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ATTITUDES OF DEFENCE AND SECURITY SECTOR MEMBERS'TOWARDS URBAN PUBLIC TRANSPORT SERVICE QUALITY DURING COVID – 19 STATE OF EMERGENCY [a]

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Abstract

Announcement of the COVID-19 pandemic, made by the World Health Organization (WHO), has caused changes in functioning of all segments of society. Employers have been endeavoring to expand online work and enforce employees to work from home. All social activities and physical contacts have been dramatically reduced. However, due to the nature of certain occupations, online work has not been feasible. In pandemic circumstances, the healthcare system has met the biggest challenge. Members of the defense and security sectors also have faced increased efforts. Because of commuting, many of them have been dependant on urban public transport system. Consequently, the rapid and adequate reorganization of public transport route network was necessary, as well as the introduction of some preventive measures regarding health care. One of the biggest challenges the management of GSP Belgrade (a public transport company in the city of Belgrade) faced was to maintain anti-epidemic measures, the safety of passengers and a high level of service quality.

The research conducted on the group of 504 participants, members of the defense and security sectors, suggests certain differences among attitudes regarding different aspects of satisfaction and safety connected with the public transport service, depending on the participants' occupation. The health-care workers employed in defense and security sectors felt the least safe in public transport vehicles and, at the same time, they used public transport the most frequently.

Key words: COVID-19, defense, healthcare, security, urban public transport.

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СТАВОВИ ПРИПАДНИКА СЕКТОРА ОДБРАНЕ И БЕЗБЕДНОСТИ О КВАЛИТЕТУ УСЛУГА ЈАВНОГ ГРАДСКОГ ПРЕВОЗА ЗА ВРЕМЕ ВАНРЕДНОГ СТАЊА ПРОГЛАШЕНОГ ЗБОГ ПАНДЕМИЈЕ КОВИД-19

Апстракт

Проглашење пандемије вирусом КОВИД-19, од стране Светске здравствене организације (СЗО), за последицу је имало промене у функционисању готово свих сегмената друштва. Послодавци су настојали да пређу на онлине облик рада „од куће", а све друштвене активности и директни контакти су сведени на минимум. У таквим околностима, највећи напор је поднео систем здравства, а под појачаним напором били су и припадници сектора одбране и безбедности, који због природе посла нису могли прећи на рад „од куће". Будући да сви запослени нису били у могућности да користе сопствени превоз за долазак и одлазак са посла, била је неопходна брза и адекватна реорганизација мреже и траса линија јавног градског превоза, као и увођење одређених организационих мера превентивне заштите здравља. Велики изазов за менаџмент Градског саобраћајног предузећа Београд (ГСП), био је задовољити истовремено противепидемијске мере, осигурати безбедност путника и одржати квалитет услуге. Истраживање спроведено на 504 припадника сектора одбране и безбедности показало је да постоје одређене разлике у ставовима по питању различитих аспеката задовољства и безбедности приликом коришћења услуга јавног градског превоза у односу на професију којом се испитаници баве. У возилима ГСП су се најмање безбедно осећали медицински радници запослени у секторима одбране и безбедности, који су истовремено и највише користили услуге градског превоза.

Кључне речи: безбедност, КОВИД-19, градски превоз, одбрана, здравство.

INTRODUCTION

The WHO announced the COVID-19 pandemic on March 11, 2020. Freedom of movement has been limited worldwide. Many countries declared state of emergency, for certain periods, which caused the local or global lockdowns: India (Agarwal & Biswas, 2020), Spain (Awad-Núñez et al., 2021), the Republic of South Africa (Zhen et al., 2020), etc. Intending to limit the spread of the virus and to end the pandemic, certain preventive public health measures have been undertaken (such as the obligation to wear medical masks and maintain physical distancing, schools were switched to virtual learning, restaurants, cafes, shops, etc. reduced working hours, and other).

State of emergency in Serbia was declared on March 23, 2020, and lasted for 45 days. In the beginning of that period, urban public transport in Belgrade was almost shut down and needed a quick reorganization. The number of vehicles was significantly decreased, as well as number of lines. Only certain bus lines were active. Departure time intervals were longer, night departures were cancelled and some new rules were introduced: responsibility to maintain physical distance, reduced vehicle capacity, marking the seats prohibited for use, marking standing spaces in the vehicle, more frequent disinfection of buses, physical barriers between the driver and

the passengers, etc. Similar measures in public transport were implemented in other cities and countries: in Poland (Przybylowski et al., 2021), Italy (Buja et al., 2020), the Republic of South Africa (Zhen et al., 2020), Singapore, Canada, Hungary (Gkiotsalitis & Cats, 2021), etc. The rules and measures were introduced because urban public transport was recognized as the potential source of spreading of the epidemic (Awad-Núñez et al., 2021).

Numerous surveys investigate this problem, mainly from two aspects. The first aspect is traffic safety during the pandemic and the connection with infection spreading (Linka et al., 2020; Troko et al., 2011; Zheng et al., 2020), and the second aspect is related to the investigation of the pandemic influence on public transport organization, service quality, consequences for passengers' habits and behavior, as well as economy in transport (Pawar et al., 2020; Wu et al., 2020).

During the state of emergency in Serbia, public transport was mainly intended for four groups of users: healthcare workers, military and police staff, city governance staff and employees in the public companies, as well as employees in the entrepreneur companies whose jobs could not been postponed or done from home.

Members of defense and security sectors and healthcare staff, due to the nature of their jobs, were not able to work from home. Therefore, they were the main users of the public transport service and they had contacts with other people more frequently than other citizens, with an increased infection risk.

Adapting to the novel circumstances, the "GSP Belgrade" modified a number of lines and departures, modified the number and location of bus stops, limited the number of seats in buses, etc. Initially, in the area of 12 central municipalities, 32 bus "corridor" lines were introduced, and two additional were added later (Figure 1).

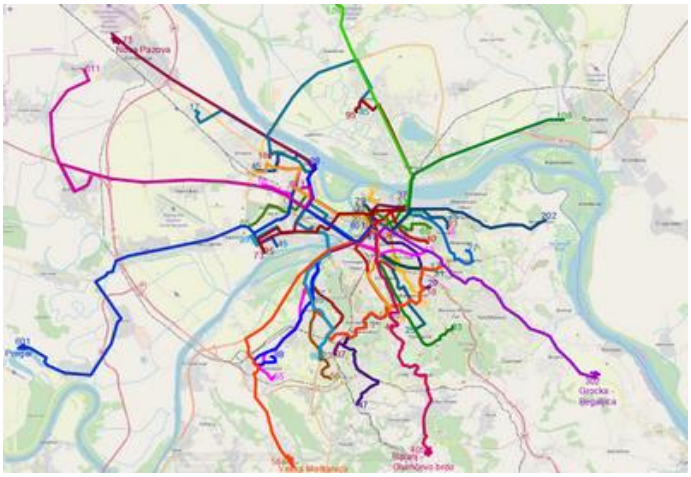

Figure 1. Corridor lines of urban public transport in Belgrade during the state of emergency

The imposed physical distance between passengers reduced the bus capacity and, as a consequence, had the biggest influence on the public transport organization. According to Gkiotsalitis & Cats (2020), the adherence to physical distance reduces the capacity of buses from 6.5% to 50%, depending on the type and dimensions of the vehicle and depending on the length of its route.

Urban and suburban public transport were active only in two time periods during a day, from 5.30 to 8.00 and from 17.30 to 20.00. In these periods, departures in urban public transport were organized each 15 minutes, while suburban departures were minimized. Common ticketing system was suspended and a new system was introduced. Certain documents, such as written employer's confirmation, employee's identification cards and personalized smart cards/tickets, which were controlled on bus stops, were necessary in urban public transport.

Military staff, beside their usual remit of work, were responsible for helping citizens and police staff during the state of emergency. They guarded selected facilities and institutions, such as hospitals, nursing homes (because elderly population was estimated as highly endangered population), warehouses (where medical equipment was storaged) and migrant centeres. Furthermore, CBRN (chemical, biological, radiological and nuclear) units were engaged in disinfection of large areas and special purpose facilities. Similar activities were noticed in other countries, such as China, the UK, France, South Korea, the Netherlands, Spain, the United States, Germany etc. (Pascal & Kalkman, 2021).

Police staff were engaged to control the curfew and self-isolation (14 days of self-isolation were obligatory for everyone who came from abroad), to disperse illegal gatherings, even to control compliance with epidemiological measures in urban public transport. Some research suggests increased stress levels among police staff caused by new type of tasks (Agarwal & Biswas, 2020; Frenkel et al., 2021), despite the fact that some criminal activities (thefts, murders, fights and car accidents) decreased in that period, mainly because of limited ability of movement. Similar trends are noticed in Brazil, Germany, Austria, Spain and Denmark (Alcadipani et al., 2020; Frenkel et al., 2021).

Healthcare workers, employed in defense and security sectors, have been available for the civilian sector during the pandemic all the time. Different variants of engagement of medical staff were applied in North Macedonia, the UK and the United States (Ristevska-Dimitrovska & Batić, 2020), while Russia and China sent military medical staff to help other counties (Pascal & Kalkman, 2020). In Serbia, it means that military hospitals and other military medical facilities were available to civilians, not for military personnel and members of their families only.

The above mentioned three professions are recognized in psychology as stressful and extremely risky regarding physical and mental health. Occu-

pational stress refers to the harmful psychophysical reactions present in members of certain professions, expressed when conditions at the work place and work demands overwhelm the employee's and affect their abilities, capabilities and needs. Therefore, taking into consideration the fact that the pandemic increased the workload and risk at their work places, it is obvious that the state of emergency contributed to additional stress among employees in the military, the police and especially in the healthcare system. They experienced prolonged intensive exposure to specific stressors, such as increased hazard to be infected at the work place, long duty shifts and frequent overtime, responsibility to make critical decisions, the potential transition of the virus to their homes and families, especially when they were the only potential source of infection (Eriksen et al., 2006).

Factors which exerted particular influence as occupational stressors among lower ranked staff in all three professions (nurses, soldiers and police officers) are the extended scope of tasks, the lack of autonomy and of participation in the decision making processes, organizational problems, demanding administration, inadequate work equipment and the risk of infection (Agarwal & Biswas, 2020; Al-Makhaita et al., 2014; Simić et al., 2021). On the other hand, certain surveys argue that, due to the increased responsibility and demanding tasks, higher ranked staff feels high level of stress (Jenkis & Elliott, 2004). Additionally, in some surveys, gender appeared as a factor which significantly influences occupational stress in these professions, suggesting that women are more exposed to stress (Healy & Tyrell, 2011).

Considering that results from previous researches indicated that urban public transport is the potential source of various viruses in different epidemics, the subject of this research was to determine the level of satisfaction and the sense of security among urban public transport users, in Belgrade, during the state of emergency declared because of the COVID-19 pandemic. The task of the research was to reveal, based on different parameters, if there had been any differences in the estimation of health risk and service quality of urban public transport, during the state of emergency, among three professions.

METHODS

Sample

The research sample was random. It consisted of 504 respondents (N = 504), ages 20 to 55. The mean age was M = 35.24, and standard deviation SD = 8.81.

Table 1. Passenger profile

Variable	Categories	%
Gender	men	48.8
	women	51.2
Age	< 30	29.2
	30 - 40	36.3
	40 >	34.5
Education	college	47.6
	university	52.4
Profession	healthcare	38.1
	military	27.6
	police	34.3

Certain differences appeared within the sample characteristics (Figures 2 and 3). The biggest number of the surveyed who have a university degree were among the healthcare workers ($\chi^2 = 7.617$, df = 2, $p < .022$). Also, respondents employed in the police were slightly younger: average age of the employed in the police was 33 years, in the military 35 and in the healthcare system 36 years.

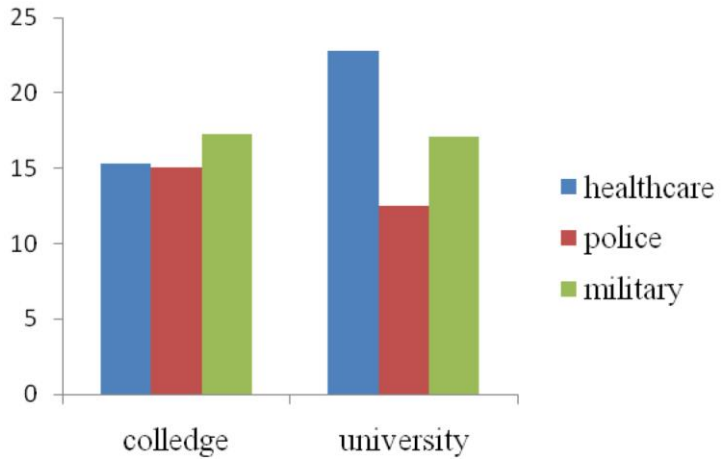

Figure 2. Relationship between profession and level of education in the sample (data are shown in percentage of total sample)

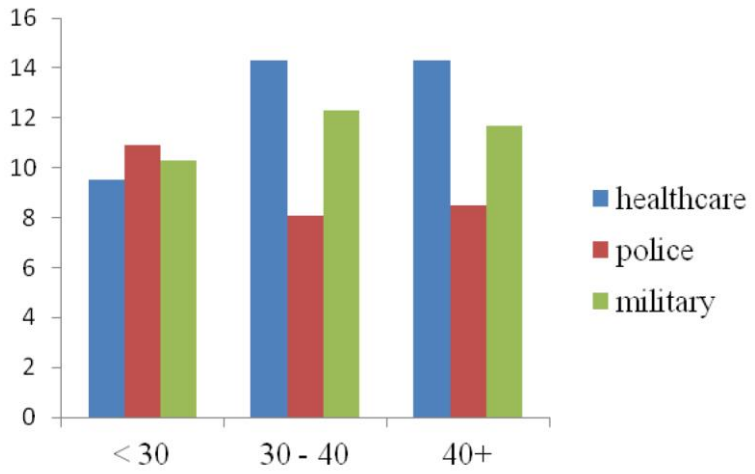

Figure 3. Relationship between profession and age (data are shown in percentage of total sample)

Instruments

The questionnaire designed for the purpose of this survey consisted of 17 questions: four questions connected to socio-demographic variables (age, gender, profession, level of education), and moderator variable - line number. Three questions were about the specifics of the need to use urban public transport and nine questions about the impression of urban public transport functioning during the state of emergency. The respondents answered using a five-point Likert scale (from 1 – totally disagree to 5 – totally agree).

Independent variables were sex (men and women), age (three arbitrary selected categories, each covered approximately 1/3 of the total sample), the level of education (two categories, since in the sample there were no respondents with a high school diploma or lower level of education) and profession (the police, the military and the medical staff employed in the defense and security sectors). The moderator variables were the lines where the survey took place (there was a possibility that some respondents used more lines while commuting), the frequency of using urban public transport during the state of emergency and zone. The dependent variables were related to the respondents' assessment of different aspects of urban public transport functioning (the quality of service, courtesy of staff, departure timetable obeying, passenger awareness, bus cleanliness and compliance with epidemiological measures).

Procedure

The survey covered 34 corridor lines of the urban public transport in the zones 1 and 2. Among respondents, 72.8% of passengers used the urban public transport in both zones. The survey was conducted during five working days, from Monday (13 April 2020) to Friday (17 April 2020). On each corridor line, at the starting bus terminal, each passenger, employed in the defense and security sectors, was questioned. Their participation in the survey was voluntary.

Data processing techniques

Data processing was carried out by IBM SPSS 22 software, calculating frequencies, percentages and χ^2 test.

RESULTS

Results showed that the greatest number of the respondents used corridor lines number 1 and number 24 (Figure 4) for commuting.

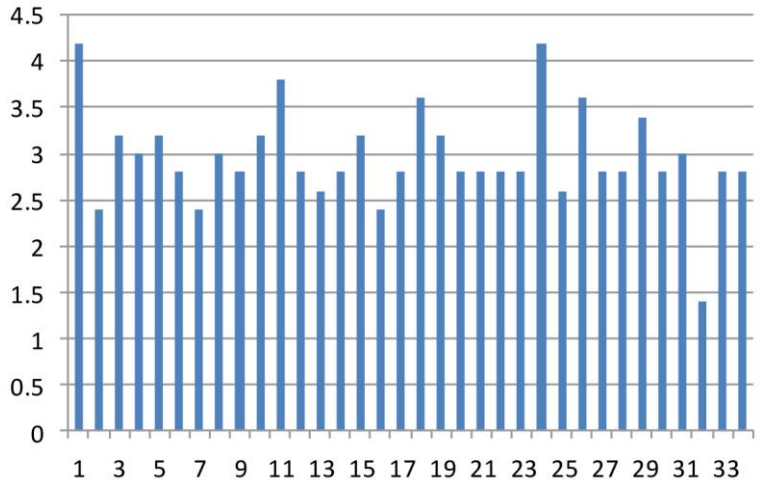

Figure 4. Percentage of respondents on different lines relative to the total sample

Among all questioned passengers, 53% used urban public transport on a daily basis (Figure 5) and 67% of them commuted through both transport zones (Figure 6).

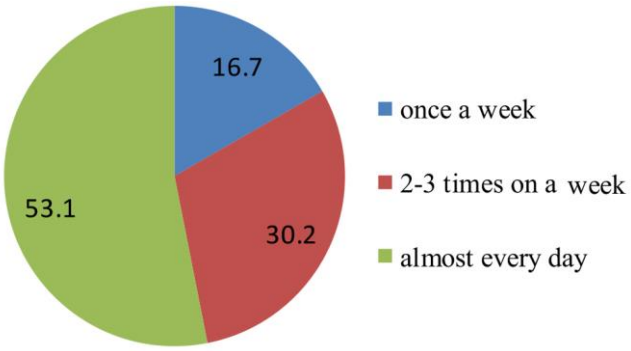

Figure 5. Frequency of use of the urban public transport on a weekly basis (expressed in percentages)

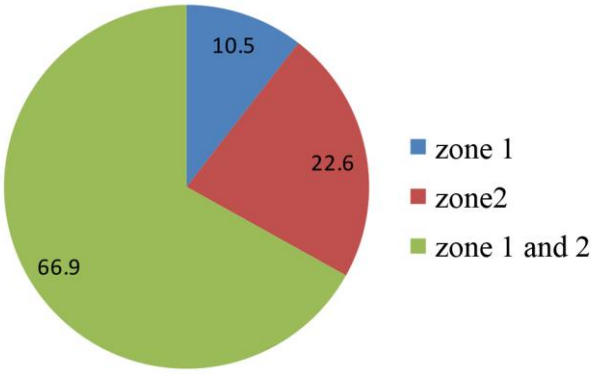

Figure 6. Frequency of use of the urban public transport per transport zones (expressed in percentages)

Table 2 contains results which show passenger satisfaction with regard to certain safety and protection aspects in vehicles. Passengers, regardless of the profession, were dissatisfied with the information about the corridor lines. On the other hand, as service customers, the respondents were exceptionally satisfied with the courtesy of staff and organization of transport. From the aspect of safety, passengers also were satisfied with the pre-emptive safety actions. However, they felt high level of fear of the possibility of becoming infected in buses.

Table 2. Results regarding attitudes to different aspects of urban public transport functioning during the state of emergency (expressed in percentages)

Item	I totally disagree	I disagree	I am not sure	I agree	I totally agree
I am satisfied with the urban public transport time table during the state of emergency.	6	20.6	30.6	30	12.8
I am satisfied with the awareness level about the functioning of urban public transport during the state of emergency.	23.4	48.4	22.6	4.2	1.4
I am satisfied with the courtesy of staff engaged in urban public transport during the state of emergency.	0	2.8	33.4	36.4	27.4
I am satisfied with the level of hygiene and tidiness of buses during the state of emergency.	4.8	8.9	33.3	48	5
I am satisfied with the seats marking system in buses during the state of emergency.	1	22	49.2	24.2	3.6
I am satisfied with the physical distancing in buses during the state of emergency.	1.4	18.3	50.3	25.8	4.2
I am satisfied with the passengers compliance with the epidemiological measures of prevention from the infection by COVID-19 virus, in buses, during the state of emergency.	0.2	2.8	37.9	44.4	14.7
I think that there is a possibility to be infected by COVID 19 virus while I am using urban public transport.	7.8	13.8	31.4	20.4	26.6
I am satisfied with the overall functioning of the urban public transport during the state of emergency.	8.9	9.1	33.7	41.6	6.7

In addition, survey results showed existence of statistically significant differences in frequency of use of urban public transport regarding to the profession ($\chi^2 = 10.089$, $df = 4$, $p < .039$). Services of the urban public transport system, the most frequently, were used by medical staff employed in the defense and security sectorc (Figure 7).

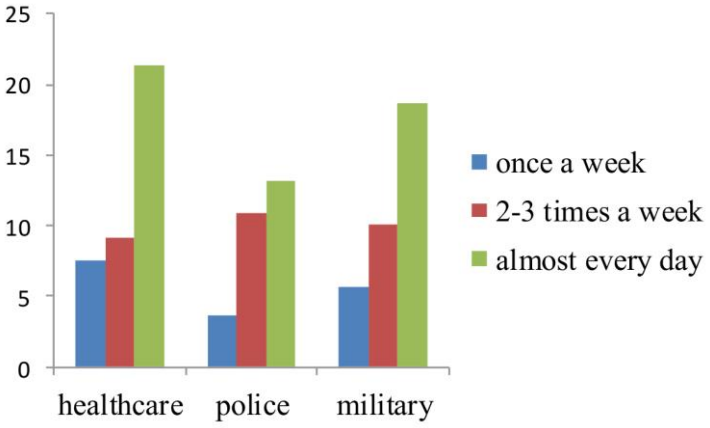

Figure 7. Frequency of use of the urban public transport relative to the profession (expressed in percentages of the total sample)

Statistically significant differences in the passengers' satisfaction with the level of hygiene in buses with respect to the profession were also present ($\chi^2 = 13.987$, df = 8, $p < .042$). The lowest level of satisfaction was among medical staff employed in the defense and security sectorc (Figure 8).

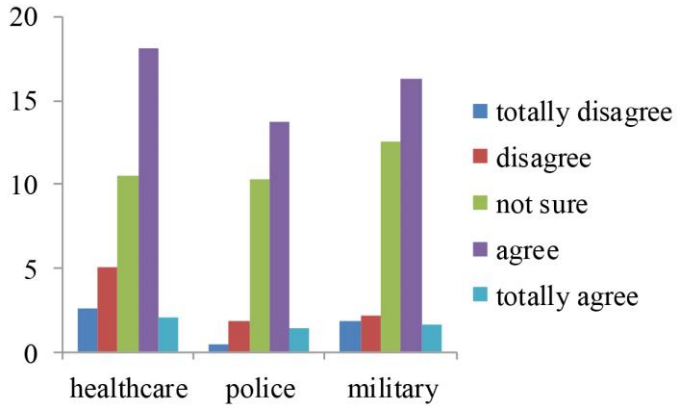

Figure 8. Frequency of passengers' satisfaction with the level of hygiene in buses with respect to the profession (expressed in percentages of the total sample)

Statistically significant differences in the passengers' opinion about the possibility of becoming infected in buses with respect to the profession were noticed, too ($\chi^2 = 15.708$, df = 8, $p < .047$). Accordingly, staying in the busses of urban public transport, the medical staff employed in

the defense and security sectors considered, in the highest percentage, as a threat of potential infection.

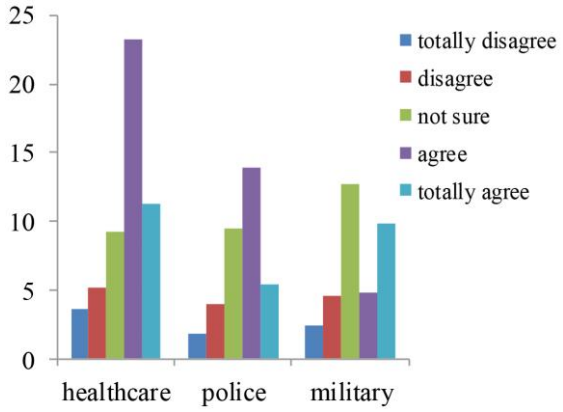

Figure 9. Perception of the possibility of infection by COVID-19 in buses

DISCUSSION

The number of passengers in a vehicle, together with well informed users, is an important item in assessing the quality of public city transport services (Filipović et al., 2009). Under conditions of the pandemic, it was a challenge to organize public city transport that will ensure respecting the imposed anti-epidemic measures and the appropriate quality of service. The research showed that 53% of the respondents used public city transport services every day during the state of emergency, and that 67% used both zones, so it might be concluded that the number of passengers was high and unevenly distributed with regard to the lines. The overload of certain lines, especially in the "peak" period in Belgrade, was the subject of many controversies and research in the previous period (Filipović et al., 2009; Gladović & Deretić, 2014). Given the further reduced timetable, as well as the limited capacity of vehicles, it was expected that passengers would be dissatisfied both in terms of the quality of service and in terms of personal-safety perception in public city transport. Also, results of the research indicated that the weakest link in terms of the quality of the public city transport services during the state of emergency was the level of information provided regarding the changes in the traffic timetable and the introduction of ”corridor lines.“ Foreign experience has shown that in case of a pandemic, it is necessary to organize detailed information campaigns which would enable passengers to be accurately and timely informed about all the changes in the public city transport (Bubalo et al., 2021; Shen et al., 2020). On the other hand, re-

sults of the research show that the passengers were very satisfied with the behavior and kindness of the drivers.

From the aspect of the perception of personal safety in the public city transport, it is expected that the public city transport will be recognized as a place of high risk of infection, as shown by global trends (Eubank et al., 2004; Troko et al., 2011). According to the results of this research, the categories of passengers who participated in the research were satisfied with the measures taken, but the subjective feeling of fear of the possibility of infection during the use of public city transport was present to a large extent. The possibility of transmitting the virus and the constant fear of getting sick, both at work and on the way to and back home, certainly made medical staff more anxious than soldiers and police officers. Increased efforts and stress at work, awareness of possible risks to oneself and family, along with the increased awareness of the seriousness of the disease, as well as responsibility towards others, have certainly made medical staff in defense and security sectors pay more attention to anti-epidemic measures in the public city transport. This is supported by their more pronounced dissatisfaction with the issue of cleanliness and tidiness of public city transport vehicles in comparison to soldiers and police officers. Results obtained by other authors are in line with the data obtained in this research (Beck & Hensher, 2020).

Medical staffs employed in defense and security sectors consider the stay in the public city transport vehicles to be the greatest threat to health. The obtained data are in accordance with the results obtained by Marković et al. (2020), that the greatest fear among medical staff is that they can become infected by COVID-19, despite respecting all anti-epidemic measures (81%), and that the level of anxiety and depression of medical staff in Serbia is increased in comparison to soldiers. These data were also confirmed in Northern Macedonia (Ristevska-Dimitrovska & Batić, 2020) and PTSD (post-traumatic stress disorder) was registered in the population of medical staff, unlike the military staff, police staff and the general population. Similar results were obtained in the United Kingdom (Walton et al., 2020) and therefore, as a form of support for medical staff during the pandemic, it was proposed to organize transportation from home to work and back, by the employer. However, obtained data are inconsistent with data from India (Agarwal & Biswas, 2020) on the increased fear of police officers of possible infection in transportation. Potential explanations may be cultural differences - understanding masculinity as an important factor in the professional vocation in terms of gender roles as an important part of business culture (Alcadipani et al., 2020; Loftus, 2010). Of course, the fact that the job of a police officer is relatively low paid with regard to the risk, the stress at work being chronically present, the occurrence of a pandemic does not significantly change the perception of stress level (Violanti et al., 2016), especially not for

women, whose perception of stress level is already very high (Ristevska-Dimitrovska & Batić, 2020).

CONCLUSION

The main function of urban public transport system in emergency situations is to ensure the mobility of employees in strategic professions (healthcare, food industry, police, military, etc.). In the state of emergency caused by the current COVID-19 pandemic, urban public transport system had dual responsibility: to ensure mobility and avoid disease transmission. In this situation, the management of transport enterprises, among many factors, had to consider consumers' behavior patterns and attitudes towards the pandemic.

Experiences from the state of emergency caused by the COVID-19 pandemic have indicated changes in the travel habits associated with going to and from work. There has been an increase in the use of private vehicles, bicycles, walking, but also changes in the perception of the quality of service in public transport. It should be taken into account that in many situations it is not possible to change travel habits, due to the great distance between home and work, as well as that there are professions whose work cannot be organized otherwise, such as health, defense and security, which are key to the functioning of the state itself, especially in emergencies. Therefore, contingency plans need to be based on the experience gained during the state of emergency caused by the pandemic.

Bearing in mind the specifics of each emergency situation, urban public transport system needs to develop contingency plans for different scenarios. Some common requirements faced by the urban public transport system in the emergency situations similar to the COVID-19 pandemic could be recognized in this study and can be summarized as follows:

- The need to develop emergency network routes and mechanisms of monitoring the number of passengers and the level of vehicle occupancy,
- The need to create guidance regarding hygiene and safety measures, and ensure ways of their implementation,
- The need to use of information technology to support the implementation of the developed plans and to inform passengers about public transport organization and
- The need to develop financial mechanisms to conduct the contingency plans.

The reliability and sustainability of urban public transport system requires constant investment of large sums of money on a daily level in regular circumstances. This need is especially important in emergency conditions when there are numerous unforeseen problems and costs caused by the requirement to comply with anti-epidemic measures. As an

attempt to satisfy their consumers and to make possible the working process of vital institutions of the capital, the urban public transport service had to overcome these challenges with accessible financial resources, with no additional help. Since the results of this research showed that sustainability of the transport system in emergency situations also depends on the flexibility of customers and their readiness to support route changes and changes of travel habits made by the management, the role of the human factor in the sustainability of urban public transport system is also significant.

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СТАВОВИ ПРИПАДНИКА СЕКТОРА ОДБРАНЕ И БЕЗБЕДНОСТИ О КВАЛИТЕТУ УСЛУГА ЈАВНОГ ГРАДСКОГ ПРЕВОЗА ЗА ВРЕМЕ ВАНРЕДНОГ СТАЊА ПРОГЛАШЕНОГ ЗБОГ ПАНДЕМИЈЕ КОВИД-19

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Резиме

Светска здравствена организација (СЗО) је прогласила КОВИД-19 пандемију 11. марта 2020. године. Широм света је ограничено кретање становништва, уведено је обавезно ношење заштитних маски, физичко дистанцирање од најмање два метра, обустављена је настава у школама и на факултетима, лимитиран је рад привредних субјеката, увођена су "закључавања" и полицијски часови, ограничена су окупљања а редукован је и јавни превоз. Ванредно стање услед епидемије КОВИД–19 у Србији је трајало 45 дана (23.03.2020. - 08.05.2020.). Због тога је била потребна темељна реорганизација структуре, начина, средстава и услова градског превоза, уз обавезно поштовање протиепидемијских мера како би се омогућило онима који, због природе посла, нису могли радити од куће, а чије је обављање њихове дужности било од виталног значаја за функционисање земље у току ванредног стања (здравство, војска и полиција), и који нису имали на располагању други начин долажења до посла, да неометано користе градски превоз. На основу доступних података у претходним интерним истраживањима ГСП, формиране су 34 тзв. "коридорске линије" на територији градских општина чије је коришћење било допуштено само онима који су имали радну обавезу и одговарајућа документа. Све ове мере су уведене због препознавања јавног градског превоза као могућег епицентра даљег ширења инфекције. Тај потез је актуализирао два питања: безбедности коришћења јавног превоза у доба пандемије и утицај пандемије на организацију самог превоза и квалитет услуга. С обзиром на то да су претходна истраживања епидемија разних заразних болести показала да је јавни градски превоз једно од могућих жаришта у трансмисији различитих вируса у разним епидемијама, предмет овог истраживања је било утврђивање степена задовољства и осећаја сигурности корисника услуга јавног градског превоза за време ванредног стања проглашеног услед пандемије КОВИД-19. Истраживање је спроведено на 504 припадника сектора одбране и снага безбедности. Инструмент је конструисан у форми анкете специјално у сврхе овог истраживања. Независне варијабле су биле пол, старост, ниво образовања, а зависне варијабле су се односиле на процену испитаника о различитим аспектима функционисања градског превоза. Подаци су обрађени помоћу фреквенција, процената и χ^2 теста. Показало се да постоје одређене разлике у ставовима по питању различитих аспеката задовољства (нарочито хигијене возила и квалитета информисаности путника), као и сигурности приликом коришћења услуга ГСП у односу на професију којом се испитаници баве. У возилима ГСП су се најмање безбедно осећали медицински радници запослени у секторима безбедности и одбране, који су истовремено и највише користили услуге градског превоза. С обзиром на то да су добијени резултати указали на промене у навикама путовања повезаних са одласком на посао и повратком са посла, као и промене у перцепцији квалитета услуга јавног превоза од стране путника и економску одрживост јавног градског превоза, потребно је искуства из ванредног стања изазваног пандемијом КОВИД–19 инкорпорирати у будуће акционе планове о организацији и функционисању јавног градског превоза у потенцијалним ванредним околностима.