. Thus, the majority of the sample was between 46-55 years old, namely 18 people (21.7%). In terms of gender, the results showed that of the 83 study samples, 15 people (18.1%) were women and 68 people (81.9%) were men. Thus, the majority of the research

sample were men, as many as 68 people (81.9%).In terms of occupation, the results showed that of the 83 research samples, 22 people (26.5%) did not work and 61 people (783%) worked. Thus, the majority of the research sample is working as many as 61 people (73.%).

Table 2. Prevalence Rate of Mechanical Trauma Victims Death Injury

No	Trauma Prevalence Rate mechanic	Amount (n)	Percentage (%)
1	Blunt and sharp	3	3.6
2	Blunt	80	96.4
	Total	83	100.0

Table 2 shows that from the 83 study samples, 3 people (3.6%) experienced blunt and sharp mechanical trauma and 80 people (96.4%) experienced blunt mechanical trauma. Thus, the majority of the study sample experienced blunt mechanical trauma as many as 80 people (96.4%).

Table 3. Combination of Mechanical Trauma to Dead Victims with Injuries Treated at the Forensic Installation of RSUD Dr. Pirngadi Medan City

No	Combination of Mechanical Trauma	Amount (n)	Percentage (%)
1	Yes	3	3.6
2	No	80	96.4
	Total	83	100.0

Table 3. shows that of the 83 study samples, 3 people (3.6%) experienced a combination of sharp and blunt mechanical trauma and 80 people (96.4%) did not experience a combination of blunt and sharp trauma. Therefore, the majority of the study samples did not experience a combination of blunt and sharp mechanical trauma, as many as 80 people (96.4%).

Table 4. Types of Mechanical Trauma Injuries to Dead Victims Injuries Treated at the Forensic Installation of RSUD Dr. Pirngadi Medan City

No	Type of Wound Mechanical Trauma	Total(n)	Percentage (%)
1	Scratches	3	3.6
2	Fractures	1	1.2
3	Scratches and fractures	4	4.8
4	Blisters and bruises	1	1.2
5	Torn and scuffed	15	18.1
6	Blisters and Cuts	1	1.2
7	Torn and bruised	4	4.8
8	Tear and fracture	1	1.2
9	Rips, abrasions and bruises	12	14.5
10	Torn, scuffed and broken bones	12	14.5

11	Ripped, bruised and broken bones	1	1.2
12	Blisters, bruises and fractures	3	3.6
13	Ripped, scuffed, bruised and broken bones	23	27.7
14	Cuts, abrasions, cuts and fractures	1	1.2
15	Ripped, scuffed, bruised, broken bones and slash	1	1.2
	Total	83	100.0

Table 4 shows that of the 83 research samples, the majority of the types of mechanical trauma injuries were tears, abrasions, bruises and fractures, namely 24 people (28.9%), followed by tearing and abrasions as many as 15 people (181%) and tears, abrasions and bruises as well as tears, abrasions, and fractures each as many as 12 people (14.5%).

Table 5. Location of Mechanical Trauma Wounds in Dead Victims Injuries Treated at the Forensic Installation of RSUD Dr. Pirngadi Medan City

No	Location of Wound Mechanical Trauma	Total (n)	Percentage (%)
1	Head	22	26,5
2	Chest	3	3,6
3	Belly	1	1,2
4	Extremities	2	2,4
5	Back	1	1,2
6	Head and neck	20	24,1
7	Head and chest	4	4,8
8	Head and belly	6	7,2
9	Stomach and chest	3	3,6
10	Neck and chest	2	2,4
11	Head, waist and chest	1	1,2
12	Head, chest and abdomen	10	12,0
13	Head, chest and neck	6	7,2
14	Head, neck, stomach	1	1,2
15	Head, chest, neck and abdomen	1	1,2
	Total	83	100.0

Table 5 shows that of the 83 study samples, the majority of the locations of head injuries were on the head, namely 22 people (26.5%), followed by the locations of head and chest injuries as many as 20 people (24.1%) and wounds on the abdomen as many as 10 people (12.0). %).

Table 6 Area Mechanical Trauma Victim Dead Injury Treated at the Forensic Installation of RSUD Dr. Pirngadi Medan City

No	Mechanical Trauma Crime Scene Area	Total (n)	Percentage (%)
1	Perairan Polda Sumut	1	1.2
2	Sektor Medan Area	1	1.2
3	Sektor Medan Petisah	1	1.2

4	Sektor Medan Barat	1	1.2
5	Sektor Patumbak	4	4.8
6	Medan Kota	6	7.2
7	Sektor Hamparan Perak	1	1.2
8	Sektor Percut Sei Tuan	16	19.3
9	Sektor Medan Labuhan	52	62.7
	Total	83	100.0

Table 6 shows that of the 83 research samples, the majority of the TKP area where the injury occurred was in the Medan Labuhan Sector, which was 52 people (62.7%) followed by the Percut Sei Tuan Sector TKP area as many as 16 people (19.3%).

4. Discussion

The results of the descriptive analysis showed that the majority of the research samples were mostly in the 46-55 year age group, namely 21.7% and the least in the 0-5 year age group, namely 1.2%. This is because the productive age group has higher mobility than other age groups. The high mortality rate due to mechanical trauma in the productive group has an unfavorable impact on the economy. Therefore, it is better for strategies in prevention to be targeted specifically at productive groups. While the lowest death toll was in the 0-5 year age group as much as 1.2%. This is because the 0-14 age group has low mobilization. The results of the descriptive analysis showed that the majority of the research samples were male, namely 81.9%. While the female gender is 18.1%. The results of this study are also in line with the research of Jefryanto et al. (2015) which shows that the type of violence that is most often experienced by survivors of injury cases is blunt force, which is 150 VeR (94.9%) of 158 VeR. Similarly, the research of Intan Rosaline Simangungsong et al. (2015) showed that the highest case based on the type of violence contained in all VeR data was the type of blunt violence with 72 victims (92.3%) out of 78 people. Meanwhile, from the research results of Wilda Septi Pratiwi et al. (2015) showed the same result where the type of violence most experienced by live victims of injury cases was blunt force, which was 137 VeR (88.9%) out of 154 VeR. Trauma is the main cause of death in productive age, namely those under 40 years old, and is the 3rd cause of death in the world after cancer and cardiovascular disease. Trauma that resulted in the loss of life by 26% and more than half of them lost their productive age so that it would have a significant impact on economic conditions (Tentillier, Mason, 2000). It was found that about 7-10% of the total number of trauma cases made abdominal trauma one of the 3rd causes of death in these trauma patients (Costa et al 2010). In cases of blunt trauma, the diagnosis is more difficult to establish because multisystem trauma usually occurs, while trauma to intra-abdominal organs may occur due to penetrating wounds (Umboh, Sapan, Lampus, 2016). A 1997 study by Schurink et al showed that abdominal examination yielded similar results in nearly half of patients with multitrauma. So to produce good management, it must require further examination (Schurink, Bode, Luijt, & Vugt, 1997). The results of the descriptive analysis showed that the majority of the study samples did not experience a combination of blunt and sharp trauma, as many as 80 people (96.4%). In other words, only 3 people (3.6%) experienced a combination of sharp and blunt mechanical trauma. The results of this study are in line with the research of Gershon (2019) Prevalence of Mechanical Trauma in Living Victims in Dr. RSUD. R.M. Djoelham Binjai in 2019 where the results showed that the prevalence in patients included mechanical trauma, blunt force trauma, sharp object trauma, gunshot trauma, and a combination of several traumas. The results of the descriptive analysis showed that the majority of types of mechanical trauma injuries were tears, abrasions, bruises and fractures as many as 24 people (28.9%), followed by the type of trauma torn and abrasions as many as 15 people (181%) and tears, abrasions and bruises and tears, abrasions, and fractures each as many as 12 people (14.5%). The results of this study are in line with Setyawati (2021) Prevalence of Mechanical Trauma and Characteristics of Survivors of Injury at Dr. Hospital. R. M. Djoelham Binjai in 2020 where the results of the study showed that the most common wound pattern was abrasions (70.5%). The results of the descriptive analysis showed that the majority of the locations of head injuries were on the head, namely 22 people (26.5%), followed by the locations of head and chest injuries as many as 20 people (24.1%) and wounds on the abdomen as many as 10 people (12.0%). The results of this study are in line with Oktavianti's research (2014) Prevalence and Patterns of Injuries to Motorcycle Accident Victims at the Forensic Installation of Sanglah Hospital Denpasar in 2013 where the results of the study prove that the victims who died in motorcycle accidents who entered the Forensic Medicine Installation of Sanglah Hospital mostly suffered injuries in the head

and face with abrasions, bruises, blunt openings, and broken bones. The results of the descriptive analysis showed that the majority of the TKP area where the injury occurred was in the Medan Labuhan Sector, as many as 52 people (62.7%) followed by the Percut Sei Tuan Sector TKP area as many as 16 people (19.3%). The results of this study are different from the results of Silaban's research (2018). Characteristics of Victims Died Due to Traffic Accidents at the Forensic Medicine Installation of RSUD Dr. Pirngadi, Medan City in 2016 – 2017 where the victim died due to a traffic accident at the Forensic Medicine Installation at RSUD Dr. Pirngadi Medan City 2016-2017 in Medan City is 84.2% and outside Medan City is 15.80%. The high number of fatalities and injuries in the Medan Labuhan Sector is closely related to the very large area of Medan Labuhan and is crossed by various types of large-scale transport vehicles such as oil trucks and other large trucks, causing the crime rate against life to be very high.

5. Conclusion

Prevalence of mechanical trauma in injured victims at RSUD Dr. Pirngadi Medan City in 2019-2021 had the most blunt trauma, which was 96.4%. This is indicated by the majority of the study sample experiencing blunt trauma as many as 80 people (96.4%). The most common types of mechanical trauma injuries were lacerations, abrasions, bruises and fractures as many as 24 people (28.9%), followed by tearing and abrasions as many as 15 people (181%) and tears, abrasions and bruises and tears, abrasions, and fractures each as many as 12 people (14.5%). The location of the wound in general was on the head as many as 22 people (26.5%), on the chest as many as 20 people (24.1%) and wounds on the abdomen as many as 10 people (12.0%). Gender shows that from the 83 study samples, 15 people (18.1%) were women and 68 people (81.9%) were men. Thus, the most victims were men, as many as 68 people (81.9%). In terms of age, the results showed that from 83 research samples, 1 person (1.2%) was between 0-5 years old, 3 people (3.6%) was between 6-15 years old, 17 people (20.5%) was between 16 years old. -25 years old, 16 people (19.3%) between 26-35 years old, 14 people (16.9%) between 36-45 years old, 18 people (21.7%) between 46-55 years old and 10 people (12.0.0%)) aged between 56-65 years. Thus, the most victims were aged between 46-55 years, namely 18 people (21.7%). In terms of occupation, the results showed that of the 83 research samples, 22 people (26.5%) did not work and 61 people (783%) worked. Thus, the most victims in this study were working as many as 61 people (73.%). The TKP area where the injury occurred was in the Medan Labuhan Sector which was 52 people (62.7%) followed by the Percut Sei Tuan Sector TKP area as many as 16 people (19.3%). The combination of blunt and sharp mechanical trauma was generally absent, as many as 80 people (96.4%). In other words, only 3 people (3.6%) experienced a combination of sharp and blunt mechanical trauma.

Acknowledgements

We would like to thank the Chief of the RSUD Dr. Pirngadi Medan and Chief of Forensic and Medicolegal Instalation RSUD Dr. Pirngadi Medan

References

1. Dahlan. S. Ilmu Kedokteran Forensik, Pedoman bagi Dokter dan Penegak Hukum. Cetakan Ketiga. Universitas Diponegoro, Semarang. 2000. Hal: 67,89-91.
2. Ferdinan J dan Mistar Ritongga. Penilaian Alur Luka untuk Menentukan Penyebab Kematian. Medan: Departemen Ilmu Kedokteran Forensik dan Medikolegal Fakultas Kedokteran Universitas Sumatera Utara, RSUP H. Adam Malik Medan. 2012.
3. Mason JK and Purdue BN. The Pathology of Trauma. London: Arnold Publisher. 1999.
4. BUKU AJAR KEDOKTERAN FORENSIK DAN MEDIKOLEGAL Olehdr.Abdul Gafar Parinduri,M.Ked(For),Sp.F cetakan pertama, umsu, 2020
5. https://www.pormiki-dki.org/2016-04-20-03-11-28/pp-pmk-uu/26-permenkes-269-tahun-2008-rekam-medis
6. https://komnasperempuan.go.id/siaran-pers-detail/catahu-2020-komnas- perempuan-lembar-fakta-dan-poin-kunci-5-maret-2021
7. WHO. 10 Facts About Violence Prevention. 2017.
8. http://www.who.int/features/factfiles/violence/en/ Diakses pada 5 februari 2022
9. Vugt RV, Frederik K, Digna K, Jaap D, Michael E. Selective Computed Tomography (CT) Versus Routine Thoracoabdominal CT for High-Energy Blunt-Trauma Patients. Netherlands:John Wiley & Sons,Ltd. 2013.

10. Steward KA, Groen RS, Kamara TB, Farahzard M, Samai M, Yambasu SE, et.al. Traumatic Injury in Developing Countries : Report From a Nationwide Cross-Sectional Survey of Sierra Leone. USA: JAMA Surg. 2013.
11. https://pusdatin.kemkes.go.id/resources/download/general/Hasil%20Riskesda s%202013.pdf
12. http://dinkes.sumutprov.go.id/sekretariat/downloadfile?id=1568
13. Situmorang, Timothy Gershon. 2021. Prevalensi Trauma Mekanik pada Korban Hidup di RSUD DR. R.M. Djoelham Binjai Tahun 2019. Skripsi. Medan : Fakultas Kedokteran Universitas Sumatera Utara.
14. Aflanie, I., Nirmalasari, N. & Arizal, M. H. 2017, Ilmu Kedokteran Forensik & Medikolegali, PT RajaGrafindo Pesada, Jakarta.
15. Idries AM, Tjiptomartono AL. Penerapan Ilmu Kedokteran Forensik dalam Proses Penyidikan. Jakarta: Sagung Seto, 2009.
16. Paul, G. & Verma, S. K. 2015, Review of Forensic Medicine and Toxicology, Jaypee Brothers Medical Publishers (P) Ltd, New Delhi.
17. Saukko, P., Kinght, B. 2016, Knight's Forensic Pathology, 4th edn, CRC Press, New York.
18. Prahlow, J. A. 2016, 'Forensic Autopsy of Sharp Force Injuries', Medscape, [online], Available at: https://emedicine.medscape.com/article/1680082-overview
19. Dettmeyer, Reinhard B & Schütz, Marcel A.V (2014).Gunshot and Blast Woundsin Forensic Medicine: Fundamental and prespectives. New York:SPRINGER.