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ESTABLISHING HOSPITALS` DISASTER RESILIENCE ON THE CASE OF HEALTHCARE INSTITUTIONS OF SMALL CAPACITY

Marina Nenković-Riznić[27]; Borjan Brankov[28]; Mila Pucar[29]; Snežana Petrović[30]

Abtsract

In case of disasters, caused by natural hazards or antrophogene factors, it is important to preserve the function of health institutions. The World Health Organization has developed the HSI (Hospital Safety Index) method that can categorize a healthcare facility in terms of disaster safety in a simple and relatively reliable way. If a healthcare facility has a smaller capacity (up to 20 beds) it can be assessed using a simplified method of HSI according to the recommendations of the World Health Organization. By assessing the list of elements according to the recommendations, the potential weaknesses of the facilities that can lead to security threats can be preliminarily identified. On that basis, emergency interventions could also be defined in order to increase the safety of the healthcare facility. Paper uses methods (the standard HSI method and the method applied to small-capacity hospitals) for assessing the resistance on the selected case of a low capacity healthcare facility in Belgrade.

Key words: *Disaster resilience, hospital safety index, capacity of a healthcare facility*

Introduction

Resilience in terms of cities generally refers to the ability to absorb, adapt and respond to changes in an urban system [1], [2], [3]. The resilience and preservation of the social infrastructure, within which schools and hospitals are of special importance, is an integral part of city resilience [4]. [5]. The World Disasters Report 2017 states that there are increasing number people in urban areas in low- and middle-income nations are susceptible to high levels of risk generated by rapid urbanization, poor governance at the local level, unprecedented population growth, and poor health services [6].

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Hazards can be natural or man-made (anthropogenic hazards) and they carry with them a high probability of causing socioeconomic consequences (possible human losses, damage to property and the economy including the destruction of infrastructure), but also the probability of harmful effects on the environment (environmental impacts) [2].
The Sendai Framework for Disaster Risk Reduction 2015-2030 was adopted in 2015 [7], which set long-term goals and assessed the effects of the previous Hyogo Framework (168 signatories, including Serbia) [8]. Disasters that are often influenced by climate change are even more frequent and intense, making the progress towards sustainable development much more difficult. The Sendai Framework, together with the Action Plan, sets high targets within three priority fields: understanding disaster risk; strengthening disaster risk governance to manage disaster risk; investing in disaster risk reduction for resilience [7].

Materials and methods

Population healthcare in special conditions caused by hazards is addressed through the issue of critical infrastructure. The European Directive 2008/114/EC defines critical infrastructure as an asset, system or part thereof located in the Member States that is essential for the maintenance of vital societal functions, health, safety, security, and the economic or social well-being of people, the disruption or destruction of which would have a significant impact on a Member State as a result of the failure to maintain those functions [9]. Each country adopts its own national regulations that define these issues in more detail.
Hospitals and other healthcare facilities play an important role during disasters, as they provide "lifeline" services to reduce the disaster associated mortality and mobility, and thus minimize the impact of disasters on the community [5, 10-13]. Efficient hospital disaster management is considered an essential way for hospitals to supply continuous health services during disasters, even if the hospitals are directly affected by the disaster [14-15].

Hospital Safety Index – difference in methodologies

Hospitals and other healthcare facilities represent more than 70% of a country's public spending on health and it is important to provide continuity in their work during emergencies and disasters. It is vital to identify the level of safety and functionality a hospital will have if an emergency or disaster occurs. Hospital evaluations aim to identify elements that need improvement in a specific hospital or network of hospitals (healthcare facilities), and to prioritize interventions in hospitals that, because of their type or location, are essential for reducing the mortality, morbidity, disability and other social and economic costs associated with emergencies and disasters [16].
Using methodology based on the Hospital Safety Index (HSI), proposed initially by Pan American Health Organization, can significantly show weak points and improve resilience of healthcare facilities in emergency situations [17]. Evaluation through the HSI is a methodology for the fast and relatively economical evaluation

of the functional capacity of a hospital. The HSI not only estimates the functional capacity of a hospital during and after an emergency, but it also provides ranges that help authorities determine which hospitals most urgently need actions to improve their safety and functionality.

The check is carried out using a basic group of criteria that is diversified into 2 forms: 1) general information on a hospital, and 2) the safe hospital checklist, divided into 4 modules: Module 1: Hazards affecting the safety of the hospital, the role of the hospital in an emergency and disaster management; Module 2: Structural safety; Module 3: Nonstructural safety; and Module 4: Emergency and Disaster Management. Each of these modules contains a set of questions for evaluation, whereby the risk is quantified based on the magnitude of impact on the safety and capacity of the healthcare facilities, as well as the probability of a risk occurring. The structural safety of the hospital involves assessment of the type of structure and materials, and the previous exposure to natural and other hazards. Nonstructural Safety refers to architectural safety, Infrastructural Protection, Access and Physical Security, Critical Systems and Equipment and Supplies. The Emergency and Disaster Management (the functional capacity) considers the level of preparedness of a hospital's organization, personnel and essential operations to provide patient services in response to an emergency or disaster.

There are two models for weighting the modules to calculate the safety index. Depending on the hazards identified through the Module 1, the research was directed to the use of one of the following evaluation models (model 1 is used in the earthquake prone areas, model 2 is used in other situations):

In the model 2, which will be used further on, all the modules are given equal weight: structural safety has a weighted value of 33.3% of the index; nonstructural module has a weighted value of 33.3%; and the emergency and disaster management is weighted at 33.3%.

This model was used as a base for the research in the larger scale healthcare facilities. On the other hand, parallel with the methodology for the large scale hospitals (basic methodology), a new, adapted methodology was introduced for the small scale level healthcare facilities (by Pan American Health Organization) [18]. This methodology has some significant changes (in the type and number of criteria), having in mind specific conditions in the local environment and the scale of the healthcare facility. Model for weighting the modules is not presented in the HIS for small-sized hospitals and because of that models introduced in HSI for large-sized hospitals will be used.

Case study of private small-sized healthcare facility in Belgrade

Analysis of the hospital through modules 1-4

This particular healthcare facility has been chosen, having in mind tendencies for the development of small-sized healthcare facilities on local and national level. In this regard, such institutions will play an important role in the future development of health care system in the next period in Serbia. Also, in the last decade there was a huge development in the private healthcare sector with the possibility for its

inclusion in the existing national-funded healthcare system. Network of Public Health Institutions in Serbia has more than 20 public health institutions with up to 20 beds and private health facilities in which HSI methodology for small-sized hospitals can be applied [19].

The total number of private health institutions and private practices is 1342. 112 (8.34%) are higher health systems (general/special hospital, health center, etc.), while 1230 (91.65%) are a small practice or a clinic. Total private health care is the highest in Belgrade (40.4%), while the lowest is in the eastern and southern Serbia (16.4%) [20].

Private hospitals are generally more cooperative and open for the collaboration in the scientific research process, and the procedure for obtaining approval and permits for research is altogether more efficient. Also there is greater possibility of benefits and direct application calculations of the HSI index in practice of such heath care facilities.

The healthcare facility is made up of two buildings (one new and one old). The old building has a ground floor, two upper floors and a gallery, while the new building has three lower floors, a ground floor and two upper floors, with a total gross building area of 2042 m². The Healthcare building 1 is older, and it has all technical documentation regarding its present state, while the Healthcare building 2 is newer and has a complete project documentation. The ground floor of the Building one becomes floor 2 in the Building 2 and they act as one area in the healthcare center. The capacity of the healthcare facility is 8 apartments (around 20 beds/patients) (Fig. 1, 2).

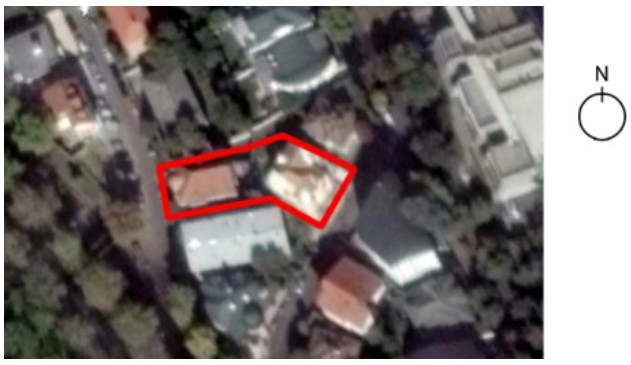

Figure 1: Site plan of the buildings

For the purpose of this research, methodologies of HSI for large-sized and small-sized healthcare facility was used [17], [18]. The two HSI questionnaires were filled out from modules 1, 2, 3 and 4. The healthcare facility's technical documentation was used to fill in modules 2 and 3. It included architectural plans and sections, technical descriptions of the buildings, the electrical scheme and plans etc.

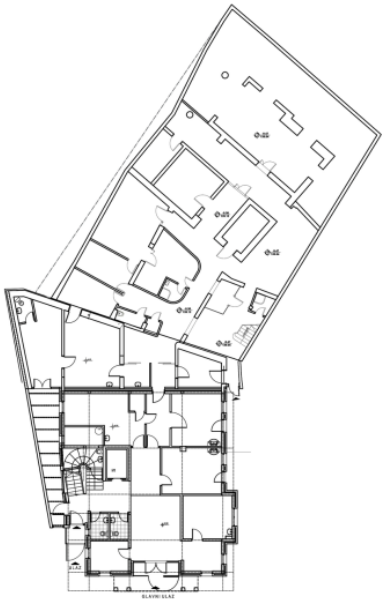

Figure 2: Ground floor elevation of the old building (southern part) and the new building (northern part)

Table 1: Safety levels for hospital by module for HSI checklist for large-sized hospitals

MODULE	Unlikely to function (Safety level = Low)	Likely to function (Safety level = Average)	Highly likely to function (Safety level = High)	Total
Structural safety (MODULE 2)	2,25	12,75	85,00	100
Nonstructural safety (MODULE 3)	9,92	23,97	66,12	100
Emergency and disaster management (MODULE 4)	0,00	12,85	87,15	100

Table 2: Safety levels for hospital by module for HSI checklist for small-sized hospitals

MODULE	Unlikely to function (Safety level = Low)	Likely to function (Safety level = Average)	Highly likely to function (Safety level = High)	Total
Structural safety (MODULE 2)	0,00	11,62	88,38	100
Nonstructural safety (MODULE 3)	9,94	20,11	54,65	100
Emergency and disaster management (MODULE 4)	0,00	8,05	91,95	100

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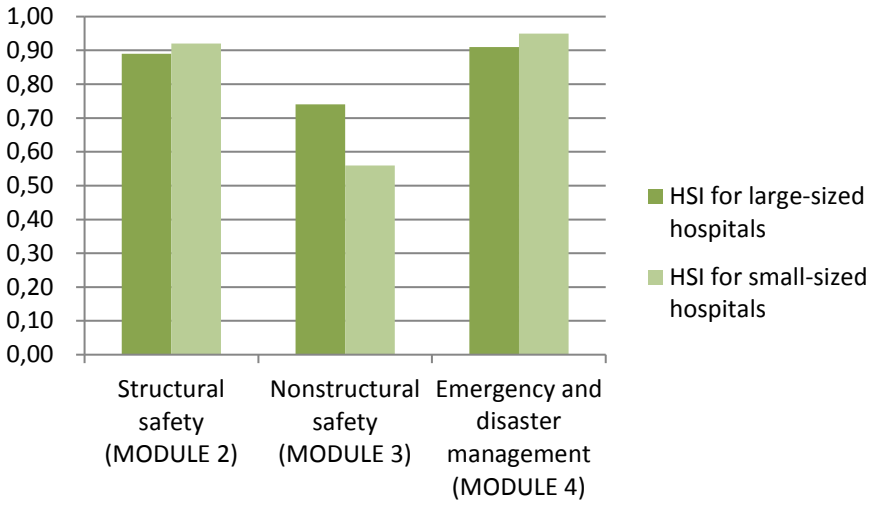

Figure 3: Safety index by HSI for large-sized hospitals and for small-sized hospitals

Discussion on module 1 - direct correlation between climate change and HSI

After the evaluation of the building safety according to modules 2, 3 and 4 it was concluded that it is necessary in both methodologies to use the module 1 not only as part of descriptive data (although represented in a table) but also as an additional parameter in assessing the hospital safety. This part of the HSI evaluation in both methodologies is closely related to the specific hazards - floods, extreme temperatures etc. (in the territory of Serbia).

The methodology for both large-sized hospitals and small sized hospitals, in the final stage of the calculation, do not consider climate change impact on the increased risk of natural disasters (flood, windstorm, drought, fire, etc.), which is necessary for further evaluation of resilience of certain buildings.

In this case, based on the research conducted for the needs of this case study, it was concluded that the further research should be also extended to surrounding built area. In this way, the direct causes of hazards would be determined and evaluated.

The module 1 is an initial recommendation on hazards in relation to which the vulnerability/ safety is assessed, and it is necessary to carry out its further evaluation at a specific example and to include information and potential warning about the surrounding context of the building. In addition to not being evaluated in a single evaluation, there is also a lack of correlation between this and other modules.

In addition, in order to establish a direct correlation between the HSI calculations, within the research were used the guidelines given in the Action Plan of the

Republic of Serbia [21] and those contained in the Sendai Protocol [7] which should be implemented in the local HSI:

- ☐ establishing a set of measures within designing of buildings that would ensure the construction in accordance with: temperature conditions through a control of internal temperature; the improvement of thermal insulation of buildings; passive cooling, i.e. enabling the natural ventilation of buildings; strategic designing of green areas, etc.
- ☐ establishing a set of measures within urban planning which would prohibit the construction of buildings in the areas that could be threatened by flooding, landslides, flash floods and other natural hazards.

Conclusion

The conducted HSI analysis in the area of a private health care facility in Belgrade indicated the area for possible improvement of the methodologies for the HSI developed by the WHO. Network of Public Health Institutions in Serbia and private health institutions and private practices have great number of small-capacity health care facilities in Belgrade and in Serbia in total. In that sense, it is important to determine adequate criteria and effectiveness of checklists that can show real vulnerabilities and urgent measures to increase safety. Developing this methodology is important for prevention and mitigation of harmful consequences in the event of a disaster.

Namely, considering the fact that low indices of vulnerability of the healthcare facility were obtained through the results of the evaluations of large-sized and small-sized hospitals (modules 2 – 4), it is possible to conclude that the building belongs to category A, which means that it is likely that the hospital will function in emergencies and disasters. However it is recommended to continue measures to improve emergency and disaster management capacity and to carry out the measures in the medium and long term to improve the safety level in case of emergencies and disasters.

On the other hand, the assessment of the safety of modules 2-4 and comparison between two methodologies showed in some modules a different safety level and neglecting of some criteria in HSI for small-sized hospitals. For this reason, the paper suggests that additional criteria in this methodology in module 3 should be customized to small-sized healthcare facilities or at least to extend evaluation criteria with the one given within module 3 (as in HSI for large-scale hospitals).

In this methodology, the new parameters that are not included in standard evaluation were taken into account, in order to establish correlation between hazards and the role of the hospital in the emergency and disaster management. In addition, the guidelines given in the Action Plan were also used in the research to establish direct correlations between the HSI calculations.

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References

[1] Tompkins, E., & Hurlston, L.-A. Public–private partnerships in the provision of environmental governance: A case of disaster management. In *Adapting institutions: Governance, complexity and social–ecological resilience* (E. Boyd & C. Folke), Cambridge University Press, Cambridge, United Kingdom, 2012, pp. 171–189.

[2] UNISDR Terminology on Disaster risk reduction,United Nations International strategy for Disaster Reduction (UNISDR), Geneva, Switzerland, 2009. http://www.unisdr.org/we/inform/terminology, accessed on 11.7.2016

[3] Desouza, K., Flanery, T. Designing, planning and managing resilient cities: A conceptual framework, Cities, 35, (2013), pp. 89-99, 2013

[4] Chang, S., McDaniels, R. Fox, J., Dhariwal, R. Longstaff H. Toward Disaster-Resilient Cities: Characterizing Resilience of Infrastructure Systems with Expert Judgments, *Risk analysis*, Vol. 34, (2014), no 3., p.p. 416-433, DOI: 10.1111/risa.12133

[5] Zhong, S, Clark, M., Hou, H., Zang, Y., Ftizgerald, G. Validation of a Framework for Measuring Hospital Disaster Resilience Using Factor Analysis, *International Journal of Environmental Research and Public Health*, 11, (2014), p.p. 6335-6353; DOI:10.3390/ijerph110606335

[6] Lotte, K., Luther, S., Mucke, P., Prutz, R., Radtke, K., Schrader, C. World Risk Report Analysis and Prospects 2017, Bündnis Entwicklung Hilft, Berlin, Germany, 2017. https://reliefweb.int/sites/reliefweb.int/files/resources/WRR_2017_E2.pdf accessed on 15.1.2019

[7] UNISDR Sendai Framework for Disaster Risk Reduction 2015 – 2030, The United Nations Office for Disaster Reduction, Geneve, Switzerland, 2005. http://www.unisdr.org/we/coordinate/sendai-framework, accessed on 11.7.2016

[8] UNISDR, Hyogo Framework for Action 2005-2015: Building the Resilience of Nations and Communities to Disasters, United Nations International strategy for Disaster Reduction, Geneva, Switzerland, 2005. http://www.unisdr.org/files/1037_hyogoframeworkforactionenglish.pdf, accessed on 1.08.2016

[9] OECD, Protection of Critical infrastructure and the role of investment policies relating to national security, Investment Division, Directorate for Financial and Enterprise Affairs Organization for Economic Co-operation and Development, Paris, France, 2008. www.oecd.org/investment/investment-policy/40700392.pdf, accessed on 10.7.2020

[10] Albanese, J.; Birnbaum, M. et al. Fostering disaster resilient communities across the globe through the incorporation of safe and resilient hospitals for community-integrated disaster responses. *Prehosp. Disaster Med.*, 23, (2008), pp. 385–390.

[11] Braun, I., Wineman, N., Finn, L. et al. Integrating hospitals into community emergency preparedness planning. *Ann. Intern. Med.* (2006), 144, pp. 799–811.

[12] Paturas, L., Smith, D., Smith, S., Albanese, J. Collective response to public health emergencies and large-scale disasters: Putting hospitals at the core of community resilience. *J. Bus. Contin. Emer. Plan.*, (2010), 4, pp. 286–295.
[13] Cimellaro, G., Reinhorn, A, Bruneau, M. Framework for analytical quantification of disaster resilience. *Eng. Struct.* (2010), 32, pp. 3639–3649.
[14] Sauer, L., McCarthy, M., Knebel, A., Brewster P., Major influences on hospital emergency management and disaster preparedness. *Disaster Med. Public Health Prep*. (2009), 3, pp. S68–S73.
[15] Barbera, J., Yeatts, D., Macintyre, A. Challenge of hospital emergency preparedness: Analysis and recommendations. *Disaster Med. Public Health Prep.* (2009), 3, pp. S74–S82.
[16] WHO News release, Protecting hospitals and health centers before disasters saves lives, World Health Organization. www.who.int, accessed on 20.08.2017.
[17] World Health Organization, Hospital Safety Index – Guide for evaluators, Pan American Health Organization, 2015. http://www.who.int/hac/techguidance/ hospital_safety_index_evaluators.pdf, accessed on 10.08.2016
[18] World Health Organization, 2011, Guide for evaluation of small and medium-sized helath facilities, Pan American Health Organization
[19] Uredba o planu zdravstvenih ustanova, 2018, https://www.paragraf.rs/propisi/uredba_o_planu_mreze_zdravstvenih_ustanova.html, accessed on 15.2.2018 [Health facilities plan regulation document]
[20] Asocijacija privatnih zdravstvenih ustanova i privatnih praksi Srbije, 2017. http://privatnapraksa.org/, accessed on 1.12.2017 [Association of Private Healthcare Institutions and Private Practices of Serbia]
[21] Akcioni plan adaptacije na klimatske promene, "Official Gazette of the City of Belgrade", no. 65/2015. http://klimatskepromenebeograd.rs/wp-content/uploads/2015/11/Akcioni-plan-adaptacije-na-klimatske-promene.pdf-, accessed on 11.7.2016 [Action plan for adapting to climate change]

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