

BUS DRIVERS' CHRONIC MORBIDITY

Goran Ilić¹, Darinka Stožinić, Slavica Savić

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INTRODUCTION

Traffic is one of the most important economic branches here. The main factor for safe traffic flow is a driver. An important precondition for working as a professional driver, besides knowing traffic regulations and having a high quality driving training, is the health condition of the drivers. A physically and psychologically healthy driver is an important factor for traffic safety.

Monitoring of the health condition from the aspect of chronic morbidity presents an important indicator of the driver's health condition. An analysis of chronic morbidity in a certain population or in the part of the population (a company, a shop), especially an analysis of frequency and a form of professional diseases can indicate the presence and intensity of risk factors arising from conditions or work processes.

A bus driver's work place is limited to a small space and work consists of sitting on mostly uncomfortable seats. The drivers are exposed to unpleasant microclimatic factors, noise, vibrations, exhaust gases and often stressful situations.

Working hours and shifts of professional drivers often vary, so the necessary rhythm of work and rest is disturbed.

The feeling of responsibility for lives of passengers during driving is strongly expressed among bus drivers. [2, 7]

WORK AIM

The work aim is the analysis of chronic morbidity and work – related diseases among bus drivers.

EXAMINEES AND WORK METHODS

The group of 169 "Autosaobracaj" bus drivers was examined. Data from periodical driver examinations which were used – contained diagnoses of psychologists, neuro-psychologists, ophthalmologists and specialists of occupational health. The control group consisted of 65 mechanics from the same company that have never worked as drivers.

All examinees were examined in Zastava Institute of Occupational Health Kragujevac where workers of Autosaobracaj Company realize full preventive and curative protection.

¹ Corresponding author e-mail: ilicgorankg@yahoo.com, Institute of Occupational Health "Zastava" Kragujevac, Serbia

Morbidity was analyzed according to ISCDRH (X revision). [10] All data were processed using the statistical program SPSS.

An average age in the examined group was 43.1 ± 8.5 . An average age in the control group was 41 ± 7.3 . Regarding the age difference both groups were comparable because there was not a statistical age difference ($t=1.75$; $p>0,05$).

An average length of total working years (TWY) for drivers was 19.4 ± 8.3 and for mechanics 18.7 ± 8.3 and there was not a significant statistical difference in lasting of TWY ($p>0,05$).

An average length of exposition working years (EWY) of examined drivers was 14.5 ± 7.2 . EWY of most of the drivers were between 15 – 19 (29%).

RESULTS

In the examined group of 169 drivers, 77 (45.6%) did not have any diseases, while 92 (54.4%) had one or more diseases. In the control group of 65 mechanics, 25 (38.5%) did not have any diseases and 40 (61.5%) had some diseases.

Table 1: A comparative overview of the number of sick workers in both groups

	Basic group		Control group		χ^2
	N	%	N	%	
Without disease	77	45.6	25	38.5	
With disease	92	54.4	40	61.5	0.68 ($p>0,05$)
Σ	169	100.0	65	100.0	

There was not a significant statistical difference ($p>0,05$) between the numbers of sick workers in the exposed group and in the control group.

In the exposed group there were a total of 145 registered diseases. The general morbidity rate of bus drivers was 85.8%.

Table 2: A comparative overview of the chronic morbidity structure per disease groups (IDC) in both groups

Disease group		Basic group		Control group		χ^2 test
		N	%	N	%	
II	neoplasm	1	0.7	2	3.6	ns
IV	endocrine diseases	1	0.7	1	1.7	ns
V	psycholog.disturbances	31	21.4	4	7.1	4.57 ; $p<0,05$
VI	nerv.syst. dis.and sen.org	12	8.3	1	1.7	ns
IX	cardiovascular diseases	33	22.7	12	21.4	ns

Disease group		Basic group		Control group		χ^2 test
		N	%	N	%	
X	respiratory system diseas.	2	1.4	1	1.7	ns
XI	digestive system diseases	18	12.4	7	12.5	ns
XII	skin disease	1	0.7	2	3.6	ns
XIII	bone-muscle system	36	24.8	16	28.6	ns
XIV	urogenital diseases	10	6.9	10	17.8	4.12 ; p<0,05
Σ		145	100	56	100	ns

Most common diseases of bus drivers were the bone-muscle system diseases with 24.8%. The second place took cardiovascular diseases with 22.7%. In third place there were psychological disturbances with 21.4%, which were statistically much more frequent when compared to the control group (p<0.05). In fourth place there are diseases of the digestive system with 12.4%.

In the control group, 56 diseases were registered. The general morbidity rate in the control group was 86.1% and there was not a significant statistical difference between the general morbidity rate between drivers and mechanics. (X^2 test = 0.22; p>0.05).

The most common diseases among mechanics were the diseases of the bone-muscle system with 28.6%. In second place there were cardiovascular diseases with 21.4%. Urogenital diseases with 17.8%, were in third place, which were statistically significantly more frequent among mechanics (p<0.05). In fourth place, there were digestive system diseases with 12.5%.

Table 3: The most common diseases in the examined group

Order	Disease	N	rate
I	Lumbal syndrome	28	16.6
II	Neurosis	25	14.8
III	Hypertension	14	8.3
IV	Ulcus ventriculi; ulcus duodeni	9	5.3
V	Refractive anomalies of the eye	8	4.7

100 examinees rate

Table 4: The most common diseases in the control group

Order	Disease	N	rate
I	Lumbal syndrome	12	18.5
II	Hypertension	7	10.8
III	Ulcus ventriculi; ulcus duodeni	5	7.7
IV	Prostatis chr.	4	6.2
IV	Nephrolithiasis	4	6.2

The most common disease of bus drivers was lumbal syndrome. In second place there was the neurosis (15.4%), which is statistically much more frequent when compared to the control group ($p < 0.05$). In third place, there was arterial hypertension (8.3%).

The most common disease in the control group was lumbal syndrome (18.5%). In second place there was arterial hypertension (10.8%). In third place, there were ulcus ventriculi and ulcus duodeni (7.7%).

Through the analysis of the distribution of chronic morbidity done according to the age of bus drivers and mechanics, the following results, which were received, are shown in the Tables 5. and 6.

Table 5: *Chronic morbidity and the age of examined group*

Age group	20-29	30-39	40-49	50 and more	Total
N	12	45	64	48	169
w/o disease	11	28	27	11	77
% w/o dis.	91.7	62.2	42.2	22.9	45.6
Disease total	1	22	52	70	145
Rate (%)	8.3	48.9	81.2	145.8	85.8
Dis.per.work	0.1	0.5	0.8	1.5	0.9

The connection between the age of bus drivers and the increase of the general chronic morbidity rate can be noticed from the Table No. 5, in a way that the disease rate was the highest in the 50 + age group (145.8%), meaning 1.5 illnesses per worker.

The results in the control group were similar to the results in the examined group. The increase in the number of illnesses with age and the decrease of the number of workers without disease can be noticed.

The Table 7. shows the distribution of chronic morbidity in relation to the length of EWY of the drivers.

Table 6: *Chronic morbidity and the age in the control group*

Age group	20-29	30-39	40-49	50 and more	Total
N	3	26	27	9	65
w/o disease	1	18	5	1	25
% w/o dis.	33.3	69.2	18.5	11.1	38.5
Disease total	2	12	30	12	56
Rate (%)	66.7	46.2	118.6	133.3	86.2
Dis.per.work	0.7	0.5	1.1	1.3	0.9

Table 7: Chronic morbidity and the length of EWY

EWY – intervals	0-4	5-9	10-14	15-19	20-24	25-29	Total
N	22	25	36	49	15	22	169
w/o dis.	21	14	16	19	1	6	77
% w/odis.	95.4	56	44.4	38	6.7	27.3	45.6
Dis. total	1	16	31	42	25	30	145
Rate (%)	4.5	64	86.1	85.7	166.7	136.4	85.8
Dis.perwork	0.04	0.6	0.9	0.9	1.7	1.4	0.9

The Table 7. shows that the number of diseases increased with the length of EWY, while the number of examinees not having any diseases decreased. In that sense, the groups of 20-24 and 25-29 EWY had the highest number of diseases per one driver 1.7 and 1.4.

DISCUSSION

The analysis of chronic morbidity and work – related diseases found in 169 bus drivers employed in Autosaobračaj Kragujevac Company gave the following results.

Practically, the same general morbidity rate was found in the examined (85.8%) and the control group (86.1%). It is also important to notice that within the examined group, a much better professional orientation and medical and psychological selection was conducted, resulting in the fact that when employed, drivers have a very low general morbidity rate (the Table 5; the Table 7.). When the diseases from the Regulation book on medical condition for motor vehicle drivers [9] are diagnosed during work, they are usually reassigned to other work places or they retire, meaning that they could not be included in this study.

Within the examined group, bone-muscle system diseases were the most common with a rate of 24.8%. The most common disease in this group and also, in the examined group, was lumbal syndrome with a specific morbidity rate of 16.6% (the Table 2; the Table 3.).

Sitting position while driving, an action of general vibrations, frequent temperature changes around the driver with air drafts and increased sweating in the lumbal back area, complete with uncomfortable seats, led to such a high rate of degenerative spine diseases.

In second place, there were the cardiovascular diseases with 22.7%. The leading disease in this group was arterial hypertension, which was in third place with a rate of 8.3% in the specific morbidity. Hypertension as a psychosomatic disease was partly connected to the stressogenic factors to which the drivers were almost continuously exposed. Noise is the most common factor of the physical work environment. Working in shifts and irregular work – rest regimes increased the risk of cardiovascular diseases.

In third place, there were the psychological disturbances with 21.4%. The leading illness in this group were neuroses, which took up a second place with a rate of 15.4% in the specific morbidity, which were statistically much more frequent when compared to the control group ($p < 0.05$). Chronic professional stress to which the drivers were exposed, contributed to the presence of neuroses in a greater percentage in the examined group.

In fourth place, there were the diseases of the digestive system with 12.4%. The leading diseases in this group were ulcus ventriculi and ulcus duodeni with a rate of 5.3%, which

were in fourth place in the specific morbidity. Chronic professional stress, working in shifts and a way of nourishment led to the appearance of ulcus among professional drivers.

In fifth place, there were the diseases of the nervous system and of sense organs with 8.3%. The main diagnoses in this group were refraction eye anomalies, which took the fifth place with a rate of 4.7% in the specific morbidity.

In the control group, as well as in the examined one, in first place there were the diseases of the bone-muscle system with 28.6%. The leading disease in this group as well as in the specific morbidity was lumbal syndrome with a rate of 18.5%. The position during work, lifting of heavy objects during replacements and repairs, unfavorable microclimatic conditions in shops and in the field, led to a high rate of the lumbal syndrome disease among car mechanics.

In second place, there were the cardiovascular diseases with 21.4%. The leading disease in this group and in the specific morbidity was arterial hypertension with a rate of 10.8%.

In third place, there were urogenital diseases with 17.8%, which were statistically more frequent when compared to drivers ($p < 0.05$). The diagnoses in this group were chronic prostatitis and nephrolithiasis, which shared the fourth place with a rate of 6.2% in the specific morbidity. Working in pits and unfavorable microclimatic conditions led to the high frequency of urogenital diseases among mechanics.

In fourth place, there were the digestive system diseases, with a rate of 12.5%. The leading diseases in this group were ulcus ventriculi and ulcus duodeni with a rate of 7.7%, which took the third place in the specific morbidity.

In fifth place, there are the psychological disturbances with 7.1%.

A similar order and percentage of most common diseases of traffic workers have been noticed in foreign and domestic literature. [1, 3, 4, 5, 8]

The chronic morbidity rate increased with the age. The lowest was in the youngest group (20-29 years) with only 8.3% and the highest – in the 50 + years group with 145.8%, or 1.5 diseases per worker. Those are the expected results considering the fact that healthy candidates are usually being employed and that the registered diseases are also present in the general public within the older age (Table 5.).

The chronic morbidity rate increased with the length of EWY. The reason for a higher rate of illnesses in the group with a shorter EWY (20-24 years) when compared to the group with the longer EWY (20-29) was probably because the group was smaller (the Table 7.).

CONCLUSION

The leading disease among bus drivers was lumbal syndrome, with the specific morbidity rate of 16.6%.

In second place there were the neuroses (15.4%), statistically significantly more frequent when compared to the control group ($p < 0.05$).

In third place, there was arterial hypertension (8.3%).

In fourth place, there were ulcus ventriculi and ulcus duodeni (5.3%).

In fifth place, there were the refraction anomalies of the eye (4.7%).

None of the professional diseases was registered. The four leading diseases of bus drivers were diseases from the work – related group. It can be concluded that work-related diseases were dominant in the specific morbidity of bus drivers. [6]

REFERENCES

- [1] Adum O. Influence of work condition on the occurrence of chronic diseases of traffic workers, Dissertation, Medical school, Belgrade, 1974: 84-95
- [2] Adum O., Đorđević M. Traffic. In Occupational health. Stanković D. Ed. 866-70. Medical book, Belgrade-Zagreb, 1984.
- [3] Brković B. Analysis of morbidity and absenteeism of occupational drivers. Specialist paper, Belgrade, 1991:8-18.
- [4] Hildebrandt VH. Back pain in the working population: prevalence rates in Dutch trades and professions. *Ergonomics* 1995; 38(6): 1283-98.
- [5] Jensen MV., Tuchsén F., Occupational and lumbar disk prolapse. *Ugeskr Laeger* 1995;15(11) 1519-23.
- [6] Peruničić B. Work related diseases. In Occupational Health II. Vidaković A. Ed. 929-40. Belgrade: Occupational Health Society of Yugoslavia, 1997.
- [7] Savić M. Traffic. In Occupational Health I. Vidaković A. Ed. 438-46. Belgrade: Occupational Health Society of Yugoslavia, 1996.
- [8] Savić M., Jovanović J. Actual problems in health care of traffic workers. IX Congress of Occupational Health of Yugoslavia. Niš: Occupational Health Society of Yugoslavia, 1997:48-53.
- [9] The Role of health condition which must be contented, by motor vehicle drivers. Belgrade: 'Official Paper SFRJ' N° 5/82.
- [10] WHO. International Statistical Classification of Diseases and Related Health – tenth version. Vol. 1. Federal Institute of Health Protection and Improvement, Belgrade, 1996.