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DESCRIPTION OF URIC ACID LEVELS BUS DRIVER ARSA BUANA MANUNGGAL

Ni Putu Mentari Yulia [1], Ida Bagus Oka Suyasa[1*], I Nyoman Gede Suyasa[1], I Gede Sudarmanto[1]
[1]Poltekkes Kemenkes Denpasar
Jl. Sanitasi No 1, Sidakarya Denpasar Selatan Telp. (0361) 710447
*corresponding author, e-mail: iamgusoka@gmail.com

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Abstract

Background. *Uric acid is the end result of breaking down a substance called purine. Purine substance is a natural substance which one of the chemical structure groups is the formation of DNA and RNA. Uric acid can be influenced by several factors such as age, long sitting while driving, consumption of alcoholic beverages, and consumption of foods high in purines.* ***Aims.*** *The aim of this study was to determine uric acid levels in PT.ABM drivers.* ***Methods.*** *The study sample consisted of 45 people selected by random sampling using the Point Of Care Testing method with the Autoclick Easy Touch General Check Up tool. The research sample all had received approval with adequate compensation or were not working and were in good physical and mental health.* ***Results.*** *The results showed normal uric acid levels in 32 people (71.1%) and high uric acid levels in 13 people (28.9%). High uric acid levels were more common at the age of 43-51 years in 5 people (45.5%), duration of sitting while driving was dominated by driving duration for ≥ 7 hours/day in 10 people (29.4%), while drivers 11 people (34.4%) consumed alcoholic beverages and 25 people (55.6%) consumed high-purine foods.* ***Conclusions.*** *The conclusion of this study is that high uric acid levels occur in respondents aged 43-51 years, driving for ≥ 7 hours/day, consuming alcoholic beverages and consuming foods high in purines.*

Keywords: *Uric acid, Driver, POCT method*

1. Introduction

Gout has been known for 2,000 years and is the oldest disease known to mankind. Gout is known as "the disease of kings because they generally often consume delicious food served by their servants. However, recently, in modern times, gout has spread to everyone, not only kings or nobles who consume delicious food, but also everyone who likes delicious food [1]

Uric acid is the final product of the breakdown of substances called purines. Purines are natural substances whose chemical structure group is to form deoxyribonucleic acid (DNA) and ribonucleic acid (RNA). There are two

sources of purines, namely purines produced by the body itself and purines obtained from food intake such as plants (vegetables, fruit and nuts) or animals (meat, offal and sardines) [2]. However, in general, gout can be caused by age, gender, excess purine intake, obesity (overweight), high blood pressure, heart disease, use of certain drugs, and lack of physical activity [3]. Uric acid acts as an anti-oxidant in the body and helps in cell renewal. However, when uric acid exceeds normal limits, it will become a problem for the body. When uric acid in the blood exceeds normal limits, it will precipitate in the form of urate crystals into the body's organs, especially the joints. These crystals trigger an inflammatory response resulting in lumps, reddish swelling and pain [2].

According to Regional Health Research in 2018, the prevalence of joint disease in the Bali area was 10.46%. If we look at districts/cities, the highest prevalence of joint disease is in Karangasem District at 15.36%. Meanwhile, in other districts such as Jembrana Regency it was 13.63%, Tabanan 7.82%, Badung 7.89%, Gianyar 15.02%, Klungkung 11.72%, Bangli 14.24%, Buleleng 12.93%, and in Denpasar City it was 5.11%. The data obtained shows that joint disease in Bali is still relatively high, especially in Karangasem Regency [2].

2. Research Methods

The type of research used is descriptive research, namely a type of research that systematically, factually and accurately describes the bus driver P.T. Arsa Buana Manunggal (ABM) Karangasem. The population in this study were all drivers of P.T. ABM totaling 79 people. The sampling technique used was simple random sampling with the number of samples obtained being 45 people. Simple random sampling is carried out because the population is homogeneous and a complete sampling frame is available (a list of population members accompanied by their serial numbers), and sampling is carried out using random numbers, or through available computer programs. Besides that, the population is not too large so it can be done using lottery numbers.[10] Data collection techniques in this research were carried out by measuring uric acid levels and questionnaires. The data obtained was collected, grouped based on age characteristics, sitting time while driving, alcohol consumption and consumption of foods high in purine. The data is processed and presented in table form and given a narrative.

3. Results and Discussions

a. Results

1). Characteristics of Bus Driver P.T. ABM by age.

From the results of research conducted on 45 bus drivers P.T. ABM Karangasem, obtained the results of the age

characteristics of the bus drivers as in the table below (Table 1)

Table 1. Characteristics of P.T ABM Bus Drivers Based on Age.

No.	Age (Year)	Amount (Person)	Percentage (%)
1.	25-33	15	33.3
2.	34-42	14	31.2
3.	43-51	11	24.4
4.	52-60	5	11.1
Total		45	100.0

Source: Primary Data (2024)

Based on the table above, it shows that of the 45 bus drivers P.T ABM Karangasem, apparently 15 people (33.3%) were in the 25-33 year age group.

2). Characteristics of Bus Driver P.T. ABM is based on sitting time while driving.

From the results of research conducted on 45 PT ABM Karangasem Bus drivers, the results obtained by the characteristics of the length of sitting while driving of the bus drivers are as shown in the table below (Table 2).

Table 2. Characteristics of P.T ABM Bus Drivers Based on Sitting Time While Driving.

No.	Sitting Time Driving	Amount (Person)	%
1.	≥ 7 hours/day	34	75.6
2.	< 7 hours/day	11	24.4
Total		45	100.0

Source: Primary Data (2024)

Based on the table above, of the total 45 respondents taken as samples,34 people (75.6%) were categorized in the group who drove for more than the same as 7 hours/day.

3). Characteristics of PT. ABM Karangasem Bus drivers based on alcohol consumption.

From the results of research conducted on 45 PT ABM bus drivers Karangasem, results were obtained regarding the characteristics of drivers consumption of alcoholic drinks The buses are as shown in the table below (Table 3).

Table 3. Characteristics of PT. ABM Bus Drivers Based on Alcohol Drink Consumption.

No.	Consumption Alcohol	Amount (Person)	%
1.	Yes	32	71,1
2.	No	13	28,9
Total		45	100,0

Source: Primary Data (2024)

Based on table 3, it shows that of the 45 total bus drivers, the most are at The group that consumed alcohol was 32 people (71.1%).

4). Characteristics of P.T. ABM drivers based on consumption of high purine foods.

From the results of research conducted on 45 PT ABM Karangasem bus drivers, the results obtained for the characteristics of high purine food consumption can be seen in the table below (Table 4).

Table 4. Characteristics of PT ABM Bus Drivers Based on Consumption of High Purine Foods.

No.	Food Consumption High in Purin	Amount (Person)	%
1.	Yes ≥ 2,5 Skor	25	55.6
2.	No < 2,5 Skor	20	44.4
Total		45	100.0

Source: Primary Data (2024)

Based on table 4, it shows that of the 45 bus drivers, the most were in the group that consumed high purine foods, 25 people (55.6%). Drivers who consume food or drinks containing high purines include consuming meat, alcoholic drinks, or smoking.

5). Results of examination of uric acid levels.

From the results of uric acid level checks carried out on 45 P.T. ABM Karangasem bus drivers, results were obtained as shown in the table below (Table 5).

Table 5. Uric Acid Levels in PT.ABM Karangasem Bus Drivers.

No.	Uric Acid Levels (mg/dL)	Amount (Person)	%
1.	Normal	32	71,1
2.	Tall	13	28,9
Total		45	100,0

Source: Primary Data (2024)

According to table 5 above, of the 45 PT ABM bus drivers who were interviewed, it turned out that 32 people (71.1%) had high uric acid levels.

6). Cross tabulation of uric acid levels of P.T ABM Bus drivers based on age.

From the results of uric acid level examinations carried out on 45 PT ABM Karangasem bus drivers based on age characteristics, results were obtained as shown in the table below (Table 6)

Table 6. Uric Acid Levels in PT. ABM Drivers Based on Age.

No.	Age (Year)	Uric Acid Levels Normal	Acid Level High Veins	Total (%)
1.	25-33	13	2	15 (33,3)
2.	34-42	10	4	14 (31,1)
3.	43-51	6	5	11 (24,4)
4.	52-60	3	2	5 (11,2)
Total		32	13	45 (100)

Source: Primary Data (2024)

Based on table 6 above, from the data shown there are 5 people (45.5%) in the 45- 51 year age group who have high uric acid levels.

7). Cross tabulation of uric acid levels of driver P.T. ABM is based on sitting time while driving.

Based on the length of time you sit while driving a bus all day, the bus driver's uric acid level is checked, the results of which are as shown in table 7 below.

Table 7. PT. ABM Driver Uric Acid Levels Based on Sitting Time While Driving.

No.	Sitting Time	Uric Acid Levels Normal	Uric Acid Levels High	Total (%)
	Driving			
1.	Duration ≥7 hours/day	24	10	34 (75.5)
2.	Duration <7 hours/day	8	3	11 (24.5)
Total		32	13	45 (100)

Source: Primary Data (2024)

Based on table 7, it shows that high uric acid levels are in the category of driving time more than and/or equal to 7 hours/day as many as 10 people (29.4).

8). Cross-tabulation of PT.ABM drivers uric acid levels based on alcohol consumption.

From the results of examining the uric acid levels of PT ABM Bus drivers based on consuming alcoholic drinks, the following results were obtained (table 8).

Table 8. PT. ABM Driver Uric Acid Levels Based on Alcohol Drink.

No.	Consumption Alcoholic Beverages	Uric Acid Normal	Uric Acid High	Total (%)
1.	Yes	21	11	32 (71.1)
2.	No	11	2	13 (28.9)
Total		32	13	45(100)

Source: Primary Data (2024)

Based on table 8 it shows high uric acid levels in bus drivers 11 people consumed alcohol (34.4).

9). Cross-tabulation of PT.ABM drivers' uric acid levels based on consumption of high purine foods.

From the results of examining the uric acid levels of PT ABM Bus drivers based on consuming high purine foods, the following results were obtained (2024) (table 9).

Table 9. Cross tabulation of drivers uric acid levels based on high food consumption Purine.

No.	Consumption High Purine Foods	Uric Acid Normal	Uric Acid High	Total (%)
1.	Yes≥ 2,5 Score	17	8	25 (55)
2.	No<2,5 Score	15	5	20 (45)
Total		32	13	45 100)

Source: Primary Data (2024)

Based on table 9 above, there are 8 people (32.0%) of bus drivers who have it high uric acid levels are associated with consuming foods high in purine.

b. Discussion

1). Uric acid levels in PT.ABM Bus drivers based on age.

Based on the results obtained, the vulnerable aged 25-33 years had normal acid levels, namely 13 people (28.9%), while the high uric acid levels were dominated by the vulnerable aged 43-51 years with 5 people (11.1%). Astawan (2018) explains that elderly people are susceptible to disease, where the condition of the body experiences a decrease in physical strength and body capacity which can result in disturbances in the mechanisms of the body's organs.[4] This research is also in line with research by Muthalib & Ellinasari (2019) where age >40 years in this condition increases a person's risk of contracting disease. Age is very important to pay attention to when working because this condition has an impact on various aspects, including physical, mental, ability to work and responsibility. responsible at work [5]. Nasir's research (2019) also states that those aged >40 years are more susceptible to gout compared to those aged <40 years because as a person gets older, they will experience physical and mental changes that can affect their overall condition [1].

2). Uric acid levels in PT.ABM Bus drivers based on the length of time they sit while driving

Based on the length of sitting while driving, the majority of PT.ABM drivers work for at least [7] hours a day, most of them have uric acid levels that are within the normal range[6]. This research also obtained high uric acid levels, this can happen because when driving the drivers sit for too long, the impact of the workload resting on the waist area is that the waist muscles become load-bearing and can increase the chance of developing gout.

In research conducted by Lestari et al (2021), lack of activity can increase the production of uric acid in the body and facilitate the accumulation of uric acid in the joints, so that activity or other physical movements will reduce the excretion of uric acid in the body. Apart from that, research

conducted by Lestari stated that a lack of physical activity can cause the emergence of metabolic syndrome, where this condition can lead to insulin resistance, there will be obstacles in the uric acid excretion process, as a result, uric acid will increase because the kidneys do not excrete uric acid through urine [3]. So it can be said that the results of this research are in line with research conducted by Lestari et al (2021).

3). PT. ABM Bus driver's uric acid levels are based on alcohol consumption.

Based on research on uric acid levels based on alcohol consumption, the majority of PT. ABM drivers have normal or high uric acid levels. The cause of increased uric acid levels in the body can be caused by alcohol consumption which can interfere with kidney function. Impaired kidney function can inhibit the kidney's ability to remove uric acid from the body. As a result, uric acid will accumulate in the body and can cause gout[7].

This research is in line with research by Kusumayanti (2014) which states that someone who consumes 50% alcohol every day will have high uric acid levels [8]. Consuming a lot of alcohol over a relatively long period of time will result in impaired kidney function. Impaired kidney function will cause the kidneys to be unable to excrete uric acid levels in the blood and result in a person developing gout. Based on the results of interviews conducted with respondents, it was found that many drivers consume alcohol, therefore drivers must reduce alcohol because alcohol can damage kidney function and affect the excretion of uric acid levels in the blood which can cause purines to accumulate in the kidneys.

4). P.T.ABM driver's uric acid levels are based on consumption of foods high in purine.

Based on research on the uric acid levels of PT. Pork, chicken and shrimp. Purine is one of the components found in nucleic acids in the nucleus of body cells. Apart from that, purines can also be found in food, including vegetables, fruit, nuts, and foods of animal origin.

This research is in line with research conducted by Astawan (2018) which shows that the habit of consuming foods high in purine has high uric acid levels, where consuming excess purine causes the risk of having high uric acid levels [4]. According to Jaliana (2018), purines are organic base compounds which are part of the structure of nucleic acids and are included in the group of amino acids, which are the building blocks of proteins. In interviews conducted with 45 respondents, the results obtained were higher for drivers [9].

4. Conclusion

1. PT ABM drivers with the highest age characteristics are 25-33 years (33.3%), sitting time while driving is more than 7

hours/day 75.6%, those who consume alcoholic drinks are 71.1%, and those who consume high purine foods are 55%

2. The uric acid level of the PT ABM bus driver had a high uric acid level of 28.9%.

3. High uric acid levels were found in those aged 43-51 years, 45.5%, sitting for more than 7 hours/day 29.4%, 34.4% who consumed alcohol, and 32% who consumed foods high in purine.

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