SEVERAL FACTORS ASSOCIATED BEHAVIOR DRIVERS AT THE CORPORATION OF A

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Abstract— Unsafe behavior driver is a driver's risk measures undertaken in all forms of traffic conditions can be or potentially cause an accident. Chevron Pacific Indonesia has conducted behavior based safety (BBS) to solve the problem of unsafe behavior. A survey conducted to 30 drivers at the Corporation of A found that 80% of drivers indicate unsafe behavior. The objective of this study is to detect the factors associating with unsafe behavior drivers at the Corporation of A. To achieve the objective, the design type is analytic cross sectional study. Population of study is 300 drivers working for the Corporation of A. Sample size is 215, which was calculated based on the design type of study, and it is taken from the population through systematic random sampling. Data were collected through structured interview by using questionnaire containing close ended questions. Analysis of one variable, two variables and multiple logistic regression analysis were conducted to detect dominant variables associated with unsafe behavior.
The result of study shows that less *supervision* from management to drivers is more risky 5.7 times to have unsafe behavior driver compared to sufficient supervision (CI 95%: OR = 1,1-34,3). In this case there is one confounding variable namely *perception*. Conclusion: Less supervision from management to drivers affects unsafe behavior driver compared to sufficient supervision from management to driver. Recommendation: To prevent unsafe behavior driver, the management the Corporation A has to conduct sufficient supervision especially to motivate drivers having positive perception on BBS.

Keywords— Unsafe Behavior, Driver, Bbs Program, Supervision, Perception

I. INTRODUCTION

Unsafe behavior driver is a driver's risk measures undertaken in all forms of traffic conditions can be or potentially cause accident. Unsafe behavior is also called *at risk behavior*. Unsafe behavior occurring in a driver causes accidents including occupational accident. Most of occupational accidents (80%-95%) are caused by unsafe behavior (Cooper, 2001). According to Heinrich (1980), occupational accidents are caused by unsafe behavior (88%), unsafe condition (10%) and unknown (2%).

To decrease the occurrence of transportation accidents, it is necessary to use behavioral approach of driving which is called *Behavior Based Safety* (BBS) namely a program changing unsafe behavior to be safe behavior (Heinrich, 1980). The objective of BBS is to motivate the occurrence of behavioral change of every individual human. There are 3 main factors (Green, 1980) affecting behavior namely predisposing factors (knowledge, attitude, perception, convinced, age and sex), enabling factors (training, environment) and reinforcing factors (supervision, regulation, leadership and reward).

Chevron Pacific Indonesia (CPI) Corporation which is a large company in Indonesia has applied the BBS program decreasing transportation accidents for the company's workers in certain working area since the year of 2010. The one company collaborate with the CPI Corporation is the Corporation of A which conducts BBS program (Yarmansyah, 2015). In this corporation, unsafe behavior driver, as the criteria in evaluation of BBS program consisting of no travel planning, no pre-trip inspection, without using safety belt, high velocity driving, no keeping distance between the car, pedal brake suddenly, inappropriate moving traffic lane, no wide and far look, and inappropriate going back. The driver is unsafe behavior if he has 5 criteria of BBS or more, and he is save behavior driver, if he has less than 5 criteria of BBS.

On 10 – 11 February 2015, the first survey was conducted by the Chevron Pacific Indonesia Corporation for30 drivers of the Corporation of A implementing BBS program; it found that only 20% of drivers indicating to follow BBS and 80% of drivers do not follow BBS (unsafe behavior). The question is what factors are associated with unsafe behavior at the Corporation of A? To answer this question, the literature study was conducted from which the theoretical framework (hypothetic association between several factors and unsafe behavior) is depicted, followed by conceptual framework (hypothetic association between several independent varables and unsafe behavior), then specific research problems namely the question whether each independent variable is associated with unsafe behavior. Based on the specific research problems, the specific research objectives are as follows: To examine the association between knowledge, attitude, perception, age, training, supervision and regulation with unsafe behavior driver at the A Corporation.

II. METHODS

This study applies systematic research conducted in term of Red Line (Lapau, 2015) namely systematic study namely continuation of thinking starting from the title , objective, methods (type of study design, population, sample size calculation, sampling procedure and data analysis), results, discussion on quality and accuracy of data, causal relationship, implication, conclusion followed by recommendation and suggestion (Lapau, 2013). The implication uses the causal relationship directed to conclusion and recommendation. Conclusion contains development of knowledge, while the recommendation contains how to solve the finding problems. Based on the recommendation, suggestion is formulated through inter and multidiscipline approach producing innovative work for Master degree, and through inter, multi and trans-discipline approach producing creative and original work for Doctoral degree as expected by Kerangka Nasional Indonesia (Direktorat Jenderal Pendidikan Tinggi, 2011)) or Indonesian Qualification Framework (IQF) confirmed by the President of Republic of Indonesia in January 2012

Based on the objective of study, the design type of study is analytic cross sectional (Lapau, 2013), where independent variables and the dependent variable are collected at the same time to the drivers of the A Corporation. The dependent variable is *unsafe behavior driver*. The independent variables are knowledge, attitude and perception concernig the 9 criteria of BBS, age of driver, result of training driver on the 9 criteria of BBS, supervision from manager to driver, and regulation concerning the 9 criteria of BBS. Each independent variable is categorized to be risky category and normal category as follows: knowledge is less and sufficent, attitude is negative and positive, perception is negative and positive, age of driver is < 50 years and > 50 years, result of training driver is "do not yet understand" and "understand", supervision is less and sufficient, and regulation is "not adherence" and adherence.

Population of study is all (300) drivers working for the A Corporation. Sample size is calculated according to the design type of analytic cross study (WHO, 1986) for each of the 7 independent variables. In this case α error is 5% and β error is 10%.The largest sample size is 211 for the independent variable "attitude", but the sample size is decided to be 215 for this study. The sample of 215 drivers are taken from the population by systematic random sampling (Ariawan,1998).

Primary data concerning one dependent variable and 7 dependent variables as mentioned above are collected from 215 drivers of the A corporation. The technique of data collection is structured interview using the questionaire consisting of close ended questions (Fisher et al, 1983). Planning of data collection consists of 3 phases, 1) Phase 1: permission for the process of data collection, 2) Phase 2: collection of data; 3) Phase 3: handling of data (Varkevisser et al, 1970)

Analysis of data consists of one variable, two varibles and multiple logistic regression analysis (Mitra, 2015) . The objective of one variable analysis is to describe frequency of distribution of each category of variable, and to detect homogenous variable where the one of its categories is less than 15%. The objective of anaysis of two variables is to detect significant association between one independent variable and one dependent variable by calculating prevalence odds ratio (POR) at confident level of 95% (CI 95%). If (CI 95%: POR = > 1 - > 1) means significant association (danger); If (CI 95%: POR = < 1 - > 1) means no significant; If (CI 95%: POR = < 1- < 1) means significant (protection). The objective of multiple regression analysis is to detect confirmed independent variables associated with one unsafe behavior by conducting two phase namely bivariate selection and multivariate modeling. Multivariate modeling may find confounding variables.

IV. RESULT OF STUDY

Analysis: The analysis of one variable does not show any homogenous variable, and unsafe behavior in the Corporation of A was 49% - 59% in 2015. The analysis of two variables shows significant association between each of independent variables and unsafe behavior driver. The multiple logistic regression analysis shows that less supervision from management to the drivers is more risky to have *unsafe behavior driver* compared to sufficient supervision from management to the drivers (CI 95%: POR= 1.1 – 34,3). In this case *perception of drivers on BBS* is confounding to the *supervision from management to the drivers* (Table 1).

Table 1
MULTIVARIATE ANALYSIS (7TH OR LAST MODEL) FACTORS ASSOCIATED WITH *AT RISK BEHAVIOR* OF DRIVERS AT A CORPORATION

Independent Variable	p value	POR	(95% CI)
Knowledge	0,054	0,173	(0,029 – 1,025)
Attitude	0,153	2,491	(0,712 – 8,716)
Perception	0,679	0,835	(0,359 – 1,959)
Training	0,179	1,774	(0,769 – 4,090)
Supervision	**0,039**	6,127	(1,095 – 34,274)
Regulation	0,066	2,730	(0,937 – 7,958)
Age	0,871	1,055	(0..202 - 5.382)

V. DISCUSSION

Quality and accuracy of data: Quality of data consists of relevancy and and validity of data; accuracy of data consists of relevancy, validity, and reliability of data (Lapau, 2013). Validity cosnsists of external

validity and internal validity. External validity indicates how far the result of study from representative sample can be generalized to the population. Since representative sample exist in this study, as there is conducted systematic random sampling, the result of study can be generalized to population of 300 drivers at the A Corporation. Internal validity consists of random error and systematic error. Random error consists of α error and β error. In this analytic cross sectional study, by using α error 5% and β error 10%, the sample size is 211. Bias consists of selection bias, information bias and confounding bias. Based on population of 300 drivers in the Corporation of A, there is no selection bias; data collection was conducted as best as possible to decrease information bias. Confounding bias occurs because *perception of drivers on BBS* is confounding to *supervision from management to drivers.*

Reliability is consistency of the result of measurements by different person and different time. In this study, the reliability cannot be measured because collection of data is conducted only one time and by one person for the same questionnaire.

Causal relationship: Based on the result of multiple logistic regression analysis, *supervision from managenet to driver* is associated with *unsafe behavior driver* (CI 95%: POR= 1,1 – 34,3). Based on Hill Criteria (Beaglohole et al, 1993), Table 2 shows that temporal (+/-), plausibility (+), dose response relationship (-), strength of association (POR= 6.1), consistency (+) and design type of study (-), it is justified there is causal relationship between *supervision from management to driver* and *unsafe behavior driver*.

Implication (Figure 1): Supervision from management to driver has causal relationship with unsafe behavior driver: *less supervision from management to the drivers* affects *unsafe behavior driver* compared to sufficient supervision from management to the drivers. In this case *perception of drivers on BBS* is confounding to the *supervision from management to the drivers*: negative perception of drivers on BBS is associated with less supervision from management to drivers.

Table 2. A CAUSAL RELATIOSHIP BETWEEN INDEPENDENT VARIABLE AND THE OCCURRENCE OF *UNSAFE BEHAVIOR* AT THE A CORPORATION

No.	Butir Kriteria	Independent Variable
		Supervision
1.	Temporal	+/-
2.	Plausible (logical)	+
3.	Dose Response Relationship (based on continues data)	-
4.	Strength of Association (POR= prevalence odds ratio)	6,1
5.	Consistency	+
6.	Design Type of Study (analytic cross sectional)	--

Explanation:
+ means there is causal relationship
+/- means there may be or may be not causal relationship
- means there is no causal relationship

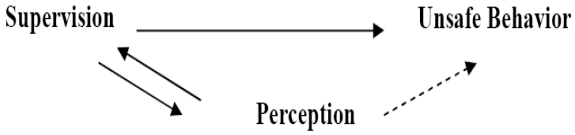


Figure 1. Causal Relationship between Supervision from Management to Driver and Unsafe Behavior Driver

So, to prevent unsafe behavior driver, management of the corporation of A has to conduct sufficient supervision especially to motivate drivers having positive perception on behavior based safety (BBS). Based on the recommendation, suggestions are formulated through inter and multidiscipline approach. Recommendation itself is the result of inter-discipline approach of epidemiology, research methodology, biostatistics, and data management. Supervision is activities studied by the discipline of health policy administration. Perception is a concept in the discipline of health promotion. The suggestion should be developed and formulated through inter-discipline of the last two disciplines as follows: 1) To intensify supervision system according to policy of the A Corporation; 2) To give reward for the save behavior driver; 3) To conduct punishment for unsafe behavior driver; 4) to plan and implement on the job training for motivation of drivers having positive perception on BBS.

CONCLUSION, RECOMMENDATION AND SUGGESTION

Conclusion: Unsafe behavior in the Cooperation o A was 49% - 59% in 2015: *less supervision from management to the drivers* affects *unsafe behavior driver* compared to sufficient supervision from management to the drivers.

Recommendation: to prevent unsafe behavior driver, management of the A corporation has to conduct sufficient supervision especially to motivate drivers having positive perception on BBS.

Suggestions: 1) To intensify supervision system according to policy of the Corporation o A; 2) To give reward for the save behavior driver; 3) To conduct punishment for unsafe behavior driver; 4) to plan and implement on the job training for motivation of drivers to be positive perception on BBS.

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