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INFLUENCE OF PARENTHOOD ON CITIZEN PREPAREDNESS FOR RESPONSE TO NATURAL DISASTERS CAUSED BY FLOODS

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Abstract: In this paper that presents the quantitative study, authors examined the influence of parenthood on the citizen preparedness to respond to natural disasters caused by floods in the Republic of Serbia. Taking into account all municipalities in Serbia in which there are risks of flooding, 19 of these were randomly selected. The research in selected municipalities was undertaken in those areas and households that have been or are potentially the most vulnerable in relation to the level of high water with the use of a multi-stage random sample. The test method based on the technique of interviewing was applied in the research.

The research results indicate that heavy rains encourage parents in higher percents to think about preparedness for responding in relation to citizens who are not parents. Parents to a greater extent as the reasons for not taking preventive measures point out that their assistance in this matter would not mean much, that they expect the citizens from flood-affected areas to be primarily engaged in actions of protection and rescue, then they know the safety procedures for response and they would be to a greater extent evacuated in friends' places, etc.

In domestic theory on disasters, there have been insufficient experimental researches, while at the same there are no papers on the relationship between parenting and the preparedness of citizens to respond. Thus, the practical aim of the research was to contribute to the improvement of citizens' preparedness to respond to natural disasters caused by floods. Namely, the research indicates the way how parents in order to raise preparedness for response to a higher level should be influenced.

Keywords: safety, natural disasters, floods, citizens, parenthood, preparedness for response, Serbia.

INTRODUCTION

Many physical aspects of natural disasters are out of control of people and severely threaten them. This does not mean that people behave passively facing them, but they design and implement measures to mitigate effects of natural disasters.[2] Attention of social sciences directed to disasters is a relative novelty. Drabek suggests that the research of disasters is located

1 E-mail: vladimirkpa@gmail.com.
2 Jakovljević et. al. (2015). *Prirodne katastrofe i obrazovanje (Natural disaster and education)*. Beograd: Univerzitet u Beogradu, Fakultet bezbednosti, 2015., p. 19

at a strategic crossroads between legal, economic, political and environmental dimensions,[3] as well as technical and technological, safety, managerial and geo-informational dimensions.[4] Community members can respond to disasters in different ways. They simply can absorb impacts of disaster with little or no pre-designed action and rely on improvisation to meet the immediate and long term needs. However, as awareness of potential natural disasters within a given social unit grows, the ability of planned and formally directed "adjustments" (i.e. efforts to distribute risk, modify effects, or prevent the occurrence of natural disasters) also increases.

Research conducted over the past thirty years have been greatly highlighted and explained the demographic, socio-economic, psychological and other factors that affect the preparedness of citizens to respond to natural disasters.[5] Preparedness as a concept in the theory of disasters includes activities undertaken before natural disasters in order to improve the response and recovery from resulting consequences.[6] Thereby, preparedness for defence against floods involves knowledge and skills related to response (knowledge of local flood risks, warning systems and ways of reacting), and possession of supplies of material and technical resources and plans for emergency response (hereinafter referred to as supplies).

Bearing in mind the frequency and consequences of the catastrophic floods in the last ten years in the national geographic space, as well as the possibility of their re-emergence, there is among other things, a need for constant research of factors that influence the level of preparedness of citizens from vulnerable and potentially vulnerable municipalities (hereinafter: local communities) for response in such situations. Therefore, the aim of this study was to explore parenthood as one of the factors influencing the level of preparedness of citizens to respond to natural disasters caused by flooding.

METHODOLOGICAL FRAMEWORK IN RESEARCH

The sample

For research purposes, communities in the Republic of Serbia with high and low risk of flooding were stratified by statistical method and empirical generalization. In this way stratum was obtained, or population consisted of all adult residents of local communities in which it

3 Drabek, T. E.: *Human system responses to disaster: An inventory of sociological findings*. New York, Springer, 1986. p. 14.

4 Milojković, B. (2014). Geotopografsko obezbeđenje upotrebe jedinica policije u akcijama zaštite i spasavanja od poplava u maju 2014. godine (Geotopographic security use police units in the actions of protection and rescue from floods in may 2014). *Bezbednost*, 56(3), p. 6.

5 Cvetković, et al. (2015). Uticaj statusa regulisane vojne obaveze na spremnost građana za reagovanje na prirodnu katastrofu izazvanu poplavom u Republici Srbiji (Impact of the status of military obligations on preparedness for flood disaster in serbia). *Ecologica, 22*(80), p. 584; Cvetković, V., & Stanišić, J. (2015). Relationship between demographic and environmental factors with knowledge of secondary school students on natural disasters., SASA, *Journal of the Geographical Institute Jovan Cvijic, 65*(3), p. 324; Cvetković, V., (2015). Faktori uticaja na znanje i percepciju učenika srednjih škola u Beogradu o prirodnim katastrofama izazvanim klizištima ((Factors of influence to the knowledge and perception of secondary school students in Belgrade about natural disasters caused by landslides)). *Bezbednost, LVII*(1/2015), p. 32; Cvetković, et al. (2015). Knowledge and perception of secondary school students in Belgrade about earthquakes as natural disasters. Polish journal of environmental studies, 24(4), p. 1553

6 Cvetković, V. (2015). Spremnost za reagovanje na prirodnu katastrofu - pregled literature (Preparedness for natural disaster – review of the literature). *Bezbjednost, policija i građani,* XI (*1-2*), p. 165; Gillespie, D. F., & Streeter, C. L. (1987). Conceptualizing and measuring disaster preparedness. *International Journal of Mass Emergencies and Disasters, 5*(2), p. 155. Cvetković, V. (2015). Spremnost građana za reagovanje na prirodnu katastrofu izazvanu poplavom u Republici Srbiji (The preparedness of citizens to respond to natural disaster caused by floods in Serbia). (*Doktorska disertacija – Doctoral thesis*), Univerzitet u Beogradu, Fakultet bezbednosti.

occurred or there is a risk of flood occurrence. From this stratum, 19 from a total of 154 communities where there was the threat or potential threat of flooding were randomly selected.[7] The research included the following communities: Obrenovac, Šabac, Kruševac, Kragujevac, Sremska Mitrovica, Priboj, Batočina, Svilajnac, Lapovo, Paraćin, Smederevska Palanka, Jaša Tomić, Loznica, Bajina Bašta, Smederevo, Novi Sad, Kraljevo, Užice and Rekovac (Figure 1).

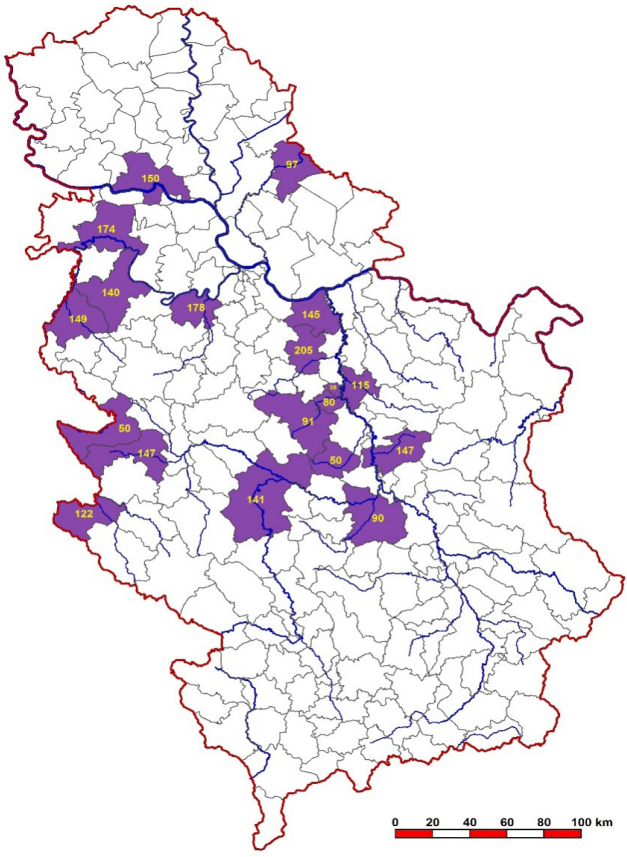

Figure 1: *Map of geospatial distribution of respondents by local communities in the Republic of Serbia*

Further sampling procedure used multistage random sampling. The first stage determined parts in administrative headquarters of local communities that were threatened by flood waves or potential risk of high water. The second stage determined streets or parts of streets, and the third stage defined households in which the survey would be conducted. The number of households is harmonized with the population of the community. The fourth stage of sampling referred to the selection procedure of respondents within predefined household. The selection of respondents was conducted randomly selecting adult household members who were present at the time of the survey. The study surveyed a total of 2500 persons (Table 1).

7 According to statistical data for 2014, the Republic of Serbia without Kosovo and Metohija has 168 municipalities.

Table 1: *Characteristics of local communities where citizen survey was conducted*

Local community	Total square area	localities	Population	Number of households	Number of respondents	Percentages (%)
Obrenovac	410	29	72682	7752	178	7.71
Šabac	797	52	114548	19585	140	6.06
Kruševac	854	101	131368	19342	90	3.90
Kregujevac	835	5	179417	49969	91	3.94
Sremska Mitrovica	762	26	78776	14213	174	7.53
Priboj	553	33	26386	6199	122	5.28
Batočina	136	11	11525	1678	80	3.46
Svilajnac	336	22	22940	3141	115	4.98
Lapovo	55	2	7650	2300	39	1.69
Paraćin	542	35	53327	8565	147	6.36
Smederevska Palanka	421	18	49185	8700	205	8.87
Sečanj – Jaša Tomić	82	1	2373	1111	97	4.20
Loznica	612	54	78136	6666	149	6.45
Bajina Bašta	673	36	7432	3014	50	2.16
Smederevo	484	28	107048	20948	145	6.28
Novi Sad	699	16	346163	72513	150	6.49
Kraljevo	1530	92	123724	19360	141	6.10
Rekovac	336	32	10525	710	50	2.16
Užice	667	41	76886	17836	147	6.36
Total - 19	10784	634	1500091	283602	2500	100

Table 2 gives a detailed overview of the structure of the sample of surveyed citizens.

Table 2: *Structure of the sample of surveyed citizens*

Variables	Categories	Frequency	Percentages (%)
Gender	Male	1244	49.8
	Female	1256	50.2
Age	18-28	711	28.4
	28-38	554	22.2
	38-48	521	20.8
	48-58	492	19.7
	58-68	169	6.8
	Over 68	53	2.2

Education	Primary	180	7.2
	Secondary/3 years	520	20.8
	Secondary/4 years	1032	41.3
	Higher	245	9.8
	High	439	17.6
	Master	73	2.9
	Doctorate	11	0.4
Marital status	Single	470	18.8
	In relationship	423	16.9
	Engaged	67	2.7
	Married	1366	54.6
	Divorced	99	4.0
	Widow / widower	75	3.0
Distance between household and river (km)	Up to 2 km	1479	59.2
	From 2 to 5	744	29.8
	From 5 to 10	231	9.2
	Over 10	46	1.8
Number of household members	Up to 2	63	2.5
	From 2 to 4	1223	48.9
	From 4 to 6	639	25.6
	Over 6	575	23.0
Employment status	Yes	1519	60.8
	No	883	35.3
Size of apartment / house (m^2)	Up to 35	128	3.9
	35-60	237	7.2
	60-80	279	8.5
	80-100	126	3.9
	Over 100	45	1.4
Income level - montly	Up to 25.000 RSD	727	29.1
	Up to 50.000 RSD	935	37.4
	U to 75.000 RSD	475	19.0
	Over 90.0000 RSD	191	7.6

The implementation of the sampling techniques provided a solid representation of the sample, while sample size gave reliability of reasoning on basic set - population.

Sample of variables

Operationalization of theoretical concept of preparedness to respond identified three dimensions of impact on predictor variable that were studied in such a way that for each variable a number of criterion variables is determined (Figure 2). The sample of criterion variables consisted of three groups: the first, dimension related to the perception of preparedness for response and includes variables on preparedness at different levels, barriers to raise level of preparedness, variables on expectation of help from various categories of people and organizations and evaluation of effectiveness of response of first respondents; the second group of dimensions relating to knowledge, was studied through the variables in relation to the level of knowledge, flood risk mapping; knowledge of where shelters are, as well as technical means for protection and rescue and methods of handling, desire for training, desire for modes of education and knowledge of how to access information on floods; the third group of dimensions refers to supplies, i.e. to variables such as holding of oral/written response plans, keeping supplies of food and water, radio-transistors, flashlights, hack, shovel, hoe, spade, first-aid kit and insurance policies of persons and property.

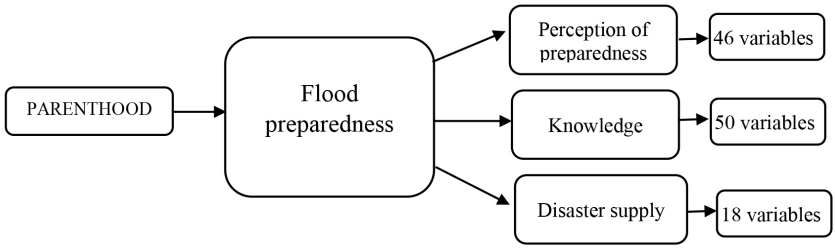

Figure 2: *Design of research variables*

Instrument

The design of valid and reliable instrument included three steps. The first step identified relevant research which used scales for measuring preparedness of citizens to respond to disasters. The second step took an adapted or a specially designed question in the questionnaire for each variable (perception of preparedness to respond - 46 variables; knowledge - 50 and supplies - 18). In the third step, a preliminary (pilot) study was carried out in Batočina on a sample of 50 respondents with the aim of checking metric characteristics of the constructed instrument.

Data analysis

Statistical analysis of collected data was done in *Statistical Package for Social Sciences*. Chi-square test of independence ($\chi 2$) was used for testing the correlation of gender and categorical variables on perception, knowledge and possession of supplies and plans for a natural disaster caused by flood. On this occasion additional assumptions were filled which related to minimal expected frequency in all cells, which amounted to five or more. In assessment of size of the impact ratio phi coefficient that represents the correlation coefficient ranging from 0 to 1 was used, where a higher number indicates a stronger relationship between the two variables. Cohen's criteria were used: 0.10 for small, 0.30 for medium and 0.50 for a large impact (Cohen, 1988). For tables larger than 2 x 2, to assess the size of the impact, Cramer's V indicator which takes into account the number of degrees of freedom was used. Accordingly, it is for the R-1 or K-1 equals to 1, the following criteria of impact size were used: small = 0.01, medium = 0.30 and large = 0.50 (Gravetter & Wallnau, 2004). To test the statistical significance of differences between mean values of continuous variables on the perception, knowledge and possession of supplies and plans of the citizens who are parents and those who are not, *independent samples t-test* was elected.

RESULTS AND DISCUSSION

Chi-square test of independence ($\chi 2$) examined the correlation between parenthood and categorical variables on the perception of preparedness to respond to a natural disaster caused by flood (hereinafter - natural disasters). The results of Chi-square test of independence ($\chi 2$) (with continuity correction by Yeats, referring to tables 2 x 2) has shown that there is a statistically significant relationship between parenthood and the following variables (Table 4): the engaged in field work ($p = 0.000 < 0{,}05$, phi = - 0.091 – small impact); the engaged in shelters ($p = 0.000 < 0.05$, phi = - 0.106 – small impact); heavy rains ($p = 0.001 < 0.05$, phi = 0.070 – small impact). On the other hand, there was no statistically significant relationship with the

following variables: preventive measures (p = 0.10 > 0.05); financial resources (p = 0.80 > 0.05); visiting flood-hit areas (p = 0.10 > 0.05); river level rise (p = 0.47 > 0.05); media reports (p = 0.54 > 0.05); level of preparedness (p = 0.18 > 0.05) (Table 3).

Based on the results, parents compared to those who are not:

- A higher percentage of them think on preparedness to respond encourage due to heavy rains (parents - 42.4%, non-parents - 35.5%);

- A lower percentage of them would engage in field work to help victims (parents - 14.4%, non-parents - 21.4%); would engage in one of shelters for flood victims (parents - 3.0%, non-parents - 7.7%).

Table 3: *Chi-square test of independence (χ2) of parenthood and variables on the perception of preparedness to respond*

	value	df	Asymp. Sig. (2 - sided)	Phi coefficient
Preventive measures	4,508	2	,105	,045**
Funds	,064	1	,800	,006
The engaged in field work	19,050	1	,000*	- ,091
The engaged in shelters	25,574	1	,000*	- ,106
Visiting flood-hit areas	2,669	1	,102	- ,035
Heavy rains	11,154	1	,001*	,070
River level rise	,511	1	,475	,016
Media reports	,361	1	,548	,013
Level of preparedness	7,511	5	,185	,057**

* statistically significant correlation - p ≤ 0.05

** Cramer's V coefficient for tables larger than 2 x 2

Independent samples T - test examined statistically significant difference between the mean values of continuous variables on the perception of citizens who are parents and those who are not. Statistically, significant differences of results with citizens who are and are not parents were in the following continuous variables: individual preparedness (parents: M = 2.93, SD = 1.07; non-parents: M = 3.05, SD = 1.01; t (2469) = - 2.805, p = 0.005, eta squared = 0.0031 - little influence); household preparedness (parents: M = 2.98, SD = 0.991; non-parents: M = 3.10, SD = 0.964; t (2185.9) = - 2.95, p = .003, eta squared = 0,0039 - little influence); I am not threatened (parents: M = 2.85, SD = 1.44; non-parents: M = 3.04, SD = 1.44; t (2445) = - 3.18, p = 0.001, eta squared = 0, 0041 – little influence); I have no support (parents: M = 2.69, SD = 1.28; non-parents: M = 2.84, SD = 1.34; t (2423) = - 2.63, p = .008, eta squared = 0, 0028 – little influence); NHO (parents: M = 2.41, SD = 1.19; non-parents: M = 2.59, SD = 1.14; t (2420) = - 3.89, p = .000, eta squared = 0.0062 – little influence); help would not mean much (parents: M = 2.67, SD = 1.29; non-parents: M = 2.53, SD = 1.17; t (2321) = 2.606, p = 0.009, eta squared = 0.0029 – little influence); citizens from flooded areas (parents: M = 2.85, SD = 1.23; non-parents: M = 2.70, SD = 1.21; t (2297) = 2.97, p = 0.003, eta squared = 0.0038 - little influence) (Table 4).

Table 4: *T - test of comparison of mean values of variables on the perception of preparedness in relation to parenthood*

	Levene's test for equality of variances		t - test for Equality of Means						
Dependent variables	F	Sig.	t	df	Sig. (2 - tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Individual preparedness	,670	,413	- 2,805	2469	,005*	- ,121	,043	- ,205	- ,036
Household preparedness	6,352	,012	- 2,959	2185,962	,003*	- ,118	,040	- ,196	- ,040
Preparednes of loc. comunity	,537	,464	,579	2467	,562	,028	,047	- ,066	,121
National preparedness	3,019	,082	- ,088	2098,760	,930	- ,004	,046	- ,094	,086
Sop. abilities	,438	,508	- 1,279	2454	,201	- ,055	,043	- ,138	,029
Importance of prev.measures	1,274	,259	- ,638	2463	,524	- ,030	,047	- ,121	,062
First responders	,996	,318	- ,440	2430	,660	- ,024	,055	- ,132	,084
I am not threatened	,140	,708	- 3,187	2445	,001*	- ,190	,060	- ,307	- ,073
I do not have time for that	4,443	,035	- ,414	2422	,679	- ,023	,056	- ,132	,086
It is very expensive	,080	,777	- 1,588	2412	,112	- ,087	,055	- ,194	,020
I will not influence on safety	1,060	,303	,511	2417	,610	,028	,054	- ,079	,134
I am not capable	11,924	,001	- ,952	1998,440	,341	- ,053	,056	- ,162	,056
I have no support	1,038	,308	- 2,634	2423	,008*	- ,143	,054	- ,249	- ,036
I cannot prevent	,116	,733	1,177	2408	,239	,066	,056	- ,044	,177
Household members	,008	,927	- ,734	2435	,463	- ,037	,051	- ,137	,063
Neighbours	,001	,978	- ,559	2436	,576	- ,029	,052	- ,130	,073
National hum. organisation	7,182	,007	- 3,890	2420	,000*	- ,189	,048	- ,284	- ,093
International hum. organisation	9,154	,003	- ,628	2419	,530	- ,030	,048	- ,123	,063
Religious community	9,594	,002	- ,464	2187,536	,643	- ,023	,050	- ,122	,075
Police	,072	,789	- 1,557	2433	,120	- ,085	,054	- ,191	,022
First responders	6,421	,011	- ,815	2152,615	,415	- ,041	,051	- ,140	,058
Emergency service	,925	,336	,485	2435	,628	,025	,051	- ,076	,125
Army	2,828	,093	- 1,537	2437	,125	- ,085	,055	- ,193	,023
Self-organized individuals	4,972	,026	- 1,646	2100,962	,100	- ,091	,055	- ,200	,017
Awareness	4,115	,043	- 1,693	2195,454	,091	- ,086	,051	- ,186	,014
Help would not mean much	3,122	,077	2,606	2321	,009*	,138	,053	,034	,241
Others helped	1,245	,265	- ,185	2320	,854	- ,010	,052	- ,111	,092
Duty of state authorities	1,716	,190	,800	2315	,424	,042	,053	- ,061	,146
Citizens from flooded areas	2,396	,122	2,976	2297	,003*	,155	,052	,053	,257
Lack of time	3,003	,083	1,573	2307	,116	,086	,055	- ,021	,194
It is too expensive	,177	,674	- ,202	2305	,840	- ,010	,051	- ,110	,089
Police efficiency	2,396	,122	,100	2412	,920	,005	,053	- ,099	,109
Efficiency of first responders	,423	,516	,853	2413	,394	,046	,053	- ,059	,151
Efficiency of emergency service	,423	,515	1,462	2412	,144	,074	,051	- ,025	,174
Efficiency of army	2,121	,145	,173	2399	,862	,010	,055	- ,099	,118
Efficiency of staff for emergencies	4,140	,042	- 1,752	2168,455	,080	- ,098	,056	- ,208	,012

* Statistically significant difference of test results - $p \leq 0.05$

With parents, there is a higher level of specifying the following reasons for not taking measures of preparedness to respond: my help would not mean much and I expected citizens from flood-affected areas to be primarily engaged. On the other hand, there was a lower level of assessment of individual preparedness and preparedness of households to respond to natural

disasters caused by flood; specifying the following reasons for not taking preventive measures at the personal level that would help in the event of flooding: I do not consider myself or my household at risk of flooding and have no support from the local community; expecting help from non-governmental humanitarian organizations in the first 72 hours after occurrence of floods.

The results of Chi-square test of independence ($\chi 2$) showed a statistically significant correlation between parenthood and the following variables on knowledge of natural disasters caused by floods (Table 5): familiarity with safety procedures ($p = 0.00 < 0.05$, $v = 0.093$ – little influence); evacuation ($p = 0.001 < 0.05$, $v = 0.089$ - little influence); training at work ($p = 0.000 < 0.05$, $v = 0.153$ - little influence); elders, disabled ($p = 0.000 < 0.05$, $v = 0.086$ - little influence); help - elders, disabled ($p = 0.000 < 0.05$, $v = 0.162$ – little influence); neighbors - individually ($p = 0.008 < 0.05$, $v = 0.064$ - little influence); official warning ($p = 0.000 < 0.05$, $v = 0.144$ - small impact); potential infections ($p = 0.000 < 0.05$, $v = 0{,}173$ – small impact); water valve ($p = 0.000 < 0.05$, $v = 0.237$ - little influence); gas valve ($p = 0.000 < 0.05$, $v = 0{,}169$ - little influence); electricity switch ($p = 0.000 < 0.05$, $v = 0.182$ - little influence); handling water valve ($p = 0.000 < 0.05$, $v = 0.227$ - little influence); handling gas valve ($p = 0.000 < 0.05$, $v = 0{,}176$ - little influence); handling electricity switch ($p = 0.000 < 0.05$, $v = 0.159$ - mall influence); information from household members ($p = 0.001 < 0.05$, phi = - 0.068 – little influence); information from a friend ($p = 0.000 < 0.05$, phi = - 0.098 – little influence); information at school ($p = 0.000 < 0.05$, phi = - 0.080 - little influence); information in collage ($p = 0.004 < 0.05$, phi = - 0.062 – little influence); information through an informal system ($p = 0.011 < 0.05$, phi = - 0.055 - little influence); information at work ($p = 0.000 < 0.05$, phi = 0.086 - little influence); information on the radio ($p = 0.024 < 0.05$, phi = 0.048 - little influence); information via the Internet ($p = 0.000 < 0.05$, phi = - 0.087 - little influence); education through television ($p = 0.000 < 0.05$, phi = 0.076 - little influence); education. via video - games ($p = 0.000 < 0.05$, phi = - 0.085 - little influence); education via the Internet ($p = 0.000 < 0.05$, phi = - 0.122 – little influence). On the other hand, there was no statistically significant relationship with variables: education at school ($p = 0.12 > 0.05$); education within family ($p = 0.79 > 0.05$); apparatus for firefighting ($p = 0.71 > 0.05$), restocking ($p = 0.60 > 0.05$); first aid kit in the home ($p = 0.16 > 0.05$), and discussions and plan ($p = 0.16 > 0.05$) (Table 5).

Based on the results, it is noticed that the parents compared to non-parents:

- in a higher percentage: know the safety procedures for floods (parents - 26.9%, non-parents - 19.7%); would evacuate to a friend's place (parents - 37.9%, non-parents - 33.3%); say that someone at work told them about the floods (parents - 38.4%, non-parents - 23.8%); know where in the community live elders, handicapped and infants (parents - 26.9%, non-parents - 19.7%); know what assistance is needed by elders, disabled and infants during floods (parents - 59.9%, non-parents - 43.5%); know what should do after official warnings about approach of flood wave (parents - 33.9%, non-parents - 21.1%); aware of viruses and infections that accompany period after the floods (parents - 52.5%, non-parents - 35.5%); they know where the water valve is (parents - 87% non-parents - 67.6%), gas valve (parents - 61% non-parents - 44.3%), electricity switch (parents - 84.5 %, non-parents - 70.7%); know how to handle the water valve (parents - 82.5%, non-parents - 62.4%), gas valve (parents - 58.7%, non-parents - 41%), electricity switch (parents - 77, 9% non-parents - 63.7%); say they got information about floods at work (parents - 16.8%, non-parents - 10.6%), the radio (parents - 17.2%, non-parents - 13.6%); would like to be educated about the floods on television (parents - 65.4%, non-parents - 57.9%);

- in a lower percentage: they would evacuate to shelters during floods (parents - 2.3%, non-parents - 15.4%) and rented apartments (parents - 26.9%, non-parents - 4.8%); say they think that their neighbors can independently save themselves in case of flooding (parents -

38.2%, non-parents - 38.7%); point out they got information about floods from household members (parents - 16.9%, non-parents - 14.7%), from friends (parents - 8.4%, non-parents - 14.6%) at school (parents - 11.8%, non-parents - 17.5%), at college (parents - 4.5%, non-parents - 7.4%), through informal system of education (parents - 7.2%, non-parents - 10 3%) over the Internet (parents - 25.4%, non-parents - 33.4%); would like to be educated through the video - games (parents - 0.9%, non-parents - 3.2%).

Table 5: *Chi-square test of independence (χ2) of parenthood and knowledge*

	value	df	Asymp. Sig. (2 - sided)	Cramers v
Knowledge on floods	5,522	2	,063	,048
Familiarity with safety procedures	19,785	2	,000*	,093
Evacuation	17,761	4	,001*	,089
Education at school	4,239	2	,120	,042
Education within family	,449	2	,799	,014
Education at work	54,026	2	,000*	,153
Elders, disabled	17,412	2	,000*	,086
Consent to evacuate	1,989	1	,158	,030
Help - elders, disabled	63,842	2	,000*	,162
Neighbors - individually	9,689	2	,008*	,064
Flood risk map	3,157	2	,206	,036
Official warning	47,972	2	,000*	,144
Potential infections	70,263	2	,000*	,173
Water valve	134,937	2	,000*	,237
Gas valve	54,541	2	,000*	,169
Electricity switch	76,327	2	,000*	,182
Handling water valve	124,109	2	,000*	,227
Handling gas valve	60,449	2	,000*	,176
Handling electricity switch	58,625	2	,000*	,159
Information from family members	10,635	1	,001*	- ,068**
Information from neighbors	1,857	1	,173	,029**
Information from friends	21,926	1	,000*	- ,098**
Information from relatives	,930	1	,335	- ,021**
Information at school	14,568	1	,000*	- ,080**
Information at college	8,391	1	,004*	- ,062**
Information through an informal system	6,509	1	,011*	- ,055**
Information at work	16,934	1	,000*	,086**
Information in religious community	,000	1	1,000	- ,002**
Information on television	,446	1	,504	,015**
Information on the radio	5,059	1	,024*	,048**
Information from the press	2,528	1	,112	,034**
Information via the Internet	17,564	1	,000*	- ,087**
Trained	1,773	1	,183	,029
Desire for training	5,742	2	,057	,050
Education via television	13,205	1	,000*	,076**
Education on the radio	1,857	1	,173	- ,030**
Education through video - game	15,239	1	,000*	- ,085**
Education via the Internet	34,173	1	,000*	- ,122**
Education through lectures	,032	1	,859	,005**
Informal system	,349	1	,554	,013

* Statistically significant correlation - $p \leq 0.05$

** Phi coefficient for tables bigger than 2 x 2

For the examination of relationship between parenthood and continuous dependent variables on knowledge, independent samples t - test was elected. Statistically significant differences of the results about citizens who have and those who do not have children existed in the following continuous variables on knowledge: risk of flooding. - 1 year (parents: M = 2.65, SD = 1.42; unemployed: M = 2.42, SD = 1.23; t (2322.6) = 4.29, p = .000, eta squared = 0.0078 – little influence); risk of flooding. - 5 years. (parents: M = 2.90, SD = 1.42; unemployed: M = 2.76, SD = 1.31 t (2216) = 2.55, p = .011, eta squared = 0.0029 – little influence); first responders (parents: M = 2.82, SD = 1.35; unemployed: M = 2.72, SD = 1.18; t (2279) = 2.03, p = 0.042, eta squared = 0.0018 – little influence); nearby shelters (parents: M = 2.24, SD = 1.27; unemployed: M = 2.35, SD = 1.16; t (2221) = - 2.35, p = 0.018, eta squared = 0.0024 – little influence) (Table 6). For parents, there was a higher level of assessment of risk of flooding local community in the next one and next five years and better familiarity with responsibilities of first responders in natural disasters caused by flooding. On the other hand, a lower level of familiarity with nearby shelters was found.

Table 6: *T - test of comparison of the mean values of variables on knowledge in relation to parenthood*

	Levene's test for equality of variances		t - test for Equality of Means						
Dependent variables	F	Sig.	t	df	Sig. (2 - tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
								Lower	Upper
Level of knowledge	,547	,460	1,020	2370	,308	,044	,043	- ,040	,128
Risk of flooding – 1 year	36,647	,000	4,292	2322,609	,000*	,231	,054	,126	,337
Risk of flooding – 5 years	4,343	,037	2,553	2216,956	,011*	,144	,056	,033	,255
Warning systems	3,372	,066	1,543	2416	,123	,076	,049	- ,021	,173
Insurance	10,343	,001	,798	2217,146	,425	,041	,051	- ,060	,141
First responders	31,250	,000	2,038	2279,225	,042*	,106	,052	,004	,208
Stuff for Emergency Situations	14,476	,000	1,368	2225,515	,172	,071	,052	- ,031	,173
Fire routes	10,072	,002	,156	2187,742	,876	,008	,052	- ,095	,111
Nearby shelters	7,762	,005	- 2,359	2221,093	,018*	- ,118	,050	- ,217	- ,020
Vulnerability assessment and plans	4,706	,030	- 1,448	2179,079	,148	- ,072	,049	- ,169	,025

* Statistically significant difference of test results - $p \leq 0.05$

Chi-square test of independence ($\chi 2$) examined the relationship between parenthood status and categorical variables on supplies and plans for response to a natural disaster caused by flood. The results of Chi-square test of independence ($\chi 2$) (with continuity correction by Yeats, referring to tables 2 x 2) have shown that there is a statistically significant relationship

between parenthood and the following variables: supplies at home (p = 0.000 < 0.05, v = 0.090 –little influence); food supply (p = 0.004 < 0.05, v = 0,120 – little influence); water supply (p = 0.002 < 0.05, v = 0,135 – little influence); restocking (p = 0.000 <0.05, phi = 0.116 – little influence); copies of documents (p = 0.000 < 0.05, v = 0.131 – little influence); insurance (p = 0.000 <0.05, v = 0,191 – little influence) (Table 7).

Based on results, it is noticed that parents compared to non-parents:

- in a higher percentage have: food supplies for four days (parents - 66.2%, non-parents - 56.9%); water supplies for four days (parents - 51.8%, non-parents - 38.9%); never replenish supplies (parents - 49.5%, non-parents - 38.1%); copies of important financial, personal and other documents (parents - 28.4%, non-parents - 26.9%); home insurance in case of flood (parents - 9.3%, non-parents - 7.1%);

- in a lower percentage have: supplies at home in case of a natural disaster caused by flood (parents - 24.7%, non-parents - 26.6%); food supplies for two days (parents - 13.8%, non-parents - 22.8%); water supply for one day (parents - 22%, non-parents - 24.6%), for two days (parents - 26.2%, non-parents - 36.4%); replenish supplies once a month (parents - 32% non-parents - 37%), once a year (parents - 18.5%, non-parents - 24.9%).

Table 7: *Chi-square test of independence (χ2) between parenthood, having supplies and response plans*

	value	df	Asymp. Sig. (2 - sided)	Crames, v
Supplies at home	19,435	2	,000*	,090
Food supplies	10,843	2	,004*	,120
Water supplies	12,834	2	,002*	,135
Radio - transistor	,002	1	,969	- ,003**
Flashlight	,010	1	,921	- ,004**
Shovel	3,595	1	,058	,055**
Hack	3,313	1	,069	,053**
Hoe and spade	1,248	1	,264	,033**
Apparatus for firefighting	,872	1	,350	,030**
Restocking	17,416	2	,000*	,116**
Supplies in the car	5,564	3	,135	,050
First aid kit in the home	34,111	2	,000*	,123
First aid kit in the vehicle	7,931	2	,019	,065
First aid kit - easily accessible	14,843	2	,001*	,086
Response plan	22,220	3	,000*	,097
Discussion of the plan	17,599	2	,000*	,088
Copies of documents	37,592	2	,000*	,131
Insurance	86,223	2	,000*	,191

* Statistically significant correlation - p ≤ 0.05

** Phi coefficient, table 2 x 2

The results obtained in similar surveys do not differ significantly. For example, the research results of preparedness of citizens to respond to natural disasters conducted in the United States, indicate that 30% of respondents are familiar with the warning systems and informing on natural disasters, 31% know the way how they can get important information during natural disasters, 47 % know how to evacuate, 48% are familiar with local risks from natural disasters, 54% of respondents know where the nearest shelters are, and 58% are familiar with evacuation routes.[8]

8 FEMA (2009) Personal Preparedness in America: Findings from the Citizen Corps National Survey

Then, the results of the research conducted in Scotland showed that 38.1% of respondents are informed through neighbors and friends, 28.6% over the radio, 27.2% in the press, 28.5% over the national television, 36.7% over the relevant state authorities and 12.8% in other ways.[9]

CONCLUSION

Parents in higher percentage/greater extent in relation to non-parents think about preparedness to respond due to heavy rains. They point out the following reasons for not taking action of preparedness: "My help would not mean much" and "I expected the citizens from flood-affected areas would be primarily engaged". Then, they are familiar with safety procedures, they would evacuate to a friend's place, they point out that someone at work talked about the floods; they know where elders, disabled and infants live in the community; they know what help is needed by elders, disabled and infants; they know what they should do after official warnings about the approach of the flood; they are familiar with viruses and infections that accompany the period after the flood; they know where the water valve, gas valve and electricity switch are; they know how to handle the water and gas valve, electricity switch; they say that they got the information about the floods at work, on the radio; they would like to be educated about the floods on television; they scored a level of assessment of risk from flooding local community in the next year and five years and higher familiarity with the responsibilities of first responders in natural disasters caused by flooding; they have food and water supplies for four days; they never replenish supplies they have; they have copies of important financial, personal and other documents and they have home insurance in case of flood.

On the other hand, the respondents who are not parents in higher percentage/greater extent: would engage in assisting the victims in the field and in shelters, scored a rating level of individual preparedness and preparedness of households to respond. They point out the following reasons for not taking preventive measures on personal plan: "I do not consider myself or my household at risk of flooding" and "I have no support from the local community"; they expect help from non-governmental humanitarian organizations in the first 72 hours after the occurrence of flood; they would evacuate to shelters during the floods and rented apartments; they believe their neighbors can rescue themselves in the event of floods; they say theey got the information on floods from family members, friends, at school, at college, through informal education system, through the Internet; they would like to be educated through video - games, scored a level of familiarity with the nearby shelters; they possess: supplies at home, food supplies for two days, water supply for one day and two days; they replenish supplies once a month and once a year.

RECOMMENDATION

Based on the results, parents should be influenced to get involved in providing assistance in shelters; to evacuate to shelters; to be educated by television. On the other hand, citizens who are not parents should be influenced to learn about safety procedures for viruses and infections that accompany a period after the flood; to be informed about the positions of the water valve, gas valve and electricity switch. They should be educated about how to handle the water valve, gas valve and electricity switch. They should be directed to possess supplies at home, food supplies for two days, water supplies for one day, to replenish supplies once a month and once a year.

[online]. http://www.citizencorps.gov/ready/research.shtm [accessed 24. December 2015].

9 Werritty et al. (2007). *Exploring the social impacts of flood risk and flooding in Scotland: Scottish Executive*, Edinburgh, p. 122

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