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Knowledge and Attitudes of Police and Medical Doctors in Central Lampung Regency Regarding Alcohol Level Test for Motor Vehicle Drivers

I Putu Suwartama Wiguna[a,b], Fitri Agustina Huspa[a], Yoni Fuadah Syukriani[a]
[a] Department of Forensic Medicine and Medicolegal, Faculty of Medicine Universitas Padjadjaran - dr. Hasan Sadikin Hospital; [b] Demang Sepulau Raya Central Lampung Regency Hospital

ABSTRAK

Kecelakaan lalu lintas adalah salah satu faktor penyebab kematian di dunia berdasarkan data *Global Status Report on Road Safety* yang diterbitkan oleh World Health Organization tahun 2018 dan tahun 2023. Salah satu faktor yang mempengaruhinya adalah alkohol, karena dapat mengganggu konsentrasi saat mengemudi. Berbagai negara berusaka menurunkan angka kejadian kecelakaan lalu lintas melalui pemeriksaan kadar alkohol pada pengendara. Indonesia adalah salah satu negara yang belum melakukan program tersebut, sedangkan angka kecelakaan lalu lintas masih tergolong tinggi. Contohnya adalah korban kecelakaan lalu lintas di Provinsi Lampung mengalami peningkatan antara tahun 2021 dan 2022, dan Kabupaten Lampung Tengah menempati urutan tertinggi ke-2 terjadinya kecelakaan lalu lintas di Provinsi Lampung. Upaya pemeriksaan kadar alkohol perlu keterlibatan pihak kepolisian dan rumah sakit, termasuk anggota kepolisian dan para dokter. Penelitian ini mendeskripsikan bagaimana pengetahuan, sikap, serta perilaku polisi dan dokter di Kabupaten Lampung Tengah terhadap pemeriksaan kadar alkohol pada pengendara yang mengalami kecelakaan lalu lintas. Desain penelitian yang digunakan adalah *mixed method* jenis *sequential explanatory*. Data kuantitatif tentang pengetahuan dan sikap dikumpulkan melalui kuesioner (n=77, 36 dokter, 41 polisi). Metode pengambilan sampel menggunakan *convenience sampling* yang dianalisis menggunakan perangkat lunak *SPSS ver.27.* Analisis data dilakukan secara univariat, bivariat (uji *Spearman*, uji *Mann-Whitney*, uji *Chi-square* dan *Fisher exact*), dan multivariat uji regresi logistik untuk menilai karakteristik yang dominan. Data kualitatif untuk memperjelas pengetahuan, sikap, serta perilaku dikumpulkan melalui wawancara dengan pengambilan sampel secara *purposive sampling*. Hasil penelitian menunjukkan ada perbedaan signifikan pengetahuan, sikap, dan perilaku antara polisi dan dokter (p<0,001); terdapat korelasi lemah antara pengetahuan dengan sikap serta perilaku polisi dan dokter (r=0,399), dan usia, masa kerja, jenis kelamin, pendidikan, dan pekerjaan memiliki korelasi cukup signifikan dengan pengetahuan, sikap, dan perilaku polisi dan dokter (p<0,05). Faktor usia memiliki hubungan paling dominan dengan pengetahuan (OR 3,4; p=0,02) pada polisi dan dokter. Data kualitatif menjelaskan bahwa dokter usia muda memiliki pengetahuan yang lebih baik, serta sikap dan perilaku yang lebih positif terhadap pemeriksaan kadar alkohol pada pengendara yang mengalami kecelakaan lalu lintas, dibandingkan polisi. Secara umum dapat disimpulkan bahwa ada perbedaan signifikan antara polisi dan dokter dalam pengetahuan, sikap, dan perilaku terhadap pemeriksaan alkohol pengendara yang mengalami kecelakaan lalu lintas. Kebijakan pemeriksaan alkohol pada pengendara perlu didahului dengan pendidikan kepada polisi dan dokter menggunakan pendekatan yang berbeda.

Kata kunci: pengetahuan, sikap, perilaku, pemeriksaan alkohol, kecelakaan lalu lintas.

ABSTRACT

Based on data from the Global Status Report on Road Safety published by the World Health Organization in 2018 and 2023, traffic accidents are one of the factors causing death in the world. One of the influencing factors is alcohol because it can interfere with concentration while driving. Various countries have tried to reduce the number of traffic accidents by checking drivers' alcohol levels. Indonesia is one of the countries that has not implemented the test routinely, while the number of traffic accidents is still relatively high. For example, traffic accident victims in Lampung Province have increased between 2021 and 2022, and Central Lampung Regency ranks 2nd highest in traffic accidents in Lampung Province. Efforts to check alcohol levels require the involvement of police agencies and hospitals, including police officers and doctors. This research describes the knowledge, attitudes, and behaviour of police officers and doctors in Central Lampung Regency regarding alcohol level tests in drivers who have experienced traffic accidents. The research used an explanatory sequential mixed method design. Quantitative data regarding knowledge and attitudes were collected through questionnaires (n=77, 36 doctors, 41 police officers). The convenience sampling approach was used as the sampling method, then analyzed using SPSS ver.27. Data analysis was carried out using univariate, bivariate (Spearman test, Mann-Whitney test, Chi-square and Fisher exact tests), and multivariate logistic regression tests. Qualitative data to explain the knowledge, attitudes, and behaviour were collected through interviews through purposive sampling. The results showed that there were significant differences in knowledge, attitudes and behaviour between police and doctors (p<0,001); there is a weak correlation between knowledge and attitudes and behaviour of police and doctors (r=0,399). Age, length of service, gender, education, and occupation significantly correlate with the knowledge, attitudes and behaviour of police and doctors (p<0,05). The age factor has the most dominant relationship with knowledge (OR 3,4; p=0,02) in police and doctors. Qualitative data explained that young doctors have better knowledge, as well as more positive attitudes and behaviour towards alcohol level tests, compared to that of the police and older doctors. It can be concluded that there are significant differences between police and doctors in knowledge, attitudes and behaviour towards alcohol level tests of drivers involved in traffic accidents. It is suggested that the alcohol testing policy for drivers needs to be preceded by education for police and doctors using a different approach.

Keywords: knowledge, attitude, behaviour, alcohol test, traffic accident.

Background

Traffic accidents are unexpected events that can cause injury to body organs ranging from mild to severe and even cause death. It's a problem that is still difficult to solve in every country. According to the Global Status Report on Road Safety published by WHO in 2018, the death rate due to traffic accidents in the world in 2016 reached 1,35 million (18 deaths per 100.000 population).[1] The impact of traffic accidents is extensive, including economic aspects such as life insurance financing and medical aspects related to handling injuries to victims, whether light, moderate or severe, which can cause disability or even death.

The relationship between alcohol as a risk factor causing traffic accidents has been proven to be significant. It might affect the central nervous system, which can cause cognitive, judgment, memory impairment, relaxation, sensory disorders (for example, balance, speech, vision, reaction time, and hearing), and motor disorders.[2] The Global Status Report on Road Safety 2018

suggested that reducing blood alcohol concentration from 0.1 g/dl to 0.05 g/dl could contribute to a 6-18% reduction in alcohol-related road traffic deaths[1], while alcohol use in the world based on the Global Alcohol and Health Report (WHO 2018), total alcohol consumption per capita (APC) worldwide among those aged 15 years and over increased from 5.7 litres in 2000, to 6.4 litres in 2016[3]. In Indonesia, there has been a downward trend in the last 5 years, based on reports from the Central Statistics Agency from 2018 to 2022. However, it is still relatively high because several regions in Indonesia have very high consumption data, such as the eastern part of Indonesia, due to alcohol consumption as a habit of customs[4].

Several countries have set blood alcohol concentration thresholds for drivers under the influence of alcohol, such as Australia and Malaysia. Still, several countries have not set threshold values for blood alcohol concentration, such as Indonesia, Bangladesh, Pakistan, and several other countries. [1,8]

The death rate due to traffic accidents in Indonesia reaches 12 deaths per 100,000 population or topping ranks 8th out of the 10 leading causes of death.[1] The limit value for alcohol concentration for drivers, whether in the blood or the respiratory tract, has not been stipulated in the Indonesian traffic law. There is no statistical data on the number of traffic accidents due to the influence of alcohol from police agencies or hospitals [3,6] Therefore, there has never been any data on alcohol tests being carried out on drivers involved in traffic accidents because it is very dependent on the knowledge, attitude and behaviour of police officers and doctors who receive victims at the hospital.

Based on data from the Traffic Directorate of the Lampung Province Police Headquarter for the period 2021 to 2022, from January to September, traffic accident casualties in Lampung Province increased from 1,272 victims (502 fatalities, 558 seriously injured, and 1164 minor injuries) in 2021 to the total number 1,439 victims (526 deaths, 822 seriously injured, and 1310 minor injuries) in 2022. While Central Lampung Regency has the 2nd highest number of traffic accidents in Lampung Province, reaching 203 victims (67 fatalities, 132 seriously injured victims) [6,8], it was also suspected to have a high alcohol consumption.[9,10] This study focuses on the level of knowledge, attitudes and behaviour of police and doctor groups regarding alcohol concentration examination in traffic accidents. Central Lampung Regency as a research location is based on the 2nd highest ranking of traffic accidents in Lampung Province.[4,6]

Methodology

Research Design

This research uses sequential explanatory mixed method designs by collecting and analyzing quantitative data, followed by collecting and analyzing qualitative data.

Research Subject

There were two populations targetted in this research, which were medical doctors and police officers in Central Lampung Regency with the following inclusion criteria to become research subjects:

1. Doctor subjects: doctors that work in the emergency unit at hospitals in Central Lampung Regency and have experience (at least once) in managing patients from traffic accident cases;
2. Police subjects: police who were still actively serving in the traffic unit in the Central Lampung Regency Police Office and had experience (at least once) in managing traffic accident cases.

The exclusion criteria for both were those unwilling to participate in the research, and the drop-out criteria were if the respondent could not continue filling out the questionnaire or interview.

Since the total number of medical doctors and police officers was 38 and 55, respectively, *stratified random sampling* was used,[11,12] resulted in the sample number for medical doctors and police officers being 30 and 45, respectively. Respondents for the qualitative study were sampled from those included in the qualitative study using a purposive sampling approach[13,14], with a structured interview and the researchers as the analysis instruments[11].

Questionnaire

The authors constructed the questionnaire based on literature analysis, which resulted in 12 questions to assess the knowledge regarding alcohol tests for drivers (knowledge questionnaire) and 12 questions and statements to assess attitudes towards the importance of alcohol level tests for drivers (attitudes questionnaire)(see Supplementary Material 1). Both questionnaires comprised the aspects of traffic accidents as a cause of death, driving under influence (DUI) as a cause of traffic accidents, the epidemiology of traffic accidents and alcohol consumption, the impact of alcohol on driving, the alcohol concentration threshold; the alcohol tests (blood alcohol and breathalyzer); and the regulation related to driving under alcohol influence (see Appendix). The knowledge was considered "good" if the percentage of correct answers was the same as average or higher and "not good" if it was less than average. The questions in the attitude questionnaire were constructed to reveal positive or negative attitudes by answering "Totally not agree", "Not agree", "Agree", and "Totally agree" and calculated as Likert scale. The respondents' attitude is considered positive towards the alcohol test if the percentage agrees with positive answers to questions and statements. Before distributing the questionnaire, a validity test was conducted on 30 people taken from outside Central Lampung Regency, which was then analyzed, and improvements were made through expert judgment. All questionnaires were distributed using Google Forms.

Statistical analysis

The questionnaire results were analyzed univariately to describe the respondent profile, bivariate through the Mann-Whitney and comparative tests using the Chi-square and Fisher exact test, and multivariate logistic regression to show the most dominant factors influencing knowledge and attitudes. Statistical analysis was performed using IBM SPSS Statistics v.27 software.

Qualitative data

Qualitative data was collected using structured interviews that cover issues regarding respondents' experience in handling victims or drivers involved in traffic accidents suspected to be related to driving under alcohol influence, experience in alcohol level tests for drivers, how the respondents describe the importance of alcohol level test for drivers; how their experience influence their attitudes towards alcohol tests; the importance of regulation of alcohol tests for drivers; the importance of collaboration between healthcare facilities and police authority in alcohol tests and its possible problem; and the recommendation towards the issue of alcohol tests for drivers. Qualitative data was then analyzed using an interactive approach of data reduction, data display, and drawing conclusions. [12,15]

Results

Based on the data collected, the total number of respondents in the quantitative analysis was 77 respondents who met the inclusion criteria, comprised of 31 medical doctors from four

hospitals in Central Lampung Regency and 46 police officers from the Central Lampung Regency Police Office. The profile of the respondents can be seen in Table 1.

Table 1. Respondents' Profile

Category	Numbers	Percentage (%)
Total number of respondents	77	100%
Occupation:		
Medical doctors	31	40,3%
Police officers	46	59,7 %
Gender:		
Male	55	71,4%
Female:	22	28,6%
Age (years old; y.o.):		
<30 y.o.	26	33,8%
30-40 y.o.	34	44,2%
>40 y.o	17	22,1%
Pre-professional education:		
Highschooler	21	27,3%
Bachelor	56	72,7%
Years of service:		
<5 years	40	51,9%
5-10 years	18	23,4%
>10 years	19	24,7%

The results of the knowledge-questionnaire were calculated based on the percentage of correct answers. In general, the mean percentage is relatively high (74 ± 11,41). Of the 12 questions, the question that most respondents were unable to answer was regarding the average alcohol concentration levels that could have an impact on a person (wrong answers up to 83%). The difference in knowledge level between medical doctors and police officers is highly significant ($p<0,001$), with averages of 84.6 ± 6.59 and 66.9 ± 7.8, respectively.

Results of the attitude-questionnaire were also calculated based on the percentage of positive attitudes towards alcohol tests for drivers. The difference in attitude percentage between medical doctors and police officers is highly significant ($p<0,001$), although with less gap of 73,45 ± 2,8 and 65 ± 7,9, respectively.

Chi-square analysis showed the correlation between occupation, gender, age, pre-professional education, and years of service variables with knowledge and attitude, displayed in Table 2.

Table 2. Correlation between occupation, gender, age, pre-professional education, years of service with knowledge and attitude

Category	Knowledge		*p*	Attitude		*p*
	Good	Not good		Positive	Less Positive	

Occupation							
	Polisi	12 (24,5%)	34 (21,5%)	0,001	12 (25,1%)	34 (20,9%)	0,001
	Dokter	29 (16,5%)	2 (14,5%)		30 (16,9%)	1 (14,1%)	
Age							
	<30 y.o.	24 (13,8%)	2 (12,2%)		22 (14,2%)	4 (11,8%)	
	30-40 y.o.	15 (18,1%)	19 (15,9%)	0,001	12 (18,5%)	22 (15,2)	0,001
	>40 y.o.	2 (9,1%)	15 (7,9%)		8 (9,3%)	9 (7,7%)	
Gender							
	Male	21 (29,3%)	34 (25,7%)	0,001	23 (30%)	32 (25%)	0,001
	Female	20 (11,7%)	2 (10,3%)		19 (12%)	3 (10%)	
Basic education							
	Highschool	3 (11,2%)	18 (9,8%)	0,001	7 (11,5%)	14 (9,5%)	0,38
	Bachelor	38 (29,8%)	18 (26,2%)		35 (30,5%)	21 (25,5%)	
Years of service							
	<5 years	29 (21,3%)	11 (18,7%)		33 (21,8%)	7 (18,2%)	
	5-10 years	9 (9,6%)	9 (8,4%)	0,001	5 (9,8%)	13 (8,2%)	0,001
	>10 tahun	3 (10,1%)	16 (8,9%)		4 (10,4%)	15 (8,6%)	

The results of the Chi-square test and Fisher exact test demonstrate that occupation, age, gender, education and years of service have a highly significant correlation with knowledge and attitudes towards alcohol level test for drivers (p=0,001), except the pre-professional education variable that showed no correlation (p=0.38). Overall, knowledge and attitude showed a weak correlation (n=77; Spearman rank r=0,399)

As for multivariate analysis, logistic regression analysis estimated that age was the most correlated variable to knowledge (OR 3,4; p=0,02).

Based on the permit from the Central Lampung Police Headquarter, only one police officer respondent could be interviewed as an informant (age >40 years, bachelor degree, 5-10 years of service, with a negative attitude towards alcohol level test for drivers). From the medical group, 12 respondents were interviewed (aged <30 and 30-40 years old, <5 and 5-10 years of service, with a positive attitude towards alcohol level tests for drivers).

The interview confirmed that the police informant was unable to explain adequately about alcohol testing, concerning how to do it, the tools used, the concentration level value, the purpose of the alcohol test, service standard and the regulations on alcohol testing, because this is something new for the informant. Moreover, the informant explained that since alcohol level tests are not regulated, police officers do not use them as parameters in performing their duty on the street. In contrast, most medical doctor informants were able to explain the issues well. Regarding the service standard for alcohol level tests, most medical doctors demonstrate an adequate understanding that although there is a service standard, inadequate facilities and infrastructure hamper this in hospitals. The police informant acknowledged that he did not have sufficient knowledge compared to medical personnel.

Discussion

The factors causing traffic accidents are human factors, vehicles, roads, and the environment.[16] According to Haddon et al.[17], the actions that need to be taken are preventing accidents, preventing injuries and severity, and reducing bad outcomes. Measurement of alcohol

concentration can be done at various stages. At the prevention stage, routine alcohol level tests can be carried out during highway patrols through a rapid test (e.g. breathalyzer) or when an accident occurs after the accident to ensure blood alcohol concentration, which can only be done in a hospital.

The process involves police officers and doctors who examine victims, including drivers, especially when traffic accidents occur and after the accident. The study results generally show that although knowledge is quite good (average percentage 74 ± 11.41), and based on interviews, it appears that this knowledge cannot be implemented because there is no regulatory framework to perform alcohol tests on drivers, including when it is suspected to be the cause of an accident. Even the lack of knowledge among police officers is likely also related to the absence of regulations that require them to think about an objective examination of alcohol level to prove traffic law violations.

The Indonesian Traffic and Road Transportation Law (Law Number 22/2009) article 283 regulates that if a driver is driving under the influence of something that interferes with the driver's focus concentration, even if it does not cause an accident, the driver will still be charged with violating the Law. If it causes injuries (minor injury to death), the driver will receive severe prosecution, from a maximum sentence of 4 to 12 years imprisonment. Although alcohol consumption in Indonesia between 2018-2022 tended to decrease[4], in several areas, including Central Lampung, the level of alcohol consumption is relatively high, which is due to the widespread circulation of alcoholic beverages in Indonesia and because alcohol consumption is a local tradition. [9,10]

Epidemiological studies have shown that 40–60% of all seriously injured drivers had a blood alcohol concentration (BAC) of 0.1 g/dL, and 30–40% of them had a BAC > 0.15 g/dL.[18] The WHO has explained in the Global Status Report On Road Safety 2018 that reducing blood alcohol concentration from 0.1 g/dL to 0.05 g/dL could contribute to a 6–18% reduction in alcohol-related road traffic deaths.[1]

Some countries have set a blood alcohol concentration threshold for drivers under the influence of alcohol. In Australia, the blood alcohol concentration threshold is 0.05 g/100 ml, while in Malaysia, it is 0.05 g/100 ml, and in other countries might have used different alcohol concentration threshold value.[1,19] The absence of regulations on the threshold in Indonesia raises questions such as how Article 283 of the Traffic Law can be implemented. Proving that drivers have caused accidents based solely on the smell of alcohol or from their guilty plea when they are arrested is certainly inadequate and is subjective evidence. Accident prevention through routine road checks is also challenging because no screening mechanism has been applied. The results of the questionnaire and interviews that confirmed the lack of knowledge and positive attitudes of police officers towards alcohol testing for drivers indicate the absence of encouragement from the regulatory framework and facilitation. This also has consequences; although most doctors know the principles of the examination, it is still difficult to implement their knowledge.

The Indonesian government has not yet set a limit on alcohol concentration levels in the blood or breath of motor vehicle drivers.[1,7] Learning from Malaysia as a sister country, to reduce the number of traffic accidents, legislation regulates a mechanism for measuring the driver's alcohol concentration, which involves related sectors, including the police, doctors and hospitals, to assess the impact on traffic accident victims.[5,19,20]

Multivariate analysis showed that age has a dominant relationship with knowledge. It indicates that the younger generation has more knowledge than the former, and Indonesia can

potentially improve the situation. However, the authors still see the importance of regulation in putting pressure on implementing traffic accident prevention norms and legal certainty in enforcing the law on traffic accident cases caused by DUI. Regulation on checking the alcohol level in drivers will encourage stakeholders to acquire better knowledge, which will ultimately promote the formation of better attitudes and, most importantly, appropriate behaviour.[21] The results also indicate that the generational gap might be a factor that should be considered when preparing training material or policy socialization involving different generational groups.

Study limitations

This research has several limitations, including the lack of interest in studying the subjects, which makes it difficult to compare the results with other references. The qualitative data from the police perspective was lacking due to the number of police informants, which was only one. Moreover, the interview did not involve external stakeholders, such as the government (local and central), members of parliament, hospital directors, and alcohol toxicologists.

Conclusion

The study showed significant differences between police and doctors in knowledge and attitudes towards alcohol level tests of drivers. The most dominant factor in adequate knowledge and positive attitude is the younger age. Adequate knowledge from doctors will not be optimally utilized without regulations regarding alcohol level tests for drivers. The study results showed that training regarding alcohol level tests policy for drivers must be carried out considering age factors. These findings can be the basis for evaluating the right approach for police officers and medical doctors. However, it implies that regulations on alcohol concentration tests for drivers are essential to be able to encourage increased knowledge for stakeholders, especially police officers, both to prevent traffic accidents related to DUI and for an objective and proper traffic violation due process.

Research Ethics Clearance

The protocol for the research has been reviewed and received approval from the Universitas Padjadjaran Research Ethics Committee #290/UN6.KEP/EC/2024, dated March 15, 2024. Universitas Padjadjaran Research Ethics Committee has been acknowledged by the WHO-Sidcer Fercap #ID-008 since 2014.

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