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YOUNG DRIVERS UNDER THE INFLUENCE OF ALCOHOL AND THEIR IMPACT ON THE ROAD TRAFFIC SAFETY

Summary. We have to consider the fact that alcohol is a legal drug. The spread of alcohol consumption reflects also in the road traffic safety; nevertheless, alcohol is a significant factor in traffic accidence occurrence, especially in those with serious consequences. In the last few years traffic crashes with fatalities are just following one another and are mostly caused by drivers who consumed alcohol. Adolescents between ages 15 and 24 are one of the most endangered groups of people in traffic, especially drivers and passenger between ages 15 and 24. Adolescents tend to acquire drivers licence as soon as possible in order to enter into drivers' world. Young drivers as participants in traffic represent a bigger danger as they consume alcohol and drive, than older experienced drivers with the same level of alcohol in blood. We have precisely examined the topic on traffic accidents, young drivers and alcohol intoxication in our country and abroad. We have also carried out a field investigation – conducted a survey in the district Nova Vas - Celje. We came to conclusions which we found very much disturbing as they based on the analysis of results and processed information.

Keywords: Alcohol, road traffic safety, adolescents, young drivers, traffic accidents

NIETRZEŹWI MŁODZI KIEROWCY I ICH WPŁYW NA BEZPIECZEŃSTWO RUCHU DROGOWEGO

Streszczenie. Musimy wziąć pod uwagę fakt, że alkohol jest legalnym narkotykiem. Rozprzestrzenianie konsumpcji alkoholu oddziałuje również na bezpieczeństwo ruchu drogowego. Alkohol jest istotnym czynnikiem wystąpienia wypadków, zwłaszcza tych o poważnych konsekwencjach. W ciągu ostatnich kilku lat wypadki z ofiarami śmiertelnymi następują jeden po drugim i są głównie spowodowane przez kierowców spożywających alkohol. Młodzież w wieku pomiędzy 15 i 24 rokiem życia jest jedną z najbardziej zagrożonych grup w ruchu, zwłaszcza kierowcy i pasażerowie w wieku 15 i 24 lat. Młodzież ma tendencję do zdobywania prawa jazdy jak to tylko możliwe, aby wejść do świata kierowców. Młodzi kierowcy, jako uczestnicy ruchu stanowią większe zagrożenie spożywający alkohol i prowadząc, niż kierowcy z większym doświadczeniem z taką samą zawartością alkoholu we krwi. Ten temat dokładnie zbadaliśmy na wypadkach drogowych,

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młodych kierowców w naszym kraju i za granicą. Przeprowadziliśmy również śledztwo terenowe – badanie w dzielnicy Nova Vas – Celje. Na podstawie analizy wyników i przetwarzanych informacji doszliśmy do konkluzji, które wydają się być bardzo niepojące.

Słowa kluczowe: Alkohol, bezpieczeństwo ruchu drogowego, młodzi kierowcy, wypadki drogowe

1. INTRODUCTION

Alcohol as a drug type has made its way through centuries and in the recent years became a permanent and indispensable part of all major events in our society, whether happy or sad. Parallel to this fact it is important to emphasize that we are daily witnesses to traffic accidents, caused by drunk drivers. Alcoholism represents a special issue in traffic safety. The fact is that road traffic every day requires more and more attention and concentration of the driver, and alcohol is the one that blocks this ability and requirements. Alcohol heavily affects those human capabilities, which are the most important for operating a vehicle.

Young people aged from 15 to 24 are one of the most vulnerable age groups in traffic. This applies especially to young drivers and passengers aged from 18 to 24. Talking about vulnerability of young drivers, we have to be aware that the situation can worsen with fast economic growth, which will give young people more opportunity to own a car. The issue, which needs far more attention, is alcohol intoxication among young drivers. Increased vulnerability of young drivers is being recognized in all states of the European Union.

It is important to mention that the majority of all traffic accidents, caused by young drivers, happen at night, when they return from parties – they already have little driving experience, especially in night driving. Accidents usually happen near home, since adolescents are convinced that they know the neighbourhood and all the dangers that may occur, but under the influence of alcohol they fail to adequately and timely respond to the situation. Adolescents frequently overestimate their driving abilities, especially under the influence of alcohol and other psychoactive substances.

2. INTOXICATED YOUNG DRIVERS AND THEIR PARTICIPATION IN ROAD TRAFFIC

The road traffic condition is by no means acceptable. One of the reasons is that almost the entire population is involved in it. The car purchase price and method nowadays are no longer a problem for almost a majority of the population of the Republic of Slovenia. The driving culture, way of candidate's education in various driving schools, no further education after the examination, the availability of alcohol to almost everybody (even primary school students), the lack of traffic areas, overcrowding of roads with sometimes dubious traffic signalling and deficiencies of individual vehicles create preconditions for numerous problematic situations.

According to researchers we should consider that traffic safety (or its estimation) depends on [1]:

- completely autonomous factors affecting the number of accidents, such as the weather, natural resources, price of fossil fuels, state of the technology, size of the country and population;
- numerous socio-economic factors that affect the safety level, where some are considered as factors in the development of the traffic policy, while others often are not;
- the structure and numerosity of the traffic sector and its elements; the majority of this information is important to acknowledge the exposure, since it was for example ascertained that the severity of accidents is increasing with the number of freight vehicles in the traffic flow; to estimate the state of traffic safety we would need information on the state of traffic roads, vehicles, public transport in number of transported passengers, state of repair activities for vehicles, driving school system and acquisition of driving licenses;
- the quality of statistical data and their systematic collection; any change in the criteria or methods of data acquisition can affect the assessment of the traffic safety state;
- the amount and possibilities to generalize the available data; in Slovenia it is important to consider that we are talking about small numbers, especially when we discuss individual groups of participants in road traffic (e.g. children), where it is difficult to determine the legalities and perform measures based on the frequency of a particular event; the locations of fatal accidents are therefore not the best criterion to determine a point of danger and carry out measures, it is necessary to consider all accidents, including those where there has been only material damage;
- measures, aimed directly towards the improvement of safety (technical measures, repressive measures, improvements on vehicles).

In all researches, which regulated mutual relations between factors and their impact on the occurrence of accidents, they found out that human as a participant is the most important factor in traffic [2].

Human in road traffic is mostly affected by the following factors: personal characteristics of the driver or pedestrian, physical and mental characteristics, education and culture. Today it is easier to get a driving license, which represents a ticket for active participation in traffic. The work of educational institutions should also be to address key questions in the field of alcoholism among young drivers in road traffic.

Everyone should be aware that he is not alone on the road and that he can due to the failure to comply with traffic rules or improper behaviour on the road endanger others, not only himself [3].

2.1. Alcohol and traffic safety

Alcohol use in traffic, whether by drivers, pedestrians, cyclists or motorcyclist increases the likelihood of accidents. The risk of accidents increases with the increase of the concentration of alcohol in the blood [4].

Unfortunately, the widespread use of alcoholic beverages is also reflecting in road traffic safety. Alcohol is an important factor of accidents, especially those with the worst consequences. In recent years every third fatal traffic accident was caused by an intoxicated participant in road traffic. Since Slovenia is an independent state, more than 2100 people died in accidents, caused by an intoxicated participant [5].

Alcohol affects all human functions, important for a safe participation in road traffic: it decreases the perception, we make false estimation of the distance and improperly or slowly react to traffic situations, the perception of the colour red worsens, we are less flexible to light changes, less careful, the reaction time increases, disturbances in balance occur and the viewing angle narrows.

We state some of the characteristics of the driving of drunk drivers with more than 0.5 per mille of alcohol in the blood: stopping in the traffic lane with no reason, too short safety distance, turning with a larger radius, driving in another and not in the indicated direction, driving on the median line, slow response to traffic signals, switched off lights, the signalization is not aligned with the driver's behaviour, rapid changes in acceleration or deceleration, too slow or too high speed, improper stopping, aimless braking, improper turning etc.

The following figure (Figure 1) shows the level of risk for the occurrence of traffic accidents, depending on the amount of alcohol in the blood.

The impact of alcohol on the driver's abilities and behaviour [6]:

- 0.2 grams of alcohol per kilogram of blood means: the ability of observation of moving lights is getting worse.
- 0.3 grams of alcohol per kilogram of blood means: the ability of deep observation and correct choice of a safe distance worsens. The criticality of own behaviour and self-control decreases. The willingness to take risks increases, possibly also the aggressiveness.

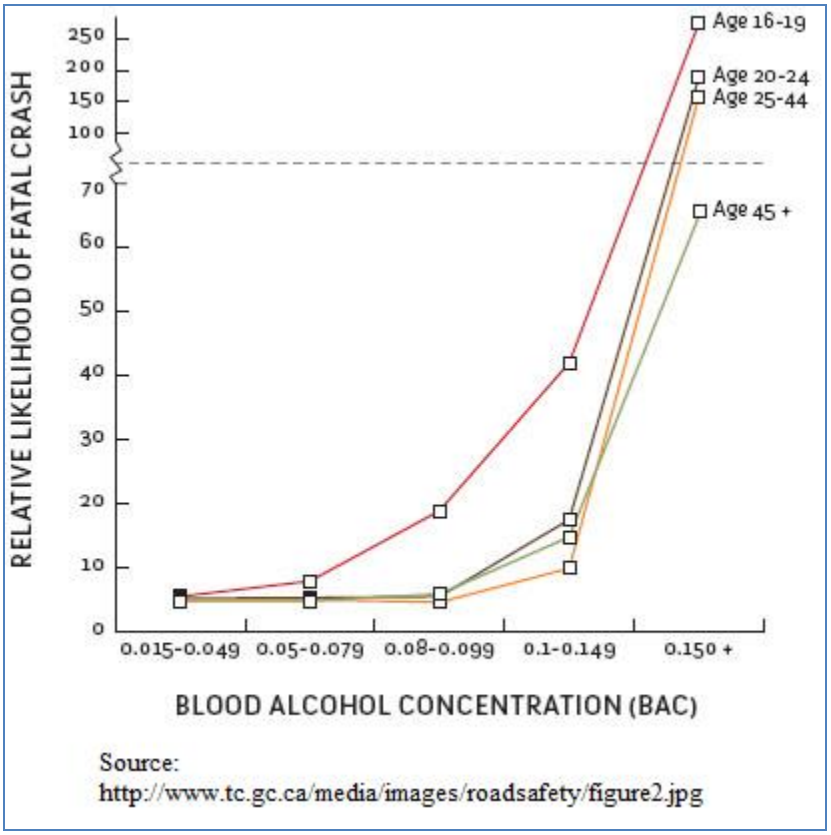

Fig. 1. The relative risk for fatal traffic accidents, depending on the level of alcohol in the blood
Rys. 1. Względne ryzyko wypadków śmiertelnych, w zależności od poziomu alkoholu we krwi

- 0.5 grams of alcohol per kilogram of blood means: objects, observed by the driver, appear more distant than they really are. The so-called red blindness appears. It gets increasingly difficult for the driver to perceive the red light, vehicle identification lights, brake lights and markings which signal obstacle on the road etc. The ability to quickly direct the view from one object to another is decreasing. Adapting to rapid light changes is getting difficult. The attention and ability for timely reaction are considerably decreased. Disturbances of balance appear which is especially dangerous for those, who drive vehicles with two wheels. The driver starts to wrongly estimate the speed of vehicles. Most people with 0.5 g/kg alcohol in blood fail to decide not to drink anymore.
- 0.8 grams of alcohol per kilogram of blood means: the response time and with it the stopping way increase. The reaction time is extended for 35–50%. The ability to concentrate significantly decreases. The visual acuity is reduced up to 25%. The narrowing of vision, the so called tunnel vision appears. The state of euphoria appears. The driver is not any longer under the control and overestimates his abilities. The abilities of spatial perception and evaluation of the distance of vehicles and objects that are approaching decrease. The driver can no longer direct his view.
- Higher concentrations: the number of mistakes increases and the above stated conditions are getting worse.

2.2. Young drivers

Young drivers enter as motor vehicle drivers into the biggest group of participants in traffic; and a young driver is at the same time a beginner driver.

Beginner drivers are all motor vehicle drivers: until they are twenty one years old, two years from the acquisition of the driving licence, regardless of whether they obtained it in the Republic of Slovenia or abroad, two years after first obtaining the driving licence to drive motor vehicles of categories A2 or A or B, although they already have the licence to drive motor vehicles of any other category more than two years.

The main difference between young drivers or beginner drivers and other drivers is the experience. The beginner driver has only a few ten hours of driving experience in traffic, which took place under the watchful eye of an instructor in his home town, familiar to him. An experienced driver has already travelled many miles, many on unfamiliar roads. This does not mean that every driver after a certain number of hours of individual driving perfectly masters the traffic situation.

2.3. Characteristics of traffic accidents of young drivers in correlation with intoxication

Young people aged 15 to 24 are one of the most vulnerable age groups in traffic, this applies especially to young drivers and passengers, aged from 18 to 24. Talking about vulnerability of young drivers, we have to be aware that the situation can worsen with fast economic growth in Slovenia, which will give young people more opportunity to own a car.

Researches show, that we can classify the intoxicated responsible for car accidents into two groups. The first group includes adolescents aged from 16 to 20 and the second group includes multiple offenders and alcohol addicts [7].

It is important to mention that the majority of all traffic accidents, caused by young drivers, happen at night, when they return from parties – they already have little driving experience, especially in night driving. Accidents usually happen near home, since adolescents are convinced that they know the neighbourhood and all the dangers that may occur, but under the influence of alcohol they fail to adequately and timely respond to the situation.

Adolescents frequently overestimate their driving abilities, especially under the influence of alcohol and other psychoactive substances [8].

In Europe around 3% of all trips are associated with driving under the influence of alcohol, while about 30% of all injured drivers are under the influence of alcohol. Alcohol is one of the main factors, which contribute to traffic accidents and is as such on the rise. The danger of alcohol use is also being recognized by road users themselves. 85% of European drivers think that alcohol is often or always the cause of accidents – this is the opinion of 93% of Swedish drivers, the rate of German drivers with such an opinion is lower, 72%. Despite such an awareness level that alcohol in connection with driving is problematic, the issue remains.

Adolescents cause many traffic accidents under the influence of alcohol, since they are inexperienced. They are also inexperienced alcohol consumers – it is more likely that they in addition to alcohol consume other illicit drugs, which give them a false sense of invincibility and immortality, which badly ends in traffic.

Researches show that young people mostly consume alcoholic drinks at parties, in various clubs, private parties, by friends at home. Alarming is the fact that they also do it in the vicinity of schools [9].

Data, shown in Figure 2, which defines the most common causes for death of people in individual age groups, was contributed by member states of the Organisation for Economic Co-operation and Development (OECD). The members are: Austria, Belgium, Denmark, France, Greece, Ireland, Island, Italy, Canada, Luxemburg, Germany, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, United Kingdom, the USA. Later they were joined by Japan, Finland, Australia, New Zealand, Mexico, Czech Republic, South Korea, Hungary, Poland, Slovakia and Chile. From this year Slovenia is also a member of the OECD. The invitation to join the organization came in 2007.

We can see from the legend that the yellow field indicates disease as cause of death, the red one traffic accidents, the white one other accidents, the black one suicides, the blue one homicides and the light blue one other external causes. The age group, in which we are most interested in the figure below, is the group of people aged from 15 to 24, since it is the subject to this research. We can see that the majority of people in these age groups die in traffic accidents, which is alarming. The percentage of young people, who die in traffic accidents, deviates significantly from other age groups. This age group is also more susceptible for other accidents, homicides and suicides.

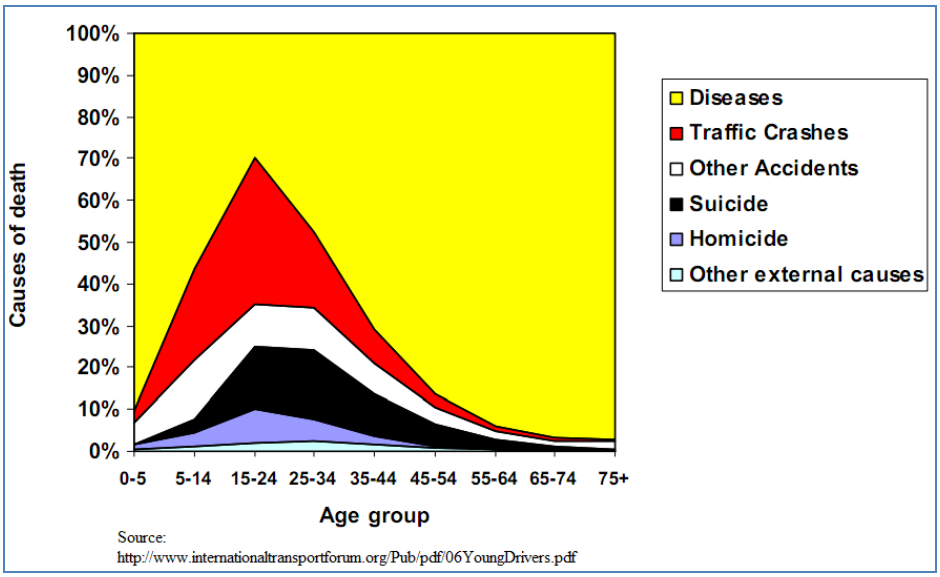

Fig. 2. Causes of Death in OECD Countries
Rys. 2. Przyczyny zgonów w krajach OECD

Figure 3 shows fatalities in traffic accidents by age groups per million people in a particular group. The OECD member states contributed data, which was collected and presented in the following figure. As we can see, the largest percentage of fatalities is in the age groups 18–20 and 20–24. The member states agree that such a high rate of mortality in traffic accidents can be attributable to young drivers due to the lack of experience, overestimation of abilities and the usage of alcohol and other psychoactive substances.

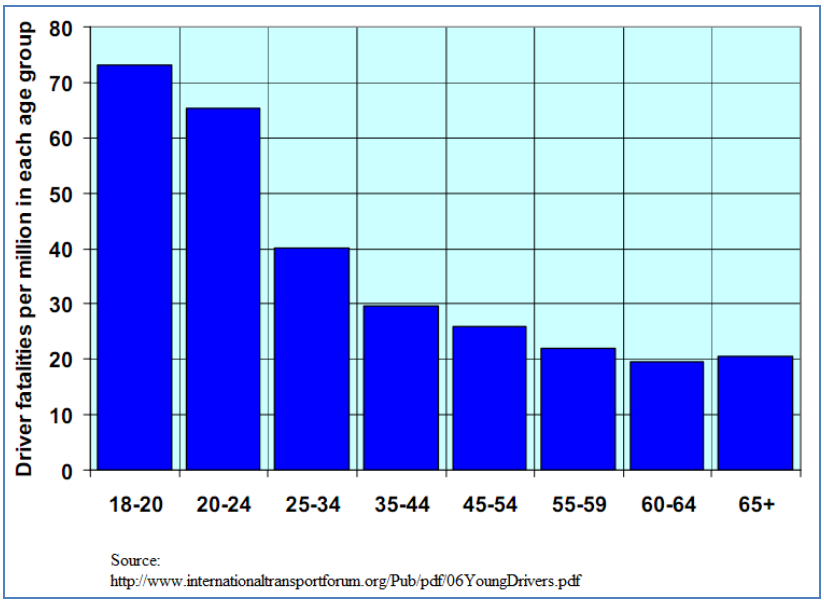

Fig. 3. Driver fatalities per million for different age groups in selected OECD and ECMT countries where solo driving begins at 18 years
Rys. 3. Ofiary śmiertelne dla różnych grup wiekowych w wybranych krajach OECD i ECMT, gdzie uprawnienia do samodzielnej jazdy uzyskuje się w wieku 18 lat

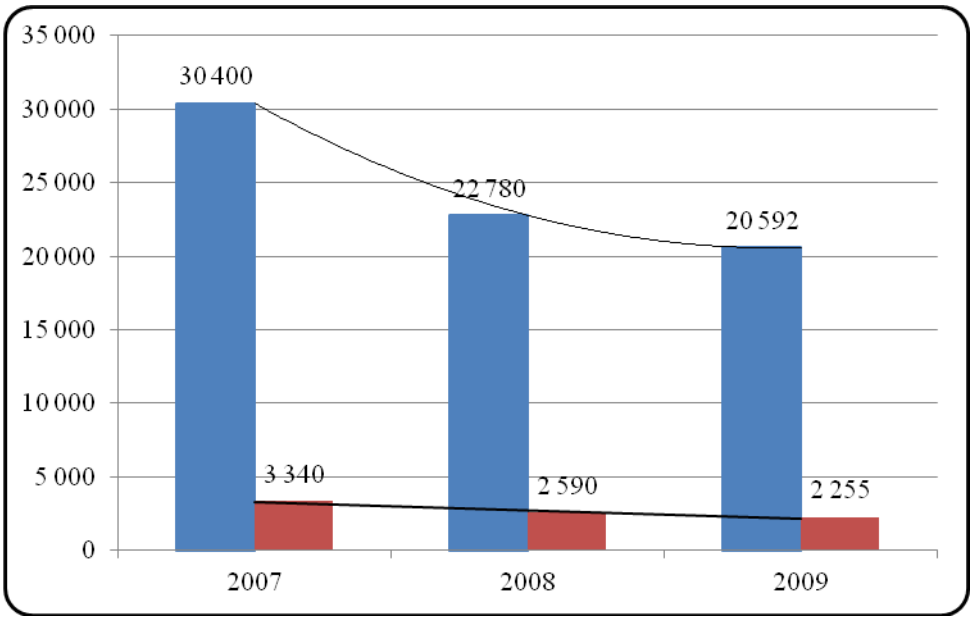

Fig. 4. Intoxicated people, responsible for traffic accidents in the years 2007, 2008 and 2009 in Slovenia

Rys. 4. Liczba osób pod wpływem alkoholu odpowiedzialna za wypadki drogowe w latach 2007, 2008 i 2009 w Słowenii

Figure 4 shows intoxicated responsible ones for traffic accidents in Slovenia in comparison with the number of accidents in the past three years. The number of those is steadily decreasing, which is shown by the clear downward trendline. The number of intoxicated responsible ones for traffic accidents is also decreasing. But the trendline is not as sloping as the previous one, meaning that the number of these intoxicated drivers, responsible for traffic accidents, is not significantly changing in relation to the decrease in the number of traffic accidents, which is alarming.

3. METHODOLOGY OF RESEARCHING TRAFFIC ACCIDENTS OF YOUNG DRIVERS AND INTOXICATION

In order to analyze young intoxicated drivers and their impact on road safety in the district Nova vas, we questioned young people from the stated district, aged 16 to 23. This means that we tried to include all periods of adolescence, namely the early, middle and late adolescence.

The research sample consisted of 185 respondents, of which 54% were male and 46% female.

In the research work we used non-experimental research, the work method was field research and the research form was the questionnaire, which consisted of closed type questions. In order to collect data we developed an anonymous questionnaire. We asked the respondents for honesty, since the data will serve for research purposes only. The questioned answered 21 questions, mostly related to driving a car and drinking habits of adolescents in the given research district.

Before we questioned the respondents we set hypotheses based on the given state, which we then confirmed or disproved on the ground of the survey results.

Hypothesis 1: We think that young people decide to drive under the influence of alcohol due to the short distance between the place of the party and their home.

Hypothesis 2: Most adolescents first drove a car in the driving school.

Hypothesis 3: Young drivers are against driving with the presence of a companion.

Hypothesis 4: Young people do not agree with the alcohol policy in traffic.

4. ANALYSIS OF RESULTS OF THE ACTUAL CASE RESEARCH OF TRAFFIC ACCIDENTS INVOLVING ADOLESCENTS

We chose the district Nova vas - Celje to be the research area to analyse intoxicated young drivers and their impact on traffic safety. Nova vas is one of the districts in Celje, Slovenia. Regarding the previously stated theory and the knowledge on traffic accidents and young drivers we decided to research intoxicated young drivers and their impact on traffic safety in the district Nova vas. This district is full of adolescents and close to many bars, where young people have fun until dawn.

The issue we are facing is the awareness of young drivers in the district Nova vas regarding speeding, alcohol and traffic. The point, which is definitely worth mentioning, is that more and more adolescents drive extremely fast and expensive cars, owned by their parents or themselves. This is the origin of the desire for competition and proving in front of their peers. Many times they also chose to drive under the influence of alcohol, since they say that they are just tipsy, meaning that they are able to handle and properly react in every traffic situation, but often it is quite the contrary.

4.1. Analysis of the questionnaires

In continuation we present the analysis of data, gained with the help of the survey, carried out among adolescents in the district Nova vas.

The survey, carried out among adolescents in the district Nova vas - Celje, involved 17% adolescents aged 16–17, 31% adolescents aged 18–19, 22% adolescents aged 20–21 and 30% late adolescents.

The research sample consisted of 185 adolescents, of which 86 (46%) were female and 99 (54%) male.

Most questioned adolescents already have a driving licence (82%).

Regarding their first driving experience most adolescents (27%) answered that they first tried to drive secretly, 24% adolescents answered that they first drove with a friend (Figure 5).

When asked about their opinion on the Act, allowing driving a car with 17 with a mandatory presence of a companion (Figure 6), 40% of them answered that this is an ideal opportunity, since the young driver this way gets experience with the help of the companion. The lowest number of respondents (25%) thinks that the Act is not suitable, since the young driver despite the presence of the companion cannot properly react in exceptional situations.

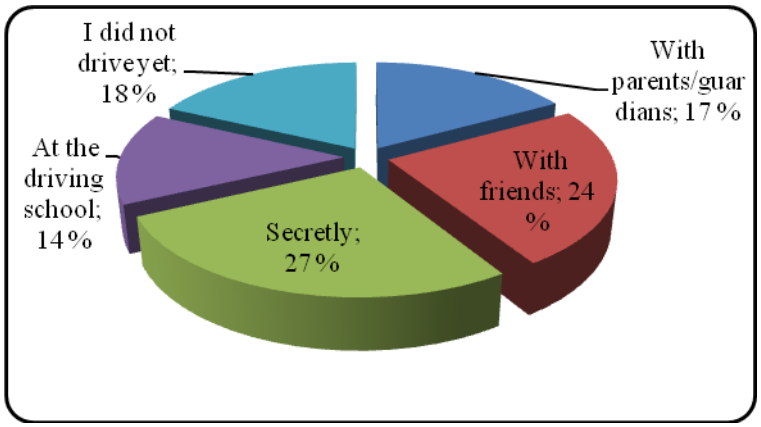

Fig. 5. First car ride
Rys. 5. Pierwsza jazda samochodem

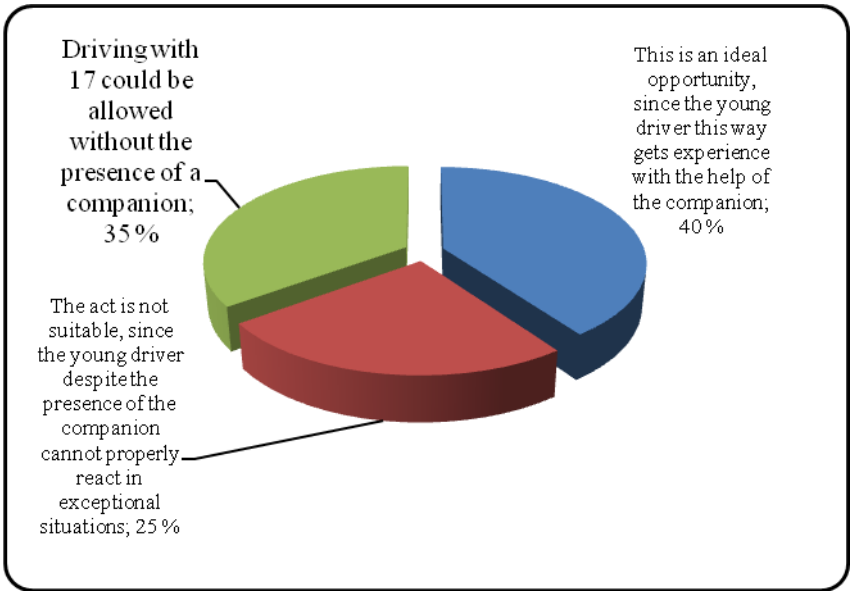

Fig. 6. Opinions on driving a car with 17 with a mandatory presence of a companion
Rys. 6. Opinie na temat prowadzenia samochodu przez 17-latków z obowiązkową obecnością osoby towarzyszącej

In the questionnaire there was also a question whether they have ever caused a car accident. 46% adolescents answered that they never caused one. 39% caused an accident once, 8% caused it twice and 7% three times.

Those who caused an accident (Figure 7) stated alcohol as the reason.

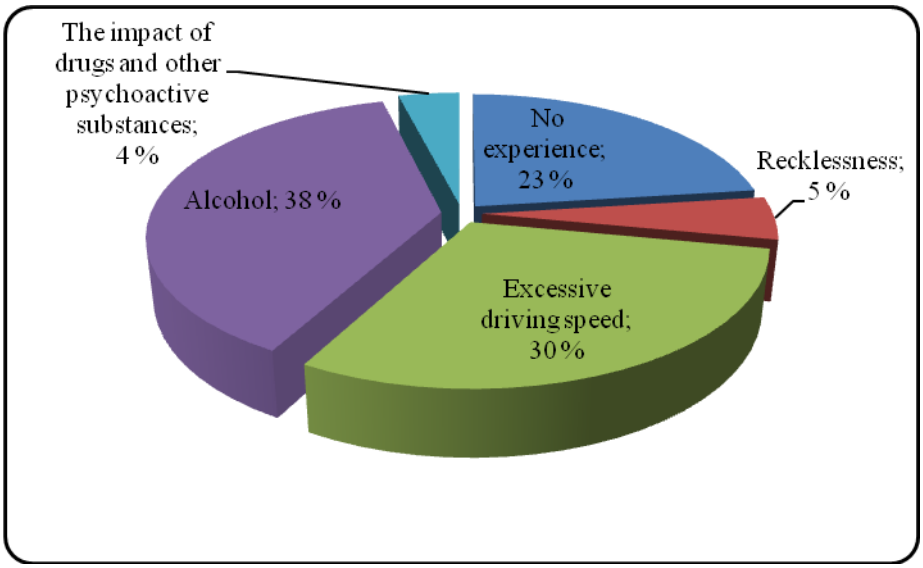

Fig. 7. Traffic accident cause
Rys. 7. Przyczyny wypadków drogowych

The questionnaire also included a question on knowing rules and traffic regulations, where the respondents had to mark on a scale from 1 to 10 how familiar they are with traffic rules and regulations. It is interesting that no one of the questioned did assess their knowledge on traffic rules and regulation with a grade less than 6. 3% said that the knowledge of this rules could be assessed with a 6, 39% percent assessed it with an 8, followed by the 9 with 26%, the 7 with 24% and the 10 with 8%.

Regarding the question how young people are familiar with the alcohol policy in traffic (Figure 8) most of them answered (32%) that they are well informed (8) and very well informed (9) with 30%.

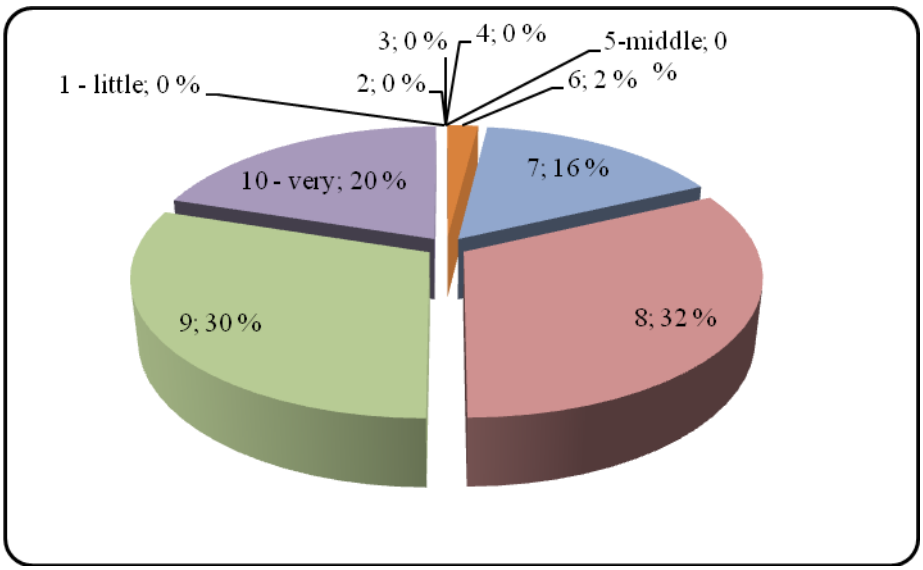

Fig. 8. Familiarity with the alcohol policy in traffic
Rys. 8. Znajomość zasad związanych z alkoholem w ruchu drogowym

Regarding the question on agreeing with the alcohol limit for beginner drivers (Figure 9) 86% of adolescents answered that they do not agree with the alcohol limit (0,0 g kg blood), which applies to beginner drivers.

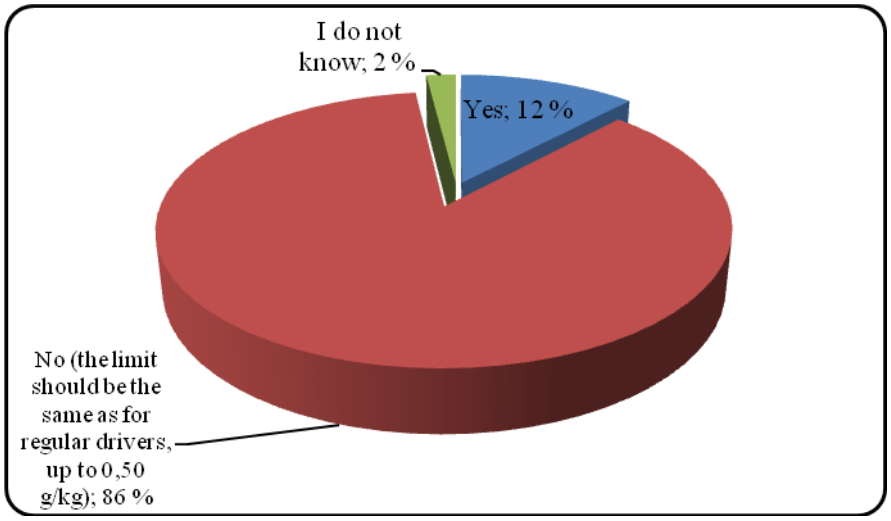

Fig. 9. Agreeing with the alcohol limit (0,0 g per kg blood) for beginner drivers
Rys. 9. Zgoda na limit alkoholu (0,0 g na kg) dla początkujących kierowców

Figure 10 shows that 52% of adolescents think that the alcohol limit for experienced drivers should be increased to 0,80 g/kg. 38% agree with the current alcohol policy (0,50 g/kg).

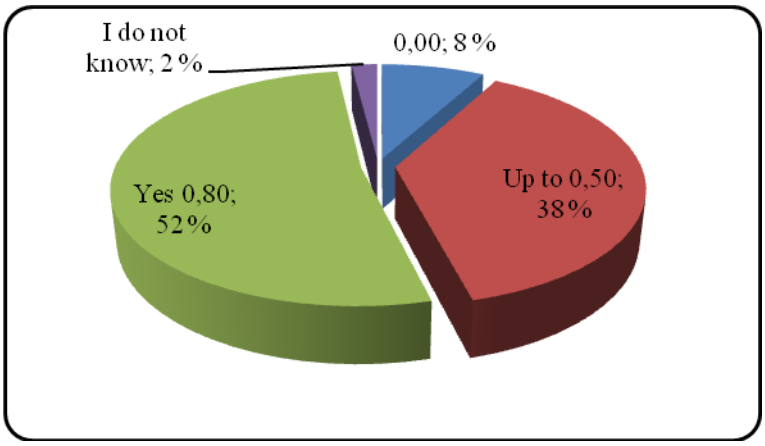

Fig. 10. Opinions on limiting alcohol in blood for experienced drivers
Rys. 10. Opinie na tamat ograniczeń alkoholu we krwi dla doświadczonych kierowców

Regarding the question what should adolescents do in the case of drunkenness at a party, to which they came with their own vehicle (Figure 11), 46% answered that they still sit behind the wheel and head home, because they live nearby. 26% call a taxi in order to go home.

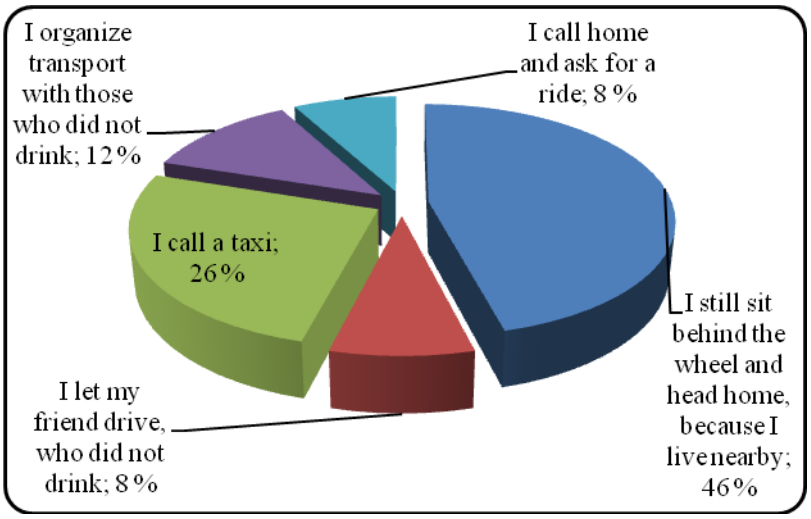

Fig. 11. Acting in the case of drunkenness while getting to the party with own vehicle
Rys. 11. Działania w przypadku nadużycia alkoholu

4.2. Evaluation of the set hypotheses

Before the research we set certain hypotheses, which we confirmed or disproved on the ground of gained data through field research with the help of a questionnaire.

Hypothesis 1 said: We think that young people decide to drive under the influence of alcohol due to the short distance between the place of the party and their home. The analysis showed that adolescents decide to drive under the influence of alcohol particularly because of the short distance between the place of the party and their home. This is shown in Figure 9. Based on the data analysis we can confirm this hypothesis.

Hypothesis 2 said: Most adolescents first drove a car at the driving school. One of the questions in the questionnaire asked regarding the first driving experience. Only 14% answered that they drove a car for the first time in a driving school. Most adolescents set first behind the wheel secretly or with friends. Based on the results above and Figure 5 we have to refute this hypothesis.

Hypothesis 3 said: Young drivers are against driving with the presence of a companion. Figure 6 shows that 40% of adolescents say that this is an ideal opportunity, since the young driver is gaining experience with the help of a companion. 35% think that driving with 17 could be allowed also without a companion. 25% think that such an act is not suitable, since the young driver despite the presence of a companion cannot properly react in certain situations. Based on such results we can refute our third hypothesis.

Hypothesis 4 said: Young people do not agree with the alcohol policy in traffic. Figure 9 shows that most adolescents (86%) are against the alcohol limit (0,0 g per kg blood), applying to beginner drivers. 52% of adolescents think that the limit of alcohol in blood for experienced drivers should be increased to 0,80 g/kg. Based on the given results we assess that the last hypothesis can be affirmed.

5. CONCLUSION

Traffic accidents with numerous fatalities and injuries are regarding their abundance a serious problem, faced by our society. High number of traffic accidents is recorded at home as well as in other European states. Alcohol is unfortunately that element, which has a significantly negative impact on those skills, which are vital for driving.

The difference between a sober driver and a driver under the influence of alcohol is that the sober driver also makes mistakes, but they are unique, the driver detects and corrects them immediately. The intoxicated driver does not perceive the mistakes, they accumulate, because they are not corrected and continue for the duration of the driving under the influence of alcohol.

Young drivers are only beginners in driving, which does not mean that they have no abilities or that they have to give way to others. The problem is that every new situation demands certain behaviour. The fact is that they are precisely because of their lack of experience more prone to accidents. If we add driving under the influence of alcohol to inexperience, overestimating the driving abilities and inappropriate acting in traffic a traffic accident is almost a certain event.

In Slovenia and abroad we are facing these issues. Based on the research we came to the conclusion that traffic accidents involving adolescents have common key points. Car accidents involving young drivers usually demand more dead and injured of the same age group. The lifestyle of this age group differs from others. Young people go together to parties, where alcohol is too often present. If we add to this fact the lack of experience, speeding, sometimes obsolete vehicles, sometimes new, fast cars, such situation is understandable, but no more acceptable.

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