

CONTROL OF TRAFFIC ACCIDENTS IN SOUTHEAST SULAWESI, INDONESIA BASED ON OCCUPATIONAL SAFETY AND HEALTH

Muhammad Andriadi Karim

Public Health (Occupational Safety and Health), Universitas Gadjah Mada, Yogyakarta, INDONESIA, Email: muhammad.andriadi.k@mail.ugm.ac.id

Abstract

In Indonesia, traffic accidents are one of the biggest causes of death. Based on the number of accidents for the end of 2014 in Southeast Sulawesi increased compared to 2015. The number of traffic accidents occurring in Southeast Sulawesi is dominated by productive ages. Based on the description of traffic accidents case needs to do some review both from previous research result and based on some theory, then done by giving the solution based on safety and health science so that traffic accidents case does not increase from year to year especially in Southeast Sulawesi area. This study aims to find out the causes of the increasing number of traffic accidents in Southeast Sulawesi, review the driving behavior based on Health Belief Model (HBM) Theory and conduct Traffic Accident Control efforts reviewed based on Occupational Safety and Health (OSH) approach. This research use case study method and literature study. Primary data obtained from direct interviews with experts in their field. Secondary data obtained online media review literature. Research results indicate that the cause of the increasing number of traffic accidents in Southeast Sulawesi is unsafe behavior in driving, especially in the productive age. Based on a review of driving behavior using HBM theory it is found that drivers who drive in good behavior can avoid and can prevent accidental conditions otherwise poor driving behavior can lead to accidents. Although the driving behavior is also inseparable from the level of education, culture. Efforts to reduce the number of traffic accidents based on the approach of Occupational Safety and Health Sciences that is with early detection and prevention by civilizing OSH in driving such as the use of personal protective equipment (PPE). Safety culture in driving should be done with promotion and training. The conclusion of unsafe behavior in driving as the cause of work accident can be suppressed by civilizing OSH before driving.

Keywords: Traffic Accidents, Driving Behavior, OSH Approach, Safety Culture

1 INTRODUCTION

Traffic accidents are a serious health problem in both developed and developing countries. According to the World Health Organization (WHO), nearly one person died and four were injured every hour on average due to traffic accidents. Excessive speed and non-compliance with traffic signals account for more than 65% of traffic, resulting in substantial economic losses to victims, families, and even the country as a whole. (WHO, 2013)

In Indonesia, traffic accidents are one of the biggest causes of death. Where a large number of victims will provide economic impact (material loss) and social is not small, preventive efforts to improve traffic by involving various parties related to the results have not been as expected. According to AKP Iswan, the number of accidents for the end of 2014 in the POLDA region of Southeast Sulawesi increased compared to 2015. The details in 2014 were 248 wounded, severe 122 people, and 54 people died with losses of Rp.561,200,000. In 2015 there were 373 accidents with minor injuries 316 people, severe injuries 114 people, 40 people died and loss estimated at Rp.945.950.000. The number of traffic accidents that occurred in Southeast Sulawesi was dominated by the productive age. Based on traffic accidents data in Southeast Sulawesi, 66 percent of victims were productive ages between 15-50 years. Among the victims is dominated by students and students, which is about 36 percent. Responsibility in pushing down the accidental fatality rate requires synergies from various components. Both from the police, transportation, Jasa Raharja and awareness of the user's own vehicle. Many accidents are caused by lack of understanding and public awareness of safety procedures (Kendari Pos, 2016).

Associated with the number of traffic accidents occurring in Southeast Sulawesi, which is dominated by productive age in line with research conducted by Suhasini Ramisetty-Mikler and Abdul Karim Almakadma regarding Attitudes and behaviors towards risky driving among adolescents in Saudi Arabia. The results showed that unsaved attitudes and behaviors including brave personalities, not wearing seatbelts and using cell phones while driving were significant factors associated with risky driving activity (Ramisetty-mikler & Almakadma, 2016). Similar to the study conducted by Fikri, 2015 showed that the victims of traffic accidents at Tampaksiring Public Health Center were mostly found in men than women. Accident patients are most prevalent in the adult age group (20-44 years), and the number of traffic accident patients in adolescence tends to look higher than the elderly. Patients who were victims of traffic accidents at Tampaksiring Public Health Center were mostly found on Monday and most used 2-wheeled vehicles. (Fikri, R. et al., 2015)

Based on the description of traffic accidents case, it is necessary to do some review both from previous research result and based on some theory, then give the solution based on occupational safety and health approach so that traffic accidents case does not keep increasing from the year of its especially caught in Southeast Sulawesi area.

2 MATERIAL AND METHOD

This research use case study method and literature study. Primary data obtained from direct interviews with experts in their field. Secondary data obtained online media review literature.

3 RESULTS AND DISCUSSION

3.1 The Cause of the Increasing Number of Traffic Accidents in Southeast Sulawesi

Almost all traffic accidents begin with traffic violations. Violations usually occur due to the deliberate violation, ignorance of the applicable rules, do not see the provisions of the rules imposed or pretended not to know. In addition, people as road users are very often negligent, even inconsiderate in driving a vehicle, not least the number of traffic accidents caused due to driving in a drunken state, sleepy, and easily provoked by other road users who may be able to provoke passion for the race.(Mako & Szakonyi 2016)

The following responses related to the cause of the increasing incidents of traffic accidents in Southeast Sulawesi presented by Prof. Adi Heru as an expert in Public Health Sciences Gadjah Mada University are as follows:

"Actually, if seen there are several factors that cause the occurrence of accidents that are human factors, vehicles, and the street. The combination of these three factors usually causes traffic accidents. But the human factor is the dominant factor in an accident ". (Prof. Adi Heru, 26 Oktober 2017)

If reviewed based on some research, especially research conducted by Suhasini Ramisetty-Mikler and Abdul Karim Almakadma show that unsafe behavior of human being which become the main cause of the accident, especially among teenagers, because ignore the safety of drivers. Behavior is a collection of interacting factors. Individual readiness is influenced by factors such as perceptions about vulnerability to disease, potential threats, motivation to minimize vulnerability to potential threats, and the belief that behavioral change will benefit. Factors affecting behavioral change are those behaviors that are influenced by individual characteristics, individual assessments of proposed changes, interactions with health workers who recommend behavioral change, and experience trying to change similar behaviors. (Haghighi et al., 2016). As stated by Prof. Adi Heru driving behavior also affects the high number of traffic accidents;

"In terms of driver behavior, although this is also a major factor in the occurrence of accidents but

the authorities are also not necessarily off hand. Should be done certain approaches, especially in vulnerable groups such as adolescents, change the mindset in behaving inconsiderate driving into a healthy behavior or a positive mindset. Although in terms of changing behavior it is very difficult because it has been entrenched in life but in terms of changing behavior should be made a figure who became a good role model in terms of driving. Like someone who can always at any time communicate with them. " (Prof. Adi Heru, 26 Oktober 2017)

Prof. Adi Heru argues that although the behavior is a major factor but should be those who are in charge of traffic accidents, it should make an effort to change the behavior of the rider even though it is not an easy thing. Gaps in driving behavior may affect a person's rider against the risk of an accident. If it is assumed by the Health Belief Model (HBM) theory, that drivers who drive in good behavior are advised to believe that they can avoid and prevent accident conditions.

3.2 The Cause of the Increasing Number of Traffic Accidents in Southeast Sulawesi

Health Belief Model is a cognitive model that means the individual behavior is influenced by cognitive processes in itself. This cognitive process is influenced by several factors such as demography, sociopsychological, and structural characteristics. Demographics include class, age, gender. Sociopsychological characteristics include personality, peers, and group pressure. Structural knowledge and experience about the problem. (Taylor, S. E., 2012). According to Snelling, Anastasia, the 2014 Health Belief Model is based on the understanding that a person will take action that will be related to health. This theory is poured in terms of thinking within the individual, which affects the effort that exists within the individual to determine what is good for him. The applications of the HBM theory component to driving behavior are:

- a. Perceived Susceptibility is the belief of a person by assuming a disease is a result of performing the certain behavior. Perceived susceptibility is also defined as perceived vulnerability, which means perceived vulnerability that refers to the possibility of a person being exposed to a disease. Perceived susceptibility has a positive relationship with healthy behavior. If the perception of susceptibility to disease is high then a person's healthy behavior is also high. For example, someone believes that everyone is potentially exposed to an accident.
- b. Severity is the subjective belief of individuals in the spread of disease caused by behavior or believes how dangerous the disease so as to avoid unhealthy behavior to avoid pain. This means that perceived severity is principled on the perception of severity that the individual will accept. Perceived severity also has a positive relationship with healthy behavior. If the perception of individual severity is high then it will behave healthily. For example, individuals believe that safe driving can avoid accidents.
- c. Perceived Benefits is the belief in the advantages of the suggested method of reducing the risk of disease. Perceived benefits, in brief, mean the perception of benefits that have a positive relationship with healthy behavior. Individuals who are aware of the benefits of early detection of disease will continue to perform healthy behaviors such as routine medical checkups. For example, routine maintenance of vehicles.
- d. Perceived barriers are a belief in the price of the behavior performed. Perceived barriers, in brief, mean the perception of obstacles or the perception of decreased comfort when leaving unhealthy behavior. The relationship of perceived barriers with healthy behavior is negative. If the perception of obstacles to healthy behavior is high then a healthy toll will not be done. For example, in riding a motor, using a helmet the driver will feel comfortable.
- e. Cues to action are to accelerate the actions that make a person feel the need to take action or take concrete action to perform the healthy behavior. Cues to action also mean the support or encouragement of the environment towards individuals who perform the healthy behavior. Police advise to helm and adhere to traffic rules in driving or recommendations have been made to act in the context of safety driving.
- f. What is useful in protecting health is self-efficacy. Self Efficacy is a person's beliefs about his ability to persuade the situation or feel confident with healthy behaviors performed. Self-efficacy is divided into two namely the outcome expectancy such as receiving a good response and outcome value such as receiving social value.

Based on HBM theory it is seen that to know the happening of behavior change someone does the assessment internally, they can decide to do the action of change or not. This theory explains if a person has believed that has had a risk of an accident, then someone will become more sensitive to it and will regard as a serious problem so that eventually will do the preventive behavior. (Haghighi et al. 2016)

3.3 Traffic Accident Control Is Reviewed Based on Occupational Safety and Health (OSH)

According to Suma'mur, 1996 Occupational safety and health science is the science of promotion and maintaining the highest degree of all workers physically, mentally and socially well in all types of work to prevent the deterioration of health and the occurrence of injuries caused by their working conditions. Protecting workers on every job and risks arising from factors that could interfere with workers' safety and health. The placement and maintenance of workers in the work environment in accordance with the physiological and psychological conditions of the worker and to create conformity between the work and the worker and each person with his duties.

Work security is the supporting elements that support the creation of a safe working atmosphere, both in the form of material and non-material. Security material supporting elements such as Workwear, Helmet, Eyewear, Gloves, and Shoes. Non-material safety supporting elements such as User's manual on the use of appliances Signs and hazards, Appeals, Security Officers. Occupational Safety Objectives: Protecting workers and others at work, ensuring that each source of production can be used safely and efficiently and Ensure the production process runs safely. (Leitao & Greiner 2016).

There are some things that are a person's mistake in taking an attitude or action. Classification of errors are 1) Mistakes due to forgetting, the way to overcome that is changing the means and environment, reminded to be more careful, improve supervision, reduce impact, and others. 2) The error of not knowing, It usually occurs due to lack of training, error instructions, unformed information changes, and others. 3) The mistake of inadequacy, this type of mistake occurs because the person is not able to do his job. 4) Mistakes due to lack of motivation, errors that occur, Personal impulse, for example, want to quickly complete, through shortcuts, want to feel comfortable, lazy to wear PPE, attract attention by taking excessive risks, and others. (Tulashie, Addai, & Annan, 2016). To suppress the case of traffic accidents in southeast Sulawesi was disclosed by Prof. Adi Heru as follows:

"Though this case has been a problem for a long time. (Traffic Accident Cases). this is actually to be done early detection. if you look at this situation until when it is underestimated and our country will also continue to lose money. Actually, if in developed countries such incidents of this kind of early detection are reliable, so there are events immediately carried out a quick response warning response but our country is not so, even that seem impressed ignored. " (Prof. Adi Heru, 26 Oktober 2017)

Prof. Adi Heru stated the need for early detection efforts related to the incidents of traffic accidents cases, as has been done to the developed countries in an effort to suppress the number of traffic accidents. The many cases of traffic accidents, especially among teenagers in southeast Sulawesi caused by the behavior of motorists, science OSH view that in fact someone's own behavior that can allow the occurrence of an accident or unsafe behavior. Where the actions or deeds of a person or several people are riders who increase the likelihood of an accident. As stated by Prof. Adi Heru as follows:

"In the application prior to driving must have at least 3 examination; the inspection before driving, youth inspection after driving and regular inspection. if in health and safety science. this 3 is always in priority either drive or in company though. And all that must be done with good and right. " (Prof. Adi Heru, 26 Desember 2016)

Based on the results of interviews show the effort to prevent accidents should be prior to driving must undergo 3 stages of inspection that is before check driving, inspection after driving and inspected periodically. In addition to efforts to reduce the number of traffic accidents based on OSH is the behavior change rider with OSH culture. In this case, promotional efforts are made related to the hazards and impacts of traffic accidents. The related application of OSH culture proposed by Azham as an expert in the field of occupational safety and health in the interview as follows:

"In changing the behavior of riders should follow the example of corporate companies that have successfully cultivated OSH to its workers. such as small briefing before doing the activity. so before the company workers go to the stop first. Then the foreman always warns repeatedly so that good behavior is also automatic, even the unconsciously attached to the mind of the worker. ". (Azham U Abidin, 27 Desember 2016)

Other efforts that OSH needs to do other than OSH culture in driving is the provision of Personal Protective Equipment (APD). It is based on Law No. 1 of 1970 on Occupational Safety. The use of APD is also presented by Azham in the following:

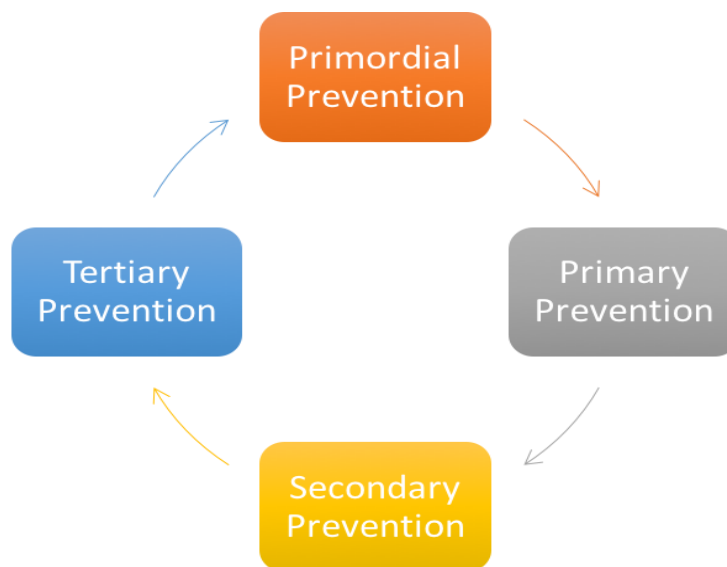
"Actually, the traffic accident is a driving condition in the unsafe condition. So OSH plays a role in the provision of prevention efforts such as giving PPE, promoting training or other about accidents and do prevention and handling." (Azham U Abidin, 27 Desember 2016)

From some of the above description OSH efforts to prevent traffic accidents is to increase knowledge of OSH culture and use of PPE before driving.

4 CONCLUSION

High Traffic Accidents that occurred in Southeast Sulawesi cannot be separated from several factors, namely human, vehicle, and street. But the main cause of the high number of accidents, especially in Southeast Sulawesi caused by unsafe behavior in driving, especially among adolescents. Based on the theory of the Health Belief Model (HBM), that drivers who drive in good behavior can shine and can prevent accident conditions otherwise poor driving behavior can lead to accidents. Although driving behavior is also inseparable from the level of education, culture, environment, and socio-economic level. Efforts to reduce the number of traffic accidents based on the OSH Occupational Safety and Health approach is by early detection and prevention by cultivating OSH in driving such as the use of personal protective equipment (APD). OSH culture in driving should be done with promotion and training.

5 RECOMMENDATION



1. Primordial Prevention; Stabilization of Health Status (Underlying Condition) for example prohibition of sick people in driving.
2. Primary Prevention; Education and information dissemination on traffic for example, Health Promotion, protection of motorists against danger (wearing helmet, gloves, etc.)
3. Secondary Prevention; Preliminary diagnosis and treatment are appropriate, for example, case finding, and rational and effective drug delivery to accidental riders. Disability Limitations for example the installation of pins on broken limbs on the rider's body members who had an accident.
4. Tertiary Prevention form; Rehabilitation for example rehabilitation of disability with the provision of tools to the driver who is an accident (disabled)

6 ACKNOWLEDGEMENT

The author wishes to thank Indonesia Endowment Fund for Education (LPDP) Ministry of Finance Republic Indonesia who has funded this research and INTCESS 2018 activities that the authors follow. Moreover, the financial education of UGM is also funded by LPDP so that the author appreciates to the chance on getting study in this graduate level.

REFERENCE LIST

- Fikri, R. et al. (2015). *Karakteristik Pasien Kecelakaan Lalu Lintas Yang Datang Ke Puskesmas Tampaksiring I*.
- Haghighi, M. et al. (2016). *Safety Culture Promotion Intervention Program (SCPIP) in an oil refinery factory: An integrated application of Geller and Health Belief Models*. *Safety Science*, 93, pp.76–85.
- Mansuri, F.A. et al., 2015. Road safety and road traffic accidents in Saudi Arabia. , 36(4), pp.418–424.
- Mako, E. & Szakonyi, p. (2016). *Evaluation of Human Behavior at Pedestrian Crossings*. *Transportation Research Procedia*, 14, pp.2121-2128.
- Ramisetty-mikler, S., & Almakadma, A. (2016). *ScienceDirect Attitudes and behaviors towards risky driving among adolescents in Saudi Arabia*. *International Journal of Pediatrics and Adolescent Medicine*, 3(2), 55–63. <https://doi.org/10.1016/j.ijpam.2016.03.003>
- Snelling, & Anastasia. (2014), *Introduction to Health Promotion*, Jhon Wiley & Sons ; USA
- Suma'mur P. K. (1996). *Keselamatan Kerja dan Pencegahan Kecelakaan*. Haji Masagung.Jakarta
- Taylor, S. E., (2012), *Health Psychology* (8th edition). New York: McGraw-Hill Higher Education
- Tulashie, S. K., Addai, E. K., & Annan, J. S. (2016). Exposure assessment, a preventive process in managing workplace safety and health, challenges in Ghana. *Safety Science*, 84, 210–215. <https://doi.org/10.1016/j.ssci.2015.12.023>
- Leitao, S. & Greiner, B.A. (2016). Psychosocial, Health Promotion and Safety Culture management ??? Are Health and Safety Practitioners involved?.
- Sekretariat Negara Republik Indonesia. (1970). *Undang-Undang Republik Indonesia Nomor 1 Tahun 1970 Keselamatan Kerja*
- World Health Organization. World health ranking Road traffic accidents. Available at : (2013). <http://www.worldlifeexpectancy.com/cause-of-death/road-traffic-accidents/by-country/>