

The Assessment of Public Health Capacities at Local Self-governments in Serbia

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Abstract The objective of this quantitative study was to examine the impact of selected factors on the level and state of public health capacities in local self-government units in 2021. This survey included 77 out of 145 local self-government units in the Republic of Serbia and examined six dimensions defined by the Law on Public Health. The results of the Pearson correlation showed that there were statistically significant correlations between the effectiveness of the realized program budget and microbiologically defective drinking water samples from the so-called village water supply systems, defective samples of drinking water from public taps, unsatisfactory analyses of wastewater samples, and the number of mandated fines issued. The results of the logistic regression model showed that the local self-government units that received assistance from the Standing Conference of Towns and Municipalities were 5.6 times more likely to perform analyses of their health status.

Keywords: • public health • local self-government • capacity development • Serbia

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1 Introduction

The health of the nation is the most valuable resource of any country and is essential for the sustainable economic and social development of every individual, family, and community (Kwangkee & Moody, 1992; Kaur, 2020; Cvetković, et al., 2022a; Akter et al., 2023). Provided through the coordinated efforts and well-informed decisions made by societies, organizations (both public and private), communities, and people, public health refers to the science and art of avoiding disease, extending life, and promoting health (Gatseva & Argirova, 2011; Rocha et al., 2019; Al-ramlawi et al., 2020; El-Mougher, 2022). The goals of public health are aimed at prolonging life and improving health through the organized efforts of society and providing conditions in which people can be healthy, and these goals are primarily aimed at the population as a whole (Rosen, 2015). Creating resilient, adaptable communities and supportive environments is one of the goals of the “Health 2020” police framework developed by the World Health Organization (WHO), of which Serbia is also a signatory. Resilient communities are those that react proactively to new or unwanted situations; prepare for economic, social, and environmental changes; and cope well with crises and difficulties (Kirmayer et al., 2009; Öcal et al., 2020). Health promotion and disease prevention include the adoption, implementation, and evaluation of health promotion programs in cooperation with public health actors in the community, based on risk analysis and the health needs of the population (Li et al., 2020). Health education and promotion in the community are carried out through campaigns promoting healthy lifestyles and preservation and improvement of the environment and the work environment (Nutbeam, 2000; Cvetković et al., 2021), as well as advocacy for organizational changes in the environment and the creation of an environment that supports healthy choices (Harms-Ringdahl, 2001; Mekonnen & Hoekstra, 2016; Cvetković, Öcal, & Aleksandar, 2019; Doherty, Del Giudice, & Maggi, 2019; Cvetković et al., 2020).

The reform of the health system in the first decade of the 21st century in Serbia devastated the existing network of services for the healthcare of workers in institutions in the Network Plan. Private health institutions play the leading role in the preventive examinations of the working population, performing periodic and systematic examinations specific to the workplaces of employees. The level of participation of local governments in health promotion campaigns in the community was satisfactory. After the decentralization process in 2005, local governments received the founding rights in relation to primary healthcare institutions. The health policy adopted at that time, described in the document *Better Health for All in the Third Millennium* and the series of activities undertaken in accordance with the action plan required the significant engagement, aside from the health sector, of a number of different actors associated with public health in the community. Numerous programs have strengthened the civil sector, including both citizens’ associations and patients’ associations. Through numerous projects, actors in the

community were strengthened through the formation of a partnership with a common goal, creating conditions in their living and working environments designed to lead to the improvement and preservation of health and increase the quality of health services.

Regional development programs vary in their approach to healthcare. While some programs allocate only a limited amount of attention to healthcare, others take a more comprehensive approach, developing detailed concepts and strategies for healthcare (Rozmarinová, 2019). Jagrić et al. (2021) state the importance of the effects of financing the regional healthcare sectors.

At the same time, the focus of health protection institutions at that time changed significantly to reflect a new, significantly broader concept of public health. From numerous projects supported by the international community, foundations of advisors arose for the protection of patient's rights and the provision of health advice. During the past fifteen years, the involvement of these actors in the community has been strengthened, but we must certainly not neglect further work with young people who are just getting involved in the field of public health. Health centers, as providers of primary healthcare, are the strongest partners in local self-government units, and it is necessary to nurture and further improve these relationships by all means, as well as partnerships with experts from the Institute for Public Health.

In this study, we assessed Public Health Capacities at Local Level and performed a comparative analysis with the situation in 2019–2021, as well as the implementation of the competences of Local Self-Government Unit (LSGU) in the areas of public health. The first assessment of the state of public health in LSGU was conducted during the period of January–May 2020 for 2019. The analysis of the state of public health at the local level for 2019 provided the starting point for the regular monitoring and evaluation of indicators in the field of public health and health improvement at the local level.

2 Literature Review

The major challenges involved in analyzing the field of public health include the emphasis on populations rather than individuals, multi-component interventions, qualitative as well as quantitative approaches, the emphasis on implementation processes, and the complexity and long-term nature of interventions and outcomes (Jackson & Waters, 2005). Public health interventions are highly cost-saving and cuts to public health budgets in high-income countries generate billions of pounds' worth of additional costs to health services and the wider economy (Jackson & Waters, 2005; Glanz & Bishop, 2010; Masters et al., 2017; Hartley & Perencevich, 2020). State policymakers and taxpayers continue to have serious concerns about

the rising cost of healthcare (Bradley et al., 2016). The United States spent about one-fifth of its GDP, or USD 4.7 trillion, on its healthcare system in 2021, which was by far the highest amount spent by any country [National Health Expenditure Accounts (NHEA), 2023]. Around the world, various public health interventions are being implemented, including smoking cessation programs (Collins et al, 2015), home blood-pressure monitoring for the diagnosis and treatment of hypertension (Arrieta et al., 2014), workplace health promotion for firefighters (Kuehl et al., 2013), health promotion programs for hospital staff (Long & Sheehan, 2010), the implementation of speed cameras in urban settings (Mendivil et al., 2012), intensive early education programs for socioeconomically deprived families (Reynolds et al, 2011), social service interventions (Frank et al., 2006; Ludwig et al., 2011), and income support services for older adults (Herd, Schoeni, & House, 2008).

Wilkinson and Pickett (2010) found that people's health was better in countries with less inequality in incomes. Furthermore, Lewis (2006) found that good governance is important in ensuring effective healthcare delivery, and that returns to investments in health are low in cases where governance issues are not addressed. Bara, Van den Heuvel, and Maarse (2002) suggest that future reforms in Romania should encourage the free choice of physicians, the autonomy of the primary healthcare system, and increasing financial resources for the healthcare system. China needs to reorganize its public health system and the demand side of the public health system, particularly in regard to reducing the financial barriers to public health services (Liu, 2004). Kawachi (2001) found that better social engagement, collective efficacy, and trust are associated with better health outcomes.

In a 2003 poll conducted in Germany, 89 percent of participants reported being in good health, with 10 percent reporting a sickness and 1 percent reporting an accident-related injury. Ninety-three percent of young children were deemed healthy. The proportion of healthy persons was highest among those between the ages of 10 and 20 (96%) and lowest among those between the ages of 60 and 75 (72%), who also had the highest proportion of sick (27%) and damaged (1.1%) people, respectively, as well as injured people (1.1%) (Busse, Riesberg, & World Health, 2004). In Italy, the majority of national and local taxes (97%) and patient co-payments go toward funding public healthcare. Private spending in 2001 was 21.4 billion euros, or 2.1 percent of GDP, and was mostly funded by personal funds. The majority of ambulatory specialist treatments and private hospital care for childbirth and minor surgery were covered by the 15% of Italians who have private health insurance (France, Taroni, & Donatini, 2005).

For professionals such as nurses, doctors, dietitians, educators, and social workers, public health program designers and practitioners must offer training across sectors. They also need to check public health mass communication messages for stereotyping, blaming, and inaccuracy (MacLean et al., 2009). Anugwom (2020)

found that effective legislation, substantial funding, gender inclusivity, increased research, the assessment and evaluation of routine needs, the setting of needs-driven priorities, and the development of the capacity of health promotions to target marginalized and vulnerable members of society are just a few of the ways that health promotion in the continent can be strengthened. A more widespread adoption of evidence-based tactics has been advised in order to accomplish state and national goals for improved population health (Fielding & Briss, 2006; Brownson, Fielding, & Maylahn, 2009; Brownson et al., 2017). The development of healthy public policies, requirements to ensure that environments are supportive of health, the significance of personal skills, community action, and the challenge of reorienting health services are five key action areas that mutually reinforce one another with the aim of improving the health of populations (Kickbusch, 2003). Prevention campaigns should systematically incorporate and respond to the existing beliefs and emotions of at-risk populations, as well as the perceived barriers in the message design process, to effectively promote changes in behavior (Boulware et al., 2003; Cho & Witte, 2005).

The objective of this study was to examine the situation of public health in local self-government units in Serbia, that is, to carry out assessments of the built capacities of public health actors in the community. Besides this, the assessment of the capacities of public health actors in the community has been examined in the context of the following sub-goals:

- To determine the selected indicators for each area of public health as parameters for monitoring the effects of the activities undertaken by various actors in local self-government units;
- To evaluate the cooperation of health councils and public health institutes, as well as other partners and actors related to public health in the community.

3 Materials and Methods

The objective of this quantitative study was to examine the impact of selected factors on the level and state of public health capacities in local self-government units in 2021, with the consideration of data from 2020 and 2019. On the basis of the research conducted, we have made recommendations for the further development of public health capacities in local self-government units. In this study, statistical analyses included analysis of variance (one-way ANOVA), Pearson's correlation coefficient (r), and the multivariate linear regression model. Besides, the multivariate linear regression model was used to determine the predictors of health status of local self-government units scores.

3.1 Study Area

In Serbia, health councils are responsible for providing social care for public health at the level of local self-government units according to the Law on Public Health (Official Gazette of the RS, No. 15/16) and the Law on Patients' Rights (Official Gazette of the RS, No. 45/13). The intersectoral composition of the council enables a comprehensive approach to meeting health needs, supported by a wide network of partners at the local community level. Through its advisory role, the council provides support in the process of strategic planning, the selection of priorities for financing programs related to health in the local community, as well as the coordination of the activities of other services and administrations of local self-government units related to health (communal activities, education, social protection, environment, sport, traffic, youth office, employment, urban planning, etc.). The Law on Health Care (Official Gazette of RS, No. 25/19, article 13) prescribes the competencies of local self-government units, and the founding rights have been returned to the Republic of Serbia. The monitoring and analysis of capacities and resources in the health system (personnel, equipment, space), the financing of healthcare, the coverage of the population with regard to health services, as well as ensuring the implementation of established priorities in healthcare in the territories of local self-government units are the responsibilities of the health councils and advisers for the protection of the rights of patients. According to the abovementioned law, the areas of action in regard to public health are (1) the physical, mental, and social health of the population; (2) health promotion and disease prevention; (3) environment and population health; (4) working environment and population health; (5) the organization and functioning of the healthcare system; (6) the handling of crisis and emergency situations.

Cities and municipalities, according to the competences derived from the Law on Local Self-Government ("Official Gazette of the RS", no. 129/07, 83/14) perform many functions that are directly related to the protection of the environment and health. The Law on Public Health stipulates that local self-government units, as part of the social provision of healthcare, have the obligation to implement preventive measures for the preservation and improvement of the environment (water, air, soil, noise, vibrations, and ionizing and non-ionizing radiation), ensuring the conditions for supplying the population with healthy water for drinking and safe food and the disposal of waste materials, as well as activities related to sanitary, hygienic, and epidemiological surveillance. The tasks related to monitoring and supervision are carried out by the territorially competent public health institutes; they analyze the health status of the population through assessments of health risks related to the impact of the environment.

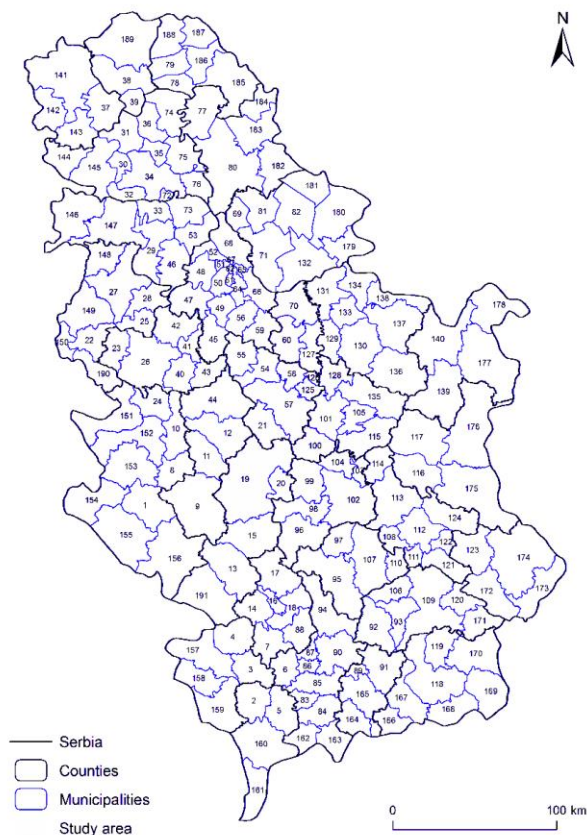
The Standing Conference of Towns and Municipalities (SCTM) implemented a series of activities aimed at achieving the key interests of local self-governments,

which are defined in the strategic and program documents of SCTM, as well as through the actions of its organs and bodies. Given that this is a continuous process, it is necessary to continuously monitor the situation on the ground, and adjust the methods and scope of support provided to local self-government units in this area according to the assessed situation. One of the activities carried out as part of this monitoring process is the analysis of the state of public health at the local level, which is conducted using an electronic database containing information on the implementation of the responsibilities of local self-government units in the field of public health.

Public health enforcement in the area of dealing with emergency situations includes public health risk assessments and actions conducted according to the law that regulates this area (the Law on Disaster Risk Reduction and Emergency Management). Each unit of local self-government is obliged to prepare protection and rescue plans and plans for action in emergency situations, as well as to implement security measures and the exchange of information in emergency and crisis situations.

This survey included 77 local governments in the Republic of Serbia (Figure 1). In terms of regions, local self-governments from Vojvodina (32.5%) Šumadija and Western Serbia (32.5%) participated the most, and those from Belgrade participated the least (7.8%) (Figure 1). A complete table of all Serbian municipalities (with IDs) is shown in the Supplementary Materials.

Figure 1: Study areas. Source (authors)



3.2 Sample

In terms of regions, the study covered 32.6% of local self-governments from Vojvodina, 32.4% from Šumadija, 27.3% from Southern and Eastern Serbia, and 7.8% from Belgrade. Table 1 shows the cities and municipalities that submitted questionnaires in electronic form by region.

Table 1: Cities and municipalities by region

City/Municipality by Region			
Vojvodina	Belgrade	Southern and Eastern Serbia	Šumadija and Western Serbia
Sombor	Barajevo	Bor	Grad Užice
Kula	Zvezdara	Požarevac	Sevojno
Odžaci	Zemun	Veliko Gradište	Kosjerić
Bela Crkva	Mladenovac	Žabari	Nova Varoš
Opovo	Čukarica	Malo Crniće	Lajkovac
Plandište		Zaječar	Ub
Novi Sad		Boljevac	Paraćin
Bač		Sokobanja	Svilajnac
Bačka Palanka		Bojnik	Kruševac
Vrba		Medveđa	Čičevac
Bečej		Crna Trava	Varvarin
Srbobran		Niš–Niška Banja	Trstenik
Titel		Aleksinac	Novi Pazar
Sremski Karlovci		Gadžin Han	Raška
Kikinda		Ražanj	Kragujevac
Ada		Smederevo	Arandelovac
Kanjiža		Velika Plana	Batočina
Subotica		Smederevska Palanka	Lapovo
Mali Idoš		Dimitrovgrad	Topola
Zrenjanin		Bujanovac	Šabac
Novi Bečej		Vladičin Han	Ljubovija
Šid		Blace	Ivanjica
Ruma		Kuršumlija	Lučani
Pećinci			
Indija			

Source: Own elaboration based on research.

The degree of development of local self-government units is an important indicator of the economic development of municipalities. It is determined by applying basic and corrective indicators. The basic indicator is the sum of the total amount of wages and pensions in the local self-government units in accordance with the budget income of the local self-government units, expressed per capita, after excluding the funds received from other bodies in order to eliminate the consequences of extraordinary circumstances. Corrective indicators are demographic decline or growth, the unemployment rate and the level of education.

Concerning the functional role of the person who filled out the questionnaire, the majority were Heads of the OU/GU (41.6%), followed by heads of departments (13%), heads of the Administration for Social Activities (6.5%), city administration employees (4.2%) and council members (2.6%). In the process of filling out the questionnaire, other functional roles were also reported (coordinator of the health council; employees on the legalization of facilities; presidents of the assembly and the health council, an associate in the field of public health, a social and healthcare advisor, an advisor for the protection of patients' rights, an advisor for environmental protection and ecology, the head of the department for social activities, head of the department for the protection of veterans/disabled people, head of the department for social activities, etc.).

3.3 Questionnaire Design

In order to realize the research objectives, a survey questionnaire entitled "The assesment of public health capacities at the local level for the year 2021 was used. Before the study was carried out, a group of experts analyzed all the questions in detail and made suggestions for its improvement in accordance with changes in the socio-economic and political environment, as well as recommendations for improving the questionnaire on the basis of previous research. The questionnaire consisted of a general and a special part, with six units:

- (a) Basic knowledge on local self-government units (5 questions);
- (b) Social care for the public health of the city/municipality regarding:
 - Physical, mental, and social health of the population (27 questions);
 - Promotion and disease prevention (6 questions);
 - Environment and health (42 questions);
 - Environments and population health (6 questions);
 - Organization and functioning of the health system (15 questions);
 - Dealing with emergency and crisis situations (15 questions).

The questionnaire was constructed in such a way as to include all areas of public health based on the available knowledge concerning the previous activities of local self-government units. The questionnaire primarily dealt with health councils and their development, as well as the monitoring of activities in the previous period. The structured questionnaire was developed using closed-ended five-point Likert scale questions (where 1 indicates strong disagreement and 5 indicates strong agreement). Based on the consensus of the expert team, additional data for analysis were obtained from the official databases of the Institute of Statistics of the Republic of Serbia (Papanicolas et al., 2018), from Institute of Public Health of Serbia (IJZS) (Reynolds et al., 2011), and from the Decision on local self-government units budgets database (2019–2022). A questionnaire, created and placed in Google Forms, was used as a tool.

Standing Conference of Towns and Municipalities invited all municipalities and cities via e-mail to participate in the survey on the state of public health in the Republic of Serbia. An invitation letter, instructions for filling in the questionnaire, a link to the questionnaire in electronic form, a Word version of the questionnaire, and the deadline for the submission of answers were sent via e-mail. We suggested that the person filling out the questionnaire should be the head of the city/municipal administration. The study did not include local self-government units from the regions of Kosovo or Metohija (Kosovo* - This designation is without prejudice to positions on status and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo* declaration of independence). The e-mail also contained the contacts of people for professional support regarding the content of the questionnaire and the process of completing the questionnaire electronically.

In the instructions, it is proposed that different administrations/services or departments should participate in filling out the questionnaire as:

- The part of the questionnaire related to the physical, mental, and social health of the population and health promotion and disease prevention was filled in by employees of social services, health or health advice professionals;
- The part of the questionnaire related to the field of the environment was filled out by employees of environmental services and communal activities;
- The part of the questionnaire related to working environments was filled out by employees of occupational health and safety services and inspection services;
- The part of the questionnaire related to the organization and functioning of the health system was filled out by employees who work in relation to health and social activities.

Finally, the part of the questionnaire related to emergency and crisis situations was filled out by employees who work in relation to social and health activities and the Headquarters for Emergency Situations. The research protocol was approved by the committees of the Institutional Review Board, University of Belgrade, the Institutional Review Board of the Scientific-Professional Society for Disaster Risk Management, and the International Institute for Disaster Research (protocol code 002/2021, 14 March 2022).

3.4 Analyses

In the program for statistical data processing (SPSS), all the data obtained from the survey were sorted and classified. In the logistic regression model, five independent variables were used (formed council, appointed coordinator, public health plan, received assistance, and having a rights protection advisor) that had statistical significance ($p < 0.05$). For more detailed analyses, T-tests, Pearson's correlation,

and chi-squared tests were used. The assumptions underlying the analyses, such as the assumption of normality, linearity, multicollinearity and homogeneity of variance, were not violated (Rocha et al., 2019). The mentioned statistical analysis was performed using IBM SPSS Statistics, Version 26. Previous investigations of the residual scattering diagram revealed that the assumptions of normality (normal probability P-P plot and scatterplot), linearity, multicollinearity ($r = 0.81$), and variance homogeneity were not violated. The internal consistency of Likert scales was good, with a Cronbach's alpha of 0.82.

4 Results and Discussion

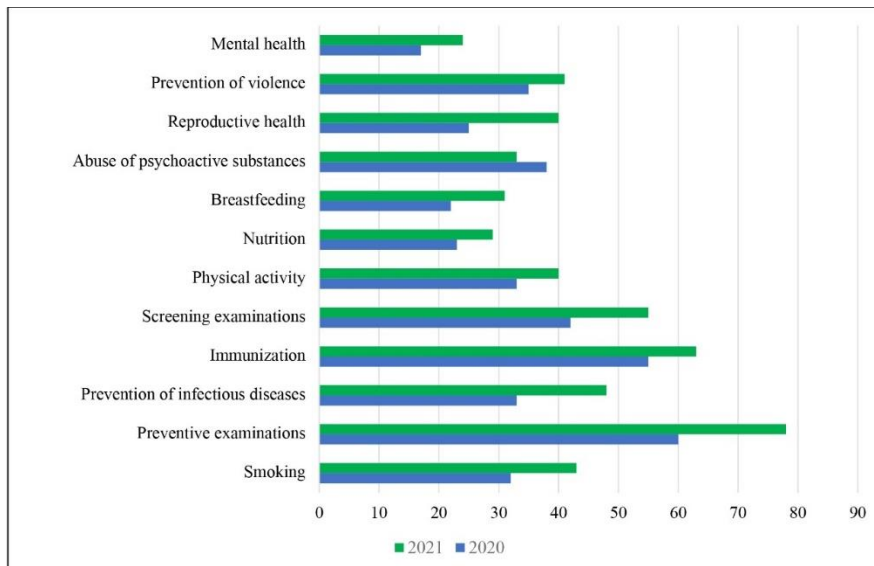
The study's findings are presented in relation to the following dimensions:

- 4.1 Correlation analyses of variables affecting public health in Serbia;
- 4.2 Predictors of the state of public health in Serbia.

4.1 Correlation analysis of variables from the field of public health in Serbia

Our analysis showed that most local self-government units had a local action plan for youth (49.4%), followed by a slightly lower proportion having a local action plan for Roma and the City/Municipal Social Protection Strategy (42.9%) and the third-highest proportion of units having a local action plan for waste management 40.3%. A small proportion (1.3%) of local self-government units had a local action plan for the prevention of HIV/AIDS, the improvement of mental health, and preventing the abuse of psychoactive substances. A comparative analysis of the strategic documents adopted at the local self-government unit level (strategies, plans, and local action plans) with the previous two years of research showed an increase in the participation of local self-government units with the increased adoption of the following planning documents: public health plans, local action plans for Roma, social protection strategies and programs, and local action plans for the disabled. In further analyses, we determined that over 61.5% of local self-government units committed over 95% of their planned budgets for program activities in the field of public health, whereas 10.3% committed up to 70%, etc. We observed a decline in the participation of local self-government units in campaigns promoting healthy lifestyles during the observed three years. Nevertheless, the surveyed local self-government units strengthened their cooperation with health centers, civil society organizations, and the competent institutions for public health in their activities related to the promotion of healthy lifestyles. Compared to the previous year, the campaigns were on a larger scale for all topics except the abuse of psychoactive substances (Figure 2).

Figure 2: Content participation in community campaigns/promotion, expressed as percentages, 2020–2021



The results of the chi-squared tests showed that there was a statistically significant relationship between the establishment of a council for public health and the following variables ($p < 0.05$): having a Work Plan for 2022; having a public health plan; the participation of a SCTM in the process of making the plan; the process of making a plan with the help of institutions/institutes; having a representative of the institute for public health; the attendance of meetings by representatives; the availability of analyses of the state of health of LSGU (3 years); the identification of vulnerable groups; the performing of public health risk assessments by LSGU; the availability of inspection reports; the implementation of campaigns promoting healthy lifestyles; different methods of supporting campaigns; the cooperation of the council with the Headquarters ($p < 0.05$); the availability of analyses of environmental indicators; the awareness of suggestions for improving environmental indicators; the existence of zones of sanitary protection of the water supply; the creation of a map/diagram of the water supply system ($p < 0.05$); the availability of a water network reconstruction plan; having a wastewater treatment plant; having a register of septic tanks and collecting pits; performing air control measures; having a municipal waste dump; access to data on employee injuries; having a system for monitoring work injuries; having an adviser for the protection of patient rights; having a local emergency healthcare plan; having a protection and rescue plan; and conducting exercises and education in the area of providing first

aid. No statistically significant correlation was found with the other variables (Table 2).

Further analysis showed that LSGU that had formed a Health council had not adopted a Work Plan for 2022 in 71.6% of cases. Of the total number of LSGU that had formed a health council, 49.3% had not adopted a Public Health Plan, 16.4% had started the drafting process, and 6% had such a plan underway in the parliamentary process. Then, we determined that 53.7% of LSGU pointed out that the Standing Conference of Towns and Municipalities helped them in the process of making plans, whereas 46.3% pointed out that they did not receive such help. Furthermore, 52.2% of LSGU did not report that they had used the help of the competent institute in the process of creating their public health plan. It is important to point out that we determined that only 26.9% of LSGU that had formed a council did not have a representative of the institute for public health. On the other hand, 71.6% of LSGU had a representative of the institute in the council.

In the majority of LSGU that had formed a council (44.8%), the competent institute for public health had not prepared an analysis of the health status of the LSGU in the three years of the study period, whereas in 13.4% of cases it was in the process of being prepared. It is interesting to point out that in 52.2% of cases, LSGU did not identify vulnerable groups in the analysis of the health status of the city/municipality. The results showed that in 83.6% of LSGU that have formed a council, risk assessment studies for LSGU health had not been prepared, whereas, on the other hand, in 49.3% of LSGU, inspection reports for 2021 were not available.

In the further analysis of the obtained results, we determined that of LSGU that had formed a council, the majority (76.1%) participated in health promotion campaigns. In addition, we determined that LSGU that had formed a council provided support to the greatest extent (33%) by providing space, transportation, and media support. Furthermore, the majority of LSGU with established councils (61.2%) cooperated with the Headquarters for Emergency Situations. Moreover, many of them (56.7%) pointed out that no analyses of environmental indicators were available, and an even greater proportion (89.6%) did not give recommendations for the improvement of such indicators. Furthermore, we determined that LSGU which had formed a council, in most cases (74.6%), had established certain sanitary protection zones in regard to their water supply; they had a map/diagram of their water supply system (68.5%).

On the contrary, among LSGU that had not formed a council, most units (80%) had a plan for the reconstruction of the water supply network and they reported having wastewater treatment facilities to a greater extent (40%) than units that had formed a council. Several of these units reported having an advisor for the protection of

patients' rights (92.5%), having a developed plan for the protection and rescue of the population (55.2%), and had conducted exercises and education in the field of first aid (43.3%). On the other hand, LSGU that had formed a council had to a slightly greater extent (4.5%) established a register of septic and collecting pits, performed air control measures (47.8%); had access to data on employee injuries (20%), had a system for monitoring injuries (22%), and had a local plan for taking care of the health of the population in emergency situations (40%).

Table 2: Results of the chi-squared test regarding the relationship between the formation of a health council and selected variables

Variable	Sig. (2-Tailed)	df	χ^2
The adoption of a Work Plan for 2022	0.000 **	12	81.81
The adoption of a Public Health Plan	0.000 **	16	84.81
Receiving help from the SCTM	0.000 **	8	81.01
Type of assistance provided by the SCTM	0.000 **	16	54.40
Drafting of a public health plan	0.000 **	8	81.36
Representative of the institute in the council	0.000 **	12	86.83
Attendance of representatives at sessions	0.000 **	12	46.35
Access to analyses of the state of health of LSGU	0.000 **	12	51.51
Having identified vulnerable groups	0.000 **	8	42.87
Access to public health risk assessments of LSGU	0.002 *	12	31.65
Availability of inspection reports	0.000 **	25	94.66
Instituting campaigns promoting healthy lifestyles	0.000 **	8	80.24
Means of supporting campaigns	0.000 **	28	196.44
Cooperation with the Headquarters for Emergency Situations	0.000 **	12	88.34
Availability of analyses of environmental indicators	0.000 **	8	80.521
Making proposals for improving life indicators	0.000 **	8	87.12
Zones of sanitary protection for the water supply	0.000 **	12	80.73
Creation of a map/diagram of the water supply system	0.000 **	20	85.04
Having a plan for the reconstruction of the water supply	0.000 **	8	80.26
Having a wastewater treatment plan	0.000 **	8	80.24
Having a register of septic and collecting pits	0.000 **	8	39.05
Performing air control measures	0.000 **	8	43.51
Having a municipal waste dump	0.005 *	6	56.51
Availability of data on employee injuries	0.000 **	8	31–73
Availability of a system for monitoring work injuries	0.000 **	8	29.85
Having a counselor for the protection of patient rights	0.000 **	8	46.59
Having a local emergency healthcare plan	0.000 **	8	41.04
Having a protection and rescue plan	0.000 **	12	83.95
Conducting exercises and education in the field of first aid	0.000 **	8	79.90

* $p \leq 0.05$; ** $p \leq 0.01$.

Source: Own elaboration based on research.

The results of the chi-squared test showed that there was a statistically significant relationship between the development categories of LSGU and the following variables ($p < 0.05$): having a Work Plan for 2022; having a public health plan; receiving help from the SCTM in the process of making the plan; the type of help

provided by the Standing Conference in the process of creating a plan; the creation of a public health plan; having a representative of the institute on the council; the attendance of meetings by representatives; the availability of analyses of the state of health of LSGU (3 years); having identified vulnerable groups; the availability of LSGU' public health risk assessments; the availability of inspection reports; instituting campaigns promoting healthy lifestyles; cooperation of the council with the Headquarters; the availability of analyses of environmental indicators; making suggestions for improving environmental indicators; having zones of sanitary protection of the water supply; having a map/diagram of the water supply system; having a water network reconstruction plan; having a wastewater treatment plant; having a register of septic tanks and collecting pits; performing air control measures; having a municipal waste dump; the availability of data on employee injuries; having a system for monitoring work injuries; having an adviser for the protection of patient rights; having a local emergency healthcare plan; having a protection and rescue plan; and conducting exercises and education in the area of providing first aid. No statistically significant correlation was found with the other variables (Table 3).

Further analyses showed that the LSGU belonging to the fourth category of development in the largest number of cases (88.2%) had not adopted a work plan for 2022. In contrast, LSGU belonging to the second category of development had most often (33%) adopted such a document. Furthermore, we determined that LSGU in the second category of development had adopted a public health plan to the greatest extent (38.9%). In the same category of LSGU, respondents pointed out most frequently (66.7%) that the SCTM helped them in the process of developing the plan, whereas this was noted the least (58.3%) by LSGU belonging to the third category of development. LSGU in the third category of development pointed out to the greatest extent (33.6%) that the SCTM provided them with assistance in the form of training, professional support, and the use of manuals for the development of a public health plan.

The largest proportion (66.7%) of LSGU from the second category developed a public health plan with the help of the competent institution. On the other hand, this was reported in the smallest number of cases (23.5%) by LSGU from the fourth category of development. In addition, we determined that LSGU from the fourth category of development, in most cases (76.5%), had a representative of the competent institution/institute on the health council, whereas LSGU from the third category reported this the least (66.7%). Furthermore, LSGU from the second category of development reported to the greatest extent (72.2%) that representatives of institutions regularly attended sessions, whereas those in the III category of development reported this the least (33.3%).

Most LSGU from the second category of development (51%) had conducted an analysis of the health status of LSGU for the previous 3 years. In LSGU from the first category of development, to the greatest extent (70.6%) of vulnerable groups were identified within the analysis of the health status of LSGU. In the largest number of cases, LSGU from the fourth category of development (94.1%) did not have access to a public health risk assessment of LSGU. Moreover, we determined that LSGU from the third category (33.3%) most often emphasized that they had inspection reports available for the year 2021.

In further analyses of the obtained results, we determined that LSGU from the first category participated to the greatest extent (94.4%) in health promotion campaigns, whereas LSGU from the fourth category participated the least (58.8%). In addition, LSGU in that category emphasized to the greatest extent (61.1%) that analyses of environmental indicators were available to them, whereas LSGU from the fourth category (23.5%) emphasized this the least. To the greatest extent, proposals for improving the analysis of environmental indicators were given by LSGU from the second category of development (27.8%), whereas LSGU from the first category of development (5.6%) reported this the least. Sanitary protection zones had been determined to the greatest extent (88.9%) by LSGU from the second category of development, whereas LSGU from the first category of development reported this the least (61.1%).

The majority (77.8%) of LSGU from the second category had a map/scheme of their water supply system, whereas the LSGU from the third category (55.6%) reported this the least. Having a plan for the reconstruction of the water supply network was reported to the greatest extent (94.4%) by LSGU from the second category, whereas LSGU from the fourth category reported this the least. Wastewater treatment plants were mostly owned by LSGU from the second category (66.7%), whereas LSGU from the first category (33.3%) were the least likely to own them.

Registers of septic and collection pits were reported most often (5.9%) by LSGU from the fourth category of development, whereas this was reported the least (0.5%) by LSGU from the first category. Air control measures in LSGU were carried out to the greatest extent (72.2%) by LSGU from the second category, whereas these were carried out by the fewest LSGU in the fourth category (17.6%). Data related to injuries of employees in the workplace were most frequently reported to be available (35.3%) to LSGU from the fourth category, whereas this was reported the least by LSGU from the second category (16.7%). A system for monitoring work injuries was available to the greatest extent (29.4%) to LSGU from the fourth category, whereas LSGU from the third category (8.3%) reported this the least. Advisors for the protection of patients' rights were reported to the greatest extent (95.8%) by LSGU from the third category. The existence of a local plan for taking care of the health of the population in emergency situations was most often reported

(33.3%) by LSGU from the third category, whereas LSGU from the first category (16.7%) were the least likely to have such plans.

Having a plan for protection and rescue in emergency situations was reported to the greatest extent (58.3%) by LSGU from the third category, whereas this was reported the least by LSGU from the second category (44.4%). Practices and education in the field of providing first aid were most often provided by LSGU from the first category (50%), whereas LSGU from the second category (38.9%) reported the lowest amount of training. Furthermore, the results showed that LSGU from the third category most often (62.5%) emphasized that the health council cooperated with the Headquarters for Emergency Situations, whereas LSGU from category IV emphasized this the least (47.1%).

Table 3: Results of the chi-squared tests of the relationship between LSGU' development categories and selected variables

Variable	Sig. (2-Tailed)	df	X ²
The council adopted a Work Plan for 2022	0.000 **	12	84.42
The council adopted a public health plan	0.000 **	16	86.53
Received help from the SCTM	0.000 **	8	80.64
Type of assistance received from the SCTM	0.000 **	16	50.69
Drafting of a public health plan with help	0.000 **	8	86.01
Presence of a representative of the competent institution	0.000 **	12	82.25
Attendance of representatives at sessions	0.000 **	12	47.38
Access to analyses of the state of health of LSGU (3 years)	0.000 **	12	47.75
Having identified vulnerable groups	0.000 **	8	54.84
Access to public health risk assessments of LSGU	0.000 **	8	82.85
Availability of inspection reports	0.027 *	12	23.05
Instituting campaigns promoting healthy lifestyles	0.001 **	8	84.54
Means of supporting campaigns	0.198	34	48.51
Cooperation of the council with the Headquarters	0.000 **	12	82.39
Availability of analyses of environmental indicators	0.000 **	8	83.14
Creation of proposals for improving life indicators	0.000 **	8	84.06
Having zones of sanitary protection for the water supply	0.000 **	12	85.42
Having a map/diagram of the water supply system	0.000 **	20	93.54
Having a plan for the reconstruction of the water supply network	0.000 **	8	87.48
Having a wastewater treatment plan	0.000 **	8	90.64
Having a register of septic and collecting pits	0.000 **	8	41.29
Performing air control measures	0.000 **	8	55.29
Having a municipal waste dump	0.000 **	7	67.29
Access to data on employee injuries	0.000 **	8	30.32
Having a system for monitoring work injuries	0.000 **	8	30.28
Having a counselor for the protection of patient rights	0.000 **	8	47.84
Having a local emergency healthcare plan	0.000 **	8	43.66
Having a protection and rescue plan	0.000 **	12	80.98
Conducting exercises and education in the field of first aid	0.000 **	8	78.53

* $p \leq 0.05$; ** $p \leq 0.01$.

Source: Own elaboration based on research.

The results of the chi-squared test showed that there was a statistically significant relationship between the realized budget for program activities and the public health risk assessments of LSGU ($p = 0.005$). In contrast, no statistically significant association with any other variables was found (Table 4). Based on the obtained results, it could be said that the budget is not a decisive factor for the success of the implementation or improvement of public health by LSGU, bearing in mind that no statistically significant difference was determined on this basis (Table 4). Further analysis showed that LSGU that implemented up to 70% of their program budget in the largest number of cases (87.5%) did not have access to public health risk assessments of LSGU. In addition, we determined that LSGU that realized up to 80% of their projected budget in 33.3% of cases had access to a public health risk assessment in the drafting procedure (Table 4).

Table 4: Results of the chi-squared test of the percentage of realized budget and selected variables

Variable	Sig. (2- Tailed)	df	X ²
The council adopted a Work Plan for 2022	0.439	12	12.08
The council adopted a public health plan	0.355	16	17.47
Received help from the SCTM	0.946	8	2.79
Type of assistance received from the SCTM	0.277	16	18.83
Drafting of a public health plan	0.936	8	2.97
Presence of a representative of the competent institution	0.749	12	8.45
Attendance of representatives at sessions	0.577	12	10.44
Access to analyses of the state of health of LSGU (3 years)	0.160	12	16.73
Having identified vulnerable groups	0.686	8	5.65
Access to public health risk assessments of LSGU	0.005 *	12	26.70
Availability of inspection reports	0.232	21	26.17
Instituting campaigns promoting healthy lifestyles	0.904	8	3.43
Means of supporting campaigns	0.316	34	15.24
Cooperation of the council with the Headquarters	0.428	12	12.21
Availability of analyses of environmental indicators	0.570	8	6.69
Creation of proposals for improving life indicators	0.946	8	2.80
Having zones of sanitary protection for the water supply	0.594	12	10.24
Having a map/diagram of the water supply system	0.644	20	17.13
Having a plan for the reconstruction of the water supply network	0.869	8	3.87
Having a wastewater treatment plan	0.769	8	4.89
Having a register of septic and collecting pits	0.377	12	12.88
Performing air control measures	0.601	8	6.41
Having a municipal waste dump	0.376	8	8.60
Access to data on employee injuries	0.648	8	5.99
Having a system for monitoring work injuries	0.626	8	6.19
Having a counselor for the protection of patient rights	0.622	8	6.22
Having a local emergency healthcare plan	0.800	8	4.59
Having a protection and rescue plan	0.995	12	3.09
Conducting exercises and education in the field of first aid	0.679	8	5.71

* $p \leq 0.05$.

Source: Own elaboration based on research.

The results of the chi-squared test showed that there was a statistically significant relationship between the preparation of a public health risk assessment study of LSGU and the following variables ($p < .05$): the creation of a public health plan; the identification of vulnerable groups; instituting campaigns promoting healthy lifestyles; the availability of analyses of environmental indicators; making suggestions for improving indicators; having a water network reconstruction plan; having a wastewater treatment plant; having a protection and rescue plan; conducting exercises and education in the field of first aid. In contrast, no statistically significant association with any other variables was found (Table 5).

Further analysis revealed that LSGU which had reported preparing a public health risk assessment study to a greater extent (33%) had adopted a public health plan and to a greater extent had such plans in progress (50%). Such LSGU reported more often (66.7%) that the SCTM helped them in the process of developing the plan and that the competent institution helped them in the process of developing a public health plan (64.8%). Moreover, we determined that the LSGU that had prepared such an assessment more often (83.3%) performed an analysis of the health condition of the LSGU for the previous three years. In addition, to a greater extent, they identified vulnerable groups in the area of LSGU (87%). In addition, such LSGU were also more likely to participate in campaigns for the promotion of healthy lifestyles (83.3%), to report the availability of analyses of environmental indicators (82.3%), to give suggestions for improving indicators (33.3%), to have plans for the reconstruction of water supply networks (100%), to have wastewater treatment plants (34.3%), not to have plans for protection and rescue in disasters (52.4%), and to conduct exercises and education in the field of first aid (50%).

Table 5: Results of the chi-squared test of the relationship between having a prepared public health risk assessment study and selected variables

Variable	Sig. (2-Tailed)	df	X ²
The council adopted a Work Plan for 2022	0.065	9	16.35
The council adopted a public health plan	0.031 *	12	22.64
Received help from the SCTM	0.012 *	6	16.37
Type of assistance received	0.147	12	17.06
Drafting of a public health plan	0.007 **	6	17.79
Presence of a representative of the competent institution	0.051	9	16.85
Attendance of representatives at sessions	0.071	9	15.84
Access to analyses of the state of health of LSGU	0.052	9	13.42
Having identified vulnerable groups	0.008 **	6	17.40
Access to public health risk assessments of LSGU	0.321	10	24.31
Availability of inspection reports	0.058	8	21.24
Instituting campaigns promoting healthy lifestyles	0.004 *	6	18.92
Means of supporting campaigns	0.083	26	97.24
Cooperation of the council with the Headquarters	0.054	9	19.57
Availability of analyses of environmental indicators	0.003 *	6	19.59
Creation of proposals for improving life indicators	0.004 *	6	18.96
Having zones of sanitary protection of the water supply	0.073	9	15.72
Having a map/diagram of the water supply system	0.077	15	23.36
Having a plan for the reconstruction of the water supply network	0.003 *	6	19.70
Having a wastewater treatment plant	0.006 *	6	18.09
Having a register of septic and collecting pits	0.142	6	9.60
Performing air control measures	0.053	6	12.43
Having a municipal waste dump	0.061	6	10.53
Access to data on employee injuries	0.484	6	5.47
Having a system for monitoring work injuries	0.470	6	5.59
Having a counselor for the protection of patient rights	0.168	6	9.09
Having a local emergency healthcare plan	0.219	6	8.27
Having a protection and rescue plan	0.039 *	9	17.68
Conducting exercises and education in the field of first aid	0.000 **	6	20.97

* $p \leq 0.05$; ** $p \leq 0.01$.

Source: Own elaboration based on research.

The results of the Pearson correlation analysis showed that there was a statistically significant correlation between the effectiveness of the realized program budget and the following variables ($p \leq 0.01$): microbiologically defective samples of drinking water from the so-called village waterworks ($r = 0.529$), microbiologically defective samples of drinking water from public taps ($r = 0.368$), the percentage of unsatisfactory analyses of wastewater samples ($r = 0.406$), the total number of air samples on an annual level for PM25s ($r = 0.365$), and the number of mandated fines issued ($r = 0.252$). No statistically significant correlation was found with other variables (Table 6).

Judging by the obtained results, we determined that with the increase in the efficiency of the realized program budget, the number of microbiologically

defective drinking water samples from the so-called village waterworks increased, as did those from public fountains, the number of unsatisfactory analyses of waste water samples, as well as the total number of air samples on an annual level for PM₂₅s. In addition, with the increase in the efficiency of the implementation of the program budget, the number of mandated fines issued also increased.

Table 6: Results of Pearson's correlation analysis of the relationship between the effectiveness of the realized program budget and the selected variables

Variable.	r	Sig.
Number of employees in LSGU	0.270 *	0.034
Water supply network	-0.025	0.844
Sewage network	0.042	0.746
Number of households connected to the water supply system	0.133	0.302
Microbiologically defective water samples	-0.049	0.739
Physically and chemically correct samples	-0.082	0.570
Microbiologically defective samples of drinking water	0.529 **	0.000 **
Physically and chemically defective samples of drinking water	-0.026	0.842
Microbiologically defective samples of drinking water from public taps	0.368	0.004 **
Physical and chemical defective samples of drinking water from public taps	-0.012	0.930
Percentage of unsatisfactory analyses of wastewater samples	0.406	0.001 *
Septic and collecting pits that were regularly emptied in a professional manner	-0.018	0.893
Permanent measuring points for air-quality monitoring	0.078	0.546
Total number of air samples per year for PM ₁₀ s	0.171	0.183
Total number of air samples on an annual basis for PM ₂₅ s	0.365	0.004 **
Landfills in LSGU	0.206	0.131
Sanitary landfills	0.232	0.095
Wild controlled landfills	0.001	0.997
Wild, uncontrolled landfills	0.112	0.447
Mandated fines issued	0.252	0.048 *
Mosquito disinsections undertaken	-0.111	0.578

* $p \leq 0.05$; ** $p \leq 0.01$.

Source: Own elaboration based on research.

The results of the T-tests showed that there was a statistically significant association between having a public health plan and the following variables ($p \leq 0.05$): physical/chemical defective water samples in rural schools, unsatisfactory analyses of waste water samples, and septic and collection pits. Further analyses showed that LSGU that had a public health plan were more likely ($M = 25.61$) to report that they had physico-chemical defective water samples in their rural water supply systems, followed by unsatisfactory analyses of wastewater samples ($M = 54.05$). On the other hand, LSGU that did not have a Public Health Plan were more likely ($M = 9.62$) to report that had have septic and collecting pits that were regularly maintained (Table 7).

Table 7: T-test results of the relationship between having a public health plan and selected variables

	<i>t</i> -Test for Equality of Means						
	<i>t</i>	<i>df</i>	Sig. (2-Tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
						Lower	Upper
Cooperation with health institutions in the process of immunization	1.572	72	0.120	0.225	0.143	−0.060	0.509
Cooperation with the SCTM	1.244	74	0.217	0.148	0.119	−0.089	0.385
Number of health centers in LSGU	1.760	72	0.083	2.111	1.199	−0.280	4.501
Number of clinics	1.089	73	0.280	2.511	2.305	−2.084	7.105
Number of security guards	−0.140	70	0.889	−0.012	.082	−0.176	0.153
Number of applications for protection advisors	1.648	69	0.104	15.789	9.580	−3.322	34.901
Number of public companies with a risk assessment act	0.413	75	0.681	0.250	0.606	−0.957	1.457
The total number of enterprises in the LSGU	0.911	72	0.365	0.635	0.697	−0.755	2.025
The number of extinguished individual fireplaces	1.575	74	0.120	15.426	9.794	−4.088	34.940
Microbiologically defective water samples—village waterworks	0.808	74	0.422	21.719	26.886	−31.853	75.290
Physico-chemical defective water samples—village waterworks	1.635	66	0.107	7.716	4.720	−1.709	17.140
Microbiologically defective water samples—public taps	1.428	72	0.158	12.321	8.627	−4.876	29.518
Physico-chemical defective water samples—public taps	1.074	72	0.286	6.212	5.784	−5.319	17.743
Microbiologically defective water samples—village schools	1.222	72	0.226	8.467	6.930	−5.348	22.281
Physical and chemical defective water samples—village schools	2.329	72	0.023 *	6.848	2.940	0.987	12.709
Unsatisfactory analyses of wastewater samples	2.121	72	0.037 *	16.144	7.612	0.970	31.319
Septic and collecting pits	3.422	73	0.001 *	34.632	10.120	14.462	54.802
Microbiologically defective water samples	−0.132	74	0.896	−0.761	5.782	−12.282	10.760
Physical and chemical defective water samples	−0.445	60	0.658	−1.946	4.373	−10.693	6.801

* $p \leq 0.05$; ** $p \leq 0.01$.

Source: Own elaboration based on research.

4.2 Predictors of the state of public health in Serbia

In the first step of applying the logistic regression model, the combined impact of various factors was tested (with these factors including the availability of analyses of the health status of LSGU, the identification of vulnerable groups, the availability of risk assessment studies, performing air control measures, having a register of septic and collection pits, having a local plan for healthcare in emergency situations, instituting health promotion campaigns, and access to data on employee injuries) in the predicted model (Table 8).

The first model, with the dependent variable analysis of the health status of LSGU, indicated statistically significant results, with $\chi^2 = 18.44$ (5, $N = 77$; $p \leq 0.002$), and explained between 21.1% (Cox and Snell) and 28.9% (Nagelkerke) of the variance. The results indicated that one variable had a unique statistical influence on the model (receiving help from the SCTM; $p \leq 0.05$) and its probability quotient was 5.6. This shows that LSGU that received assistance from the SCTM performed an analysis of the health status of LSGU 5.6 times more often than other units did. Next, we tested the model with the dependent variable of the identified vulnerable group and found that it was statistically significant, with $\chi^2 = 36.85$ (10, $N = 77$; $p \leq 0.000$), and explained between 37% (Cox and Snell) and 50.6% (Nagelkerke) of the variance. The results indicated that two variables had a unique statistical influence on the model ($p \leq 0.05$) (appointed coordinator and health status analysis). In addition, we determined that the coefficient of probability for the appointed coordinator variable was 4.5, whereas for the analysis of the health status the coefficient was 6. This showed that the LSGU that appointed a coordinator of the health council were four and a half times more likely to identify vulnerable groups within their analysis of the health status of the LSGU. In contrast, LSGU that conducted health status analyses identified vulnerable groups six times more often within their analysis of the LSGU's healthcare status (Table 8).

In the third model, with the dependent variable of the risk assessment study, it was determined that the results were not statistically significant ($p > 0.05$), with $\chi^2 = 4.66$ (5, $n = 77$). In addition, the results showed that the model (air control) was not statistically significant $\chi^2 = 5.66$ (5, $n = 77$) as was the case for the predictive model regarding the register of septic tanks and collection pits $\chi^2 = 6.51$ (5, $n = 77$); the model related to having a local plan for the provision of healthcare in emergency situations $\chi^2 = 2.99$ (5, $n = 77$), the model related to the implementation of campaigns $\chi^2 = 6.14$ (5, $N = 77$), as well as the model related to injuries to employees $\chi^2 = 10.34$ (5, $N = 77$) (Table 8).

Table 8: Logistic regression analysis used to assess the predictive power of selected variables

Predictor Variable	Analysis of the Health Status of LSGU		Identified Vulnerable Groups		Risk Assessment Studies		Air Control		Register of Septic and Collecting Pits		Local Emergency Care Plan		Health Promotion Campaigns		Data on Employee Injuries	
	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE	B	SE
Council formed	1.84	1.14	2.50	1.46	-3.05	1.84	0.62	0.82	0.71	0.75	0.05	0.87	0.97	-1.02	0.85	0.80
Coordinator appointed	-0.15	0.56	1.52	0.65	-2.18	1.50	0.54	0.54	0.40	0.49	0.77	0.60	0.50	0.50	0.27	0.61
Public health plan	0.30	0.62	1.22	0.72	-0.29	1.65	0.56	0.67	0.78	0.59	-0.21	0.69	0.64	0.76	1.02	0.71
Received help from the SCTM	1.73	0.60	-0.03	0.74	0.24	1.47	-1.06	-0.37	0.57	0.53	0.58	0.64	0.50	0.49	0.03	0.69
Adviser for the protection of rights	1.05	1.20	-1.85	1.10	-0.87	1.92	0.65	0.03	0.95	0.91	-0.63	0.93	-0.73	0.98	20.34	0.97

Source: Own elaboration based on research.

5 Discussion and recommendations

Regarding the public health capacity, it is seen that the topics of resources, organizational structures, workforce, partnerships, leadership and governance, knowledge development and country-specific context come to the fore in the literature (Tabachnick, 2007; Rosen, 2015). In this respect, capacity building involves the protection and development of human, social, physical and natural existence. Given the time frame over which capacity-building interventions have been in place the selected indicators for each area of public health as parameters for monitoring the effects of the activities undertaken by various actors in local self-government units. This study assessed public health capacity-building interventions in the state of public health in local self-government units, that is, to carry out assessments of the built capacities of public health actors in the community.

In the study, it was seen that 49.4% of LSGUs had an action plan for young people, but 40.3% had an action plan for combating environmental pollution. However, the extent of LSGU’s participation in public health promotion campaigns is a relatively high level of participation that has been realized. The implemented campaigns/promotions were mostly conducted in the domains of preventive

examinations and immunization, followed by screening examinations, the prevention of infectious diseases, smoking reduction, physical activities, violence prevention, reproductive health, prevention of the abuse of psychoactive substances, breastfeeding, and nutrition. Mental health promotion campaigns have the smallest extent. Also, there was a statistically significant relationship between the establishment of a council for public health and some variables in the study. In public health promotion campaigns, Health Centers and Civil Society Organizations have a big role as partners. WHO (2012), suggested that to maintain essential public health functions, using their political leadership and local governments to strengthen the health authorities over public health functions to lead and coordinate intra-sectoral and cross-sectoral public health planning and integrated strategies.

One of the findings obtained in this study is the necessity of the establishment of a council for public health for sustainable public health in a place. The Council has been found to play a key role in the more efficient formulation, development and execution of a range of public health-related works and plans. Wilkinson & Pickett, 2010 discussed capacity building in the field of health in the context of sustainability, emphasizing the development of organizational capabilities and skills and the establishment of sectoral consensus in the field of health.

In this study, LSGUs who received assistance from SCTM displayed better performance than others in this study. WHO-EURO (2022) determined the following contents within the framework of the action plan for improving public health services and capacity: surveillance of population health and well-being, monitoring and response to health hazards and emergencies, health protection, health promotion, disease prevention, assuring governance for health, assuring a sufficient and competent workforce, assuring sustainable organizational structures and financing, advocacy, communication and social mobilization, public health research.

Further steps in increasing the capacities of local governments and other public health actors in the community are as follows.

- Providing support to local self-governments that are in the process of adopting and developing public health plans to help them complete the process;
- Monitoring and controlling the quality and suitability of drinking water in relation to health and assessing its impact on the health of the population;
- Monitoring and controlling the healthiness of foodstuffs and items of general use;
- Performing disinfection, disinsection, pest control, and monitoring for the presence of harmful organisms;

- Providing opinions on documents for spatial and urban planning in relation to the health of the population;
- Performing assessments of the risk to the health of the population based on the pollution source register (cadaster), and in connection with the risk factors from the environment, including the assessment of the epidemiological situation;
- Organizing workshops for the development of public health programs in the field of promotion—the creation of successful campaigns and the provision of support for national programs;
- The establishment of a mentoring model of LSGU;
- The exchange of practices and experiences, providing support for the dissemination of successful program activities;
- Facilitating intersectoral cooperation in LSGU among public health actors, and building and strengthening the partnership between the public and civil sectors in the area of public health;

The analysis highlighted the importance of communication between partners and interested actors in relations to public health (healthcare facilities, public health institutes, inspection services, and the civil sector) and model workshops with the participation of all actors are recommended in further work; furthermore, so that the existing analysis can be applied to follow the progress of all LSGU and so that we can accomplish the planned inclusion of local governments according to our priority areas, it would be desirable in the coming period to collect data from municipalities that were not included in this study through the competent public health institutes.

All activities should be coordinated with an action plan as part of the public health strategy. Given that this is a continuous process, it is necessary to monitor the situation on the ground continuously and, according to the assessed situation, to adjust the methods and scope of support provided to LSGU in the area of public health.

6 Conclusions

The results confirmed the effectiveness of implementing health councils in the areas of promotion and prevention, as well as in the organization and functioning of the healthcare system. In future works, LSGU should be supported in their choices of effective programs and priorities. Although a large percentage of local governments reported having an institutionally provided advisor for the protection of patients' rights, a small number of patient complaints indicated that it is necessary to empower citizens to exercise their rights guaranteed by law.

On the other side, the results of the study can be considered relevant to the regular monitoring and evaluation of indicators in the field of public health and in regard to health improvement at the local level, as well as assessing the capacities of cities and municipalities to implement their given responsibilities. The survey comprehensively assessed self-government units' competencies in all areas of public health. The results obtained from the analysis of the work of the health councils, the selected indicators for each area of public health, and the effects of the support of the SCTM and the representatives of the public health institutes provided clear guidelines for establishing effective monitoring systems, planning the activities of the actors involved (LSGU, the SCTM, and public health institutes) and evaluating their effects.

Areas of public health that were identified as needing special support included the environment, workplace environments, and emergency situations. The environment is the most complex area and probably the most important because it includes the entire population in each local self-government area. First of all, it is necessary to conduct health risk assessments in each municipality and adopt special environmental improvement programs based on the unit's priorities. In general, the most important issues identified was water—the provision of proper drinking water in cities and small village waterworks, the availability of proper water in public facilities, as well as providing solutions regarding wastewater for both communal and industrial facilities. The second most important issue was air pollution measurements, which must be conducted continuously and for specific pollutants, and which were provided in less than a third of the LSGU.

Further, it is essential to pay attention to the category in which the LSGU is located when we want to follow the development of this self-governing unit within the framework of public health. The development category indicator is very important from the point of view of local self-government, especially when it comes to planning its further development.

It is necessary to help local self-governments to develop plans for the care of the population in crisis and emergency situations because the occurrence of unwanted events (such as floods, mass migrations, chemical spills, and pandemics) is becoming more frequent. The results of this study showed that the participation of public health representatives in the councils resulted in the councils having better access to analyses of health status and indicators of various areas of public health. Establishing good communication between partners at the local level contributes to the improved effectiveness of the activities undertaken.

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