ORIGINAL ARTICLE

Wound Pattern Profile in Deceased Victims of Traffic Accidents in Raden Said Sukanto Bhayangkara Hospital Jakarta from January 2017 until December 2018

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A B S T R A C T

Introduction: A traffic accident is an incident that happens on the road, such as a car crash that started on the road and leads to injury or death or damaged properties in the surrounding environment. Traffic accident injuries have a different pattern from any other events or violence, such as a mechanical injury due to friction with asphalt. The wounds that are usually found on the victims are abrasion, laceration, contusion, and wounds with fractures. About 70% of traffic accidents in Indonesia are happening in Java. The aim of this study was to determine the wound patterns of victims of traffic accidents, particularly deceased victims recorded in the Forensic Department of Raden Said Sukanto Bhayangkara Hospital Jakarta from January 2017 until December 2018.

Methods: This was a descriptive study using secondary data. Consecutive sampling methods were used by using an external examination form obtained from the Forensic Department of Raden Said Sukanto Bhayangkara Hospital Jakarta from January 2017 until December 2018. Age, gender, and wound patterns such as abrasion, laceration, contusion, and wounds with fracture data were taken.

Results: 67 cases of traffic accidents were recorded. Male victims were the most common victims (87.5%) within the age of 26–45 years old (42.18%). Abrasions were the most common wounds found (44.92%) and the head and neck regions were the most affected area (44.09%).

Conclusion: The deceased victims of traffic accidents were mostly males aged 26–45 years old. The most common wound found were abrasions and the most affected areas were the head and neck region.

A R T I C L E I N F O

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Introduction

Rapid economic growth is currently being experienced by most of the developing countries in the world, thus changing the traffic environment. Several developing countries have significant growth in motorcycles and car quantity, resulting in limited education to obtain complete road safety and driving instruction and knowledge. Therefore, underdeveloped driving skills and a low level of traffic awareness contribute to traffic accidents.[1]

A traffic accident is an incident that happens on the road, such as a car crash or collision, resulting in the death or injury of victims or damaged properties surrounding the events.[2] Some risk factors that can cause traffic accidents are human, vehicle, infrastructure, and natural factors.[3] According to WHO data in 2018, 1.3 million people died and around 50 million people are injured due traffic accident.[4] National Transportation Safety Committee (KNKT) stated that 70.35% of accidents in Indonesia happened in Java from 2007 until 2016.[5] Jakarta recorded 5,825 traffic accidents in 2013 with 1,286 of the victims within the age of 21–30 years old.[6]

Various types of injuries could occur if there was an accident, from minor injuries to a disability, and even death where traffic accidents become one of the most common causes of death.[7] There are two main injuries, blunt that are caused by blunt impact resulting in contusion and abrasion, and sharp injuries which are caused by a sharp-edged object, resulting in incised and puncture.[8] Most common injury that can occur during a traffic accident is fracture injury.[9]

Wounds are the result of physical damage when a human body experienced a mechanical high-energy impact.[10] Traffic accidents can be divided into three groups; mild, medium, and heavy.[11] Each wound caused by a traffic accident has its own pattern which can help doctors and police to identify the victim's cause of death.[12]

Studies about wound patterns in deceased victims of a traffic accident are extremely limited, especially in Jakarta. Therefore, conducting a study on wound patterns in deceased victims of traffic accidents is the point of interest of this study.

Methods

This was a descriptive study to determine the profile of wound patterns in deceased victims of traffic accidents. Secondary data were collected from Department of Forensics, Raden Said Sukanto Bhayangkara Hospital Jakarta from January 2017 to December 2018 in the form of an external examination form. Total sampling was used for the patients who met the inclusion criteria. Exclusion criteria were made if there was incomplete data in the medical record.

The variables included age, gender, and wound patterns such as abrasion, laceration, contusion, and fractured. The data were mapped to pink form or Post-mortem form of Interpol to have a better understanding of the location of the wounds.

The data obtained were grouped and sorted according to the year the traffic accident occurred, victims' gender, and the number of wounds added up from each year.

Results

Table 1 shows the sample distribution based on age range and gender. Of 64 cases recorded, 55 cases involved male victims and 9 were female victims. 27 of the total victims were within the range of 26–45 years old.

Table 1. Sample distribution based on age range and gender of the deceased victims

Age	2017		2018		Total
	Male	Female	Male	Female	
5 – 11	1	0	0	0	1
12 – 25	8	0	7	0	15
26 – 45	8	0	13	6	27
46 – 65	6	1	9	2	18
> 65	1	0	2	0	3
Total	24	1	31	8	64

Source: Research data, processed

The sample distribution based on wound types and the position of inflicted wounds in the deceased victims for each year was described in Table 2 and 3. The most recorded wounds in deceased victims were abrasion with 270 wounds. The most affected region with 265 wounds was head and neck region with 92 of them were lacerations.

Table 2. Sample distribution based on wound types and the position of inflicted trauma in the deceased victims in 2017

2017 wounds	Head and neck	Thorax	Abdomen	Upper extremity	Lower extremity	Total
Abrasion	32	11	6	25	21	95
Contusion	21	4	2	3	5	35
Laceration	30	3	0	8	7	48
Fractured	19	10	2	4	3	38
Total	102	28	10	40	36	216

Table 3. Sample distribution based on wound types and the position of inflicted trauma in the deceased victims in 2018

2018 wounds	Head and neck	Thorax	Abdomen	Upper extremity	Lower extremity	Total
Abrasion	54	16	11	47	47	175
Contusion	19	11	4	11	9	54
Laceration	62	3	5	17	16	103
Fractured	28	8	0	8	13	57
Total	163	38	20	83	85	389

Discussion

There were 64 cases with 56 of them being male casualties. This study shows the same result as the study conducted in California where male drivers mostly become casualties of traffic accidents. This is due to male driver tends to drive more aggressively whereas female driver tends to drive more cautious.[13] The age group that becomes the most fatalities with 29 casualties are adults from the age of 26-45 years old. From the age of 20-29 years old, the crash risk was at the highest and it will decrease progressively until the age of 60-69 years old.[14]

The most common wounds found in the victim's body were abrasions, which affect a discontinuity of a skin with or without bleeding,[15] with 270 wounds. Similar results were shown in a study conducted at Prof. Dr. R. D. Kandou General Hospital Manado in 2017 where the most common wounds found were abrasions as many as 82 out of 152 wounds.[16] Other studies also gave the same result where abrasions become the most wounds found. This result comes from a study conducted at Dr. M. Djamil General Hospital Padang in 2012 with the result of 18 abrasion wounds from 48 total wounds.[17]

Head and neck region became the most impactful region of the body from the traffic accidents with 265 wounds. This data has a similarity with the study conducted in Ethiopia in 2013 where head region become the site of most wound found with 116 out of 329 wounds recorded.[18] A study from Sanglah General Hospital Denpasar in 2013 also stated that most of the wounds were located in head region with 67 out of 74 cases presented.[12]

Laceration wounds, where the body sustains forceful tear with an irregular shape,[19] were the most common wounds found in head and neck region with 92 wounds. A different result was shown in a study conducted at Prof. Dr. R. D. Kandou General Hospital Manado in 2010 in which head and neck region had abrasion wounds as its most common wound found with 32 out of 79 wounds in the region.[20] This difference could happen because Java is the most populated island in Indonesia compared to the other island. Java is the center of government, economy, and industry, thus the number of traffic accidents is significantly higher than in other region.[5]

Conclusion

Based on the results of the study, the most amount of wounds found in the deceased victims of traffic accident case in Raden Said Sukanto Bhayangkara Hospital Jakarta from January 2017 until December 2018 were abrasions, with males aged 26–45 years old as the most common victims and head and neck region became the most impactful part of the body from the traffic accidents.

It is necessary to have additional data, such as the cause of the accident, the process of occurrence, the role of the victim as risk factors (intoxication, level of compliance, using a phone while driving), as well as a longer study period and more specific cases to obtain a various result.

By acknowledging the wound pattern profile from the deceased victims of traffic accidents, this study hopefully can raise awareness among road users about road safety, such as wearing a helmet, driving carefully, and always obeying the rules and traffic signs.

Conflict of Interest
The authors declared there is no conflict of interest.

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