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INSTITUTE FOR HUMAN REHABILITATION

ISSN 2232-9935

Doi: 10.21554

HUMAN

Research in Rehabilitation

Volume 9 | Issue 2 | September, 2019

Human Research in Rehabilitation

Institute For Human Rehabilitation
Association of scientists
Veljka Lukića Kurjaka 41,
75 000 Tuzla, Bosnia and Herzegovina
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ISSN 2232-9935 (print)
ISSN 2232-996X (online)

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Web services included Journal Human Research in Rehabilitation: DOAJ; EBSCO HOST; INDEX COPERNICUS; ERIH; DRJI; SHERPA/Romeo; CNKI Scholar, etc.

Owned and published by Association of scientists,
Institute for Human Rehabilitation
Published twice a year.

For online version of the journal and online
manuscript submissions see <http://www.human.ba>
Date of print: September, 2019.
Circulation: 200

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THE IMPACT OF GEOMETRY KNOWLEDGE ON THE ORIENTATION AND MOBILITY OF BLIND STUDENTS

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Original scientific paper

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Received: 2019/6/24

Accepted: 2019/8/15

ABSTRACT

The problem of blindness and other visual impairment is very important because it affects millions of people in the world. For those suffering from innate visual impairment, it is very difficult to imagine the world like it is, the fight begins from early school stages and continues until the end of life. This paper describes how the learning of basic geometric shapes, and their different positions, has an impact on the formation of a mental scheme in orientation and mobility. Geometry and its knowledge represent only one small part necessary for a safer and more independent movement of blind people. The research has shown that the quarterly individual work, on the adoption of geometric concepts and positions in students, is making progress in overcoming the recent problems. Spatial visualization implies understanding and imaginary movements, which, with spatial orientation and recognition of parts and relationships in the micro and macro environment, require mental rotation in relation to the position of the body. Therefore, it all together influences the formation of the mental scheme of the blind people, which is the basis for orientation and movement.

Keywords: *geometry, orientation, mobility, blind students*

INTRODUCTION

Geometric shapes (rectangles, triangles, squares, etc.) can be considered as categories that share common properties, which include an infinite number of specific shapes (Piaget & Inhelder, 1947). Geometry is the main theory of space and the foundation of mathematics, a subject that students cannot avoid during their (school) life (Erwin et al., 2001). Studies have pointed out the importance of awareness of geometry (Edwards et al.,

2006), because it is not limited only to school subjects, but to everyday processes. This is crucial for people with visual impairment; to develop the correct sense of space, relationships and reasoning. It establishes the basis for systematic thinking through the numerical and spatial aspects of the objects. Proper process and manipulation of various objects in the space, together with the necessary spatial thinking, provides a strong background for other more advanced modules, such as trigonometry (Klatzky & Lederman, 2003).

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Although adults and children are able to categorize geometric shapes in some conditions, according to abstract geometric rules, they show prejudices against prototype forms, both in perception (the estimation of the typicality of the visualized triangles and quadrangles), as well as in the production tasks (drawing numbers) of different copies of the category (Feldman, 2000). The types of forms have become scattered structures organized around prototypes (Feldman, 2000; Medin & Schaffer, 1978; Nosofsky, 1988; Rosch, 1975; Rosch & Mervis, 1975), with whom blind students are usually acquainted with tactile perception, and their learning takes place by using the analytical way and synthetic way. An analytical way involves the individual perception of details and individual parts, and on the basis of these data an image of the object and its purpose is created. Synthetic way means the capture of the whole object by touching without details, and on the basis of the overall impression the object is recognized. In practice, both are complemented and used almost simultaneously. The important thing is that for the recognition through tactile perception it takes far more time than through visual perception (which is always complete). Partially-sighted students, for the perception of the environment, other than the rest of the senses, use the rest of the sight, but they also need more time (Matok, 2003). Perception generally has an object character, and it is oriented to objects and phenomena, and selective character, because it separates objects as forms from the background. Touch and other skin sensations are an important part of information about the outside world (Bosnar-Salihagić, 2011, according to Stančić, 1991). For blind people to orientate and move in space, knowledge of geometry and knowledge of basic shapes, relationships and angles are necessary. Haptic way, i.e. a method that supports tactile and kinesthetic sense has been studied to a limited extent since neurological and neuro-psychological research has shown that visual and haptic images of the brain are so similar that they can be in mutual modalities (James et al., 2002; Reales & Ballesteros, 1999; Gaissert, Wallraven & Bulthoff, 2010). Another powerful impetus to use haptics is that active learning is more effective than passive learning, i.e. the power of touch recognition is more powerful than simple observation (Hahm et al., 2007). For the purpose of discussing the perception of the blind people, it is best to talk about the mapping of data or their binding (visual, haptic...) or their combination (Foley & Ribarsky, 1994), and user information, by combining these modes of operation as inputs and outputs, is

defined as multi-modal joining (Oviatt, 1999). Nowadays, a number of software tools have been developed to learn geometry (Kaufmann & Schmalstieg, 2003). More authors (Cesarek, 2014, according to Anthony et al., 2002; Hill, Rosen, Correa, & Langley, 1984; Eichfield, 2011; Filan, 1998; Bishop, 1991; Anthony, 2014), point out that for the beginning of orientation and mobility for the child, the acquisition of different skills is important (perception-sensory skills, concept development, development of motor skills, assigned movement, tracing, use of protective skills, did he/she use them before rods, etc.). Because learning about orientation and movement consists of training in motor skills, movements, sensory abilities, spatial concepts, tracing and protection techniques too (Cesarek, 2014). According to Kuyk et al. (2004), the above-mentioned skills are based on techniques that best utilize information obtained from possible residual vision and other sensory systems, as well as the techniques of using different aids (white cane, a human guide, a guide-dog and electronic aids). Orientation and movement is one of the important specific rehabilitation programs created for people with visual impairment (Fajdetić, 2012, according to De l'Aune, 2006), which, with the application of the correct methodology, results in the skills of safe, independent and oriented movement (Fajdetić, Zimmerman, & Roman, 2006). The central role in planning and preparing the individualization of the treatment is to identify the individual specificities of students, which determine their success in solving the assigned tasks, as well as achieving an adequate educational achievement (Jablan et al., 2010). Findings of researchers suggest that blind and partially-sighted students use the same performance patterns, which shows that both groups use similar mental representations (Heller et al., 2005). According to Fleming (2010), most perceptual data, used by blind people, have been received and processed consecutively (for example, haptic and audio information), while visual data is received and processed in parallel. Therefore, Aleman et al. (2001) conclude that these shortcomings can occur due to serial processing of sound and touch, which can be slower and more susceptible to errors and parallel processing. When it comes to concepts about space and the environment, then it is asked from a blind person to have a clear and functional idea about three-dimensional objects, about their surfaces and shapes, and about the configuration of the environment, for example, about the plan of crossing streets, neighborhoods, layout of buildings, etc.

Due to inappropriate reception of sensitive information and problems of environmental observation, blind people synthesize the collected information harder, and are not sufficiently using the adopted terms. The negative role in this problem may also belong to the parents' hesitation to allow the blind child to independently and self-explicitly investigate the environment and thus reducing the child's chances of adopting correct concepts about the environment (Zovko, 1994). Unfortunately, most teachers have very limited or insufficient experience in teaching students with visual impairment and it results with stereotypical views on what the blind students are capable of learning (Ballesteros et al., 2005). For blind and partially-sighted children, many factors influence the quality of orientation and movement skills: the quantity / quality of the visual remnants, whether the vision will remain the same, will be better or worse, is there more damage (auditory, motor, tactile, taste and smell) and many other factors. Prior to the training of orientation and movement, the instructor assesses the child's skills and abilities, and then based on the results, prepares the program of work. Therefore, the way to solve specific situations and exercises should be tailored to the individual, giving him/her the opportunity to learn and gradually study in the process of moving independently and responsibly to make decisions, and bear the consequences. Staging exercises based on their difficulty implies the separation of different stages, i.e. the components, their individual explanation, and ultimately the performance (Zovko, 1994). The planned individual program of orientation and movement is part of a complete program of rehabilitation of blind and visually impaired people (Runjić et al., 2009). The aim of the paper was to examine whether there is a difference in mastering the geometric concepts of blind students before and after the implementation of quarterly individual treatment in orientation and movement.

METHODS

The sample consisted of 30 blind students aged 7 to 15, out of which 17 male and 13 female students, with the basic sampling for the sample being amourosis without any further damage. The research was carried out at the Center for children and youth with developmental disabilities "Budućnost" in Derventa (8 students) and the Center for blind and partially-sighted children and youth in Sarajevo (22 students). For data collection, data from the respondent's dossier - consisting of the basic data of the respondent - was

used. The research applied the "Mobility Assessment Tool for the Blind" (Zovko, 1994), which established the initial and final levels of development of mobility capabilities of blind students. The test consists of ten sub-tests with a total of 67 variables. In this research, a sub-test Geometry was used which had tasks of recognizing certain shapes (cube, cylinder, square, circle, triangle, rectangle, pyramid, cuboid); placing a stick in a horizontal, vertical and parallel position, and turning the own body at 90 and 180 degrees, on the left and right sides. The scoring was performed in a manner that the done task was correct (T-2 points) and uncompleted or incorrect (N-1 point). After individually determining the initial level of development of perceptual abilities and mobility of blind students, individual quarterly treatments in the field of geometry have been prepared and applied, and which have direct influence on the orientation and mobility treatments. Because boarding school students were examined, the research was done after regular classes, in the student's free time. Individual treatments were done once a week with each student for 45 minutes. All individual treatments were in accordance with established safety rules and with the verbalization of the ongoing activities. One trial exercise was permitted, in order to gain a sense of the task to be performed, and after that the students independently did their exercises/tasks. After the individual treatment of orientation and mobility, using the same test, a final assessment of geometric knowledge was carried out in order to determine the level and impact of the same on the orientation and mobility of blind students. For statistical data processing, descriptive statistic methods were used, and a t-test for the dependent sample of the respondents was used to examine the significance of the differences between the arithmetic meanings of the initial and final states. The research was carried out with a level of significance of 5% (.05).

RESULTS AND DISCUSSION

The importance of mathematics as well as the mastering of geometric concepts is not only reflected in mastering basic mathematical operations, developing the ability to solve logical problems, but it also plays an important role in the orientation and mobility of blind students. In mathematics and geometry, a number of mathematical models are used in which blind students, using the tactile way, create a representation of the three-dimensional shape and position of objects in the space, and therefore the (space) relation of their body to another.

Based on the evaluation carried out (Kouba, Ovadia, & Brill, 1990), students fail to understand the basic concepts of geometry and fail to master the skills of solving geometric problems. Factors that lead to this poor achievement are the habit and practice of students who focus only on identifying and naming geometric shapes and learning symbols for basic concepts of geometry (Daneman & Carpenter, 1980). The results obtained in relation to the geometry of the initial measurement on the variable "Geometry1" referring to the recognition of individual shapes (cube, cylinder, square, circle, triangle, rectangle, pyramid, cuboid) show that the mean is 14.70 ± 1.93 , median and mode 16, while the minimum and maximum results range from 10 to

16 (Table 1). In relation to symmetry measures, the distribution is negatively asymmetrical (.63) and platykurtical (-.63). The mean of the variable "Geometry2" referring to the orientation with the object in the horizontal, vertical and parallel position is $3.67 \pm .76$, median and mode are 4, the minimum and maximum results range from 2 to 4. Distribution is negatively asymmetrical (-1.88) and platykurtical (1.66). The mean of the variable "Geometry3" referring to the rotation of one's own body at certain angles and sides is 5.20 ± 1.86 , median and mode are 4 and the minimum and maximum results range from 4 to 8 (Table 1). The results in relation to symmetrical and kurtosis measures show that distribution is asymmetric and platykurtic.

Table 1. Measures of central tendency and dispersion measures in relation to observed variables (initial measurement)

Variables	Mean	M _d	M _o	SD	Var	S _k	K _u	Min	Max
Geometry1	14.70	16.00	16.00	1.93	3.73	-.99	-.63	10.00	16.00
Geometry2	3.67	4.00	4.00	.76	.57	-1.88	1.66	2.00	4.00
Geometry3	5.20	4.00	4.00	1.86	3.48	.92	-1.24	4.00	8.00

Legend: Geometry1 – shape/form recognition; Geometry2 – orientation with the object in a horizontal and vertical position; Geometry3 – rotation of one's own body at certain angles and sides

The results of the final measurement (Table 2) obtained on the "Geometry1" variable indicate that the mean is $15.67 \pm .96$, the median and the mode are 16, while the minimum and maximum results range from 12 to 16. In relation to symmetry measures, the distribution is negatively asymmetric (-3.03) and leptokurtic (8.68) (Table 2). The mean of the variable "Geometry2" is $3.80 \pm .61$, median and mode are 4,

the minimum and maximum results range from 2 to 4. Distribution is negatively asymmetric (-2.81) and leptokurtic (6.31). The mean of the variable "Geometry3" is 6.80 ± 1.86 , median and mode are 8, and the minimum and maximum results range from 4 to 8. The results in relation to symmetrical and kurtosis measures show that the distribution is negatively asymmetric and platykurtic.

Table 2. Measures of central tendency and dispersion measures in relation to observed variables (initial measurement)

Variables	Mean	M _d	M _o	SD	Var	S _k	K _u	Min	Max
Geometry1	15.67	16.00	16.00	.96	.92	-3.03	8.68	12.00	16.00
Geometry2	3.80	4.00	4.00	.61	.37	-2.81	6.31	2.00	4.00
Geometry3	6.80	8.00	8.00	1.86	3.48	-.92	-1.24	4.00	8.00

Legend: Geometry1 – shape/form recognition; Geometry2 – orientation with the object in a horizontal and vertical position; Geometry3 – rotation of one's own body at certain angles and sides

Based on the results obtained in Table 3, it can be concluded that there is no difference between the initial and the final measurement, i.e. before and after the treatment on the variable "Geometry2" ($t = -1.43$; $p = .16$), and which refers to orientation in the horizontal

and vertical position. On the variables "Geometry1" ($t = -3.43$; $p = .00$) and "Geometry3" ($t = -4.39$; $p = .00$), t-test results showed that there was a statistically significant difference and these differences are in favor of the final measurement.

Table 3. T-test results in relation to geometry

Orientation	Measurement	Mean	SD	<i>t</i>	<i>p</i>
Geometry1	Initial	14.70	1.93	-3.43	.00
	Final	15.67	.96		
Geometry2	Initial	3.67	.76	-1.43	.16
	Final	3.80	.61		
Geometry3	Initial	5.20	1.86	-4.39	.00
	Final	6.80	1.86		

Legend: Geometry1 – shape/form recognition; Geometry 2 – orientation with the object in a horizontal and vertical position; Geometry3 - rotation of one's own body at certain angles and sides

During our initial assessment, younger students did not demonstrate a good knowledge of geometric bodies - figures, because they had not yet been introduced to mathematics. They were mostly familiar with shapes such as cubes, circles, cylinders (most commonly used in the child's play), while the concepts of the pyramid, cone, rectangle, cuboid and square caused confusion among students. They did not do well in the tasks of placing objects at a certain position (horizontally, vertically, in parallel). After a three-month individual work on the adoption of geometric concepts and positions, individual students showed progress in overcoming recent problems. Older students have mostly done this part of the test well because of their already existing knowledge about geometric concepts. We are already aware that "visual-spatial mental images" refer to certain types of mental representations that result from a complex cognitive process, which depend on different sources of information. Furthermore, this information is processed within the framework of the "visual-spatial active memory" (Klingenberg, 2007), which extracts specific information about an object that is not completely identical to the original one. These specific information acts as a reference to mental models of objects that are easily "extracted from memory" when it is needed to represent or identify a particular object. Blind people can develop mental images, but they are organized in a different way from the mental images of people without visual impairment, which again depends on the perceptual and collected haptic experience of the person (Bouaziz et al., 2005; Cornoldi et al., 2003). Gentaz et al. (Pinet & Gentaz, 2007; Pinet & Gentaz, 2008; Kalénine, Pinet, & Gentaz, 2010), generalizing the results of the research, showed that, at the age of 5, the recognition of rectangles or triangles is better in relation to some other particular forms and shapes. The results have shown that in adults and children, both in perception and in the domain of reproduction, the categories of

forms and shapes usually have stepped structures organized around a prototype, in which horizontal orientation plays an important role in their definition.

Geometry is one of the most difficult subjects for blind students to master, but at the same time one area of which they have a lot of benefits when forming their mental maps. The classical learning of geometry is based on visual modalities (drawings, charts, lines, curves, etc.), which is not available to blind people. The study of Solene, Pinet and Gentaz (2011), was intended to examine the benefits of multi-sensory interventions in recognizing geometric shapes in the kindergarten. An experiment was performed in which a visual and haptic modality was examined in one group of children, and in the second group, only a visual modality, on a total of 72 pre-school children. The results showed that children have made more progress using both visual and haptic modality, compared to the use of only visual modality (rectangle and triangle). The authors believe that the addition of haptic modality in intervention provides useful effects by allowing children to better understand what is included in the category of forms/shapes.

Zovko (1994) conducted a case study on two students of the eighth grade of the "Vinko Bek Primary School" in Zagreb, where he tried to evaluate the impact of systemic exercises on improving the ability of visually impaired people to orientate and move. An individual treatment was conducted twice a week from 14:00 to 16:00 o'clock in a period of about three months. During the examination of the distinction between plane figures (geometric shapes) and solid figures, both students showed knowledge of the distinction between plane figures, while they were less familiar with solid figures. They independently identified the cube, the ball and the cylinder, but they sought help in identifying and naming the cuboid, cone and pyramid. Difficulties are evident in the mix up of the cuboid and the cube.

This misconception is eliminated by indicating the essential differences between the mentioned solid figures.

In his study of the tactile observation of the permanence of the shape/form, Worchel (1951) found that blind children were at the same level as children without visual impairment. However, they have succeeded poorly in tasks of spatial relations and spatial orientation. In his experiments, Hatwell (1985) finds that, in the tasks of perception of the form/shape, blind children achieve less success than children without visual impairment and that children without visual impairment are better in this perception due to early learning, which comes to them spontaneously. Observation of the form/shape is in significant correlation with learning, experience and other internal factors of observation (Jablan, 2007).

The work of Rouzier et al. (2004) describes a touch-and-sound system to help understand the concepts of geometry for blind students, and more information is obtained from experiments conducted at a school for blind children. This system enables tactile reading, measurement and the making of geometric figures. This system can help blind students form a mental representation of geometric and topological concepts. Ungar et al. (1995) conducted a survey on the method and importance of adopting a tactile map for blind and partially-sighted students. The study included 24 children with visual impairment and 22 short-sighted children, aged 7 to 13. Children had to learn tactile maps and reconstruct them from memory. Here, the strategy of learning was observed, which children use to remember tactile maps. All activities were verbalized by children. The authors came to the conclusion that reconstruction by children with visual impairment is less accurate than those of short-sighted children. It has also been found that most children with visual impairment use strategies that are unsuitable for the task. The results of several authors (Kalénine, Cheam, Izard, & Gentaz, 2013; Pinet & Gentaz, 2008; Pinet & Gentaz, 2007; Kalénine, Pinet, & Gentaz, 2010) have shown that in adults and children both in perception and in the domain of reproduction, the form/shape categories usually have stepped structures arranged around a prototype, in which horizontal orientation plays an important role in defining them.

CONCLUSION

The results of different estimates reveal that blind students fail to learn basic geometric concepts, in

particular the solving of geometric problems. The research has shown that a quarterly individual treatment, which relates to the adoption of geometric concepts and their position in space, has resulted in progress in mastering tasks previously set before blind students. In regular schools, the traditional approach is still used to learn geometry, without taking into account the ability to generate data and concrete thinking, and the visualization of the same. Spatial abilities and mathematical achievements are linked, and the spatial reasoning of geometry is therefore the basis for orientation and mobility together with spatial visualization. Spatial visualization implies understanding of imaginary movements, which, with spatial orientation and recognition of parts and relationships in the micro and macro environment, requires mental rotation in relation to the position of the body. Therefore, it all together influences the formation of the mental scheme of blind people, which is the basis for orientation and movement.

REFERENCES

- Anthony, J.L., Lonigan, C.J., Burgess, S.R., Driscoll, K., Phillips, B.M., & Cantor, B.G. (2002). Structure of preschool phonological sensitivity: Overlapping sensitivity to rhyme, words, syllables, and phonemes. *Journal of Experimental Child Psychology*, 82, 65–92.
- Anthony, T. (2014). *Orientation And Mobility (O&M): The Early Years Of Infancy Through Preschool*. Retrieved from <http://www.tsbvi.edu/orientation-amobility/3228-orientation-and-mobility-oam-the-early-years-of-infancy-throughpreschool>.
- Aleman, A., Van Lee, L., Mantione, M., Verloijen, I., & de Haan, E. (2001). Visual Imagery without visual experience: Evidence from congenitally totally blind people. *Neuroreport*, 12(11), 2601–2604.
- Ballesteros, S., Bardisa, D., Millar, S., & Reales, J. (2005). The haptic test battery: A new instrument to test tactual abilities in blind and visually impaired and sighted children. *The British Journal of Visual Impairment*, 23(1), 11–24.
- Bouaziz, S., Russier, S., & Magnan, A. (2005). The Copying of Complex Geometric Drawings by Sighted and Visually Impaired Children. *Journal of Visual Impairment and Blindness*, 99(12), 765–774.
- Cornoldi, C., Fastame, M., & Vecchi, T. (2003). Congenitally blindness and spatial mental imagery. In a. Hatwell Y., & a. V. Streri A., *Congenitally blindness and spatial mental imagery* (pp. 173–187). Amsterdam/Philadelphia: John Benjamins Publishing Company.
- Češarek, S. (2014). *Predvaje za orientacijo in mobilnost predšolskih otrok*. <http://www.kss-ess.si/wp-content/uploads/2014/03/Predvaje-za-orientacijo-in-mobilnost-pred%C5%A1olskih-otrok.pdf>.
- Daneman, M., & Carpenter, P.A. (1980). Individual differences in working memory and reading. *Journal of Verbal Learning and Verbal Behavior*, 19, 450–466.

- Eichfeld, J. (2011). *About Pre-cane Skills: What are Pre-cane Skills and How Can I Help?* Retrieved from <http://adifferentkindofvision.blogspot.com/2011/02/about-pre-cane-skills.html>.
- Erwin, E., Perkins, T., Ayala, J., Fine, M., & Rubin, E. (2001). You don't have to be sighted to be a Scientist, Do you? Issues and Outcomes in Science Education. *Journal of Visual Impairment and Blindness*, 95(6), 338–352.
- Edwards, A., McCartney, H., & Fogarolo, F. (2006). Lambda a multimodal approach to making mathematics accessible to blind students. *Proceedings of the 8th international ACM SIGACCESS conference on Computers and accessibility*. ISBN: 1- 59593-290-9. New York City: ACM New York, NY, USA ©2006. doi:10.1145/1168987.1168997.
- Fajdetić, A. (2012). Slijepi učenici i usvajanje jezika u integriranom odgoju i obrazovanju. *Časopis za pedagoški teorijsku i praksu*, 153(3-4), 463–482.
- Feldman, J. (2000). Bias toward regular form in mental shape spaces. *Journal of Experimental Psychology: Human Perception & Performance*, 26, 152–165.
- Filan, S. (1998). Orientation and Mobility. V E. Trief (ed.), *Working With Visually Impaired Young Students: A Curriculum Guide For 3 to 5 Year Olds*, 81–96. U.S.A.: Charles C Thomas.
- Fleming, P., Ball, L., Collins, A., & Ormerod, T. C. (2010). Spatial Representation and Processing in the Congenitally Blind. In S. Ballesteros, & M. Heller, *Touch, blindness, and neuroscience*. Madrid, Spain: UNED Press.
- Foley, J., & Ribarsky, B.: Next-generation data visualization tools. In: Rosenblum, L., Earnshaw, R.A., Encarnacao, J., Hagen, H., Kaufman, A., Klimenko, S., Nielson, G., F. Post, & Thalmann, D. (1994). (eds.) *Scientific Visualization, Advances and Challenges*. Academic Press, Waltham.
- Gaissert, N., Wallraven, C., & Bulthoff, H.H. (2010). Visual and haptic perceptual spaces show high similarity in humans. *Journal of Vision*, 10(11:2), 1–20.
- Hahm, J., Lee, K., Lim, S.-L., Kim, S.-Y., Kim, H.-T., & Lee, J.-H. (2007). Effects of Active Navigation on Object Recognition in Virtual Environments, *Cyber Psychology and Behaviour*, 10, 305–308. Mary Ann Liebert, Inc., New York.
- Hatwell, Y. (1978). Form perception and related issues in blind humans. In Held R, Leibowitz HW, & Teuber HL, editors. *Handbook of sensory physiology, VII: Perception*. New York and Berlin: Springer Verlag.
- Hill, E. W., Rosen, S., Correa, V. I., & Langley, M. B. (1984). Preschool orientation and mobility: An expanded definition. *Education of the Visually Handicapped*, 16(2), 58–72.
- Jablan, B. (2007). *Motorne i taktilne funkcije kod slepe dece*, Fakultet za specijalnu edukaciju i rehabilitaciju. Beograd: Centar za izdavačku djelatnost.
- Jablan, B., Kovačević, J., & Teskeredžić, A. (2010). Didaktičko modelovanje nastave matematike u radu sa djecom ometenom u razvoju. *Specijalna edukacija i rehabilitacija*, 9(1), 111–124.
- James, T.W., Humphrey, G.K., Gati, J.S., Servos, P., Menon, R.S., & Goodale, M.A. (2002). Haptic study of three-dimensional objects activates extra striate visual areas. *Neuropsychologia* 40, 1706–1714.
- Kaufmann, H., & Schmalstieg, D. (2003). Mathematics and geometry education with collaborative augmented reality. *Computers & Graphics* 27(3), 339–345.
- Kalénine, S., Pinet, L., & Gentaz, E. (2010). The visual and visuo-haptic exploration of geometrical shapes increases their recognition in preschoolers. *International Journal of Behavioral Development* 35, 18–26.
- Kalénine, S., Cheam, C., Izard, V., & Gentaz, E. (2013). Adults and five year-old children draw rectangles and triangles around a prototype but not in the golden ratio, *British Journal of Psychology*, 104 (3), 400–412.
- Klatzky, R., & Lederman, S. (2003). The haptic identification of everyday life objects. In Y. Hatwell, A. Streri, & E. Gentaz, *Touching for knowing: cognitive psychology of haptic manual perception*, 53, 105–121.
- Kuyk, T., Elliott, J.L., Wesley, J., Scilley, K., McIntosh, E., Mitchell, S., & Owsley, C. (2004). Mobility function in older veterans improves after blind rehabilitation. *J Rehabil Res Dev*, 41, 337–346.
- Kouba, Gene E., Ovadia, S., & Brill, J. (1990). A nonintrusive flowmetering method for two-phase intermittent flow in horizontal pipes. *SPE Production Engineering*, 5(4): 373–380.
- Klingenberg, G. (2007). *Geometry: Educational Implications for Children with Visual Impairment*. Norwegian University of Science and Technology.
- Medin, D., & Schaffer, M. (1978). Context model of classification learning, *Psychological Review*, 85(3), 207–238.
- Matok, D. (2003). *Integracija učenika s oštećenjem vida*. Centar za odgoj i obrazovanje „Vinko Bek“, Zagreb. Retrieved from <http://www.savez-slijepih.hr/hr/kategorija/integracija-ucenika-ostecenjem-vida-458/>.
- Nosofsky, R. M. (1988). Similarity, frequency, and category representations. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 14(1), 54–65.
- Oviatt, S. (1999). Ten myths of myths of multimodal interaction. *Commun. ACM*, 42(11), 74–81.
- Piaget, J., & Inhelder, B. (1947). *La représentation de l'espace chez l'enfant*. Paris: PUF.
- Pinet, L., & Gentaz, E. (2007). La reconnaissance des figures géométriques planes par les enfants de 5 ans. *Grand N*, 80, 17–24.
- Pinet, L., & Gentaz, E. (2008). Évaluation d'entraînements multisensoriels de préparation à la reconnaissance de figures géométriques planes chez les enfants de 5 ans: Etude de la contribution du système haptique manuel. *Revue Française de Pédagogie*, 162, 1–20.
- Rosch, E. (1975). Cognitive reference points. *Cognitive Psychology* 7, 532–547.
- Rosch, E., & Mervis, C.B. (1975). Family resemblances: Studies in the internal structure of categories. *Cognitive Psychology* 7, 573–605.
- Runjić, T., Nikolić, B., & Bilić Prcić, A. (2009). Povezanost tehnika videčeg vodiča i samostalnog kretanja osoba oštećena vida. *Hrvatska revija za rehabilitacijska istraživanja*, 45(2), 1–10.
- Rouzier, S., Hennion, B., Segovia, T.P., & Chene, D. (2004). Touching geometry for visually impaired pupils. *Proceedings of EuroHaptics, Munich Germany*, 697–704.

- Reales, J.M., & Ballesteros, S. (1999). Implicit and explicit memory for visual and haptic objects: cross-modal priming depends on structural descriptions. *Journal of Experimental Psychology: Learning, Memory, and Cognition*, 25(3), 644–663.
- Stančić, V. (1991). *Oštećenja vida- Biopsihosocijalni aspekti*. Zagreb: Školska knjiga.
- Solene, K., Pinet, L., & Gentaz, E. (2011). The visual and visuo-haptic exploration of geometrical shapes increases their recognition in preschoolers. *International Journal of Behavioral Development*, 35(1), 18–26.
- Ungar, S., Blades, M., & Spencer, C. (1995). Mental rotation of a tactile layout by young visually impaired children. *Perception*, 24(8), 891–900.
- Worchel, P. (1951). Space perception and orientation in the blind. *Psychological Monographs: General and Applied*, 65(15), i-28.
- Zovko, G. (1994). Utjecaj vježbanja na usvajanje pojma o vlastitom tijelu. *Defektologija*, 30(2), 95–103.
- Zovko, G. (1994). *Peripatologija 1*. Zagreb: Školske novine.

DIFFERENCES IN THE DEVELOPMENT OF TACTILE FUNCTIONS IN PARTIALLY SIGHTED CHILDREN IN RELATION TO CATEGORY AND TYPE OF VISUAL IMPAIRMENT

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Original scientific paper

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Received: 2019/6/18

Accepted: 2019/8/30

ABSTRACT

The aim of this study was to examine the differences in the development of tactile functions in visually impaired (amblyopic) children in relation to the category and type of visual impairment. In the study, 30 respondents with visual impairment, aged 7-13 and of both genders were examined. Tactile functions assessment was performed using the Luria-Nebraska Tactile Functions Assessment Scale ('C3'). A t-test was used to examine the significance of arithmetic mean differences. With respect to the category of visual impairment, it was found that there were statistically significant differences in arithmetic means on three variables of tactile perception. Respondents have equally developed tactile functions in relation to the type of visual impairment.

Key words: children with visual impairment, tactile functions

INTRODUCTION

Studies have shown that the existence of visual impairment limits early child development in a complex way (Reynell, 1978; Sonksen, Levitt, & Kitinger, 1984). Limitations relate to the integration and interpretation of perception from other sensory organs, the development of emotional connection, personality and confidence, social skills, localization of sound and tactile sensations, fine- and gross motor skills, persistence of objects, development of language and other cognitive concepts (Sonksen, Levitt, & Kitinger, 1984; Sonksen, 1983; Sonksen & Dale 2002; Alimovic, 2009).

Tactile - kinesthetic perception is of great importance for blind children because it represents a compensatory mechanism for the lack of visual perception. Barraga (1986) states, that the sense of touch is the dominant channel for obtaining information in blind children. However, in order for a blind person to establish a quality connection with reality, it is necessary to associate the sense of touch with kinesthetic sensitivity. She linked the two modalities by pointing out the links between tactility and kinesthesia in seeking and providing information to the brain, then encrypting, connecting and interpreting it.

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Unlike the visual, tactile - kinesthetic perception is based on direct contact. Accordingly, Jablan (2007) states, that many objects and phenomena that cannot be contacted directly are not accessible to the perception of blind people. Although this information is less accurate than visual information and may be short-lived and often volatile, Stancic (1991) emphasizes the importance of stimulating this system in children with visual impairments. Visually impaired students use tactile and kinesthetic input to learn about their environment. Such input should not be regarded as a "smaller sense" used instead of sight, but should be regarded as another learning aid system (Cox & Dykes, 2001).

According to Lukic (2007), it is essential that the child learns to use its hands. Jablan (2010) points out, that passive movements are very important for the development of tactile - kinesthetic perception of blind children, i.e. the hand movements of a blind child led or directed by another person. Such movements are the basis for acquiring tactile - kinesthetic experience, and therefore tactile - kinesthetic learning. Kinesthesia plays an important role in any motor skill learning because it indicates position and movement and integrates all sensory-motor experiences from earlier stages of development.

Tactile functions encompass an entire complex of functions related to the detection of simple elements of tactile sensation and sensitivity, and the sequential analysis and integration of these elements into

a meaningful pattern (Golden, 1987; Lević, 1988; Očić, 1988). The aim of this study was to examine whether there are differences in the development of tactile function in visually impaired children in relation to the category and type of visual impairment.

METHODS

Sample respondents

The sample consisted of 30 respondents with visual impairment, elementary school age, aged 7-13, both genders, institutionally accommodated at the "Center for Blind and Partially Sighted Children and Youth" Nedžarići - Sarajevo, and of children with visual impairment who attend regular school, i.e. "The First Elementary School" in Zavidovići.

Respondents from our sample according to visual acuity were classified into two categories:

- I category - severe visual impairment with a visual acuity below 0.1
- II category - lighter forms of visual impairment with visual acuity 0.3-0.8.

Figure 1 shows the distribution of respondents in relation to the category of visual impairment. The results obtained in Figure 1 show that a higher percentage of visually impaired respondents fall into the lighter category (66.7%), while 33.3% of the respondents fall into the severe visual impairment category.

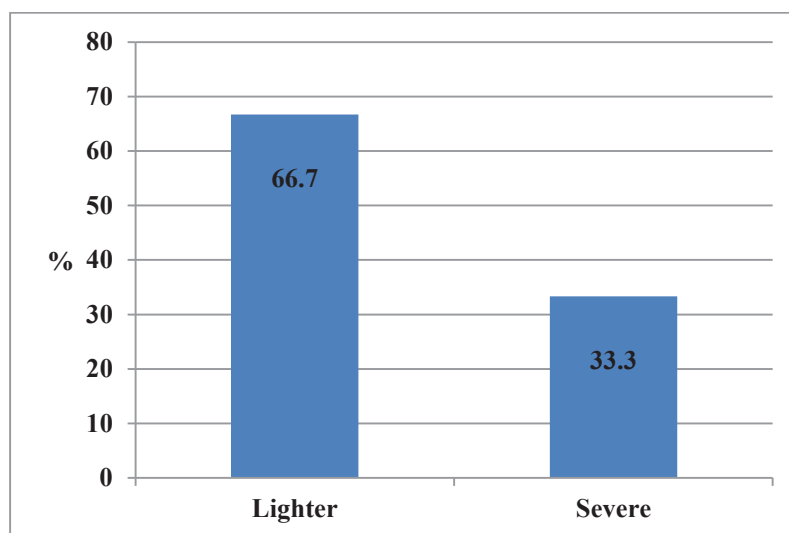


Figure 1. Distribution of respondents in relation to the category of visual impairment

In relation to the type of visual impairment, of the 30 respondents with visual impairment, 53.3% had functional - and 46.7% of the respondents had organic visual impairment (Figure 2). The results of the Chi-square test

showed that there was no statistically significant difference in the distribution of respondents in relation to the category of visual impairment ($\chi^2 = 3.33$; $p = .068$ and the type of visual impairment ($\chi^2 = .13$; $p = .715$).

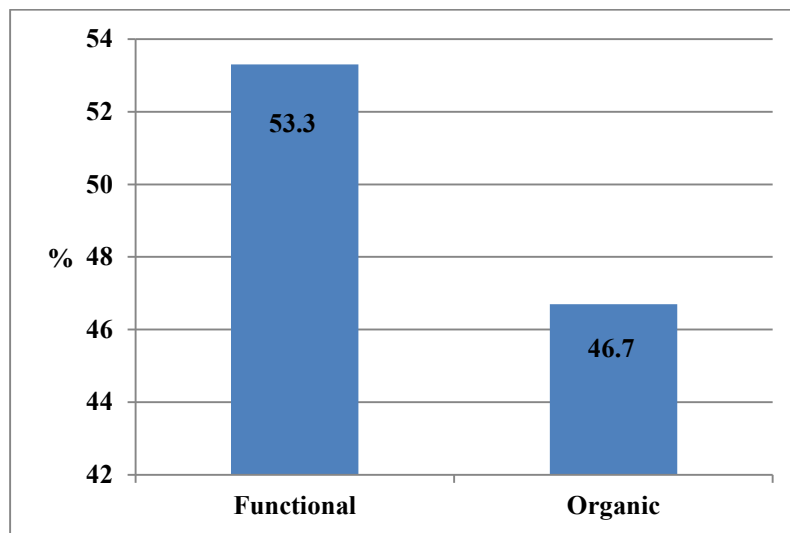


Figure 2. Distribution of respondents in relation to the type of visual impairment

Sample variables

Anamnestic variables

1. visual acuity
2. type of visual impairment.

Variables for testing tactile functions

- ability to localize touch
- sensitivity to pain
- the ability of specific tactile sensitivity, i.e. pressure strength discrimination
- ability to discriminate two points
- ability to differentiate tactile forearm sensations
- ability to differentiate and identify geometric figures drawn on the respondents' hand
- ability to discriminate and identify numbers written on the skin of the respondent
- stereognosis ability, i.e. tactile recognition of known objects without the involvement of the eyesight

Measuring instrument

The Luria-Nebraska Tactile Functions Assessment Scale "C3" was used to assess tactile functions. It is one of the scales included in the Luria-Nebraska Neuropsychological Battery for Children (LNNB-C) (Golden, 1987). It contains 16 particles grouped into pairs (the same task is performed using the right and left hand).

The method of conducting research

The research was conducted at the "First Elementary School" in Zavidovići and the "Center for Blind and Partially Sighted Children and Youth" Nedžarići - Sarajevo. All respondents were examined individually in a separate room and in a comfortable environment. The test sequence of tactile functions was designed in such a way as to prevent sequential activation of the same set of dimensions to avoid the effects of saturation and possible negative transfer.

Data processing methods

After the research, the obtained data were processed by the computer statistical program SPSS 17.0 for the Microsoft Windows operating system. Basic statistical parameters were calculated: minimum and maximum results, arithmetic mean and standard deviation. To determine the significance of differences in arithmetic means of observed variables of tactile perception between the two groups of respondents, a *t*-test for the independent sample at the significance level of 5% was used. The distribution of respondents according to the test results is presented in frequencies.

RESULTS AND DISCUSSION

Testing the differences of tactile perception variables in relation to the type of visual impairment

The results of the t-test stated in Table 1 show that there is a statistically significant difference with respect to the type of visual impairment and the variable "Graphesthesia-Numbers". Based on the insight into the values obtained, it can be concluded that children with functional visual impairment at the significance level of .05 perform better on the variable "Graphesthesia-Numbers" compared to children with organic visual impairment. Children with organic vision impairment perform better on the variables "Topognosis" and "Discrimination of two points". Although there are differences in the devel-

opment of tactile perception between children with functional - and organic visual impairment, they are not statistically significant. Research findings related to tactile perception in relation to the type of visual impairment showed that respondents with functional and organic visual impairment had equally developed tactile functions. These results tell us that the primary cognition path of our respondents is the tactile path, and that regardless of the percentage of their eyesight, these children are educated by the methods for the blind. The author Radžo Alibegović (2013) examined the difference of tactile perception in relation to the type of visual impairment on a sample of 35 respondents with visual impairment. She found that there were no statistically significant differences in tactile function relative to the type of visual impairment.

Table 1. Testing the differences of individual variables of tactile perception in relation to the type of visual impairment

Variables	Type of visual impairment	Mean	SD	t	p
Topognosis	Functional	.81	1.37	.05	.956
	Organic	.78	1.25		
Sensitivity to pain	Functional	.06	.25	-1.70	.099
	Organic	.64	1.33		
Pressure strength discrimination	Functional	.43	.96	-.37	.714
	Organic	.57	1.01		
Discrimination of two points	Functional	1.25	1.18	.50	.617
	Organic	1.00	1.51		
Differentiation of tactile forearm sensations	Functional	.00	.00	-	-
	Organic	.00	.00		
Graphesthesia-Figures	Functional	.31	.60	-1.53	.136
	Organic	.71	.82		
Graphesthesia-Numbers	Functional	.31	.70	-2.46	.020
	Organic	1.42	1.65		
Stereognosis	Functional	.12	.50	-.45	.654
	Organic	.21	.57		

Testing the differences of tactile perception variables in relation to the category of visual impairment

Table 2 shows the results of the t-test in relation to the development of tactile perception variables and the category of visual impairment of children with visual impairment. Based on the results of the t-test, it can be concluded that there is a statistically signif-

icant difference on three observed variables of tactile perception. These are the variables "Sensitivity to pain", "Graphesthesia-Figures", and the variable "Graphesthesia-Numbers". The results of the t-test show that, at a level of statistical significance of .05, respondents of the lighter visual impairment category achieved better scores on the variables "Sensitivity to pain" and "Graphesthesia" compared to respondents of the severe visual impairment category.

Also, respondents with lighter visual impairment at a statistical significance level of 0.01 achieved better results on the variable "Graphesthesia-Numbers" compared to those with severe visual impairment.

In her research, Jablan (2001) examined the impact of the visual impairment category on tactile functions in children with visual impairment. A total of 95 respondents were included: 46 totally blind and 49 practically blind respondents. She concluded that the ability to differentiate tactile sensations on the left forearm, the ability to differentiate and identify geometric figures drawn on the hand (right and left), and the ability to discriminate and identify numbers written on the skin (right and left side) are significantly

better developed in practically blind respondents in relation to the totally blind.

Heller (1985, 1989) found that individuals, who were always blind, were as successful in tactile perception as individuals who lost their eyesight later, leading her to conclude that visual experience was not necessary for tactile perception. Knowledge of Braille is not a guarantee for the correct representation of tactile images, although tactile skills and experience of tactile perception have an impact. She had previously concluded that the simultaneous use of eyesight and touch by the visually impaired improves the recognition of tactile patterns; she suggested that visually impaired people use eyesight to conduct tactile research.

Table 2. Differences in the development of tactile perception in relation to the category of visual impairment (t-test)

Variables	Category of visual impairment	Mean	SD	t	p
Topognosis	Lighter	.65	1.26	-.89	.380
	Severe	1.10	1.37		
Sensitivity to pain	Lighter	.05	.22	-2.48	.019
	Severe	.90	1.52		
Pressure strength discrimination	Lighter	.55	1.05	.39	.698
	Severe	.40	.84		
Discrimination of two points	Lighter	1.10	1.16	-.19	.850
	Severe	1.20	1.68		
Differentiation of tactile forearm sensations	Lighter	.00	.00	-	-
	Severe	.00	.00		
Graphesthesia-Figures	Lighter	.30	.57	-2.26	.031
	Severe	.90	.87		
Graphesthesia-Numbers	Lighter	.35	.74	-3.20	.003
	Severe	1.80	1.75		
Stereognosis	Lighter	.10	.44	-.97	.339
	Severe	.30	.67		

CONCLUSION

Based on the analysis of the obtained research results, it can be concluded that:

- There are statistically significant differences of the arithmetic mean on three variables of tactile perception in relation to the category of visual impairment. These are the variables "Sensitivity to pain", "Graphesthesia", and the variable "Graphesthesia-Numbers".

- Research findings related to tactile perception with respect to the type of visual impairment showed that respondents with functional and organic visual impairment had equally developed tactile functions.
- Regardless of the percentage of eyesight, the primary path in receiving information of our respondents is the tactile path, implying that these children were educated by methods for the blind.

REFERENCES

- Alimović, S. (2009). Temelji razvoja emocija kod djece s oštećenjem vida. *S Vama*, 7/8, 27–34.
- Barraga, N.C. (1986). Sensory perceptual development. In G.T. Scholl (Ed.), *Foundations of education for blind and visually handicapped children and youth: Theory and practice*. NY: American Foundation for the Blind.
- Cox, P.R., & Dykes, M.K. (2001). Effective classroom adaptations for students with visual impairments. *Teaching Exceptional Children*, 33(6), 68–74.
- Golden, J.C. (1987). *Luria-Nebraska Neuropsychological Battery. Children's Revision, Manual*. Los Angeles: Western Psychological services.
- Heller, M.A (1985). Tactual perception of embossed Morse code and braille: The alliance of vision and touch. *Perception* 14, 563–570.
- Heller, M. A. (1989). Texture perception in sighted and blind observers. *Perception and Psychophysics*, 45, 49–54.
- Jablan, B. (2007). *Motorne i taktilne funkcije kod slepe dece*. Fakultet za specijalnu edukaciju i rehabilitaciju, CID, Beograd.
- Jablan, B. (2010). *Čitanje i pisanje Brajevog pisma*. Beograd: Univerzitet u Beogradu, Fakultet za specijalnu edukaciju i rehabilitaciju.
- Jablan, B. (2001). *Taktilne i kinestetičke funkcije u procesu opažanja prostora slijepe djece*. Doktorska disertacija. Defektološki fakultet, Beograd.
- Lukić, A. (2007). *Učenik s oštećenjem vida u redovitoj školi*. Zagreb: Hrvatski savez slijepih.
- Lević, Z. (1998). *Osnovi savremene neurologije*. Beograd: Zavod za udžbenike i nastavna sredstva.
- Očić, G. (1998). *Klinička neuropsihologija*. Beograd: Zavod za udžbenike i nastavna sredstva.

GRAMMATICAL DEVELOPMENT AND THE USE OF GRAMMATICALLY COMPLEX SENTENCES IN CHILDREN WHO STUTTER AND CHILDREN WHO DO NOT STUTTER

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Received: 2019/6/14

Accepted: 2019/8/25

ABSTRACT

The main aim of the research was to determine the development of grammar and the use of grammatically complex sentences in stuttering and non-stuttering children, and to determine whether there are differences in the above abilities between these two groups of respondents. The sample of respondents consisted of a total of 64 children aged 56-83 months. Respondents are divided into two groups. The experimental group consisted of 32 stuttering children, of whom 19 were male and 13 female. The control group consisted of 32 children who did not stutter; and who compared with age and gender, were equal with the respondents of the experimental group. The research was conducted in preschools and elementary schools in the area of the Tuzla and Una-Sana Cantons in Bosnia and Herzegovina. The results of the study showed that stuttering children show statistically lower abilities during repetition of sentences, as well as recognition, understanding and use of common morphological forms. However, it is important to point out that children who stutter; regardless of significantly lower results than their fluent speaking peers, have shown above-average grammatical abilities. Also, the results showed that both children who stutter and children who do not stutter in their spontaneous speech use complex sentences.

Key words: language, stuttering, syntax, morphology, complex sentence

INTRODUCTION

Stuttering is a disorder that is easily recognized as it affects the fluency of speech (Khan, 2015; Duranović, Begić, Jovanović-Simić, & Rahmanović, 2018). It begins during childhood and, in some cases, lasts throughout life (Duranović et al., 2018). Stuttering hinders fluent speech and has the effect of influencing learning processes (Khan, 2015). The latest Diagnostic and Sta-

tistical Handbook for Mental Disorders DSM-V (2013, according to Duranović et al., 2018) defines stuttering as a communication disorder that characterizes a break in normal speech fluency, where speech speed is inconsistent with what is expected in view of age. Frequent repetitions of voices, syllables and single-word words, prolongation of voices, insertion, pause within the word, hearing or silent blockade, tension and circulation, or word substitution are being reported.

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All of this is already noticeable during early development and affects school achievement and social communication.

Grammar defines language as a system of means of expression. It is common that morphology and syntax are called grammar (Crystal, 2001, 2003, 2003, McArthur, 1992, according to Newcomer & Hamill, 2008). Morphology deals with the internal organization of words and the words consist of small units called morphs, which at the same time represent the least grammatical units (Owens, 2005). A part of the grammar that studies the syntactic structure of the language, that is, the totality of the functions of syntactic units, and their interrelationships and connections is called the syntax. The syntax is on the one hand bounded by the word and on the other hand by the bound text, and the central place in the syntax is taken by the sentence which is the basic syntactic unit (Jahić, Halilović, & Palić, 2000). Ratner (1995) points out that in clinical or research follow-up of stuttering children, distortions of articulation of voices are most often observed, a disorder in the development of syntax and / or morphology in the language and difficulty of naming. Although it is believed that there is a correlation between stuttering and several linguistic variables, clear causal connections have not been established so far and there is no consensus on their precise role or contribution as risk factors for the occurrence of stuttering and its persistence, or their impact on natural recovery. This and several other aspects of language association and stuttering remain the subject of scientific debate and controversy (Nippold, 2004). These dilemmas have attracted very rich and diverse research activities, whose results should greatly improve understanding of stuttering and treatment planning.

Namely, numerous studies have examined whether linguistic abilities are associated with the onset and duration of stuttering. It is still not fully clear whether all those who stutter have problems in processing the language components. Although stuttering is a speech disorder, attention should be given to speaking within the context of the language. In this connection, it is necessary to conduct language skills tests in the persons who stutter, or the context within which the stuttering takes place (Kutnjak, Mance, & LekoKrhen, 2016). Another reason for the need for additional research on the above issues is that stuttering typically begins in the age between the second and the fifth year, which is also the period of fast enrichment of vocabularies and the adoption of various morphological and syntactic structures

(Ntourou, Conture, & Lipsey, 2011, according to Kutnjak et al., 2016). Stimulating predictability of stuttering in the language domain revealed that stuttering varied in several grammatical factors. Most stutterers stutter more often on consonants, on initial phonemes in words, on words at the beginning of a sentence, on contextual speech, on nouns, verbs, adjectives and adverbs, on longer words and accentuated syllables. Stuttering proved to be very dependent on the language that the stuttering person uses (Braun et al 1997, according to Salihović, 2005). The results of numerous studies have confirmed that stuttering children have poorer linguistic abilities than non-stuttering children (Anderson & Conture, 2000; Pellowski & Conture, 2005). Bajaj, Hodson and Schommer-Aiken (2004) examined grammatical awareness in pre-school children and children of first and second classes who stutter and children who do not stutter. The results showed that stuttering children showed statistically significantly lower scores on grammar tasks than the control group. Tetnowski (1998, according to Finneran, Leonard, & Miller, 2009) assumes that speech disorders, including those considered to be normal non-fluency (e.g., repeating the phrase) and those usually associated with stuttering (e.g., repetition of parts of a word,) can be related to speech planning. Namely, factors that increase the requirements of language formulations, such as the longer length of the statement, the syntactic complexity and / or the complexity of the task, contribute to the higher incidence of speech disfluencies in non-stuttering children. On the other hand, the results of some studies have shown that there is no difference in linguistic abilities in children who stutter compared to their non-stuttering peers. Watkins, Yairi and Ambrose (1999) examined the lexical, morphological and syntactic characteristics of speech in 62 children at the age of 2 to 5 years who recovered from stuttering and 22 children with stuttering. The results showed a similarity in linguistic abilities between these two groups. Both groups showed normal expressive language abilities. Wingate (2001, according to Watkin & Johnson, 2004) argues that most of the evidence suggests that stuttering children have language difficulties, and concluded that studies that have not found language lag in the stuttering children are methodologically wrong. Unlike these attitudes, there seems to be more and more evidence suggesting that language skills of stammering youngsters do not differ from their average expectations (Watkin & Johnson, 2004).

Thus, at this point there is no consensus on language difficulties as a risk factor in stuttering children, and it is still not possible to say whether the level of language development / disturbance is sufficient for early predicting the incidence and persistence of stuttering or eventual recovery. In accordance with the presented content and previous research results that have not yet been harmonized in relation to the above mentioned issue, and most of the research has been conducted in English, the aim of this research is to examine the development of grammar and the ability to use grammatically complex sentences of the Bosnian language in stuttering children and non-stuttering children.

METHODS

Sample respondents

In this study, a total of 64 children, aged 56-83 months (from 4 years and 8 months to 6 years and 11 months) were examined. Respondents are divided into two groups. The first group consisted of 32 stuttering children, 19 of whom were male and 13 female respondents (experimental group). On the basis of the experimental group, a control group was also created that included the same number of non-stuttering children that, by age and gender, were equated with an experimental group. The research was conducted in preschools and elementary schools in the area of Tuzla and Una-Sana Canton in Bosnia and Herzegovina. The test was carried out individually with each respondent according to the test instructions.

Sample variables

The variables used in this study can be divided into two groups:

1. Anamnestic variables (Stuttering children and non-stuttering children);
2. Language variables (Variables for grammar testing: Repetition of sentences-scaled result, Repetition of sentences-descriptive term, Morphological complementation-scaled result, Morphological complementation-descriptive term; Variable for testing the ability to use complex sentences).

Method of conducting research and measuring instruments

The development of grammar was examined by means of sub-tests: Repetition of sentences and Mor-

phological complementation taken from the Test of Language Development (TOLDP4) (Newcomer & Hammill, 2008) (adjusted for the Bosnian language). Grammatical sub-test Repetition of sentences, out of a total of 36 tasks, measured the child's ability to repeat sentences. The respondents were expected to repeat the sentence for the examiner in the same manner as the examiner has pronounced. On this variable, the respondent could achieve a maximum of 36 points. A grammatical sub-test The Morphological complementation, with a total of 38 assignments, assessed the child's ability to recognize, understand and use common morphological forms. The morphological complementation was examined so that the examiner read unfinished sentences, and the respondent should supplement the omitted morphological form in the sentence, and the range of results on this variable ranged from 0 to 38 points. Each task could be repeated only once. The test was canceled after 5 consecutive errors. The ability to use complex sentences was assessed in a way to analyze whether the respondent correctly used a complex sentence during the conduct of the test. To test the ability to use complex sentences in children, a "Handbook for Reynell Development Speech Charts" was used (Reynell & Huntley, 1985) (adjusted for Croatian language, Lovrić, 1995). This task was positively evaluated if the respondent correctly used a complex sentence during the conduct of the test. A complex sentence is defined as the sentence consisting of two or more simple sentences that constitute a unique whole in the sense, structural and intonation aspect. A complex sentence is a linguistic expression of a unique complex thought (Minović & Ajanović, 1989; Jahić et al., 2000). The correct complex sentence has one main, independent sentence and a subordinate or dependent sentence or sentences (Reynell & Huntley, 1985).

Statistical data processing

In statistical data processing for each variable, the basic statistical parameters are calculated: arithmetic mean, standard deviation, minimum and maximum result, frequencies. To test the differences between stuttering children and non-stuttering children, the t-test for an independent sample at a level of significance of 5% was used. Distribution variables are shown tabular and graphical. The data was processed using the statistical software SPSS 20.0 for Windows.

RESULTS

The development of grammar in stuttering children and non-stuttering children was questioned by subtests Repetition of sentences and Morphological complementation. The results of descriptive statistics have shown that the average value of the variable Repetition of sentences scaled results in the stuttering group was 13.06 points, with a range of

results ranging from 1 to 17 points. In children who do not stutter, for the average result of the variable Repetition of the sentence, the scaled score was 15.06 points, and the results ranged from 12 to 17 points (Table 1). When we take into account the descriptive terms, we can conclude that the ability to repeat sentences in stuttering children was above the average level, and in children who do not stutter at an excellent level.

Table 1. Descriptive statistics of the variable Repetition of sentences in stuttering children and non-stuttering children

Respondents	N	\bar{x}	SD	Min	Max
Stuttering children	32	13.06	3.172	1	17
Non-stuttering children	32	15.06	1.318	12	17

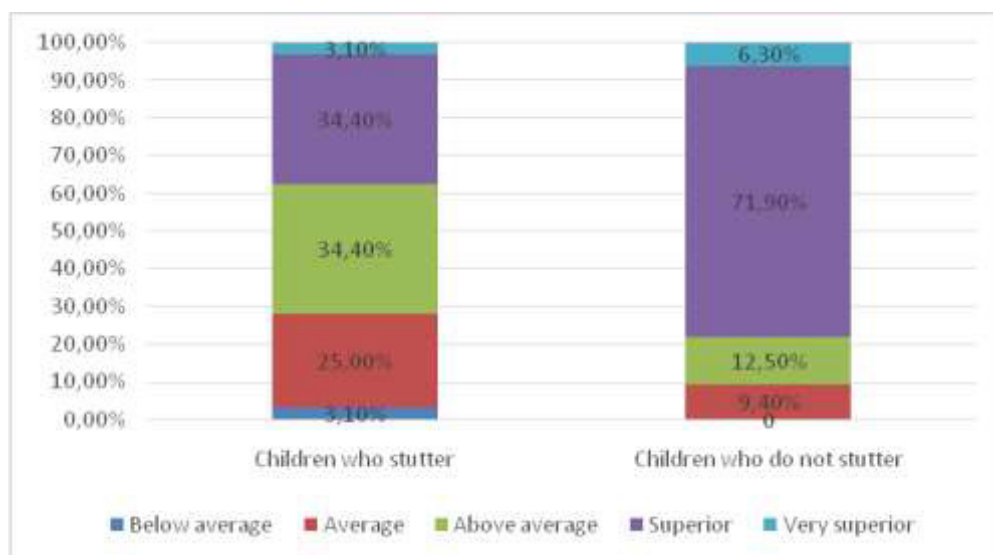


Figure 1. Graphic representation of descriptive grades achieved on the variable Repetition of sentences in stuttering children and non-stuttering children

Figure 1 shows the descriptive grades that the respondents achieved on the Repetition of sentences variable. In stuttering children one respondent was below the average and another was at the very superior level (3.1%), eight respondents (25%) were on an average level, eleven respondents (34.4%) were above the average and superior levels. In the group of non-stuttering children, 3 respondents (9.4%) showed average knowledge, 4 respondents (12.5%) were above

the average level, 23 respondents showed superior knowledge (71.9%), while two fluent respondents were very superior at Repeating of sentences (6.3%). Using the t-test, results of differences in the repetition ability of the sentences for the entire sample were obtained. The analysis shows that there is a statistically significant difference between children who stutter and children who do not stutter in the examined ability, where the p value was .002 (Table 2).

Table 2. Determining the difference between stuttering children and non-stuttering children based on the variable Repetition of sentences

Variable	<u>Stuttering children</u>		<u>Non-stuttering children</u>		df	t-test	p
	\bar{x}_1	SD ₁	\bar{x}_2	SD ₂			
Repetition of sentences	13.06	3.172	15.06	1.318	62	-3.294	.002*

The results of descriptive statistics of stuttering children and non-stuttering children on the variable Morphological complementation-scaled result is shown in Table 3. The average value of the variable Morphological complementation-scaled result in stuttering children was 13.47 points with a standard deviation of 2.032 points. In non-stuttering respondents, the average value of the variable Morphological complementation-scaled result

was 14.59 points, with a standard deviation of 1.72 points. When we take into account the descriptive terms for the assessment of Morphological complementation, which ranges from below the average to the very superior, we can establish that the Morphological complementation in stuttering children corresponds to a grade above the average, and in the group of children who do not stutter, the grade is superior.

Table 3. Descriptive statistics of the variable Morphological complementation in stuttering children and non-stuttering children

Respondents	N	\bar{x}	SD	Min	Max
Stuttering children	32	13.47	2.032	6	16
Non-stuttering children	32	14.59	1.720	9	18

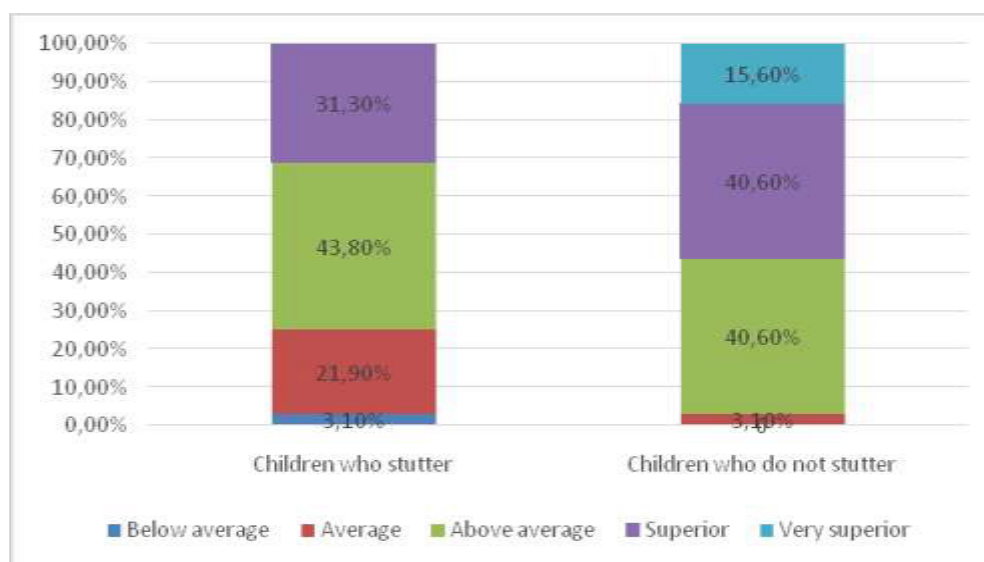


Figure 2. Graphic representation of descriptive grades achieved on the variable Morphological complementation in stuttering children and non-stuttering children

Figure 2 graphically depicts descriptive grades that stuttering children and non-stuttering children achieved on the Morphological complementation variable. In the stuttering children, one respondent (3.1%) showed below the average morphological complementation ability, 7 respondents (21.9%) achieved an average level, 14 respondents (43.8%) above the average level, and ten, respectively 31.3% of respondents showed superior knowledge during morphological complementation. In a group of non-stuttering children, one respondent had an average result of morphological complementing ability (3.1%),

thirteen respondents each (40.6%) showed above average and superior knowledge, while five respondents or 15.6% demonstrated very superior knowledge in morphological complementation.

Table 4 shows the results of the obtained statistical levels of significance of the differences for the whole sample compared to the Morphological complementation variable. The results obtained show that there is a statistically significant difference in the morphological complementation capabilities between the experimental and the control group, where the p value was .020.

Table 4. Determining the differences between stuttering children and non-stuttering children based on the variable Morphological complementation

Variable	<u>Stuttering children</u>		<u>Non-stuttering children</u>		df	t-test	p
	\bar{x}_1	SD ₁	\bar{x}_2	SD ₂			
Morphological complementation	13.47	2.032	14.59	1.720	62	-2.391	.020*

To test the use of grammatically complex sentences in stuttering children and non-stuttering children, the "Handbook for Reynell Development Scales" (Reynell & Huntley, 1985) was used. In order for the task to be graded positively, the respondent should correctly use a complex sentence during the course of the examination. After analyzing the results, it was found that all subjects of the control group used a complex sentence in their spontaneous speech. In the experimental group, only two respondents in their spontaneous speech did not use a complex sentence. After using the t-test for the comparison of stuttering children and non-stuttering children in the use of a complex sentence in spontaneous speech, it was found that there is no statistically significant difference in the use of complex sentences among the mentioned groups of respondents ($p = .156$) (t-test 1.438).

DISCUSSION

Grammatical features begin to be observed when certain grammatical errors appear during the speech or when a child has problems understanding. At that point, a meta-language approach to language processing can be helpful. Automatic morpho-syntax processing is present in all native speakers. It is apparent that speakers do not have awareness of the grammatical characteristics of the language they listen to or produce, but interpreted the message by built-in automatisms (Ljubešić, Blaži, & Bolfan-Stošić, 1993). Repetition of sentences as a research and / or diagnostic technique is based on observations that/when the child does not repeat speech mechanically. Child repetition of sentences or words is an active process of cognitive processing of a given word/sentence, and the reproduction itself gives us insight into the child's semantic and grammatical language governance (Rood & Braine, 1979, according to Ljubešić et al., 1993). The ability to repeat sentences in stuttering children in this research was above average and in non-stuttering children, it was at the superior level. Stuttering children received a fairly wide range of results from 1 to 17 points, and the lowest score on the

sub-test Repetition of sentences in the control group was 12 points. By examining the differences between stuttering children and non-stuttering children, it was found that there was a statistically significant difference between the analyzed groups on the Repetition of sentences variable. We can conclude that stuttering children have a significantly weaker repetition of sentences compared to non-stuttering children. However, it is important to emphasize that, regardless of the lower results compared to their fluent peers, stuttering children have achieved above the average ability to repeat sentences. Observing the ability of morphological complementation in stuttering children, the results showed above average values, and in the group of children who do not stutter superior values. We can conclude that stuttering children have shown significantly lower results than children who do not stutter on Morphological complementation, but again we emphasize that their abilities to recognize, understand and use common morphological forms have been above average.

As we already pointed out in the introductory part, the results of the study of the linguistic abilities of the stuttering children are not unambiguous, or some studies have shown that the linguistic abilities in stuttering children are weaker than in those who do not stutter, while the results of some other studies have not shown differences in those abilities amongst stuttering children and their fluent speaking peers (Kutnjak, Mance, & LekoKrhen, 2016). Regardless of the lack of uniformity of the results, the results obtained in this study agree with the majority of research by other authors who claim that stuttering children have less developed grammatical functions than children with fluent speech. Thus, Salihović (2005) states that numerous studies have shown that stuttering children differ significantly from children who do not stutter on variables such as the level of receptive vocabulary, the average length of the expression, and expressive and receptive syntax. Anderson and Conture (2004) examined the ability of syntactic processing between stuttering children and non-stuttering children 3.3 to 5.5 years old.

The results indicate that stuttering children may have difficulty in quickly, effectively planning and / or downloading units of the sentence structure, as well as in difficulties that may contribute to their inability to tighten the fluency of speech-language production. Also, Anderson and Conture (2000) and Pellowski and Conture (2005) found that stuttering children have poorer linguistic abilities than non-stuttering children. Bajaj et al. (2004), during the examination of grammar in stuttering children and non-stuttering children, have achieved results that suggest that children who do not stutter outdone children who stutter in the sense of assessing semantic and syntactic deformed sentences. Non-stuttering children showed statistically better results on these tasks than stuttering children. Unlike them, Watkins, Yairi and Ambrose (1999) found more developed language skills in stuttering children compared to their non-stuttering peers. Research on children who began to stutter by age four showed better linguistic and non-verbal cognitive abilities and better quality of life compared to children who did not stutter at the age of 4 (Reilly et al., 2013). However, Nippold and Schwarz (1991) found that there was no difference between these two groups. It is not yet known whether stuttering occurs as a consequence of the difficulties between semantic and morphological encryption, certain slowdowns when returning to complex phonological speech patterns or other disturbances. Lately, more questions are being considered about whether stuttering is associated with linguistic processes above motoric planning. More and more, it is concluded that stuttering is partially caused by linguistic processes (Anderson & Conture, 2000).

After comparing stuttering children and children who do not stutter in the use of complex sentences in a spontaneous speech in this study, it has been established that there is no statistically significant difference in the use of complex sentences between experimental and control groups. Both stuttering children and non-stuttering children used complex sentences in their spontaneous speech. As we have explained in the previous section of the discussion, there is also no consensus on this subject, that is, the results of the research of other authors are different, with some research being confirmed, and they negate the existence of a difference in the use of complex sentences in the speech of children who stutter and children who do not stutter. The authors find it possible that stuttering children avoid using compound sentences in their speech because the fact is that more stuttering non-fluency will occur in more complex

sentences. There is still no answer as to whether this increase in the number of non-fluency is affected by linguistic complexity or an increase in fear during the pronunciation of more complex statements. Owens (2005) points out that the sentence and its meaning are more important than the meaning of individual words, that is, sentences represent a greater meaning than the sum of individual words. The sentence is not just a set of words; it is also a link between these words. Ward (2006) states that stuttering tends to occur where linguistic concerns are high, that is, by increasing the appearance of more complex linguistic structures. As the preschool age coincides with the rise of linguistic expression, at the same time, there is an accelerated motor development of speech. It is known that stuttering is associated with reduced speech motoric skills, and it is also the case that the moments of linguistic complexity tend to bring it in close with the complexity of speech motoric. Thus, Wall (1980, according to Howell & Au-Yeung, 1995) compared a group of stuttering children aged 5 and 6 and a group of their peers with fluent speech. The author has reported that fluent speakers use a number of complex sentences rather than stuttering children. In other words, stuttering children use simpler syntax and incomplete clauses. Kadi-Hanifi and Howell (1992, according to Howell & Au-Yeung, 1995) investigated the frequency of the use of various types of sentences among stuttering children and non-stuttering children aged 4, 5, and 11. The authors found that among the stuttering children, compared to a balanced age group of fluent speakers, there was no difference in the frequency of using different sentence categories. Weber-Fox and Hampton (2008) indicate that stuttering is associated with differences in the activation of language processing, even in the absence of open planning and speech production. Their results are consistent with the multi-factorial model of stuttering (Smith, 1990; Smith & Kelly, 1997, according to Weber-Fox & Hampton, 2008) and show that the disorder associated with differences in brain morphology affects not only the coordination of the speech system engine, but it can also reflect the effectiveness of operations related to the integration and differentiation of semantic and syntax flows involved in language processing.

From a clinical perspective, if children have higher speech velocity, longer statements or greater complexity at the end of a long speech pattern, interventions that reduce velocity, length of statements, and complexity can help children in the acquisition of speech fluidity.

A closer examination of the parameters of the length of the statement, the grammatical complexity and the velocity of speech in each child would provide additional information to clinicians and researchers on factors affecting disfluency in pre-school children (Sawyer, Chon & Abrose, 2008). Stewart and Turnbull (1997) explain that if poor language skills reduce child's capacity for fluent speech, then working on language skills should serve to increase the capacity of the language. During this time, the child's speech fluency must be carefully taken into account in order to see if there are negative consequences, because if certain consequences occur, it is necessary to revise the work program. On the other hand, ignoring language difficulties limits the child's potential to develop effective communication. Begić and Babić (2017) also emphasize that during the assessment process and the diagnosis of stuttering children, the ability of the child to use complex linguistic statements should be assessed, and the frequency of dysfunction should be assessed in relation to the complexity of the statements. Precise diagnostics would provide guidelines for the treatment of stuttering in terms of implementation approaches and strategies that involve a gradual increase in the length and complexity of the statements of children who stutter during speech and linguistic therapy. During the process of evaluation and diagnosis of children who are stuttering, special attention should be paid to their linguistic abilities (Begić, Mrkonjić, & Salihović, 2014). The results of the research are also in line with the research results of Kefalianos, Onslow, Packman, Vogel and Pezic (2017), which also suggest that there can be associations between the development of language abilities and the recovery of stuttering. Future research should be directed to clearly identify the guideline of this link.

Research shows that stuttering people improve speech fluency at the heart of language, or by limiting the use of grammar. Namely, the stutterers use less sentences statements, which are simpler in structure, and use less models for expressing opinions and attitudes, which potentially less initiate communication and less enter into communication interaction (Spencer et al., 2009, according to Onslow, 2018). Considering that in our research, the respondents are quite young, that is, pre-school children and first-class children, assuming that they have not yet developed a consciousness of speech difficulties, nor have fears developed about speech and speech situations, and have not developed negative attitudes towards communication, and thus children did not avoid using spontaneous speech, in addition to simple and complex sentences, which can often be the case with adolescents and adults who stutter.

CONCLUSION

The results show that stuttering children and non-stuttering children do not have the same level of grammar development. Stuttering children exhibit lower abilities during repetition of sentences, as well as recognition, understanding and use of common morphological forms. However, we emphasize that children who stutter, regardless of the significantly lower results compared to their fluent speaking peers, have shown above-average grammatical abilities. Also, it is important to point out that in children who are stuttering the results showed a much wider range of results obtained and standard deviation. The results also showed that children who stutter and children who do not stutter in their spontaneous speech use complex sentences. Therefore, the causal link between language skills/disorders and stuttering has not been established so far, but the issue to be considered is the relationship between language skills and speech itself, and whether stuttering is the cause or consequence of poorer results in the area of language skills. Precise data on this issue, especially the results of research conducted in the official languages of Bosnia and Herzegovina precisely because of the lack of data from our speaking area, can greatly assist in the detection of factors related to stuttering, linguistic characteristics of stuttering children, and treatment plans that will certainly include grammatical/the language component of such children. The results also point to the conclusion that the diagnostic and rehabilitation processes of stuttering children should necessarily include assessment of language abilities, and determine whether stuttering can lead to linguistic difficulties or, on the other hand, whether language difficulties can lead to the occurrence of non-fluency in the child's speech. Language models for speech therapists should give guidelines on which specific aspects of language should be evaluated and later treated. If the child shows both linguistic disorder and stuttering, the treatment plan should include the treatment of both disorders at the same time, combining methods of language stimulation and increasing speech fluency. Namely, understanding the child's grammatical development/disorder and its impact on stuttering, or how the linguistic aspects of speech-language planning and production can contribute to, or aggravate the development of stuttering in children, should greatly help us in the planning of treatment, and it is certainly suggested that further research should be carried out on the mentioned topic.

REFERENCES

- Anderson, J.D., & Conture, E.G. (2000). Language abilities of children who stutter: A preliminary study. *Journal of Fluency Disorders*, 25, 283–304. [https://doi.org/10.1016/S0094-730X\(00\)00089-9](https://doi.org/10.1016/S0094-730X(00)00089-9).
- Anderson, J.D., & Conture, E.G. (2004). Sentence-structure priming in young children who do and do not stutter. *Journal of Speech Language and Hearing Research*, 47(3), 552–71. doi: 10.1044/1092-4388(2004/043).
- Bajaj, A., Hodson, B., & Schommer-Aikins, M. (2004). Performance on phonological and grammatical awareness metalinguistic tasks by children who stutter and their fluent peers. *Journal of Fluency Disorders*, 29(1), 63–77. doi: 10.1016/j.jfludis.2004.01.001.
- Begić, L., & Babić, B. (2017). Influence of length of sentences on the frequency of speech disfluencies in children who stutter. *Human Research in Rehabilitation*, 7(1), 50–55. doi: 10.21554/hrr.041706.
- Begić, L., Mrkonjić, Z., & Salihović, N. (2014). Development of phonological awareness of stuttering children and children with fluent speech. *Journal of special education and rehabilitation*, 15(12), 59–74. doi: 10.2478/JSER-2014-0004.
- Duranović, M., Begić, L., Jovanović-Simić, N., & Rahmanović, D. (2018). *Komunikacija i mucanje*. Foča. Univerzitet u Istočnom Sarajevu, Medicinski fakultet Foča.
- Finneran, D.A., Leonard, L.B., & Miller, C.A. (2009). Speech Disruptions in the Sentence Formulation of School-Age Children with Specific Language Impairment. *Int Journal of Language Communication Disorders*, 44(3), 271–286. doi: 10.1080/13682820902841385.
- Howell, P., & Au-Yeung, J. (1995). Syntactic determinants of stuttering in the spontaneous speech of normally fluent and stuttering children. *Journal of Fluency Disorders*, 20, 317–330. [https://doi.org/10.1016/0094-730X\(94\)00012-I](https://doi.org/10.1016/0094-730X(94)00012-I).
- Jahić, DŽ., Halilović, S., & Palić, I. (2000). *Gramatika bosanskog jezika*. Zenica: Dom štampe.
- Kefalianos, E., Onslow, M., Packman, A., Vogel, A., & Pezic, A. (2017). The History of Stuttering by 7 Years of Age: Follow-Up of a Prospective Community Cohort. *Journal of Speech Language and Hearing Research*, 60(10), 2828–2839. doi: 10.1044/2017_JSLHR-S-16-0205.
- Khan, N. (2015). The Effect of Stuttering on Speech and Learning process A Case Study. *International Journal on Studies in English Language and Literature (IJSELL)*, 3(4), 89–103. <https://www.arcjournals.org/pdfs/ijSELL/v3-i4/13.pdf>.
- Kutnjak, N., Mance, L., & LekoKrhén, A. (2016). Jezične sposobnosti djece koja mucaju. *Logopedija*, 6(2), 69–74. <https://doi.org/10.31299/log.6.2.4>.
- Ljubešić, M., Blaži, D., & Bolfan-Stošić, N. (1993). Posebne jezičke teškoće djece osnovnoškolske dobi. *Govor*, 10(1), 17–37. <https://hrcak.srce.hr/17623>.
- Newcomer, P.L., & Hammill, D.D. (2008). *Test of language development*. Austin, Texas. Pro-ed.
- Nippold, M. (2004). The Child Stutters and Has a Phonological Disorder: How Should Treatment Proceed? In: Bothe, A.K. (2004). (Ed). *Evidence-Based Treatment of Stuttering Empirical Bases and Clinical Applications*. Mahwah, New Jersey. Lawrence Erlbaum Associates, Inc., 97–116. <https://the-eye.eu/public/Books/BioMed/Evidence%20Based%20Treatment%20of%20Stuttering%20-%20A.%20Bothe%20%28ed%29%20%282004%29%20WW.pdf>.
- Nippold, M.A., & Schwarz, I.E. (1991). Narrative ability in school-age stuttering boys: A preliminary investigation. *Journal of Fluency Disorders*, 16(5–6), 289–308. [https://doi.org/10.1016/0094-730X\(91\)90041-A](https://doi.org/10.1016/0094-730X(91)90041-A).
- Onslow, M. (2018). *Stuttering and Its Treatment-Eleven lectures*. Sydney. Australian Stuttering Research Centre, The University of Sydney. https://www.uts.edu.au/sites/default/files/201810/Stuttering%20and%20its%20Treatment%20-%20Eleven%20Lectures%20April%202018_0.pdf.
- Owens, R.E. Jr. (2005). *Language development: An Introduction*, 6th ed. New York. Pearson Education, Inc.
- Pellowski, M.W., & Conture, E. (2005). Lexical priming in picture naming of young children who do and do not stutter. *Journal of Speech, Language, and Hearing Research*, 48(2), 278–294. doi: 10.1044/1092-4388(2005/019).
- Ratner, N.B. (1995). Treating the child who stutter with concomitant language or phonological impairment. *Language, speech and hearing services in the school*, 26, 180–186.
- Reilly, S., Onslow, M., Packman, A., Cini, E., Conway, L., Ukoumunne, O., & Wake, M. (2013). Natural history of stuttering up to 4 years of age: A prospective communitybased study. *Pediatrics*, 132(3), 459–467. doi: 10.1542/peds.2012-3067.
- Reynell, J.K., & Huntley, M. (1985). *Priručnik za Reynell razvojne ljestvice govora, Drugo revidirano izdanje*. Jastrebarsko: Naklada Slap.
- Salihović, N. (2005). *Poremećaji tečnosti govora*. Tuzla: Univerzitet u Tuzli.
- Sawyer, J., Chon, H., & Ambrose, N.G. (2008). Influences of rate, length and complexity on speech disfluency in a single-speech sample in preschool children who stutter. *Journal of Fluency Disorders*, 33(3), 220–40. doi: 10.1016/j.jfludis.2008.06.003.
- Stewart, T., & Turnbull, J. (1997). *Working with Dysfluent Children*. Brackley. Speech mark publishing Ltd.
- Ward, D. (2006). *Stuttering and Cluttering. Frameworks for understanding and treatment*. Hove and New York. Taylor & Francis e-Library.
- Watkins, R.V., Yairi, E., & Ambrose, N.G. (1999). Early childhood stuttering III: Initial status of expressive language abilities. *Journal of Speech, Language and Hearing Research* 42(5), 1125–1135. doi: 10.1044/jslhr.4205.1125.
- Watkins, R.V., & Johnson, B.W. (2004). Language Abilities in Children Who Stutter: Toward Improved Research and Clinical Applications. *Language, Speech, And Hearing Services in Schools*, 35(1), 82–89.
- Weber-Fox, C., & Hampton, A. (2008). Stuttering and Natural Speech Processing of Semantic and Syntactic Constraints on Verbs. *Journal of Speech, Language Hearing Research* 51(5), 1058–1071. doi: 10.1044/1092-4388(2008/07-0164).

CORRELATION OF METABOLIC AND ANTHROPOMETRIC PARAMETERS WITH PHYSICAL ACTIVITY AND SMOKING STATUS OF STUDENTS OF THE UNIVERSITY IN TUZLA

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Received: 2019/6/22

Accepted: 2019/8/21

ABSTRACT

Reduced physical activity and an increase in sedentary habits, as one of the factors in the development of cardiovascular diseases, hypertension, type 2 diabetes mellitus and other diseases, are also present in the youth population. The increasing of sedentary lifestyle and the reducing of physical activity can have negative consequences for the health of both genders, including increasing the risk of cardiovascular diseases (CVD). It is believed that almost 50% of young people do not practice regular physical activity. Regular physical activity reduces the risk in adults of early death caused by coronary heart disease, high blood pressure, type 2 diabetes mellitus, colon and breast cancer and depression. Studies investigating the sedentary lifestyle of young people in the United States show that the length of watching TV is directly proportional to the frequency of obesity. Daily moderate (medium-intensity) physical activity is beneficial for all people, regardless of age. The World Health Organization, within its "Health for All" strategy for the region of Europe, has set the goal for young people to be healthier and more capable to fulfill their roles in society in the year 2020 and that the psycho-social condition of people needs to be improved and help and service should be available to them, which will be better able to include and be more accessible to people with a mental health problem.

Key words: Blood pressure, BMI, smoking status, physical activity

INTRODUCTION

The student population is especially problematic because it is an age in their everyday life when they are not able to participate in physical activity. Many students spend most of their time sitting in a seating manner like sitting in classrooms, learning, watching television every day, using computers and playing video games (U.S. Department of Labor, Bureau of Labor Statistics,

2009); (Cveniĉ, 2016). Smoking is today considered a major risk factor for the development of bronchial and lung cancer, cavity cancer, throat cancer, nasal cavities and paranasal sinuses cancer, larynx cancer, esophagus cancer, pancreas cancer, kidney cancer, urinary bladder cancer, increased heart rate, constriction of small blood vessel, increase of blood pressure, increase of cholesterol and it promotes the formation of atherosclerotic pressure (KneŹiĉ & Hudoroviĉ, 2014).

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Obesity is an increasingly common problem in the student population, and research by American authors has shown that a critical period for getting overweight is the beginning of study (college).

It is assumed that the main factors responsible for the increasing occurrence of obesity in the youth population are: stress, inadequate nutrition, lack of physical activity, and increased alcohol consumption. Balanced nutrition for young people is the basis for healthy development, preservation and improvement of health, on the one hand, but it can also be the cause of the disease or its prevention, on the other. Physical activity is one of the key behavioral factors for health promotion, as many studies testify. Unfortunately, regular and proper physical activity is not an integral part of everyday life of a large part of the population. According to WHO estimates, 60% of people around the world are not physically active enough (Milosevic, Georgiev and Krajnovic, 2016). From the position of the contemporary sedentary man (homo sedens), which is characterized by hypokinesia, excessive nutrition and stress, motion, sport and kinesiological activities are imposed as a real need (Rogulj et al., 2011).

The aim of the research

The main goal of this research is to examine the connection or correlation of metabolic and anthropometric parameters with the physical activity and smoking status of students of the Faculty of Education and Rehabilitation. The fact is that sedentary habits, lack of physical activity and smoking lead to an increase in blood pressure. As a consequence of the sedentary lifestyle and inadequate nutrition of students, obesity or an increase in the body mass index occurs. Therefore, the need for pointing to a healthy lifestyle is imposed, which involves everyday physical activity and adequate nutrition.

METHODS

The research was conducted at the Faculty of Education and Rehabilitation, University of Tuzla. The study covered 73 respondents-students of the first year of the Faculty because it is a period when it can still be prevented in terms of promoting a healthy lifestyle. All subjects were examined at the Department of Physiology at the Faculty of Medicine, using the form of the questionnaire and carried out measurements in order to determine the metabolic (arterial blood pressure) and anthropometric param-

eters (body weight, body height and body mass index). The measuring instrument that was used was the Total fat intake questionnaire and the equipment used was a pressure gauge to measure blood pressure, and a centimeter tape for height and a scale for weight determination, all for the purpose of calculating the body mass index. After the survey, the data obtained were processed by the computer statistical program SPSS 20.0 for the Microsoft Windows operating system. The basic statistical parameters were calculated: minimum and maximum results, arithmetic mean and standard deviation. The Pearson coefficient determined the statistical significance of the correlation between the observed variables. ANOVA was applied. It was applied because within the group the connection/correlation with sub-variables was examined and that they are presented in three levels as a low, moderate and high intake of fat. This is important because the measured parameters depend on the level of fat intake.

RESULTS AND DISCUSSION

In a study conducted by Djuric and associates in 2017 on the BMI variable, 22.40% of subjects were pre-obese, and 2.40% were obese. The average values of the parameters tested are within the limits of the reference values. The recommended BMI values were the same for both genders and were higher in male respondents (24.36 ± 2.63) compared to female respondents (21.59 ± 2.45), which is a common result in research by authors from the region and around the world. Most of the students at the University of Banja Luka are normally nourished and regularly engaged in sports activities. However, it is worrying that one third of students do not practice any kind of sporting activity, which is partly related to the significant frequency of pre-obesity in this population. So, this points to the importance of promotion and the creation of conditions for dealing with student sports, which will reduce the prevalence of pre-obesity and its consequences.

In our study, we obtained values on the BMI variables: 16.44% of the subjects were pre-obese, and 5.48% were obese.

Table 1 shows descriptive characteristics in relation to physical activity from which it can be seen that differences in BMI, SAP and DAP in subjects with no physical activity are not significantly different. The effect of fat intake on BMI, SAP and DAP was observed in subjects with significant physical activity.

Table 1. Descriptive characteristics in relation to physical activity

SPORTS ACTIVITY		N	Mean	SD	Min	Max
Physically active	BMI	53	23.370	3.68	16.9	31.5
	TFI	53	28.57	7.24	17	49
	SAP	53	111.98	14.01	80	150
	DAP	53	72.55	10.12	50	95
	Total	53				
Physically inactive	BMI	20	21.840	2.67	16.6	27.7
	TFI	20	29.40	4.91	20	37
	SAP	20	109.00	12.52	80	140
	DAP	20	70.25	10.06	45	80
	Total	20				

Legend: BMI (Body Mass Index); TFI (Total fat intake); SAP (Systolic arterial pressure); DAP (Diastolic arterial pressure)

The analysis of the variance of the body mass index among the various kinesiology engaged students did not confirm the expected assumption that respondents who are more kinesiology engaged

have a lower body mass index (Rogulj et al., 2011). The results shown in Table 2 indicate that a quantitative increase in fat intake statistically significantly influences the increase in all observed parameters.

Table 2. Vital parameters of physically active subjects compared to total fat intake (ANOVA)

SPORTS ACTIVITY		N	Mean	SD	Std. Error	95% Confidence Interval for Mean		Min	Max	
						Lower	Upper			
						Bound	Bound			
Physically active	BMI	Low fat intake	1	2.00	.	.	.	.	2	2
		Moderate fat intake	48	2.25	.72	.10	2.04	2.46	1	4
		High fat intake	3	2.00	.00	.00	2.00	2.00	2	2
		Total	52	2.23	.70	.09	2.03	2.43	1	4
	SAP	Low fat intake	1	90.00	.	.	.	.	90	90
		Moderate fat intake	48	111.56	13.68	1.97	107.59	115.54	80	150
		High fat intake	4	122.50	12.58	6.29	102.48	142.52	110	140
		Total	53	111.98	14.01	1.92	108.12	115.84	80	150
	DAP	Low fat intake	1	65.00	.	.	.	.	65	65
		Moderate fat intake	48	72.60	10.51	1.51	69.55	75.66	50	95
		High fat intake	4	73.75	4.78	2.39	66.13	81.37	70	80
		Total	53	72.55	10.12	1.39	69.76	75.34	50	95

F(2,50)=18.8; p < .001

According to Table 3, Diastolic arterial pressure significantly increases under the influence of smoking (p

< .05), while BMI is significantly associated with systolic and diastolic arterial pressure (p < .001).

Table 3. Correlation matrix of smoking status, BMI and metabolic parameters

	SMOKER	SA	TFI	SAP	DAP	BMI
SMOKER	1					
SA	-.023	1				
TFI	-.151	.056	1			
SAP	.108	-.098	.124	1		
DAP	.235*	-.102	-.120	.692**	1	
BMI	-.010	-.197	-.093	.620**	.516**	1

*. Correlation is significant at the .05 level (2-tailed).

**. Correlation is significant at the .01 level (2-tailed).

Legend: SMOKER (Smoking status); SA (Sports activity); TFI (Total fat intake); SAP (Systolic arterial pressure); DAP (Diastolic arterial pressure); BMI (Body Mass Index)

Smoking causes damage to blood vessels, instant rise in blood pressure, and the reduction in body tolerance to physical strain. In addition, tobacco smoke components cause a reduction in oxygenation and an increase in the risk of blood clots (Zeković et al., 2015). Arterial pressure increases in proportion to the increase in body mass index (BMI), and so, prevention of childhood obesity is a crucial factor in preventing the development of elevated arterial pressure in adults. The values of arterial blood pressure in children are one of the most measurable markers of potential cardiovascular risk in later life (Trutin et al., 2017).

Insufficient dietary patterns in which food is not usually prepared at home, and meals are converted into partial meals that do not meet the recommendations of nutrients and calorie values, and reduced physical activity due to the sedentary lifestyle contributed to an increase of chronic diseases in most people (cardiovascular disease such as hypertension, coronary artery disease, high blood cholesterol, obesity, type 2 diabetes, osteoporosis, osteoarthritis, colorectal cancer, breast cancer) (Bodolović, 2018). Every day, it is necessary to satisfy the requirements of the organism regarding the intake of fat. A certain age has certain needs, so the daily recommended intake requirements for fetus, newborns, adolescents, adults, pregnant women and geriatric population are different (Kauzlarić, 2017). A properly balanced diet is characterized by: controlled energy intake (energy intake adjusted for the person depending on his/her gender, age and height, and the daily intensity of physical activity); Balance (adjustment of energy input to its consumption); diversity (intake of various foods from different food groups); and moderation (limited intake of foods that may have negative health implications if they are entered in quantities greater than recommended); (Malenica, 2016). The benefits of physical

activity for health are of paramount importance, and regular physical activity contributes to improving the quality of life. For the protection and preservation of health, physical activity from childhood to old age is important. Adopting healthy habits is important in the period of childhood and adolescence (Malenica, 2016). Given that physical activity is an important benefit for young people's health, improving physical activity among young people is an important public health challenge. Two important recommendations for young people are as follows: all young people should be moderately to intensely physically active at least one hour a day (Malenica, 2016). Smoking, different forms of addiction, unhealthy diet and low physical activity and motion are the personal choice of every individual he/she can influence. Students in Croatia are quite involved in the teaching of physical and health culture, which is the only form of organized physical activity for most students. They are also very well versed in the importance of dealing with physical activity. According to Vracan, Pisacic and Slacanac (2009), even 94% consider physical activity very important, but 56% of them are not included in any other form of physical activity outside the physical and health culture. Regular physical activity is of great importance for health as well as for the quality of life itself and should be accepted as a "foundation stone" of a healthy lifestyle. It is medically desirable and a protective behavior. It is associated with a reduction in the risk of various chronic diseases, some of which include: heart disease, type 2 diabetes, overweight body and obesity, and so on. (Sliško, 2015). Žiža (2012) examined the nutritional and life habits of the students of the University of Osijek in her work, and for this purpose a questionnaire was formulated which was anonymously filled by students at main faculties.

All respondents were compared with regard to gender and education. The body mass index was calculated through self-assessed body weight and height. The average BMI values for males were 24.7 kg / m² and 20.9 kg / m² for females, 21.5% of students had an overweight body, 30.1% of students consumed less than three meals a day, and the most commonly used meal was breakfast (Cvenić, 2016). Zach and Shalom conducted a study on the impact of physical activity on working memory. The participants trained volleyball twice a week, and before and after that exercise, tests of the working memory were carried out. The results showed that playing volleyball considerably enhances memory and based on this, it can be concluded that immediately after acute exercise, there is an increase in the function of the working memory (Grdić, 2016). Eating habits and nutritional status are most often influenced by addiction (alcohol, drugs and cigarettes), physical activity / inactivity, stress and socioeconomic status. Numerous studies confirm the fact that smokers have lower body mass than non-smokers, either due to a decrease in appetite or increased energy consumption, and that the effect of cigarettes on body weight control is more pronounced in females compared to males (Bradley et al., 2010). Body weight decreases with duration but not intensity of cigarette consumption (Hu et al., 2002). However, the loss of body weight in smokers does not necessarily reflect the reduction of fatty tissue. Likewise, the cessation of cigarette consumption is associated with gain on body weight (Pomerleau et al., 2000; Klein et al., 2004). For smokers and non-smokers, nicotine reduces appetite, resulting in a lower calorie intake during meals (Chiolero et al., 2008). These facts explain why smokers tend to have a lower body mass than non-smokers and why stopping smoking often results in an increase in body weight (Williamson et al. 1991; Ward et al., 2001). Most young people are healthy. However, more than 2.6 million young people, aged 15-24, die every year. An even greater number of young people suffer from various diseases that reduce their ability to grow and develop to their full potential. Most continue to practice behavior that not only jeopardizes their current state of health, but also the state of health in the years to come. Almost two thirds of premature deaths and one third of all adult illnesses are directly related to conditions and behavior in their youth, including: tobacco use, lack of physical activity, unprotected sex, poor nutrition and exposure to violence. Students are the last age group where preventive actions can be done by

changing unwanted habits (Macanović et al., 2013). In addition to reducing stress, the psychological aspect of physical activity is also evident in the fact that it promotes non-smoker lifestyle and proper nutrition. It also increases the level of positive psychosocial characteristics by decreasing addiction and mood amelioration (Edwards, 2006) by reducing the intensity of neurosis and depression (Tyson, Wilson, Crone, Brailsford, & Laws, 2010; Lawlor & Hopper, 2001). As a critical period for the adoption and retention of the habits of physical activity, the age of adolescence and youth was recognized. Namely, physical activity in the childhood and adolescence period determines the later activity of the individual and thus directly affects the overall health status of an individual's organism. Therefore, structured programs should encourage adolescents to participate actively in physical activity during their free time and develop a positive attitude towards physical activity (Horvat et al., 2013). The beginning of study (college) in most young people is a sensitive period in which the level of physical activity decreases and the number of activities that do not require physical effort increases. It can be concluded that carefully planned, continuous physical activity of adequate intensity has a positive impact on the growth and development of the organism and the preservation of the health status of the organism (Vrkić, 2018).

CONCLUSION

So far, research in the field of assessment of the intensity of physical activity and the sedentary lifestyle of young people has not been conducted in Bosnia and Herzegovina, so this research represents a unique contribution to the elucidation of this complex problem. Preventative action through nutritional habits and adequate physical activity is important in order to reduce the risk of developing a disease. It is necessary to start developing guidelines for encouraging young people to engage in physical activity and prevent the occurrence of obesity, cardiovascular diseases and diabetes as frequent problems of this population.

This paper was derived from the project "Linkage of metabolic and anthropometric parameters with sedentary habits and intensity of physical activity in UNTZ (University of Tuzla) students" approved by the Internal call of University of Tuzla for financing / co-financing projects in the field of science of importance to the Federation of Bosnia and Herzegovina.

REFERENCES

- Bodolović, I. (2018). *Makronutritivni sastav prehrane u populaciji studenata Farmaceutsko-biokemijskog fakulteta*. Diplomski rad. Sveučilište u Zagrebu.
- Cveni, J. (2016). *Promjene zdravstvenog fitnesa studentica Sveučilišta u Osijeku pod utjecajem eksperimentalnog programa teorijske nastave tjelesne i zdravstvene kulture*. Doktorski rad. Sveučilište u Zagrebu.
- Đurić, S., Simović, S., Rašeta, N., & Vujnić, M. (2017). Fizička aktivnost i uhranjenost studenata Univerziteta u Banjoj Luci. *Timočki Medicinski Glasnik*, 42(4), 217–223.
- Georgiev Milošević, A. & Krajnović, D. (2016). Faktori rizika za razvoj hipertenzije u vezi sa navikama u ishrani studenata Univerziteta u Beogradu. *Timočki medicinski glasnik*, 41(3), 203–207.
- Grdić, I. (2016). *Loše navike studenata medicine-utjecaj na zdravlje*. Diplomski rad. Medicinski fakultet, Sveučilište Josipa Jurja Strossmayera u Osijeku.
- Horvat, M., Iričanin Pukljak, Z., & Jakuš, L. (2013). Redovitost tjelesne aktivnosti u populaciji studenata fizioterapije. *MEDIX travanj/svibanj*, 19(104/105).
- Kauzlarić, M. (2017). *Modeliranje odnosa sadržaja masti i antropometrijskih parametara u kontinentalnoj i primorskoj regiji RH*. Završni rad. Sveučilište u Zagrebu.
- Knežić, M., & Hudorović, N. (2014). *Učestalost pušenja u studentskoj populaciji*. SG/NJ 19:126.
- Malenica, Ž. (2016). *Učestalost pretilosti kod učenika prvih razreda srednje škole u Splitsko-dalmatinskoj županiji*. Diplomski rad. Sveučilište u Splitu.
- Macanović, G., Marković, D., Ferati, A., Arsić, J., Jocić, I., & Arsić, K. (2013). Fizička aktivnost studenata. *PONS Med J* 10(4), 137–141.
- Poljak, A. (2015). *Tjelovježba, motivacija i kvaliteta života kod studenata*. Diplomski rad. Filozofski fakultet, Sveučilište Josipa Jurja Strossmayera u Osijeku.
- Rogulj, N., Kovačević, Ž., Utrobičić, I., Krstulović, H., & Jukić, J. (2011). Indeks tjelesne mase različito kineziološko angažiranih studentica i studenata. *Život i škola*, 25 (1/2011.) (57), 100–107.
- Sliško, A. (2015). *Odnos tjelesne aktivnosti, indeksa tjelesne mase i kvalitete života kod studenata*. Diplomski rad. Sveučilište J.J.Strossmayera u Osijeku.
- Trutin, I., Crnković, M., Lesar, T., & Valent-Morić, B. (2017). Karakteristike kontinuiranog mjerenja arterijskog tlaka. *PHYSIOTHER. CROAT.* 15, 11–17.
- Vrkić, A. (2018). *Tjelesna aktivnost i kvaliteta života studentica završnih godina Učiteljskog fakulteta*. Diplomski rad. Učiteljski fakultet, Sveučilište u Zagrebu.
- Zeković, M., Stojković, T., Milošević Georgiev, A., & Krajnović, D. (2015). Ispitivanje zastupljenosti odabranih faktora rizika za razvoj hipertenzije u populaciji studenata medicinskih fakulteta. *Praxis Medica*, 44(2), 13–19.

PRESENCE OF RISK FACTORS IN PRIMARY SCHOOL STUDENTS AND THE NEED FOR EARLY SOCIAL-PEDAGOGICAL INTERVENTION

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Original scientific paper

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Received: 2019/6/28

Accepted: 2019/9/3

ABSTRACT

The school is an institution that represents an important link in the social care chain for children and young people, which also involves taking various measures to prevent the occurrence of undesirable behaviors. The aim of the study is to determine the prevalence of risk factors between adolescents with externalized and internalized problems and typically developing adolescents, and to determine in which segment, in the opinion of teachers, early social-pedagogical intervention is most needed. The research sample is made up of 450 students (233 male and 217 female) of the seventh and eighth grades of primary school. The results show that the highest risk factors are present in the group of students with externalized behavioral problems, slightly less in the group with internalized problems, and the least in students without behavioral and emotional problems. When it comes to early social-pedagogical interventions, in the opinion of teachers, they should be comprehensive and implemented by a competent expert.

Key words: early social-pedagogical intervention, adolescents, risk factors, school environment.

INTRODUCTION

As a child grows up, it is increasingly exposed to a variety of environmental factors, which is especially reflected during schooling when the school environment and peers assume the role of the main agent of socialization. The school is an institution that represents an important link in the social care chain for children and young people, which also involves taking various measures to prevent the occurrence of undesir-

able behaviors. In a school context, it is possible to develop, implement and monitor in the best possible way a comprehensive support system that respects the needs of all students in the school (Sprague & Walker, 2000).

The school has great potential in terms of fostering children's development, creating a positive environment, spotting the first signs of risky behavior and responding promptly and appropriately to prevent further development of those (Bašić, 2009).

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Risk factors are related to unfavorable social conditions and circumstances which through their actions, by their presence and influence in the process of socialization, impede proper social development and prevent the formation of pro-social behaviors of children and young people, i.e. increase the likelihood of forming and exhibiting risky behaviors (Žižak, 2010). Risk is part of the psycho-dynamic transition process of maturation that entails the search for identity, and it often involves examining and shifting the boundaries of what is allowed. Risk can be the result of different types of deficits (social, material, family), just as it may be the result of the dominance of cultural values promoted by the materialistic culture of late capitalism. The question of the extent to which young people are at risk involves the discovery of a complex relationship in which power structures, reflexive individualization, determinism of social structure, and the capacity of young people to be adequately involved are intertwined (Sharland, 2005). There are three key risk factors that affect the social development and social behavior of children and young people: early and frequent antisocial behavior in school, school failure beginning in primary school, and insufficient commitment to school and school responsibilities (Hawkins, 2004). The emergence of risk factors in the school environment is significantly influenced by the system of social values, within which the status of educational activity in the system of social activity and social concern for school and school education is particularly important. Schools and even departments within the same school differ in terms of risk behaviors, levels of violence and victimization (Pavlovic & Zunic-Pavlovic, 2012). These differences are explained by the so-called departmental/class norms pertaining to violence. However, it should be borne in mind that there are significant individual differences at departmental/class level. Thus, for example, individual children may have attitudes that may differ significantly from departmental/class norms (Velki & Vrdoljak, 2012), but it should be borne in mind that both the individual characteristics and the family context of the child may influence his or her behavior in a particular situation (Bašić, 2009; Popovic-Citic, 2005; Popovic-Citic, 2007; Popovic-Citic & Popovic, 2009).

Today, there are numerous programs in our area that deal with the continuum of interventions in the school environment, depending on the needs of the students. Selective and indicative prevention programs can be considered as intervention programs, since their purpose is to repair and change the current situation into

the desired direction. An intervention is defined as a set of activities to which a group (or individuals) is exposed to change its behavior (Bašić, 2009). These interventions are preventative, because if successful, they prevent the occurrence of (new and more serious) behavioral problems (Zloković & Vrcelj, 2010). Universal or early intervention programs are based on the development and strengthening of protective factors and are far more effective than programs that seek to reduce existing behavioral problems.

Early social-pedagogical intervention is classified on the continuum of prevention of behavioral disorders as a level of selective prevention preceded by universal prevention, supplemented by an indicated level of prevention (European Monitoring Centre for Drugs and Drug Addiction, 2009). In doing so, early social-pedagogical intervention involves an individualized approach to children and young people who already have severe behavioral problems at an early stage in their development. It is an intervention targeted at selected students who are involved in universal and early-intervention school curricula and activities, while students with intense behavioral problems require interventions and treatments that generally go beyond the capabilities of the school itself and imply an interdisciplinary and inter-departmental approach in the joint work of different services of the local communities. Early social-pedagogical intervention is a targeted professional and comprehensive, especially pedagogical, action in the school environment towards students who, for various reasons, are at risk of developing behavioral problems (Bouillet et al., 2015). Students with behavioral problems are significantly different, indicating the need for a comprehensive approach to detecting the difficulties and needs of these students in a timely manner, with the aim of providing them with appropriate support and interventions aimed at preventing more serious social and behavioral problems in the future.

Problems in the behavior of children and young people are an umbrella term for a continuum of behaviors from simpler, lesser significance, danger and harm to oneself and others, to those defined and / or sanctioned by regulations or often more severe by consequences and needs for intervention (Koller-Trbović, Mirosavljević, & Jeđud Borić, 2017). This term encompasses a continuum from risky behavior, through behavioral difficulties, to behavioral disorders (Koller-Trbović, Žižak, & Jeđud Borić, 2011). In modern dimensional systems, the division into externalized and internalized behavioral problems is accepted (Achenbach & Rescorla, 2001).

Externalized syndromes refer to conflicts with other people and their expectations, which include behaviors that violate rules and aggressive behavior. The second group of problems includes types of self-directed behavior, that is, internal problems such as anxiety, depression, somatic complaints without clear medical reasons, and social withdrawal.

Aim of the research

The aim of the research is to determine the prevalence of individual risk factors in relation to adolescents with externalized problems, adolescents with internalized problems and typically developed adolescents, and to determine in which segment, in the opinion of teachers, early social pedagogical intervention is most needed.

METHODS

The sample of respondents in this study consists of 450 students (233 male and 217 female) of the seventh

and eighth grades of primary school. The research was carried out in the Municipality of Dobož Istok and Gračanica, in the primary schools of Klokotnica, Brijesnica, Lukavica and Hasan Kikić. The test was conducted with each respondent individually according to the test requirements. Emerging forms of risk behaviors were examined using the Achenbach Assessment System, the adolescent/youth self-report version (ASEBA Youth Self-Report - YSR, Achenbach & Resorla 2001). The instrument measures adaptive functioning, that is, competencies and maladaptive functioning, that is, behavioral, emotional, and social problems between the ages of 11 and 18 years. The instrument contains eight syndrome-specific scales that measure co-occurrence problems, such as: Anxiety-Depression, Retention-Depression, Somatic Problems, Social Problems, Thinking Problems, Attention Problems, Policy Violation Behavior and Aggressive Behavior. The syndromes are grouped as externalized and internalized. Statistical program SPSS 20.0 for Microsoft Windows was used for data processing.

RESULTS AND DISCUSSION

Table 1. Distribution of respondents by gender and age

Gender			Seventh grade	Eighth grade	
Gender	male	Count	93	140	233
		% within gender	39.9%	60.1%	100.0%
		% within grade	47.9%	54.7%	51.8%
	female	Count	101	116	217
		% within gender	46.5%	53.5%	100.0%
		% within grade	52.1%	45.3%	48.2%
Total		Count	194	256	450
		% within gender	43.1%	56.9%	100.0%
		% within grade	100.0%	100.0%	100.0%

Table 2. Discriminant values (lambda), group centroids (C), standard deviation (SD) of discriminant functions, F-test and level of statistical significance (p)

DF	Lambda	C1	C2	C3	SD1	SD2	SD3	F	p
1	1.0741	-.03	.07	-.09	.38	.32	.38	3.30	0,37
2	.0356	.25	-.34	.30	1.30	.72	1.34	.54	.591

Legend: C1- externalized behaviors; C2- internalized behaviors; C3- typically developed students

Discriminant analysis isolated two functions, but only one of which is a statistically significant discriminant function.

Table 3. Structure of the discriminant function

Variables	Discrimination coefficients	Discriminant functions
Low risk	.52	.67
Medium risk	.67	.93
High risk	.29	.14
Very high risk	.03	.78

Of the two discriminant functions obtained, only the first one proved statistically significant. It is defined by a medium level of significance (.67), then low (.53), and somewhat by high (.31). Although the differences are significant at the p level of .05, however, the differences between the groups are very small, that is, the very low positive correlation with this discriminant function

have students with externalized problems, in comparison with students with internalized problems. Given the position of the centroids, it is evident that the highest risk factors are present in the group of students with externalized behavior, slightly less in the group with internalized behavior, and the least in students without behavioral and emotional problems.

Table 4. Central tendency measures, measures of dispersion and asymmetries of the distribution of scores on the YSR scales

Variables	N	Min	Max	M		SD	Skeewness		Kurtosis	
				Stat	St.g		Stat	St.g	Stat	St.g
Anxiety/Depression	450	15	40	23.14	.19	4.33	1.07	.10	1.71	.20
Reticence/Depression	450	7	19	11.71	.10	2.41	1.16	.10	1.37	.20
Somatic Problems	450	8	24	10.74	.12	3.17	1.45	.10	1.80	.20
Social Problems	450	10	25	13.07	.13	2.75	1.39	.10	2.70	.20
Thinking Problems	450	10	28	13.08	.14	3.37	1.59	.10	2.29	.20
Attention Problems	450	25	65	42.57	.28	6.28	.58	.10	.48	.20
Policy Violation Behavior	450	12	28	16.21	.12	2.91	1.41	.10	2.28	.20
Aggressive Behavior	450	20	53	29.16	.24	5.34	1.18	.10	1.58	.20
Internalized problems	450	33	86	46.69	.37	8.37	1.20	.10	2.00	.20
Externalized problems	450	32	79	45.37	.32	7.62	1.54	.10	2.01	.20
	450	172	447	251.74	2.01	46.55	12.5	1	18.2	2

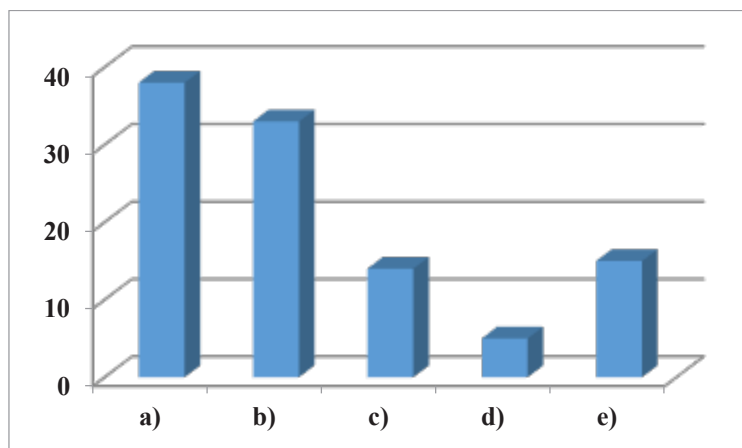
Analysis of the data in Table 4 shows that, on the sample Anxiety/Depression sub-scale, the students had achieved scores in the range of 15-40, with a mean of 23.14 (SD = 4.33). On the Reticence/Depression sub-scale, respondents achieved scores in the range of 7-19, with a mean of (SD = 2.41). Scores on the sub-scale Somatic Problems ranged from 8-24, with a mean of (SD = 3.17). In the Social Problems sub-scale, scores ranged from 10-25, with a mean of (SD = 2.75). The Thinking Problems sub-scale has scores ranging from 10-28, with a mean of (SD = 3.37). In the Sub-scale At-

tention Problems, the score is ranged from 25-65, with a mean of (SD = 6.28). In the Policy Violation Behavior sub-scale, the score ranged from 12-28, with a mean of (SD = 2.91), while in the Aggressive Behavior sub-scale, the score ranged from 20-53, with a mean of (SD = 5.34). At main Scales - Internalized and Externalized problems - scores varied from 33-86, with a mean of (SD = 8.37) for Internalized problems and 32-79, with a mean of (SD = 7.62) for Externalized problems, and the Total score ranged from 172-447, with a mean of (SD = 46.55).

The school environment is considered as one of the most influential socialization domains in a child's life (Currie, Gabhainn, Godeau et al., 2008). The sense of school affiliation and academic achievement have proven themselves to be significant negative predictors of aggressive and risky gender behavior (Kyriacou, Mylonakou-Keke, & Stephens, 2016).

Research has shown that experiences in school and adjustment to school can have both positive and negative impacts on development. Studying adolescents' interconnections, attachment, and engagement at school, Ert (2012) identifies three levels of successful school adaptation - individual level of school connection, friends connected to school (connection with school-related peers), and avoidance of negative behaviors in school (e.g., cheating, skipping school, etc.). The importance of being attached to school friends with

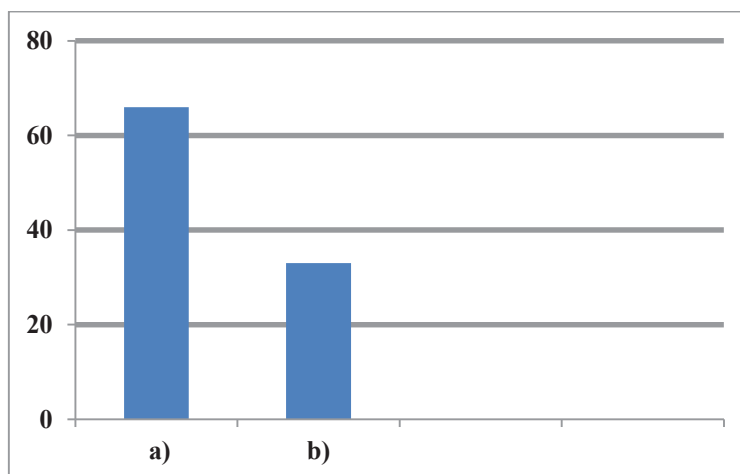
whom adolescents socialize indicates that a relationship with peers who have pro-social attitudes supports the pro-social behavior of the adolescents themselves. Hawkins (2004) points to a strong link between the children's poor adjustment to school and the use of drugs. A large number of aggressive children in the classroom increase the risk of developing behavioral disorders of other children. Risky behaviors may include impulsive decision-making, reckless behavior, quarreling with peers, or challenging authority, but they also include high-risk behaviors that have far-reaching consequences on the life course of a young person. When it comes to school-based interventions by teachers, there are several obstacles they face. The main obstacle pointed out by teachers in assisting students is a lack of knowledge of social-pedagogical preventive interventions (Chart 1).



- a) I do not know enough about methods of social pedagogical intervention
 b) I'm running out of time
 c) Insufficient cooperation with parents
 d) Pupils refuse to be helped
 e) I do not encounter obstacles, I successfully solve problems

Chart 1. Obstacles encountered by teachers when assisting students

Chart 2 presents a way of providing teacher assistance for students who have a behavioral problem.



- a) I talk privately with the student trying to cover up the cause of the behavior,
 b) When I do not disclose the cause of the behavior in the interview, I inform the educator and the associate about the behavior.

Chart 2. Ways of teacher help to students with behavioral problems

According to the analysis of the results of the research, it is found that teachers mainly use an individual approach to work in assisting students at risk for behavioral problems. The results of a qualitative study conducted by Koller-Trbovic and Zizak (2012) examining multiple perspectives on behavioral problems show that all interlocutors (teachers, school staff, local community representatives) understand children's and young people's behavioral problems as a complex social problem, they see its detrimental effect on society and its intensification in recent times. Through the different perspectives of the interlocutors, a common idea of the social conditionality of the phenomenon could also be observed. Teachers state that their main obstacle in providing adequate assistance to the adolescent with behavioral problems is their lack of knowledge of social-pedagogical methods. In schools, it is necessary for experts in the field of social-pedagogical interventions to be competent in this field. Research (Odak, Ristic Dedic, Bezinovic et al., 2010) confirms that successful schools have developed a special way of dealing with situations where a student has learning and / or behavioral problems, that they have an elaborate focused system of action to solve problems at the individual and group levels, that teachers give students with behavioral problems individual attention and that there is a consensus on values and good communication and collaboration among all individuals in the educational process. Contemporary concepts about young people who are woven into fears about the seriousness of disorders in the behavior of young people who over-incline to risky, even criminal, relate to their reality and problems of misunderstanding. At the same time, the risky behavior of young people is a cultural phenomenon that must be analyzed within the framework of cultural criminology, as an attempt to separate the real dimension of young people's relationships and the risks from their academic, and especially media dramatization. Despite the limitations of the human mind, adolescents have tremendous strength and potential for learning and development. Programs aimed at youth need to understand these potentials, the ways in which they are developed while respecting the profound complexity of teenagers' lives and the external post-modern world of disorder and insecurity (Larson, 2011). Regulating adolescent emotional being, boosting motivational capacity, and supporting self-regulation aims to turn anger and loneliness into collaboration and empathy, and the feeling of boredom and emptiness into work and life enthusiasm.

CONCLUSION

The whole spectrum of the process of socialization that takes place in a socially organized context is correlated with the individual characteristics of the developing person, and understanding the development process must take into account the change that changes both the individual and the social environment over time. The specific socio-economic, physical and emotional weaknesses of adolescents,

while recognizing their own strengths and opportunities, may be the reason for the increased risk-taking tendency that emerges as a "transition challenge". The purpose of the research was to contribute to expanding the possibility of timely prevention and early intervention of problems in the behavior of students in the school environment in relation to the presence of risk factors. The results showed that the students expressed the need to implement programs aimed at prevention of risk factors present in the group of students with externalized behavior, slightly less in the group with internalized behavior, and at least in students without behavioral and emotional problems, and such programs are not usually sufficiently available in primary schools.

REFERENCES

- Achenbach, T. M., & Rescorla, L.A. (2001). *The manual for the ASEBA school-age forms profiles*. Burlington VT, University of Vermont: Research Center for Children, Youth, and Families.
- Bašić, J. (2009). *Teorije prevencije*. Zagreb: Školska knjiga.
- Bouillet, D. (2015). Konceptualni okvir razvoja modela rane odgojno-obrazovne intervencije. U: Bouillet D (ur.): *Razvoj modela rane odgojno-obrazovne intervencije u osnovnoj školi: od ideje do evaluacije*. Zagreb: Forum za slobodu odgoja. 25–47.
- Currie, C., Nic Gabhainn, S., Godeau, E., Roberts, C., Smith, R., Currie, D., & Barnekow, V. (2008). *Inequalities in young people's health: Health behavior in school-aged children (HBSC)*. International report from the 2005/2006 survey. Copenhagen, Denmark: WHO Regional Office for Europe.
- Eret, L. (2012). Odgoj i manipulacija: Razmatranje kroz razvojnu teoriju ekoloških sustava. *Metodički ogledi* 19(1) 143–161.
- European Monitoring Centre for Drugs and Drug Addiction. (2009). *Preventing Later Substance Use Disorders in At-risk Children and Adolescents: A Review of the Theory and Evidence Base of Indicated Prevention*. Thematic papers. Luxembourg: Office for Official Publications of the European Communities.
- Hawkins, J.D. (2004). Foreword; in: Allen-Mears, P., Fraser, M.W. (eds.) *Intervention with Children and Adolescents: An Interdisciplinary Perspective*. Boston, New York.
- Kyriacou, Ch., Mylonakou-Keke, I., & Stephens, P. (2016). Social pedagogy and bullying in schools: the views of university student in England, Greece and Norway. *British Educational Research Journal*, 42(4): 6311–645.
- Koller-Trbović, N., Mirosavljević, A., & Jedud Borić, I. (2017). *Procjena potreba djece i mladih sa problemima u ponašanju-konceptualne i metodičke odrednice*. Zagreb: Ured UNICEF-a za Hrvatsku.
- Koller-Trbović, N., Žizak, A., & Jedud Borić, I. (2011). Standardi za terminologiju, definiciju, kriterije i način praćenja pojave poremećaja u ponašanju djece i mladih. Zagreb: Ministarstvo obitelji, branitelja i međugeneracijske solidarnosti i Povjerenstvo za prevenciju poremećaja u ponašanju djece i mladih Vlade Republike Hrvatske.

- Koller-Trbović, N., & Žižak, A. (2012). Problemi u ponašanju djece i mladih i odgovori društva: višestruke perspektive. *Kriminologija i socijalna integracija*, 20 (1), 1–132.
- Larson, R.W. (2011). Positive development in a disorderly world. *Journal of Research on Adolescence*, 21, 317–334.
- Odak, I., Ristić Dedić, Z., Bezinović, P., & Rister, D. (2010). Kako škole vide sebe- Analiza samoevaluacijskog upitnika u projektu samovrednovanja škola. U: Bezinović, P. (ur). *Samovrednovanje škola: Prva iskustva u osnovnim školama*. Zagreb: Agencija za odgoj i obrazovanje i institute za društvena istraživanja u Zagrebu, 63–96.
- Pavlović, M., & Žunić-Pavlović, V. (2012). Koncept rezilijentnosti u savremenoj literaturi. *Nastava i vaspitanje*, 2, 232–246.
- Popović-Čitić, B. (2005). Prevencija fokusirana na rizične i protektivne faktore kao savremeni pristup prevenciji prestupništva mladih. *Socijalna misao*, 12 (1), 27–55.
- Popović-Čitić, B. (2007). Porodični rizični faktori nasilnog ponašanja dece i omladine. *Socijalna misao*, 14(2), 27–50.
- Popović-Čitić, B. i Popović, V. (2009). Koncept rizičnih i protektivnih faktora – Klasifikacija i okviri za potrebe prevencije poremećaja ponašanja dece i omladine. *Socijalna misao*, 16(3), 43–65.
- Velki, T., & Vrdoljak, G. (2012). Uloga nekih vršnjačkih i školskih varijabli u predviđanju vršnjačkoga nasilnog ponašanja. *Društvena istraživanja*, 22 (1), 101–120.
- Sharland, E. (2005). Young People, Risk Taking and Risk Making: Some Thoughts for Social Work. *British Journal of Social Work*, 36 (2), 247–265.
- Sprague, J., & Walker, H. (2000). Early Identification and Intervention for Youth with Antisocial and Violent Behavior. *Council for exceptional children*, 44, 355–371.
- Zloković, J., & Vrcelj, S. (2010). Rizična ponašanja djece i mladih. *Odgojne znanosti*, 12 (1), 197–213.
- Žižak, A. (2010). *Teorijske osnove intervencija*. Zagreb: Edukacijsko-rehabilitacijski fakultet Sveučilišta u Zagrebu.

LABOR CAPACITY OF DEAF WORKERS ON THE WORKPLACE: QUALITATIVE ANALYSIS OF THE ATTITUDES OF DEAF WORKERS AND THEIR CO-WORKERS WITHOUT HEARING IMPAIRMENT

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Original scientific paper

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Received: 2019/6/15

Accepted: 2019/8/27

ABSTRACT

The aim of this paper is to determine the opinions of deaf workers on their labor capacity and the opinions of their hearing co-workers about the labor capacities of the deaf. The sample consisted of 247 respondents, of whom 127 were deaf and 120 were hearing workers. Qualitative and quantitative analysis were used in processing the results. Testing was performed by Wilks' Lambda, tested significance in discriminant analysis was done by F test, at the statistical significance of 0.01. It was found that the sub-sample of respondents had a statistically significant difference in views on claims regarding the exploitation of deaf workers by employers, the employment of deaf people in low-paid simple occupations, and the equally successful but insignificant productivity of deaf workers. The statistical differences found indicate that there are differences in the assessment of the labor capacity of deaf workers in the hearing work environment. Qualitative analysis found that hearing impairment and the subjective attitudes of colleagues without hearing impairment have the greatest impact on the assessment of the labor capacity of deaf workers.

Keywords: Deaf workers, labor capacity of the deaf, productivity of the deaf

INTRODUCTION

Deaf people belong to a heterogeneous population, which is caused by the degree and time of hearing impairment. Difficult communication determines their form of schooling and vocational training, with the main problem being the limited choice of occupation offered to deaf students in vocational guidance processes, resulting in low employment rates for this population, as well as low-paying, non-paying jobs in accordance with their acquired professional qualification. Hearing impairment also significantly affects communication, educational achievement, and social interaction (Bou-

tin, 2010; Boutin & Wilson, 2009), it also limits access to employment, and causes an increased rate of unemployment for deaf people (Bradley, Ebener, & Geyer, 2013; Smith, 2011). Research (Appelman et al., 2012; Boutin & Wilson, 2009) shows that despite professional training, legal regulation and raising awareness of the employment needs of deaf people, their unemployment rate is still lower than the rate of the hearing population. Bowe et al. (2005) state that young deaf people encounter employer impedance when it comes to initial employment, training, promotion and job placement because employers find the costs associated with their work integration as unnecessary.

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The study by Kramer, Kapteyn and Houtgast (2006) shows that hearing is an important ability in the workplace and that hearing loss can result in some difficulties related to: subjective noise level, ability to communicate in noise, differentiate and identify sounds, control and job requirements and requirements of additional effort to participate in communication. Buys and Rennie (2001), Scherich and Mowry (1997), and Schroedel and Geyer (2000), state that difficulties in the employment of deaf people arise as a result of insufficient long-term cooperation and inconsistent services between institutions responsible for their vocational training and employment. Deaf workers have limited employment opportunities, due to the stereotype of employers in terms of the impact of their attitudes, as well as professionals charged with implementing vocational training and career planning (Rosengreen, Saladin, & Hansmann, 2009). Insufficiently developed awareness of the opportunities of deaf workers, the lack of interest of society and negative attitudes towards their labor opportunities most often lead to the unemployment of deaf people, which leaves consequences for their integration into the social environment. The most important factors contributing to the increased risk of social exclusion of young unemployed people are low qualifications, passivity in the labor market, uncertain financial situations, low or no social support, and insufficient or nonexistent institutional support (Kiselbach, 2003).

Economic and institutional barriers to the inclusion of the deaf in the labor market continue to exist in most developed countries of the world. The acquisition of a particular profession or professional qualification is insufficient unless there are objective conditions for their employment. The new demands of the labor market and the advancement of technology are changing and requiring new skills from deaf workers, while at the same time there is increasing economic instability and diminished demand for the jobs for which they are trained. The advancement of technology and industry places greater demands on literacy and communication skills for deaf workers. Hasanbegović, Beha and Mahmutović (2013) singled out inadequate professional information and dissatisfaction with the choice of occupation, which most often do not follow the labor market, as the main cause of problems in employment and retaining the employment of deaf workers. Additional challenges for deaf workers arise from increased levels of stress and fatigue, which usually results from increased effort and concentration necessary to communicate

and listen in everyday situations, compared to people without hearing loss (Bess & Hornsby, 2014; Granberg et al., 2014; Hornsby, 2013). A series of studies examining the workplace (Coniavitis Gellerstedt & Danermark, 2004; Kramer, Kapteyn & Houtgast, 2006; Nachtegaal et al., 2009) show that deaf workers exhibit higher levels of fatigue, pronounced psycho-physiological stress, and go sick-leave because of stress more often compared to hearing workers. The authors of the studies considered that job control in the workplace is associated with the ability to participate and interact in the workplace, whereby deaf workers may feel insecure, anxious, and insufficient control when interacting with hearing colleagues in situations where important information is communicated verbally. Kiselbach (2003) states that observing the negative impact on the inability to enter the work process promotes a sense of marginalization, as well as that people without vocational training are more sensitive to social exclusion and lack of integration into society. In order to avoid the negative consequences of lifelong unemployment, deaf people seek employment despite the availability of social benefits, because the benefits of self-employed work, as opposed to dependency on care, can contribute to the positive mental health of the deaf person (Danek & Busby, 1999).

Labor market changes, including trends towards higher mobility, part-time jobs and fixed-term work, place deaf people in the position of having to change jobs, employers and jobs, which require negotiations with employers, unlike in previous years, when deaf workers spent their entire working lives in the same jobs (Fouad & Bynner, 2008; Savickas, 2012).

Most employers and co-workers are likely to have insufficient knowledge about hearing loss and its implications (Schoffstall et al., 2015), as well as about the capabilities of deaf workers. Connelly (2012) conducted a study on a sample of 215 deaf people, where it is found that the majority of respondents stated that hearing impairment limited the range of tasks they needed to perform at work, their opportunities to apply for other jobs, and their ability to move forward - not only in finding the right job, but also in the achievement on the workplace. DeCaro, Mudgett-DeCaro and Dowaliby (2001) suggest that deafness can be a cultural determinant when it comes to choosing occupations and opportunities for the deaf. The authors noted that, regardless of the cultural difference between countries, deaf people are pursuing similar occupations based on the views of employers and society.

Advanced industrial companies are looking for a better educated and technically skilled labor force. Current occupations in the labor market require modern approaches to education and higher qualifications, which deaf people most often do not have. Training of deaf people for vocational occupations, with the completed third or fourth level of education, does not meet the needs of the labor market. Stauffer and Boone (2007) cite difficulties in the professional rehabilitation of deaf people related to inadequate communication skills associated with an ineffective education system, resulting in insufficient practical work and developed work experience, as well as limited family support. Research by DeCaro et al. (2001), which included parents of deaf children and professionals, engaged in vocational training, on occupational competences of deaf children, indicate that respondents expressed a view that deaf persons have reduced labor capacity to perform certain occupations, with respondents expressing a tendency to limit the scope of occupation which this population can perform. *Research aim:* This research aimed to determine, by qualitative analysis, the perception (opinion) of deaf workers about their labor capacity and what their hearing co-workers think about their labor capacity. The study hypothesized that there were no statistical differences in the assessment of the labor capacity and social adjustment of deaf workers in a hearing work environment.

METHODS

The research was preceded by preparatory activities related to the verification of the success of inclusive employment of the deaf, and which were implemented in cooperation with centers for social work. It was found that there were reported difficulties in some companies, related to delayed work, irresponsibility at work, maladaptation of deaf workers to working conditions, etc. Although these were individual cases, it was decided to conduct a survey on a larger sample of respondents to examine the social relationships between deaf workers and their co-workers and what their opinions were about their labor capacity and labor skills. For this purpose, open-ended interview questions were created with the answers offered as I agree, I am hesitant and I do not agree, and the interview consisted of the following claims: Responsible company services send hearing workers for additional training, but do not send deaf workers; In low paid simple occupations Deaf workers are more likely to be employed than hearing workers; Each hearing worker is more likely to perform more entrusted tasks than a deaf worker; Deaf people's limited working ability is the cause of their unemployment;

Deaf workers may be as productive as hearing workers, but their productivity is not so important; I have nothing against deaf workers at work, nevertheless I do not think they are particularly worthy workers; Deaf people should only work in workplaces where there is no need for communication; Deaf people should be given social and financial assistance even when employed; Deaf people in the work environment are exploited by employers to the maximum level; In the production chain where the deaf people work, there must always be a hearing control person; Deaf workers always prefer to be on sick-leave than hearing workers; It is best for deaf people to be auxiliary workers regardless of qualification level and productivity level; Deaf people should perform the tasks of a manual worker without mental strain and hearing perception of the environment.

Interviews were conducted in direct contact with the respondents, within the companies where they are employed and at their workplaces. Authorization for the research was obtained from the management of the companies, which was preceded by a meeting and discussion in order to get acquainted with the purpose and importance of the research. Because of the sample of the respondents, a sign language interpreter was hired to obtain accurate information.

Sample of respondents

The sample consisted of deaf respondents aged 18-65 ($n = 127$) (experimental group), employed in a company with a minimum of one year of service and hearing respondents aged 18-65 (control group), who work in the same company with deaf workers or have at least one year of work experience in jobs where a deaf person worked ($n = 120$). The survey respondents are employed in the field of manual services and production (71.6%), service industry (18.8%), health care institutions (6.3%), mining and construction (2.4%) and education (0.8%).

Measuring instruments

The measuring instrument was created with the aim of establishing the respondents' attitudes on the labor capacity of deaf workers and their social behavior in the workplace. An Interview was used to verify the quantitative data, and the questions of this interview were scaled in a Likert-type questionnaire, according to Hasanbegovic (2016)².

²<http://www.human.ba/Hasanbegovic/mi.htm>

RESULTS AND DISCUSSION

Table 1 shows the frequencies of respondents' responses to the interview conducted. Both groups of respondents mostly disagree on claims related to each hearing worker is more likely to perform more entrusted tasks than a deaf worker, deaf people should only work in workplaces where there is no need for communication, deaf workers always prefer to be on sick-leave than hearing workers and the claim that deaf people should be manual and auxiliary workers regardless of qualification level and productivity level. Differences in the

answers of the respondents were noticed on the claims related to the improvement inability of deaf workers, in low paid simple occupations deaf workers are more likely to be employed than hearing workers, deaf people's limited working ability is the cause of their unemployment, productivity of deaf workers, exploitation of deaf workers by the employer. The claims - deaf people should be given social and financial assistance even when employed, in the production chain where the deaf people work, there must always be a hearing control person - did not discern any differences and disagreements in the respondents' answers.

Table 1. Respondents' answers on offered claims

Claims	Hearing workers %			Deaf workers %		
	A	H	DA	A	H	DA
Responsible company services send hearing workers for additional training, but do not send deaf workers	35.8	25	39.2	55.9	11.8	32.3
In low paid simple occupations Deaf workers are more likely to be employed than hearing workers	33.3	22,5	44.2	68.5	10.2	21.3
Each hearing worker is more likely to perform more entrusted tasks than a deaf worker	16.7	7,5	75.8	20.5	14.2	65.4
Deaf people's limited working ability is the cause of their unemployment	47.5	17,5	35	43.3	9.4	47.2
Deaf workers may be as productive as hearing workers, but their productivity is not so important	46.7	18,3	35	30.7	3.9	65.4
I have nothing against deaf workers at work, nevertheless I do not think they are particularly worthy workers	13.3	10	76.7	25.2	1.2	64.6
Deaf people should only work in workplaces where there is no need for communication	10.8	15,8	73.3	12.6	5.5	81.9
Deaf people should be given social and financial assistance even when employed	43.3	20.8	35.8	48.8	5.5	45.7
Deaf people in the work environment are exploited by employers to the maximum level	15	15.8	69.2	72.4	7.9	19.7
In the production chain where the deaf people work, there must always be a hearing control person	59.2	15.8	25	55.1	11	33.9
Deaf workers always prefer to be on sick-leave than hearing workers	3.3	11.7	85	12.6	10.2	77.2
It is best for deaf people to be auxiliary workers regardless of qualification level and productivity level	5	10	85	9.4	5.5	85
Deaf people should perform the tasks of a manual worker without mental strain and hearing perception of the environment	8.3	4.2	87.5	4.7	9.4	85.8

Legend: A-I agree, H-I am hesitant, DA-I do not agree

Within the descriptive statistical analysis, central tendency measures, dispersion measures, and tabular data presentation were calculated. The t-test of the difference of arithmetic means on the results of the respondents' answers on the offered claims was calculated. Table 2 gives an overview of the basic statistical parameters: arithmetic means, standard deviations, variance, and t-

test results. The results of the t-test indicate that there is a statistically significant difference defined at the 0.01 level of significance, expressed through claims relating to the employment of deaf workers in low-paying jobs, malpractice of hearing impairment by deaf workers, irrelevant productivity of deaf workers, and exploitation of deaf workers by employers.

Table 2. Description of basic statistical parameters and t-Test

On.	Claims	AM	SD	VAR	t - Test
1	Responsible company services send hearing workers for additional training, but do not send deaf workers	1.89	.90	.81	-2.38
2	In low paid simple occupations Deaf workers are more likely to be employed than hearing workers	1.81	.90	.80	-5.36
3	Each hearing worker is more likely to perform more entrusted tasks than a deaf worker	2.52	.79	.62	-1.42
4	Deaf people's limited working ability is the cause of their unemployment	1.96	.93	.87	1.39
5	Deaf workers may be as productive as hearing workers, but their productivity is not so important	2.12	.93	.88	4.00
6	I have nothing against deaf workers at work, nevertheless I do not think they are particularly worthy workers	2.51	.80	.64	-2.37
7	Deaf people should only work in workplaces where there is no need for communication	2.66	.68	.46	.79
8	Deaf people should be given social and financial assistance even when employed	1.95	.93	.87	.37
9	Deaf people in the work environment are exploited by employers to the maximum level	1.99	.94	.87	-10.83
10	In the production chain where the deaf people work, there must always be a hearing control person	1.72	.89	.79	1.14
11	Deaf workers always prefer to be on sick-leave than hearing workers	2.73	.60	.36	-2.25
12	It is best for deaf people to be auxiliary workers regardless of qualification level and productivity level	2.78	.56	.32	-.61
13	Deaf people should perform the tasks of a manual worker without mental strain and hearing perception of the environment	2.80	.54	.29	.28

Discriminant analysis was used to further process the data. Testing was performed with Wilks' Lambda, and tested significance in discriminant analysis was done by F test. Table 3 shows the statistical significance of Wilks's Lambda, where it is observed that the sub-samples of respondents statistically differ significantly in their views

on the claims: „In low paid simple occupations Deaf workers are more likely to be employed than hearing workers“, „Deaf workers may be as productive as hearing workers, but their productivity is not so important“ and „Deaf people in the work environment are exploited by employers to the maximum level“.

Table 3. Linear discriminant analysis in manifest space

Claims	Wilks' Lambda	F	p
Responsible company services send hearing workers for additional training, but do not send deaf workers	.978	5.639	.018
In low paid simple occupations Deaf workers are more likely to be employed than hearing workers	.895	28.767	.000
Each hearing worker is more likely to perform more entrusted tasks than a deaf worker	.992	2.024	.156
Deaf people's limited working ability is the cause of their unemployment	.992	1.927	.166
Deaf workers may be as productive as hearing workers, but their productivity is not so important	.939	15.962	.000
I have nothing against deaf workers at work, nevertheless I do not think they are particularly worthy workers	.978	5.630	.018
Deaf people should only work in workplaces where there is no need for communication	.997	.616	.433
Deaf people should be given social and financial assistance even when employed	.999	.134	.715
Deaf people in the work environment are exploited by employers to the maximum level	.676	117.209	.000
In the production chain where the deaf people work, there must always be a hearing control person	.995	1.296	.256
Deaf workers always prefer to be on sick-leave than hearing workers	.980	5.079	.025
It is best for deaf people to be auxiliary workers regardless of qualification level and productivity level	.998	.374	.542
Deaf people should perform the tasks of a manual worker without mental strain and hearing perception of the environment	1.000	.079	.778

The linear correlation coefficient on the measuring space of deaf and hearing workers is 0.643. Wilks' Lambda was

tested by the χ^2 test, with a degree of freedom (df 13), with statistical significance at $p = 0.00$.

Table 4. Correlation coefficient and statistical significance of the isolated discriminant function

Coefficient	% Variants	Cumulative %	Linear correlation	Wilks' Lambda	χ^2	df	p
.706 ^a	100.0	100.0	.643	.586	127.446	13	.000

The results obtained by discriminant analysis provide insight into the structure of causal relationships in the measurement space used. By looking at the content of isolated discriminant factors, it can be stated that the greatest discrimination of the respondents' answers was noticed on the claims: „Deaf people in the work environment are exploited by employers to the maximum level“, „In low paid simple occupations Deaf workers are more likely to be employed than hearing workers“ and „Deaf workers may be as productive as hearing workers, but their productivity is not so important“.

Information obtained on isolated claims „Deaf people in the work environment are exploited by employers to the maximum level“ and „In low paid simple occupations Deaf workers are more likely to be employed than hearing workers“ are closely related and have a causal relation. Responses from deaf respondents (72.4% of them) indicate that employers are exploiting them and that they are given a volume of jobs, which is not in line with the remuneration and qualification, in relation to their hearing co-workers, and this is due to the fact that 71.4% of respondents believe that deaf workers usually do low-paying jobs. The findings are in line with research by Hasanbegovic and Kovacevic (2018), who state that deaf workers express views on unequal workplace positions with their hearing colleagues, and that managers and hearing workers do not have a realistic picture of deaf workers. Ozdowski (2004) states that although deaf people have good knowledge and sufficient qualification to perform certain jobs, they most often do not get the job they are qualified for, while Schroedel and Geyer (2000) state that 13-15% of deaf workers covered by their research have higher level of education compared to the jobs they perform. Although there are deaf people in the labor market who have achieved success in various fields and occupations, there is still a trend of lower employment rates today, and as Punch (2016) states, paid work is around 20% lower in relation to the hearing population. The study by Svinndal et al. (2018) shows that employed deaf people use a variety of strategies to maintain work performance, which include workplace accom-

modation and self-advocacy requirements, but these strategies are limited to individual activities depending on the ability of deaf workers. The same authors state that, although a positive attitude of employers towards deaf workers has been observed, their efforts and commitment to improving conditions and adjusting jobs for deaf people are not evident, and such attitudes argue for difficulties in communication, more time needed for clarification of jobs and increased fatigue in deaf workers caused by communication efforts. The reason for this condition can be found in the research by Haynes and Linden (2012), who cite the lack of support from co-workers and their unwillingness to adapt to the needs of workers with hearing impairments as the most common difficulty in the workplace, and Kramer et al. (2006) state that the use of sick-leave is five times more frequent in the deaf than in the hearing workers, caused by fatigue, psychological- and physical straining at work. Punch et al. (2007), as specific examples, cite negative attitudes and inability to promote in the workplace regardless of the labor capacity of deaf workers, as well as a lack of tolerance when it comes to communication difficulties, which is reflected in a lack of will to repeat content that is not understood by deaf persons.

A condition for successful and efficient completion of work tasks is an understanding of instructions and orders, as well as speed in the performance of tasks. Extra time is usually not available to deaf workers, and they are assigned simple jobs, usually below the labor skills they have.

When it comes to the claim „Deaf workers may be as productive as hearing workers, but their productivity is not so important“, 46.7% of hearing respondents believe that the productivity of deaf colleagues is not important, which is a clear example of the unequal position and specific environment in which deaf people work. The highest percentage of deaf workers (65.4%) value their work as productive, which is in line with the research of Kramer et al. (2006) who conducted a study on the work performance of deaf workers on a sample of 151 hearing impaired workers and 60 hearing workers, equal in gender, age, educational level, and the type of work they perform.

The results indicated that there were no differences in productivity and effectiveness between the two groups of respondents. Opinions expressed about the limited working ability of deaf workers indicate the presence of negative attitudes towards this population, regardless that those are respondents who have had experience working with deaf workers and expressed satisfaction with their capabilities and productivity. Such attitudes are confirmed by Lussier, Say and Corman (2000) and Punch, Hyde and Power (2007), in which studies most respondents stated that they experienced discrimination in the workplace and felt that they were being treated differently from their hearing co-workers, with hearing impairment at the forefront.

CONCLUSION

Based on the research conducted and the results obtained, it can be seen that hearing impairment and the subjective attitudes of hearing colleagues have the greatest impact on the assessment of the labor capacity of deaf workers, with the primary focus being on hearing impairment and not on the sole labor capacity of deaf workers. The results of the study showed that there are statistically significant differences in attitudes between deaf and hearing workers, regarding claims related to the exploitation of deaf workers, employment in low-paid simple occupations, and successful but insignificant productivity of deaf workers. Although it is a working-age and intellectually healthy population, the erroneous assumptions based on their deafness indicate that at a set statistical significance of 0.01, there are differences in the assessment of the labor capacity of deaf workers in a hearing-based work environment, expressed through employment in low-paying jobs, which are most often incompatible with deaf workers qualification; exploitation of deaf workers by employers and unequal workplace placement when it comes to assessing the productivity of deaf workers. The systematic scientific analysis of the professions they can pursue, which would ultimately aim to promote the potential and labor capacity of deaf workers, would greatly contribute to improving the position of the deaf worker population.

REFERENCES

- Appelman, K. I., Callahan, J. O., Mayer, M. H., Luetke, B. S., & Stryker, D. S. (2012). Education, employment, and independent living of young adults who are deaf and hard of hearing. *American Annals of the Deaf*, 157(3), 264-275. doi: 10.1353/aad.2012.1619
- Bess, F. H., & Hornsby, B. W. Y. (2014). Commentary: Listening can be exhausting—fatigue in children and adults with hearing loss. *Ear and Hearing*, 35(6), 592-599. doi:10.1097/aud.0000000000000099
- Boutin, D. L. (2010). Occupational outcomes for vocational rehabilitation consumers with hearing impairments. *Journal of Rehabilitation*, 76(3), 40-46.
- Boutin, D. L., & Wilson, K. B. (2009). Professional jobs and hearing loss: A comparison of deaf and hard of hearing consumers. *Journal of Rehabilitation*, 75(1), 36-40.
- Bowe, F. G., McMahon, B. T., Chang, T., & Louvi, I. (2005). Workplace discrimination, deafness and hearing impairment: The national EEOC ADA research project. *Work*, 25, 19-25.
- Bradley, C. F., Ebener, D. J., & Geyer, P. D. (2013). Contributors to successful VR outcomes among non-Latino (Caucasian) and Latino consumers with hearing loss. *Journal of Rehabilitation*, 79(2), 24-33.
- Buyts, N. J., & Rennie, J. (2001). Developing relationships between vocational rehabilitation agencies and employers. *Rehabilitation Counseling Bulletin*, 44(2), 95-103.
- Connelly, L.B. (2012). *Labour force activities, barriers and enablers for people with a hearing loss: The Workforce Barriers and Incentives Study*. Australian Centre for Economic Research on Health.
- Coniavitis Gellerstedt, L. C., & Danermark, B. (2004). Hearing impairment, working life conditions, and gender. *Scandinavian Journal of Disability Research*, 6(3), 225-245. doi:10.1080/15017410409512654
- Danek, M. i Busby, H. (1999). *Transition planning and programming: Empowerment through partnership*. Washington, DC: Gallaudet University, Laurent Clerc National Deaf Education Center.
- Danermark, B. i Gellerstedt, C. L. (2004). Psychosocial work environment, hearing impairment and health. *International Journal of Audiology*, 43 (7). Doi: /10.1080/14992020400050049
- DeCaro, J. J., Mudgett-DeCaro, P. A. i Dowaliby, F. J. (2001). Attitudes toward occupations for deaf youth in Sweden. *American Annals of the Deaf*, 146(1), 51. doi: 10.1353/aad.2012.0110
- Fouad, N. A., & Bynner, J. (2008). Work transitions. *American Psychologist*, 63(4), 241-251. doi: 10.1037/0003-066X.63.4.241.
- Granberg, S., Pronk, M., Swanepoel, D. W., Kramer, S. E., Hagsten, H., Hjalldahl, J., et al. (2014). The ICF Core Sets for Hearing Loss. Project: Functioning and disability from the patient perspective. *International Journal of Audiology*, 53(11), 777-786. doi:10.3109/14992027.2014.938370
- Hasanbegović, H., Beha, A., Mahmutović, E.H. (2013). Differences of subjective evaluation of professional orientation between educators and deaf people. *Cahiers Des Sciences Naturelles*, 22(5)
- Hasanbegović, H. (2016). *Skala procjene za utvrđivanje diskriminacijskih determinanti u radnom okruženju*. Dostupno na: <http://human.ba/hasanbegovic/stvaranje/MI%20diskriminacija/Radni%20status.pdf>
- Hasanbegovic, H., & Kovacevic, J. (2018). The Impact of Communication Disorders on Discrimination against Deaf Workers. *Disability, CBR & Inclusive Development*, 29(4). doi: 10.5463/DCID.v29i4.781

- Haynes, S., & Linden, M. (2012). Workplace accommodations and unmet needs specific to individuals who are deaf or hard of hearing. *Disability and Rehabilitation: Assistive Technology*, 7(5), 408–415. doi: /10.3109/17483107.2012.665977
- Hornsby, B. W. Y. (2013). The effects of hearing aid use on listening effort and mental fatigue associated with sustained speech-processing demands. *Ear and Hearing*, 34(5), 523–534. doi:10.1097/AUD.0b013e31828003d8
- Kieselbach, T. (2003). Long-term unemployment among young people: The risk of social exclusion. *American Journal of Community Psychology*, 32(1-2). doi:10.1023/A:1025694823396
- Kramer, S.E., Kapteyn, T.S. i Houtgast, T. (2006). Comparing normally hearing and hearing impaired employees using the Amsterdam Checklist for Hearing and Work. *International Journal Audiology*. 145: 503-512. doi: 10.1080/14992020600754583
- Lussier, R. N., Say, K., & Corman, J. (2000). Need satisfaction of deaf and hearing employees. *The Mid-Atlantic Journal of Business*, 36(1), 47–61.
- Nachtegaal, J., Kuik, D. J., Anema, J. R., Goverts, S. T., Festen, J. M., & Kramer, S. E. (2009). Hearing status, need for recovery after work, and psychosocial work characteristics: Results from an Internet-based national survey on hearing. *International Journal of Audiology*, 48(10), 684–691. doi:10.1080/14992020902962421
- Ozdowski, S. (2004). *Possible public inquiry on employment and disability*. Australian Association of the deaf Inc.
- Punch, R., Hyde, M., & Power, D. (2007). Career and Workplace Experiences of Australian University Graduates Who Are Deaf or Hard of Hearing. *Journal of Deaf Studies and Deaf Education*, 12(4), 504–17. doi:10.1093/deafed/enm011
- Punch, R. (2016). Employment and Adults Who Are Deaf or Hard of Hearing: Current Status and Experiences of Barriers, Accommodations, and Stress in the Workplace. *American Annals of the Deaf*, 161 (3). doi:10.1353/aad.2016.0028
- Rosengreen, K. M., Saladin, S. P. i Hansmann, S. (2009). Differences in workplace behavior expectations between deaf workers and hearing employers. *Journal for Professionals Networking for Excellence in Service Delivery with Individuals who are Deaf and Hard of Hearing*, 42(3), 130–151.
- Savickas, M. (2012). Life design: A paradigm for career intervention in the 21st century. *Journal of Counseling and Development*, 90, 13–19.
- Scherich, D. L., & Mowry, R. L. (1997). Accommodations in the workplace for people who are hard of hearing: Perceptions of employees. *Journal of the American Deafness and Rehabilitation Association*, 31(1), 31-43.
- Schoffstall, S., Cawthon, S., Tarantolo-Leppo, R., & Wendel, E. (2015). Developing consumer and system-level readiness for effective selfadvocacy: Perspectives from vocational rehabilitation counselors working with deaf and hard of hearing individuals in postsecondary settings. *Journal of Developmental and Physical Disabilities*, 27(4), 533–555. doi:10.1007/s10882-015-9435-3
- Schroedel, J.G. i Geyer, P.D. (2000). Long-term career attainments of deaf and hard of hearing college graduates: Results from a 15-year follow-up survey. *American Annals of the Deaf*, 145(4), 303-314. doi: 10.1353/aad.2012.0099
- Smith, J. A. (2011). Embracing the elephant in the room: Interviewing ideas for applicants who are deaf or hard of hearing. *Journal of the American Deafness and Rehabilitation Association*, 44(2), 67-81.
- Stauffer, L., & Boone, S.E. (2007). *Survey of state staffing patterns, issues, CSPD, and related outcomes for consumers who are deaf, deaf-blind, hard of hearing and late deafened*. Retrieved from <http://www.rehabnetwork.org/committees/07/January2007CSAVRTechnical-Report-2.pdf>:CSAVR.
- Svinndal E.V., Solheim, J., Rise, M.B., Jensena, C. (2018). Hearing loss and work participation: a cross-sectional study in Norway. *International Journal of Audiology*, 57 (9). doi:10.1080/14992027.2018.1464216 57:1–11.

INTERESTS OF DEAF AND HARD-OF-HEARING STUDENTS FOR SPORTS

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Original scientific paper

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Received: 2019/7/8

Accepted: 2019/9/9

ABSTRACT

Slow speech-language development and reduced communication skills can affect weaker experiences in different activities. The aim of the research was to determine interests and aspirations for sports of deaf and hard-of-hearing students. The sample consisted of 94 examinees, divided into two groups. The first group consisted of 47 deaf and hard-of-hearing students, and the second, control group, the same number of their hearing peers, both sexes, average age of 16 ± 1.27 years. The test used for research was Test for Interests and Aspirations of Students of 20 Assertions - Indicators of attitudes about participation and opportunities provided by eight different activities, of which sport is one of them. The obtained data were processed with descriptive analysis, and the differences between the groups tested with the t-test. Deaf and hard-of-hearing students recognize the importance of dealing with sports, but feel that they do not participate enough. The examinees without hearing impairments pleaded more favorably about participation in sport activities than examinees with hearing impairment, and the statistically significant difference was established. Statistically significant difference was not determined in the case of pleading about the possibilities provided by sport. Deaf and hard-of-hearing students believe that sport can have significant impact on better socialization, wherefore it is necessary to include these persons in sport activities at an early age.

Keywords: deaf, hard-of-hearing, sport

INTRODUCTION

Hearing impairment as a form of sensory impairment can cause various negative consequences for the development of the child. The consequences are more severe if the damage occurred in the period before the formation of speech and language, which can result in deviations in the communication, emotional, cognitive and social development of the child.

People who suffer from hearing loss have limited capabilities to interact with their surroundings and have

communication problems with friends and family (Becker, Flower, Glass, & Newcomer, 1984; see Olajosun & Ogundiran, 2013). Perceptual hearing impairments have a major impact on the development of a personality that is primarily reflected in the adoption of language and speech, but there are many other problems, such as the problem of communicating with the environment, which leaves a significant influence on the emotional and social empowerment of people with hearing impairment (Hasanbegović & Sinanović, 2008).

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Severe hearing impairments cause major communication problems and cause more severe consequences in the development of cognitive functions, social and emotional functioning of deaf people. Unlike them, minor hearing damage does not cause major problems in cognitive functioning, and the consequences are more pronounced on a socially emotional plan (Radoman, 2003).

Difficulties with both educational and psycho-social progress, along with problems with speech understanding may also occur with those children who suffer from mild or unilateral permanent hearing loss (Bess et al., 1988; Culbertson & Gilbert 1996; see Shemesh, 2010).

Psychosocial health is another important thing related to the subject of hearing impairment. Deafness in childhood causes problems with social and psycho-intellectual development because of the children's inability to fully interact with their environment (Davidson, Hyde, & Alberti 1989; see Rajendran, Roy, & Jeevanantham, 2012). Those who suffer from hearing loss have limited social development due to the social and cultural factors that differ between the hearing and deaf children (Riungu, 2002; Martin & Bat-Chava, 2003, see Zipporah, 2016). Because of the differences in social spheres, deaf children often have the feeling of loneliness and alienation from the society (Martin & Bat-Chava, 2003; Riungu, 2002; Scheetz, 2004; see Zipporah, 2016).

Reports claim that people who suffer from hearing loss refrain from taking part in social activities, have poorer social relations and more frequent mood disorders, which leads to an increase in psychological stress (Hogan, 2009; see Rajendran et al., 2012).

The importance the use of certain sports activities has an impact on cognitive abilities, increased attention, self-confidence, concentration, development of values, attitudes and habits, independence and socialization.

„Sport can bring deaf people together in a setting where they are not isolated by communication barriers or seen as being different or abnormal because of an inability to hear. By providing deaf people with a means by which their social and psychological needs are fulfilled – in a way which is absent from their daily lives amongst a hearing majority who do not fully understand them, or with whom communication is at best limited – deaf sport can provide the emotional rewards that Holt contends derive from participation in sport“ (Atherton, Turner, & Russell, 2001, p. 31).

Sport can be considered a means for interaction and understanding for a Deaf participant, it gives Deaf people a social identification that cannot be achieved through other ways of socio-cultural practises (Arsic, et al., 2012; see Johnson, 2014).

Stewart (1991; see Arsic, Stankovic, & Zrnzevic, 2015) defines the sport among deaf in three dimensions and spheres: the social, psychological and educational. The socialization of the deaf and their inclusion in the community represents the most important goal for each deaf individual. Stewart further cites that “...the nature of sport among the deaf population is to promote the interaction between the deaf individuals”.

Children with hearing impairment may be less involved in sports due to deferred communication skills and emphasis on hearing and speech rehabilitation exercises.

Because of the equal playing field where both hearing and deaf people can cooperate, sport is considered as a convenient channel for socialization of deaf people. Since the communication is not a significant barrier, deaf people do not experience threatening atmosphere and can have meaningful social interactions (Stewart, 1991; see Dummer, Haubenstricker, & Stewart, 1996). For many Deaf individuals, participation in a specific Deaf sport or joining a sports club is a major means of socialization (Stewart & Ellis, 2005; see Johnson, 2014).

„Problems of low self-esteem, inadequate education and job opportunities, discrimination and negative perception, and an inability to have effective communication with the hearing majority are all difficulties that can be put aside whilst involved in deaf sport“ (Atherton, Turner, & Russell, 2001, p. 31).

When people who suffer from hearing impairment participate in sports, usually it is an excellent opportunity for the eventual development of a healthier lifestyle. It is the task of the society to include people with hearing impairment in various recreation and sport activities (Stewart & Ellis 2005; see Karademir, 2015).

„Sport among the deaf population also encourages psychological health in such a way that they identify themselves based on group membership and thus gain access into systems of social support. In addition, sport among the deaf population also has an educational component and a value which manifests in the fact that deaf individuals together learn through sports activities and work towards a goal in communion“ (Arsic, Stankovic, & Zrnzevic, 2015, p. 43). When parents and school promote children's participation in sporting activities, it positively influences their physical development, which is very important during school years because it help children develop on physical, social and psychological levels (Brown & Brown, 1996; Malina & Bouchard, 1991; see Ellis, 2001).

The aim of the research was to determine interests and aspirations for sports of deaf and hard-of-hearing students.

METHODS

Sample respondents

The sample consisted of 94 respondents, divided into two groups. The first group consisted of 47 deaf and hard-of-hearing students (30 deaf and 17 hard-of-hearing students), attending special educational institutions, and the other, the controlling group, consisted of that much of their peers from regular schools, both genders, average age of 16 ± 1.27 years.

Measuring instrument

In this research *Test for examining interests and aspirations of students* (IF, Suzic, 2003) was conducted. Test estimates students' perception of interests and aspirations for activities: studying, sports, music, TV, entertainment, reading – writing, love and dating and social work. In this study, attitudes to the activity of variable sport were assessed. Test is comprised of 20 statements – attitudes indicators, where ten statements relate to involvement in aforementioned activity and the other ten relate to perceived possibilities and opportunities that would be the consequence of this activity. Respondents had 6 offered responses: 0 = I do

not know, 1 = never, 2 = sometimes, partly, 3 = often, 4 = mostly and 5 = always. Results of the questionnaire were summed and total value was acquired as statistical array for processing and interpretation of the results. Results could range from 0 to 50 points. After summing, the total points were divided into 10 classes for data processing.

Data analysis

The data were processed in the SPSS for Windows program. Descriptive analysis was conducted, frequencies and percentages were calculated, and differences between the groups were tested with the t-test.

RESULTS AND DISCUSSION

Distribution of frequencies and percentages of responses show that deaf and hard-of-hearing students for the individual claims related to involvement in sport, most often chose the answer "always". However, this percentage of responses ranged from only 21.3% to 44.7%. Respondents responded more favorably to claims related to the opportunities provided by sports, so the percentage of responses "always" ranged from 40.4% to 66.0%.

Table 1. Distribution of the responses on involvement in sports and the opportunities provided by sports – deaf and hard-of-hearing students

	I do not know	Never	Sometimes	Frequently	Mostly	Always
Involvement in sports	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
1. I spend my time playing sports.	2(2.2)	7(14.9)	12(25.5)	6(12.8)	10(21.3)	10(21.3)
2. I am active in sports.	3(6.4)	7(14.9)	12(25.5)	3(6.4)	11(23.4)	11(23.4)
3. I achieve a lot in sports.	2(4.3)	11(23.4)	11(23.4)	5(10.6)	8(17.0)	10(21.3)
4. Whenever I can do it, I play sports.	2(4.3)	10(21.3)	10(21.3)	6(12.8)	6(12.8)	13(27.7)
5. I like to talk about sports.	4(8.5)	8(17.0)	10(21.3)	6(12.8)	5(10.6)	14(29.8)
6. It's important for me to be good at sports.	2(4.3)	7(14.9)	11(23.4)	7(14.9)	4(8.5)	16(34.0)
7. I appreciate people who are successful in sports.	0(0)	8(17.0)	(8.5)	6(12.8)	7(14.9)	22(46.8)
8. I'm satisfied when doing sports.	1(2.1)	8(17.0)	4(8.5)	8(17.0)	6(12.8)	20(42.6)
9. I would like to have time for sports.	2(4.3)	8(17.0)	3(6.4)	7(14.9)	8(17.0)	19(40.4)
10. I'm happy when I'm dealing with something that relates to sports.	3(6.4)	7(14.9)	3(6.4)	7(14.9)	6(12.8)	21(44.7)
Opportunities provided by sports	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
11. To show your skills	1(2.1)	4(8.5)	7(14.9)	5(10.6)	9(19.1)	21(44.7)
12. To progress	1(2.1)	7(14.9)	4(8.5)	4(8.5)	7(14.9)	24(51.1)
13. To act independently	2(4.3)	6(12.8)	3(6.4)	6(12.8)	7(14.9)	23(48.9)
14. To achieve a high standard of living	1(2.1)	8(17.0)	4(8.5)	4(8.5)	6(12.8)	24(51.1)
15. You live your own way	2(4.3)	5(10.6)	5(10.6)	1(2.1)	8(17.0)	25(55.3)
16. To develop yourself as a person	3(6.4)	5(10.6)	5(10.6)	3(6.4)	6(12.8)	25(53.2)
17. To be physically active	2(4.3)	4(8.5)	2(4.3)	4(8.5)	4(8.5)	31(66.0)
18. For people to appreciate and respect you	2(4.3)	2(4.3)	4(8.5)	4(8.5)	8(17.0)	27(57.4)
19. To be together with other people	3(6.4)	3(6.4)	2(4.3)	7(14.9)	6(12.8)	26(55.3)
20. To participate equally in decision making	2(4.3)	6(12.8)	2(4.3)	8(17.0)	10(21.3)	19(40.4)

Distribution of frequencies and the percentage of responses show more favorable answers of the hearing students in relation to the answers of the deaf and hard-of-hearing students about their involvement in sports and the opportunities that it provides. For claims related to involvement

in sports, hearing students were also most likely to opt for the "always" response, but this percentage of responses ranged from 29.3% to 66.0%. For the claims related to the opportunities provided by sports percentage of responses "always" ranged from 46.8% to 59.6% (Table 2).

Table 2. Distribution of the responses on involvement in sports and the opportunities provided by sports – hearing students

	I do not know	Never	Sometimes	Frequently	Mostly	Always
Involvement in sports	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
1. I spend my time playing sports.	0(.0)	8(17.0)	6(12.8)	7(14.9)	12(25.5)	14(29.8)
2. I am active in sports.	0(.0)	8(17.0)	6(12.8)	9(19.1)	8(17.0)	16(34.0)
3. I achieve a lot in sports.	0(.0)	7(14.9)	7(14.9)	7(14.9)	9(19.1)	17(36.2)
4. Whenever I can do it, I play sports.	0(.0)	7(14.9)	3(6.4)	6(12.8)	14(29.8)	17(36.2)
5. I like to talk about sports.	0(.0)	6(12.8)	5(10.6)	5(10.6)	9(19.1)	22(46.8)
6. It's important for me to be good at sports.	1(2.1)	5(10.6)	4(8.5)	7(14.9)	6(12.8)	24(51.1)
7. I appreciate people who are successful in sports.	0(.0)	2(4.3)	4(8.5)	3(6.4)	3(6.4)	35(74.5)
8. I'm satisfied when doing sports.	0(.0)	3(6.4)	4(8.5)	5(10.6)	9(19.1)	26(55.3)
9. I would like to have time for sports.	1(2.1)	4(8.5)	4(8.5)	0(.0)	7(14.9)	31(66.0)
10. I'm happy when I'm dealing with something that relates to sports.	1(2.1)	2(4.3)	4(8.5)	5(10.6)	9(19.1)	26(55.3)
Opportunities provided by sports	f (%)	f (%)	f (%)	f (%)	f (%)	f (%)
11. To show your skills	1(2.1)	4(8.5)	2(4.3)	7(14.9)	10(21.3)	22(46.8)
12. To progress	1(2.1)	2(4.3)	3(6.4)	14(29.8)	9(19.1)	25(53.2)
13. To act independently	2(4.3)	2(4.3)	2(4.3)	7(14.9)	11(23.4)	23(48.9)
14. To achieve a high standard of living	2(4.3)	3(6.4)	6(12.8)	4(8.5)	7(14.9)	25(53.2)
15. You live your own way	2(4.3)	2(4.3)	4(8.5)	6(12.8)	6(12.8)	27(57.4)
16. To develop yourself as a person	1(2.1)	3(6.4)	4(8.5)	4(8.5)	9(19.1)	26(55.3)
17. To be physically active	1(2.1)	2(4.3)	6(12.8)	4(8.5)	5(10.6)	29(61.7)
18. For people to appreciate and respect you	1(2.1)	5(10.6)	4(8.5)	1(2.1)	8(17.0)	28(59.6)
19. To be together with other people	1(2.1)	4(8.5)	6(12.8)	4(8.5)	5(10.6)	27(57.4)
20. To participate equally in decision making	1(2.1)	2(4.3)	5(10.6)	7(14.9)	7(14.9)	25(53.2)

After summing the answers and comparing the results, it can be noticed that within the involvement in Sport, 46.8% of the deaf and hard-of-hearing students had a total of 36 to 50 points, that is, the claims were largely opposed by the answers "mostly" and "always" while the percentage of hearing students was significantly higher, i.e. 66%. For the opportunities provided by sports, both groups expressed themselves similarly, so that 72.5% of

deaf and hard-of-hearing students and 70.2% of those who can hear had 36 to 50 points.

The t-test also found a statistically significant difference in attitudes among the deaf / hard-of-hearing and hearing students when it comes to involvement in sports ($t = -2.47$; $p = .02$), while there were no statistically significant differences among the groups on the opportunities provided by sports ($t = -.68$; $p = .50$) (Table 3).

Table 3. A comparative overview of the respondents' responses to involvement in sports and the opportunities provided by sports

Points	Involvement				Opportunities			
	Deaf/hard-of-hearing students		Hearing students		Deaf/hard-of-hearing students		Hearing students	
	f	%	f	%	f	%	f	%
≤ 5	0	.0	0	.0	0	.0	1	2.1
6–10	5	10.6	1	2.1	4	8.5	1	2.1
11–15	2	4.2	1	2.1	1	2.1	1	2.1
16–20	6	12.7	3	6.3	4	8.5	1	2.1
21–25	7	15.0	1	2.1	1	2.1	2	4.3
26–30	1	2.1	6	12.7	2	4.2	1	2.1
31–35	4	8.5	4	8.5	1	2.1	7	15.0
36–40	7	14.9	6	12.7	8	17.1	7	15.0
41–45	2	4.2	11	23.5	7	15.0	5	10.6
46–50	13	27.7	14	29.8	19	40.4	21	44.6
Total	47	100.0	47	100.0	47	100.0	47	100.0
<i>M (Deaf) = 31.66</i>				<i>M (Deaf) = 37.83</i>				
<i>M (Hearing) = 38.13</i>				<i>M (Hearing) = 39.62</i>				
<i>t = -2.47; p = .02</i>				<i>t = -.68; p = .50</i>				

Through sport, disabled develop physically, mentally and socially. It is a crucial element for their successful integration with community, as many research studies have shown (Eichstaedt & Lavay 1992; see Karademir, 2015).

When considering the development of motor skills, children who are deaf have been found to fall behind their hearing peers. However, participation in sporting activities helps reduce that deficiency in motor skill development (Dummer et al., 1996; Hartman, Houwen, & Visscher, 2011; see Ellis, Lieberman, & Dummer, 2013).

New opportunities, fun, hanging out with their peers, improving their physical health and skills are all reasons why hearing impaired students participate in sporting activities, studies have shown (Andreff, 2001; see Zipporah, 2016).

According to research conducted at California University, Jambor and Elliott (2005; see Karademir, 2015), what helped strengthen deaf students' self-esteem was the acceptance of their disability and seeing themselves as a part of community.

Vuljanić (2015) conducted research on hearing impaired children in the Republic of Croatia on a sample of 272 students with no hearing impairments and 60 children with hearing impairment, aged 6 to 11, in order to determine how many children who are hearing impaired participate in sports, organized sports activities. She car-

ried out an analysis of the motor efficiency of children with respect to the factor of hearing impairment and participation in sports. The obtained results showed that children with hearing impairment, compared to hearing children, are significantly less involved in sports activities, which is in line with the results of our work.

The importance of the involvement and motivation of students with hearing impairment in sports activities is indicated by a study by Juras (1971) on a population of 120 deaf people, aged 20-35, which has come to the conclusion that most deaf athletes have very successfully integrated themselves into hearing working collective, they had more expressed positive personality traits, they were positively adapted to the social position without a pronounced tendency of isolation, egocentricity, distrust to the environment, affective reaction and aggression, which is especially important because often, in professional comments, the consequences of deafness are stated to be the consequences in the mental and social plan with negative tendency in the mentioned personality traits.

The study conducted by Mwangi (2009; see Zipporah, 2016) on application and effects of special instructional methods in physical education among hearing impaired children in special units in public elementary schools in Nairobi County, Kenya showed that the special instructional methods increased children's involvement in sports.

Mwangi advised the teachers to consider the fact that children with disabilities may refuse to participate in physical activities during the programme because they may believe that they will not be able to match with their peers.

Hartman, Houwen and Visscher (2011) conducted a study to examine motor performance in deaf elementary school children and its association with sports participation. The population studied included 42 deaf children whose hearing loss ranged from 80 to 120 dB. Their motor skills were assessed with the Movement Assessment Battery for Children, and a questionnaire was used to determine their active involvement in organized sports. The deaf children had significantly more borderline and definite motor problems than the normative sample: 62% (manual dexterity), 52% (ball skills), and 45% (balance skills). Participation in organized sports was reported by 43% of the children; these children showed better performance on ball skills and dynamic balance. This study demonstrates the importance of improving deaf children's motor skill performance, which might contribute positively to their sports participation.

Salman and Naz (2012; see Zipporah, 2016) conducted a study in eight special schools in Karachi in Pakistan Asia. In the study they examined what motivated the students who suffer from hearing impairment to engage in sporting activities. The basis for the study was hypothesis that engagement in sporting activities improves physical and social rehabilitation for disabled people and makes them more aware of their self-respect, skills, determination, and competency. Factors, from physical, psychological to economic, impacted on the determination of hearing impaired students to indulge in sporting activities. The highest rated factors were those which related to personal delights and competitive needs.

CONCLUSION

The results of the insufficient involvement of deaf and hard-of-hearing students in very important areas for their development and progress, such as sports, as well as the results of the opportunities provided by sports, should be an indicator that, in addition to other specific ways of working with this population (e.g., rehabilitation of listening and speaking), it is necessary to pay much more attention to these activities. Students point out the existence of interests and aspirations for sports, and active participation in sports can be a significant support to the development of ad-

equate communication and social skills and general development.

Also, it has been confirmed that there should not be environmental prejudice about the abilities of deaf and hard-of-hearing people, and they must not be reconciled with the fact that, due to hearing impairment, they are less physically active.

The role of teachers and family is very important in increasing involvement in almost all activities, and also in sport.

REFERENCES

- Atherton, M., Turner, G. H., & Russell, D. (2001). More than a match: The role of football in Britain's deaf community. *Soccer & Society*, 2(3), 22–43. doi:10.1080/714004857
- Arsic, R., Stankovic, V., & Zrnzevic, N. (2015). An analysis of the results achieved by deaf male and female athletes from around the world in certain athletes disciplines. *Research in Kinesiology*, 43(1), 42–46. Retrieved from http://fsprm.mk/wp-content/uploads/2015/05/Pages-from-RIK-1_2015_za-email-10.pdf
- Dummer, G. M., Haubenstricker, J. L., & Stewart, D. A. (1996). Motor skill performances of children who are deaf. *Adapted physical activity quarterly*, 13(4), 400–414. Retrieved from <https://pdfs.semanticscholar.org/e035/59543b689ef4a2ea43605c0471c7b9e044ca.pdf>
- Ellis, M. K. (2001). Influences of parents and school on sports participation and fitness levels of deaf children. *Palaestra*, 17(1), 44–49.
- Ellis, M. K., Lieberman, L. J., & Dummer, G. M. (2013). Parent influences on physical activity participation and physical fitness of deaf children. *Journal of deaf studies and deaf education*, 19(2), 270–281. doi: 10.1093/deafed/ent033.
- Hartman, E., Houwen, S., & Visscher, C. (2011). Motor skill performance and sports participation in deaf elementary school children. *Adapted Physical Activity Quarterly*, 28(2), 132–145. Retrieved from <https://pdfs.semanticscholar.org/4a44/4506890be4b3d4169fe00ed4667efd10c631.pdf>
- Hasanbegović, H., & Sinanović, O. (2008). Procjena određenih psiholoških karakteristika kod gluhih osoba [Estimate of certain psychic characteristics at tested deaf people]. *Acta Medica Saliniana*, 37 (2), 127–131.
- Johnson, L. (2014). *The barriers encountered by Deaf people within the sporting environment* (Doctoral dissertation, Cardiff Metropolitan University). Retrieved from https://repository.cardiffmet.ac.uk/bitstream/handle/10369/6138/JOHNSON_LLOYD_ST20005136.docx.pdf?sequence=1&isAllowed=n
- Juras, Z. (1971). Značenje fizičke kulture u procesu rehabilitacije osoba oštećena sluha s aspekta defektologa-surdologa [Significance of physical education in the process of rehabilitation of persons with disturbed hearing from the aspects of a defectologist – surdologist]. *Defektologija*, 7(2), 59–65.
- Karademir, T. (2015). Fear of negative evaluation of deaf athletes. *The Anthropologist*, 19(2), 517–523. doi: 10.1080/09720073.2015.11891686

- Olaosun, A. O., & Ogundiran, O. (2013). Assistive Technology For Hearing and Speech Disorders. *Journal of Biology, Agriculture and Healthcare*, 3(17), 116–120. Retrieved from <https://iiste.org/Journals/index.php/JBAH/article/view/8963/9133>
- Radoman, V. (2003). *Psihologija jezika i jezičkih poremećaja* [Psychology of Language and Language Disorders]. Belgrade: Faculty of Special Education.
- Rajendran, V., Roy, F. G., & Jeevanantham, D. (2012). Postural control, motor skills, and health-related quality of life in children with hearing impairment: a systematic review. *European Archives of Oto-Rhino-Laryngology*, 269(4), 1063–1071. doi: 10.1007/s00405-011-1815-4
- Shemesh, R. (2010). Hearing impairment: Definitions, assessment and Management, in Stone J. H., & Blouin, M. (eds.), *International Encyclopedia of Rehabilitation*. Retrieved from <http://cirrie.buffalo.edu/encyclopedia/en/article/272/>.
- Suzić, N. (2003). *Vaspitni rad u odjeljskoj zajednici* (drugo, dopunjeno izdanje) [Educational work within class meetings]. Banja Luka: TTC.
- Vuljanić, A. (2015). *Analiza sudjelovanja djece s oštećenjem sluha u sportu i vrednovanje motoričke efikasnosti djece s obzirom na oštećenje sluha i sudjelovanje u sportu* [An analysis of participation in sport in hearing impaired children and evaluation of motor efficiency in children with regard to the hearing impairment and participation in sport]. Doctoral dissertation, University of Zagreb, Faculty of Kinesiology. Retrieved from <https://repozitorij.kif.unizg.hr/islandora/object/kif:383/preview>.
- Zipporah, M. M. (2016). *Determinants of participation in sports among students with hearing impairment in secondary schools for the deaf in Kenya*. Doctoral dissertation, Kenyatta University. Retrieved from <http://ir-library.ku.ac.ke/bitstream/handle/123456789/17603/determinants%20of%20participation%20in%20sports%20among.....pdf?sequence=1>.



STATUS AND PERSPECTIVES OF WAR CRIMES PROCESSING IN BOSNIA AND HERZEGOVINA

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Original scientific paper

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Received: 2019/6/18

Accepted: 2019/9/5

ABSTRACT

Serious, systematic and massive violations of international humanitarian law were committed during the 1992-1995 armed conflict in the territory of Bosnia and Herzegovina. The criminal prosecution and prosecution of perpetrators of these violations of international humanitarian law falls within the jurisdiction of several courts of various levels, namely the ICTY, the courts in Bosnia and Herzegovina, as well as the courts of other countries, in accordance with the principle of universal jurisdiction. However, the fact that is justifiably worrying is that, even after 24 years since the end of the war, the work on prosecuting those responsible for violations of international humanitarian law in Bosnia and Herzegovina is nowhere near completion. This is a consequence of non-compliance with the guidelines of the National War Crimes Processing Strategy, implementation of various laws at the state and entity levels, as well as limited regional cooperation and dialogue. The results of the research show that the concerns and perceptions expressed by citizens, as well as by some domestic and international institutions regarding the effectiveness of prosecutors' offices in prosecuting war crimes cases are very justified. Such data call for action by all relevant individuals and institutions to undertake activities in their own domain in order to advance this process and bring it to the level it deserves, given the importance for the overall BiH society.

Key words: war crime, genocide, International Criminal Tribunal for the former Yugoslavia.

INTRODUCTION

General review of war crimes processing in BiH

During the 1992-1995 armed conflict on the territory of Bosnia and Herzegovina, serious, systematic and mass violations of international humanitarian law were committed, resulting in various serious violations of fundamental human rights and freedoms. Although the United

Nations Human Rights Council (UNHRC) (2008) has taken a stand that the international community has a priority to "recognize the right of victims of gross violations of human rights and serious violations of international humanitarian law, and their families and society as a whole, to know the truth regarding such violations, to the fullest extent practicable", the consequences of this conflict have not yet been determined with certainty.²

²On the consequences of violations of human rights and freedoms during the war in BiH (1992-1995). See more: Tabeau, E (2009) *Conflict in numbers: Casualties of the 1990s Wars in the former Yugoslavia (1991-1999)*, Helsinki Committee for Human Rights in Serbia, Belgrade and The Research and Documentation Center in Sarajevo (RDC) (2019) *Human Losses 1991-1995* (20 May 2019). Available from: http://www.idc.org.ba/index.php?option=com_content&view=section&id=35&Itemid=126&lang=bs, Kukić, S et al. (2019) *Sistem ranog upozoravanja specijalno izdanje – Pravda i istina u BiH iz perspektive javnosti* (15 april 2019). Available from: www.undp.ba/download.aspx?id=355 and Mahmutović, Dž (2011) *Ratni zločini u Bosni i Hercegovini - Kažnjavanje i reparacija – doctoral thesis*, University of Tuzla, Tuzla, pp. 13-20.

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It is justified to fear that the true scale of these crimes³ will never be known.

It is evident that, with brutality and scale, these crimes outweigh all crimes committed after World War II.

In response to the multiple and systemic crimes and violations of fundamental rights, a number of measures have been developed worldwide, including the prosecution of the perpetrators of these crimes. These measures, especially the prosecution of criminals, also play an important role in responding to crimes committed in BiH.

With the reform of the criminal legislation in 2003, BiH took significant measures, first and foremost, in the substantive and procedural standardization of the prosecution of war crimes committed. The Criminal Code enacted within this reform, in accordance with international standards, in Chapter 8 incriminates *Crimes against humanity and values protected by international law*.⁴

Chapter Eight of the Criminal Code of Bosnia and Herzegovina predicts criminal offences whose incrimination is rooted in international conventions and violations of war and humanitarian law, which protect humanity and other values protected by international law.

These are: Genocide (Article 171); Crimes against humanity (Article 172); War crimes against civilians (Article 173); War crime against the wounded and the sick (Article 174); War crimes against prisoners of war (Article 175); Organizing a group of people and instigating the perpetration of genocide, crimes against humanity and war crimes (Article 176); Unlawful killing or wounding of the enemy (Article 177); Marauding the killed and wounded at the battlefield (Article 178); Violating the Laws and Practices of Warfare (Article 179).⁵

War crimes processing has multiple goals: truth-finding, prevention of repetition (deterrence), punishment of perpetrators, reconciliation between perpetrators and victims, promotion of the rule of law, separation of individual from collective responsibility, etc (Thoms, Ron, & Paris, 2010). Considering the above and the importance of war crimes processes in BiH when it comes to building trust among people and preventing new conflicts, it can be concluded that the burden is on the criminal proceeding entities involved in processing war crimes.

Criminal prosecution and processing of war crimes committed in the territory of Bosnia and Herzegovina has been and is under the jurisdiction of several courts of different levels, namely: the International Criminal Tribunal for the former Yugoslavia (hereinafter: the ICTY), the courts in BiH, and the courts of other countries, in accordance with the principle of universal jurisdiction (Ivanišević, 2008).

³All these crimes are colloquially called war crimes. In criminal law literature, specifying content of the term war crime and its definition are most often based on distinction of war crimes in the narrow sense and war crimes in the broad sense. *War crimes in the narrow sense* include grave breaches of international humanitarian law committed during international or non-international armed conflict, which are defined as such in national law, as well as the Statute of the International Criminal Court and the Statute of the International Criminal Tribunal for the former Yugoslavia. The term *war crimes in the broad sense* means "core crimes", i.e. international crimes *stricto sensu*, for which the direct jurisdiction of international courts is intended, and it includes genocide, crimes against humanity, war crimes and aggression. See more: Vekarić, B (2016) *Specifičnosti tretmana ratnih zločina u međunarodnom i nacionalnom krivičnom pravu – doctoral thesis*, Beograd.

⁴*Criminal Code of Bosnia and Herzegovina*, Official Gazette of Bosnia and Herzegovina No. 3/2003, 32/2003 - ratified, 37/2003, 54/2004, 61/2004, 30/2005, 53/2006, 55/2006, 8/2010, 47/2014, 22/2015, 40/2015 and 35/2018.

⁵About the specific and common characteristics of these offenses see more: Tomic, Z (2003) *Krivično pravo II (posebni dio)*, Faculty of Law, Sarajevo, pp. 413-416, Đurđić, V and Jovašević, D (2003) *Međunarodno krivično pravo*, Nomos, Belgrade, pp. 74-76, Mrvić-Petrović, N (2008) *Krivično pravo – opšti i posebni dio (peto izdanje)*, Union University, Faculty of Law, Belgrade, pp. 338-340, Babić, M and Marković, I (2007) *Krivično pravo – posebni dio (drugo modifikovano izdanje)*, Faculty of Law, Banja Luka, pp. 354-356, Babić, M et al. (2005) *Komentari krivičnog/kaznenog zakona BiH*, CE/EC, Sarajevo, pp. 557-558; Mahmutović, Dž op.cit., pp. 43-71, Degan, VĐ, Pavišić, B and Beširević, V (2011) *Međunarodno i transnacionalno krivično pravo*, Union University, Faculty of Law, Belgrade, Official Gazette (2011) *Comments of the Criminal Code of the Socialist Federal Republic of Yugoslavia* (1978) Savremena administracija, Belgrade, Karović, S year 21st. (2012) *Kaznena djela protiv čovječnosti i međunarodnog prava Polic. sigur.*, Zagreb, No. 4, pp. 790-799, Marković, I (2010) *Zločin protiv čovječnosti u Krivičnom zakonu Bosne i Hercegovine*, Annual of the Faculty of Law of University of Banja Luka, Banja Luka, No. 31/32, Josipović, I (2007) *Ratni zločini – Priručnik za praćenje suđenja*, Center for peace, nonviolence and human rights, Osijek.

The inertia of domestic judicial authorities in responding to ongoing crimes has forced the international community to react. As early as May (25) 1993, UN Security Council adopted Resolution 827, establishing the ICTY, whose responsibility was to prosecute persons responsible for serious violations of international humanitarian law, under individual or command responsibility⁶, executed in the territory of the former Socialist Federal Republic of Yugoslavia (hereinafter: the SFRY), beginning in 1991 (Jovašević, 2004, p. 361).

According to the latest official data, 161 persons have been indicted for grave violations of international humanitarian law, and so far, 109 cases have been finalized, 90 of which have resulted in convictions and 18 have been found not guilty. In relation to the remaining number of accused, it is important to emphasize that in relation to 20 persons the indictment was withdrawn, while 17 accused died before or after transfer to the ICTY. Under the Rule *11bis*, 13 cases were referred to national courts, and before Mechanism for International Criminal Tribunals⁷, there is currently one appeal and one retrial⁸.

Of the lasting contributions made by the ICTY to international justice, it is certainly most important to emphasize the fact that this court has held all persons accountable, regardless of their position. The individualization of guilt is a great achievement in the work of this court, as it prevents entire communities from being called "collectively responsible".

⁶See more: Popović, D (2009) *Vodič kroz tranzicijsku pravdu u Bosni i Hercegovini*, UN Development program, Sarajevo.

⁷The Residual Mechanism was established by the Resolution 1966 (S/RES/1966), adopted by the Security Council at its 6463th session, on 22 December 2010. Available from: http://www.icty.org/x/file/About/Reports%20and%20Publications/ResidualMechanism/101222_sc_res1966_residualmechanism_bcs.pdf. UN Security Council Resolution No. 1966, states that "the functions and scope of the Mechanism will gradually diminish, with fewer employees having relatively reduced functions." The Security Council has decided that the remaining accused who are on the run, 2 appeals, 3 retrials, 4 trials in the Mechanism cases will continue to act until the Council decides otherwise, but further states that progress in the Mechanism's work will be reviewed in 2016 and every two years thereafter.

⁸An appeal is pending in the case against indictee Ratko Mladić (MICT-13-56). On 15 December 2015, the ICTY Appeals Chamber ordered the retrial of Jovica Stanišić and Franko Simatović (MICT-15-96) on all counts, and the trial before the Mechanism began on 13 June 2017. See more at: <http://www.irmct.org/bcs/cases> [24 April 2019].

Listening to a large number of eyewitnesses and victims of the events, the ICTY has identified key historical facts regarding the crimes committed in this area, contributing substantially to the real inability to deny the crimes. By cooperating with national prosecutors' offices and courts in the region, passing on evidence and case law, as well as contributing to the creation of specialized war crimes tribunals, the ICTY has also made a significant contribution to strengthening the rule of law and achieving justice for victims at lower levels (Žagar, 2013). The transfer of burden to national courts can only be successful if local prosecutors have the will and the means to effectively prosecute those cases, and if the courts act independently and in accordance with international fair trial standards (OSCE, 2013).

Despite its contribution, the ICTY has received numerous criticisms, which, given the nature of the argument, can be categorized into three groups: legal criticisms, which relate both to the legality of the court and to the rules governing its proceedings and the case-law itself, then criticisms of a political nature, concerning the policy of the Prosecution, i.e. the manner in which the persons indicted were "selected", and ultimately criticisms from a psychological-criminological point of view, aiming at evaluating the court's contribution to some higher goals, such as reconciliation and prevention of future conflicts (Dimitrijević, Hadži-Vidanović, Jovanović, Marković, & Milanović, 2013).

During and shortly after the 1992-1995 armed conflict, the judiciary in BiH prosecuted war crimes cases alongside the International Criminal Tribunal for the former Yugoslavia.

The prosecution of war crimes in BiH continued after the end of the war, until 2003, at the entity level, before 10 cantonal and 28 municipal courts in the FBiH and five district and 19 basic courts in RS (Mahmutović, 2011, p. 103).

Thereafter, the prosecution of war crimes also falls within the jurisdiction of the Court of BiH. The Court of BiH, based in Sarajevo, is established in 2000 in order to ensure the effective exercises of the competences of the State of Bosnia and Herzegovina and the rule of law in the territory of this state⁹.

The War Crimes Chamber of the Court of Bosnia and Herzegovina was formed with the aim of continuing the prosecution of war crimes even after the ICTY ceased to operate.

⁹*Law on the Court of BiH (consolidated text)*, Official Gazette of BiH No. 49/09, Article 1.

Considering that in the past war, a large number of war crimes have been committed in BiH and that a large number of persons appear as possible perpetrators, and that the Court will not be able to prosecute them all, certain criteria have been drawn up, according to which all subjects will be evaluated and assessed.

First, it was agreed that cases which, after evaluation are designated as "sensitive" shall be prosecuted before cantonal or district courts, and cases that are assessed as "very sensitive" shall be tried before the War Crime Chamber of the Court of Bosnia and Herzegovina.¹⁰

As of 2018, a total of 205 cases were finalized by Section I for War Crimes of the Court of BiH, in which 217 men and 5 women were finally sentenced, while 106 men were finally released. For war crimes committed, this Court has so far imposed 2,748 years in prison.¹¹

In addition to the ICTY and national courts, the prosecution and processing of perpetrators of war crimes committed in the period 1991-1995 also took place before courts of other jurisdictions, in accordance with the principle of universal jurisdiction.¹²

Significant war crimes trials in BiH, conducted on the principle of universal jurisdiction, are the case against Nikola Jorgić for crimes committed against Bosniaks in 1992, in the wider Doboj Municipality¹³, against Maksim Sokolović¹⁴, against Đurađ Kušljčić.¹⁵

¹⁰See more: Jelačić, N et al., op.cit., pp. 8, 9 and Škorić, M (2005) *Mješoviti međunarodni kazneni sudovi*, Collection of works of the Faculty of Law of the University of Rijeka, Rijeka, No. 2, pp. 933-970.

¹¹See more: <http://www.sudbih.gov.ba/stranica/102/pregled> [20 June 2019].

¹²See more: Novoselec, P (2003) *Temeljne crte novele Kaznenog zakona*, Hrvatski ljetopis za kazneno pravo i praksu, Zagreb, Vol. 10, No. 2/2003, p. 104, Seizović, Z (2008) *Međunarodno javno pravo – zbirka eseja*, University of Zenica, Zenica, pp. 203, Simović-Hiber, I (2007) *Sistem rasprava o ideji vladavine prava, osnovama krivičnog zakona, pojmu zločinacke grupe i internacionalizaciji krivičnog prava*, Institute of Criminological and Sociological Research, Belgrade, pp.

¹³See more: *Urteil Oberlandesgericht Düsseldorf* (Nikola Jorgić) IV-26/96 (26 September 1997). Available from: http://www.hague-justiceportal.net/Docs/NLP/Germany/Jorgic_Urteil_26-9-1997.pdf [9 May 2019], *Bundesverfassungsgericht Düsseldorf*, Beschluss vom 12. Dezember 2000, (Nikola Jorgić). Available from: https://www.bundesverfassungsgericht.de/entscheidungen/rk20001212_2bvr129099.html [9 May 2019], European Court of Human Rights, *Jorgić vs. Germany* (Application no. 74613/01), Judgement, Strasbourg, 12 July 2007. Available from: <http://invisiblecollege weblog.leidenuniv.nl/files/2007/07/jorgic%5B1%5D.pdf> [9 May 2019].

¹⁴Final Judgment of the Higher Regional Court at Düsseldorf v. Maksim Sokolović, No. 3StR 372/00 from 21 February 2001.

¹⁵Judgment of the Bavarian Higher Regional Court, No: 3 StR 244/00 from 15 December 1999 and Decision of the Federal Court of Justice, No: 3 StR 244/00 from 21 February 2001.

In this particular case, universal jurisdiction, that is, the actions of other states against war criminals, contributed not only to fulfilling the international community's obligation to prosecute some of the most serious and cruel crimes, but also to raising Europe's awareness of crimes committed on the soil of Bosnia and Herzegovina, through determination of judicial facts.

The current situation and perspectives in the area of prosecuting crimes in BiH are the subject of this research, and the starting hypothesis is that the response of competent BiH institutions is not appropriate to the volume and gravity of the crimes committed. This research will first analyze the challenges faced by the BiH judiciary in the prosecution of war crimes, and by empirical research we will determine the adequacy of the response of the competent BiH authorities.

Challenges in War Crimes Processing in BiH

In order to ensure the continued fight against impunity and the achievement of justice for war crime victims, it is necessary to identify the most significant challenges, or obstacles, that have hindered the effective prosecution of those responsible for war crimes. Among those are especially emphasized: pluralism of applicable laws and the issue of retroactive application of laws; work on "Category A" cases; interpretation and application of "complexity criteria"; and regional dialogue and cooperation.

Pluralism of applicable laws and the issue of retroactive application of laws

The non-harmonized application of the laws in force in Bosnia and Herzegovina, one of the biggest challenges in the prosecution of war crimes and often leads to distortion of the rule of law and the principle of equality in the process, as well as generally inconsistent penal policy in the field of war crimes processing.

Moreover, the application of different criminal laws has resulted in significant differences in the length of sentences, as a sanction, that are pronounced for war crimes by the Entity Courts compared to the Court of BiH.¹⁶ In addition, the principle that, in practice, produced the most controversy is certainly the issue of retroactive application of the more lenient law (*lex mitior*).

The judgement of the Appellate Division of the Court of Bosnia and Herzegovina, No. Kpž 32/05 from 4 April 2006 was the first legally binding verdict for the offences under the Chapter 8 of the Criminal Code of Bosnia and Herzegovina. With the above judgment, the accused Abduladhim Maktouf was found guilty of the criminal offense of War Crimes against Civilians under Article 173 (1) (e) in conjunction with Article 31 of the Criminal Code of Bosnia and Herzegovina was sentenced to five years in prison by the application of the sentence mitigation provisions.¹⁷ Furthermore, by Judgment of the Court of BiH, No. X-KRŽ-05/107 of 19 November 2007; The Accused Goran Damjanović was found guilty of the criminal offense of War Crimes against Civilians referred to in Article 173 (1) (c) in conjunction with Article 180 (1) of the Criminal Code of BiH, and was sentenced to 11 years in prison.

¹⁶In a 2011 report, the OSCE concluded that the implementation of various criminal laws at the state and entity levels can be problematic in certain types of war crimes cases: "It is certainly acceptable that the question of what criminal law should be applied to war crimes cases is assessed on a case-by-case basis. In many cases before the Entity Courts, the application of the [1976] Act is not a serious problem in practice. Generally, cases where the application of different laws undermines the principle of equality before the law are those in which a court, by applying the [2003] Act, can sentence an accused to imprisonment longer than a sentence of 15 to 20 years, which is the maximum sentence prescribed by the Act [from 1976]. In these cases, the application of the [1976] Act clearly does not allow the court to impose a sentence commensurate with the gravity of the crime. Nor are the penalties in these cases consistent with national practice. Another category of cases where the application of the [1976] Law is problematic is that in which the defendant's conduct is best described in accordance with the concept of crimes against humanity or the theory of command responsibility, which are expressly prescribed only by the Act [from 2003]." (See more: OSCE (2011) *Achieving Justice in Bosnia and Herzegovina: Prosecution of War Crimes Cases 2005-2010*).

¹⁷In this judgment, the Court took the legal view that Article 4a) of the CC of BiH "... has, in its entirety, taken over into the criminal justice system of BiH the provision of Article 7, paragraph 2 of the European Convention, which allows for an exceptional departure from the principles of Article 4 of the Criminal Code of BiH, as well as the derogation from the mandatory application of a more lenient law in proceedings that constitute criminal offenses under international law. (See more: Court of BiH, Maktouf, Case No. Kpž-32/05, First Instance Verdict, 04/04/2006, Available from: file:///C:/Users/Mirna/Downloads/K3205_1K_MA_drugostupanjnska_04_04_2006.pdf).

After the judgment became final, Abduladhim Maktouf appealed to the Constitutional Court of BiH on 19 June 2006, complaining that, in impugned judgment, the rights guaranteed by Article II/4 of the Constitution of Bosnia and Herzegovina, as well as Articles 7 and 14 of the European Convention for the Protection of Human Rights and Fundamental Freedoms (European Convention) were violated, since the 2003 BiH Criminal Code was applied, and not, in the appellant's opinion, the SFRY Criminal Code more favorable to it, which was valid at the time of the commission of the offenses.¹⁸ Constitutional Court of BiH rejected the appeal as unfounded, holding that the application of the Criminal Code of BiH, in order to punish acts committed during an armed conflict, was allowed under Article 7, paragraph 2 of the European Convention, because these acts, at the time of execution, constituted criminal offenses under the "general legal principles recognized by civilized peoples".¹⁹

However, after using the last effective remedy, Abduladhim Maktouf and Goran Damjanović filed appeals to the European Court of Human Rights in Strasbourg, which, unlike the Constitutional Court of BiH, concluded that retroactive application of the Criminal Code of BiH from 2003, when a criminal offense of War Crimes against Civilians is concerned, is contrary to Article 7 of the European Convention.²⁰

Acting on the aforementioned judgment, although the European Court did not consider the application of the law in relation to other war crimes, the Constitutional Court of BiH also applied the prohibition of retroactivity to other, most serious crimes, including genocide. This resulted in the large number of convicts' appeals now adopted by the Constitutional Court of BiH, and the fact that, after having taken that legal understanding, Genocide can now be sentenced to a maximum of 20 years imprisonment for the gravest war crimes, while Crimes against Humanity, which by nature is less grave, as a maximum, is punishable by up to 45 years in prison.

¹⁸The Court of Bosnia and Herzegovina sentenced Maktouf with the mildest sentence in the 2003 Criminal Code, five years in prison. However, under the 1976 Criminal Code, he could have been sentenced to one year in prison.

¹⁹Constitutional Court of BiH, Appeal No: AP-1785/06, *Decision on Admissibility and Merits of 30 March 2007*.

²⁰European Court of Human Rights, *Maktouf and Damjanovic v. Bosnia and Herzegovina*, Appeals Nos 2312/08 and 34179/08, Judgment of the Grand Chamber from 18 July 2013.

It was in the decision in the Maktouf case, from March 2007, that the Constitutional Court of Bosnia and Herzegovina found that the application of various criminal laws at the state and entity levels seriously violated the rule of law and the principle of equality before the law, which will certainly continue to be a challenge in the prosecution of war crimes in Bosnia and Herzegovina.²¹

Work on "Category A" cases

According to Joanna Korner (2016), one of the main concerns is the efforts of the BiH Prosecutor's Office to produce favorable results in a statistical sense, by working on simpler cases, at the expense of prosecuting high-ranking perpetrators, and the fact that there is no policy within the Prosecution, which would serve for determining priority cases or criteria for case conclusion.

In the light of the above, the OSCE in its observation instructed the Prosecutor's Office of BiH to prioritize work on the most complex cases in accordance with the objectives and guidelines of the Revised National War Crimes Strategy (hereinafter: Revised Strategy) and to allocate sufficient resources, since the Revised Strategy provides for the processing of the most complex and priority cases before the Court and the Prosecutor's Office of BiH, and other cases before the courts at the entity and Brcko District level by the end of 2023.²²

Thus, the Revised Strategy foresees a deadline by the end of 2023. However, such a solution, as well as the concept of the Strategy, did not meet with the approval of the victims' families and their associations, who assessed that it did not again identify priority cases and cases that would have deployed within BiH's judicial system, which, in their view, will not contribute to effectively ending the processing of war crimes in BiH.²³

The root cause of this situation is related to the fact that the Prosecutor's Office of BiH does not often apply an adequate procedure for determining priorities. It does not adhere to the criteria prescribed in Annex "A" of the National War Crimes Strategy, which leads to the fact that the Court of BiH deals with numerous cases of less complexity, which satisfy the requirements for prosecution before the Entity Courts, which was also concluded in the 2016 Situation Analysis (Korner, 2016, p. 53).

A similar view is found in the Thematic Report on the Management of War Crimes Cases in the Prosecution of Bosnia and Herzegovina (OSCE, 2019). This report states that one-third of the indictments filed by the BiH prosecution in 2017 and 2018 could be judged to be less complex according to the complexity criteria contained in annex A of the War Crimes Strategy from January 2009 to June 2015 (hereinafter: Strategies)²⁴. This situation is worrying and has a very negative impact on the efficient use of available resources in state-level judicial institutions. The report also states that the Prosecutor's Office of BiH does not take measures that would substantially address these issues.²⁵

Interpretation and application of complexity criteria

Among the primary obstacles that have made it difficult to achieve the goals of the Strategy to the full extent is the uneven distribution of cases between the state and entity levels and the Brcko District of BiH, all related to the inconsistent interpretation of the complexity criteria of the State Strategy.²⁶

In January 2016, the Strategy Implementation Supervisory Body published a report that made a recommendation to transparently review the criteria for selecting and identifying priority cases, and the need to distinguish between priority cases and those falling into other categories (Korner, 2016, 23, par. 67).

According to a 2019 OSCE report, when it comes to indictments qualifying as war crimes, almost half of them could have been referred to the entity and Brcko District prosecutors' offices because of the nature of the crimes and the forms of culpability accused persons are charged of.

²⁴National War Crimes Processing Strategy. Available from: <http://www.mpr.gov.ba/userfiles/file/Projekti/Drzavna%20strategije%20za%20rad%20na%20predmetima%20RZ.pdf>

²⁵Ibid. op.cit., p. 13.

²⁶According to the OSCE, in the period between 2009 and 2017, in accordance with the mechanism for the transfer of cases envisaged by the Strategy, 480 less complex cases were transferred from the state level to the Entity and Brcko District of BiH level courts, with the largest number of these cases being transferred in 2012. However, the reduction of the total number of unresolved complex cases by their submission and termination before the Court of BiH does not reflect that number, as the Court of BiH has taken over 262 cases from the courts in the Entities and the Brcko District of BiH in the same period. (See more: OSCE, September 2018, *Observations on the National War Crimes Processing Strategy and the Draft Revision of 2018, including the "Category A" Rules of the Road, Thematic Report*).

²¹Constitutional Court of BiH, Appeal No: AP-1785/06, *Decision on Admissibility and Merits from 30 March 2007*. par. 83-89

²²See more: OSCE, *Delivering Justice in Bosnia and Herzegovina: Prosecution of War Crimes Cases 2005-2010*. op.cit.

²³Victim Associations, *First prioritize and then adopt a new strategy for the prosecution of war criminals*. Available from: -sa-then-adopt-a-new-strategy-to-prosecute-war-criminals. [9 May 2019].

The burden of responsibility under this report lies with the Prosecutor's Office of BiH, which does not carry out its duties under the Strategy in an efficient manner to ensure that the most complex and serious war crimes cases are prosecuted before the Court of BiH. In particular, the mission noted that the Prosecution of Bosnia and Herzegovina inconsistently interpreted and applied the criteria for assessing the complexity of cases. Given that the primary criteria were applied too rigidly, without considering other important circumstances, the Revised Strategy envisaged redefined complexity criteria based on the basis of a dual assessment of gravity in relation to the crime and the role of the perpetrator. In this way, special emphasis was placed on the organized form of committing war crimes or the command responsibility of the perpetrator, as a criterion of complexity.

Regional dialogue and cooperation

The results so far in the processing of war crimes in BiH have highlighted the need to establish mechanisms which would aim at strengthening regional dialogue and cooperation in war crimes cases. Although, on 31 January 2013, the Prosecutor's Office of BiH and the War Crimes Prosecutor's Office of the Republic of Serbia signed the Protocol on cooperation in the prosecution of war criminals, crimes against humanity and genocide, and on 3 June 2013. The same protocol was signed with the State Attorney's Office of the Republic of Croatia²⁷.

Such cooperation was limited to technical dialogue and the exchange of good practices in the prosecution of war crimes, while the crucial objectives and practical implementation of such protocols were largely absent.²⁸

²⁷*Protocol on Cooperation in Prosecution of War Crimes, Crimes against Humanity and Genocide*, concluded between the Prosecutor's Office of BiH and the War Crimes Prosecutor's Office of the Republic of Serbia on 31 January 2013. Available from: <http://tuzilastvobih.gov.ba/files/docs/Protokol-bos.pdf> [9 May 2019] and *Protocol on Cooperation in Prosecution of War Crimes, Crimes against Humanity and Genocide*, concluded between the Prosecutor's Office of BiH and the State Attorney's Office of the Republic of Croatia on 3 June 2013. Available from: http://tuzilastvobih.gov.ba/files/docs/Protokol_Croatia,_BIH.pdf, [9 May 2019].

²⁸The Protocol provides the exchange of information and evidence relating to crimes committed in the territory of both States when the suspects have the nationality or residence in the other Contracting State, as well as notification of the stage at which the case is, after the exchange of information and evidence. In addition, within three months of its signature, the signatories must notify each other of active cases against nationals of the other Contracting Party, which should finally overcome the practice of conducting parallel investigations (Article 3 of the Protocol).

An illustrative example is the Novak Đukić case, in which, after the final termination of the proceedings, the convicted person did not respond to the summons to serve his sentence in BiH.

An international warrant was issued for him, after which the Court of BiH sent a request to Serbia for the recognition and enforcement of a final criminal conviction, in order for Đukić to serve his sentence in Serbia.²⁹ However, the Trial Panel of the War Crimes Chamber of the Higher Court in Belgrade, in proceedings in recognition of the judgment of the Court of Bosnia and Herzegovina in the past three years, adjourned its sessions more than ten times, due to the convicted person's poor health. In addition, pursuant to the pleadings of Novak Đukić's defense, the acting court asked the Court of BiH for the entire file, to examine whether the convicted person had a fair trial, which the Court of BiH ultimately ceded. At the same time, Novak Đukić's team, at the Technical Survey Center of the Serbian Army in Nikinci, organized an experiment "Reconstruction of Crime at the Tuzla Gate", which resulted in the conclusion that the facts established in the final judgment of the Court of BiH against Novak Đukić were incorrect.

The mechanisms put in place to contribute to development of regional cooperation must be aimed at building trust between judicial institutions in the region, with the institutions having to respect and accept the facts established before the courts of other countries of the region, or to confirm the final judgments of these courts. Although the above example does not support this, the neighboring countries, and in particular Republic of Serbia, will in the future be further motivated to promote such cooperation, especially given that effective regional cooperation and good neighborly relations in the investigation and prosecution of war crimes, including the avoidance of conflicts of jurisdiction, are part of the formal conditions for Serbia's accession to the European Union.³⁰

The aim of the research was to contribute to the assessment of the current situation regarding the prosecution of war crimes committed in BiH and to stimulate discussion on this topic, that is, the problems faced by the BiH judiciary in the processing of war crimes and possible solutions to overcome them.

²⁹Case Information (X-KRŽ-07/394) on Novak Đukić are available on the official website of the Court of Bosnia and Herzegovina: <http://www.sudbih.gov.ba/predmet/2472/show>. [9 May 2019].

³⁰Negotiating positions for Chapter 23 - EU Common Position, p. 7, 22. Available from: http://www.mei.gov.rs/upload/documents/accessories/Programming_Positions/PG23%20Community%20Position%20EU.pdf. [9 May 2019].

METHODS

As a measuring instrument for the research, a *questionnaire to collect data on the extent and phenomenology of war crimes in Bosnia and Herzegovina* was used.

The questionnaire consists of two variables: the criminal report on the criminal offense; order to conduct an investigation; indictment; judgment dismissing the charge; acquittals; sentences of imprisonment; a conviction imposing a fine; a conviction ordering a suspended sentence; a conviction pronouncing a judicial reprimand; a conviction pronouncing a sentence of release, of which four variables were set aside for the purpose of this work.

Data were collected and analyzed for the period 2014-2018. Data collection was performed on two occasions. In 2017, data that were available so far were collected, and data for the last two years of interest in this research (2017 and 2018) were collected in the first half of 2019 by submitting questionnaires to the High Judicial and Prosecutorial Council of Bosnia and Herzegovina (hereinafter: Council). The Council maintains on-going databases. From the requested and obtained data for the period of five years (2012 to 2016), the data for 2014, 2015, and 2016 were first taken and subsequently, the survey was supplemented by the data for 2017 and 2018. In addition to this data, for the purpose of comparison, the data collected, systematized, and published by the OSCE Mission in Bosnia and Herzegovina, in mid-2019, which are related to this issue, were also used in this paper. The data were processed by descriptive analysis, that is, the frequency distribution and percentages for the selected variables were determined, and the results presented graphically. In addition, a comparative analysis of the data according to the stages of criminal proceedings was done.

RESULTS AND DISCUSSION

Representation of reported war crimes (by number of cases and persons)

Chart 1 shows that during the researched period a total of 1,135 charges and reports of committed criminal offences were filed³¹, which included 3,480 persons.

It is noticeable that the highest number of charges or reports (281,889 persons) were filed in 2015, and this number has been steadily decreasing over the period under study, thus in 2018 there were a total of 177 charges and reports of criminal offenses against, also the least number of persons (278). The data also show that a total number of 542 charges or reports against 4,499 persons were transferred from 2013.

The data presented in Chart 1 show some important information regarding war crimes prosecutions in Bosnia and Herzegovina. Although the subject of research in this paper is the period twenty years after the end of the war (the commission of crimes), there are an extremely large number of charges/reports on war crimes committed. Especially notable is a large number of persons covered by these reports (3,480). It can be observed that on average almost every charge/report covers three persons. A large number of charges/reports and persons involved, twenty years after committing crimes are a defeating fact for results of the work on the prosecution of war crimes, but also a danger for successful conduct and completion of these proceedings. According to Judge Corner in her report on state-level war crimes prosecutions in Bosnia and Herzegovina (Korner, 2016), the greatest danger lies in accessing suspects and witnesses, pointing to the fact that many of them have passed away, emigrated or forgotten events, and that they may have "false" memories. She also believes that repetitions of statements of these witnesses before different institutions and in different procedures could lead to some inconsistencies in their statements and could be used by defense of the suspects/accused in the later stages of the proceedings to indicate unreliability of witnesses. Important information we obtain from Chart 1 shows that the number of charges/reports and persons covered by them is decreasing, especially in the last two years of the observed period. This could be an indication that the identification of all war crimes cases is finally coming to an end.

³¹ According to the laws on criminal procedure, charges are press by officials and responsible persons in legal entities and citizens, while reports on the committed crime are submitted by authorized officials who have appropriate powers within the police bodies.

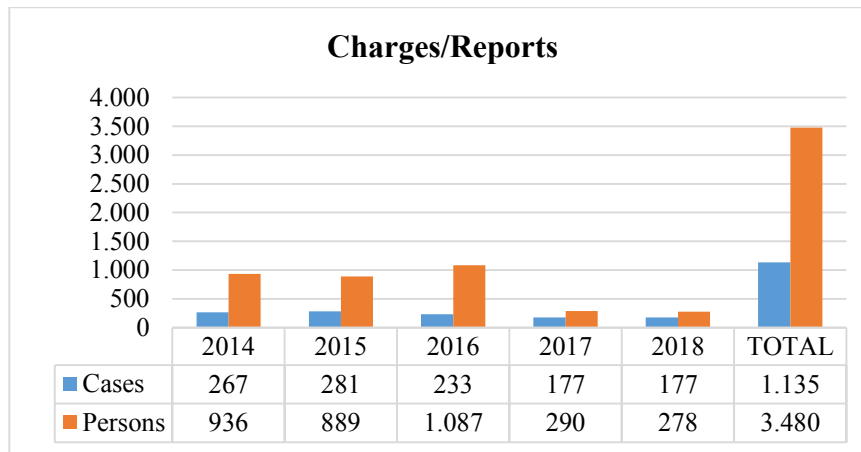


Chart 1. Charges and reports of committed war crimes (by years of research and total)

Representation of investigations initiated in war crimes cases (by number of cases and persons)

Chart 2 shows that during the investigated period, a total of 944 cases were ordered to be investigated against 2,701 persons. It is noticeable that the highest number of investigations (993, against 244 persons) was ordered in 2014, and this number is constantly decreasing in the investigated period, so that in 2017 there was the least number of ordered investigations (140 cases, against 229 persons), and slightly more in 2018 (155 cases, against 229 persons). The data we have show that 579 investigations against 2,037 persons were transferred from 2013.

Bearing in mind that a total of 205 cases have been closed before the Court of BiH since its establishment until the end of 2018, the number of investigations conducted by Prosecutors' Offices in Bosnia and Herzegovina is worrying and represents a real danger of compliance with all the deadlines set so far in regard to completion of war crimes cases. In this respect, it is possible to agree and support the recommendations made by the OSCE Mission to Bosnia and Herzegovina in its Thematic Report on the Management of War Crimes Cases before the Prosecution of Bosnia and Herzegovina" (OSCE, 2019). According to these recommendations, it is necessary to share the burden of prosecuting war crimes within the judicial system in Bosnia and Herzegovina, while respecting the criteria for assessing the complexity of cases as defined by the National War Crimes Processing Strategy.³²

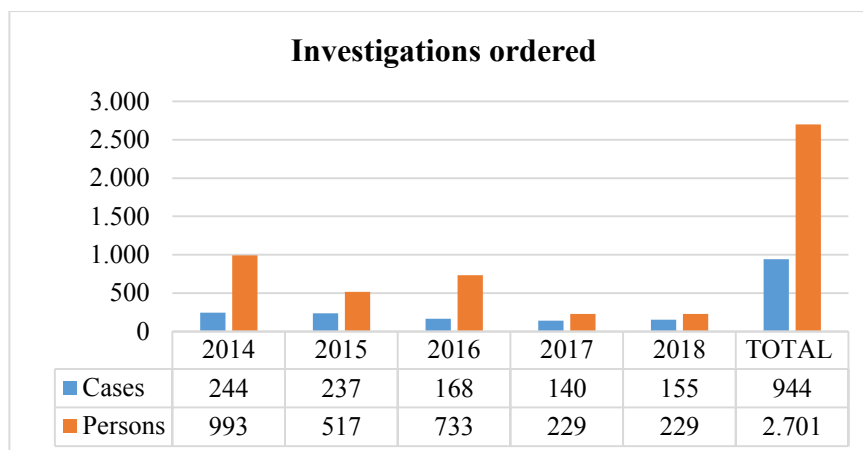


Chart 2. Ordered investigations on war crimes committed ((by years of research and total)

³²National War Crimes Processing Strategy, op.cit.

Representation of indictments in war crimes cases (by number of cases and persons)

Chart 3 shows that a total of 366 indictments were filed during the period under review and 720 persons were indicted. The highest number of indictments (102 against 211 persons) were filed in 2014, and this number is constantly decreasing in the investigated period, so that in 2018, 46 indictments were filed against 66 persons.

It is obvious that during the observed period the number of indictments was reduced, so at the end of this period twice less indictments were filed compared to the beginning of the observed period. The reasons for this deterioration in the performance of prosecutors' offices in Bosnia and Herzegovina in war crimes cases need to be investigated in details, and it is certain

that some of them are also recognized in the OSCE Thematic Report (prosecutors' professional qualifications, the organization of the Special Prosecution Division, etc.).

The purpose of this paper was to present the number of confirmed indictments, in order to compare the indictments raised and confirmed, and to demonstrate the quality of the indictments submitted for confirmation. However, this was not possible; given that the data obtained in the second phase of the survey (data for 2017 and 2018) do not contain this information. Why this record is not kept is a question that should be investigated. Data for the first three years of the observed period show that just under 90% of the indictments are confirmed, which is certainly not commendable for the prosecutors who file such indictments.

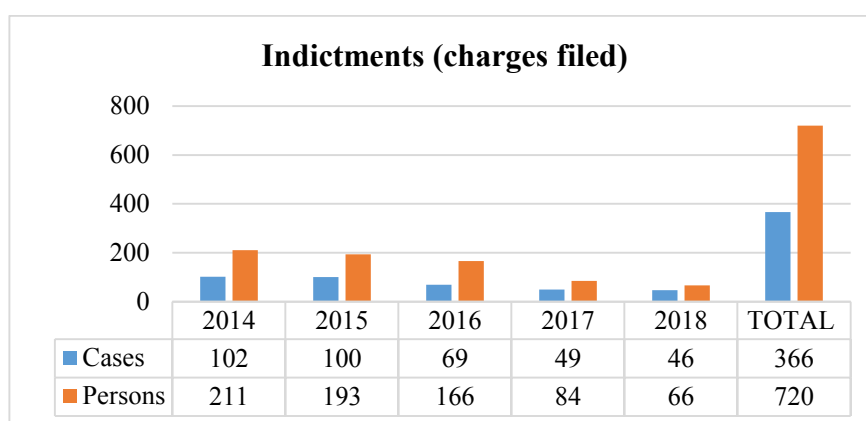


Chart 3. Indictments for committed war crimes (by years of research and total)

Representation of convictions in war crimes cases (by number of cases and persons)

Chart 4 shows that during the period under review, a total of 254 war crimes judgments were issued by all courts in Bosnia and Herzegovina, which involved

a total of 434 persons. The highest number of judgments (61, covering 89 persons) were issued in 2015, and thereafter the number of judgments rendered by courts in war crimes cases has steadily decreased. The fewest rulings were made in 2018, 48, and those referred to 98 people.

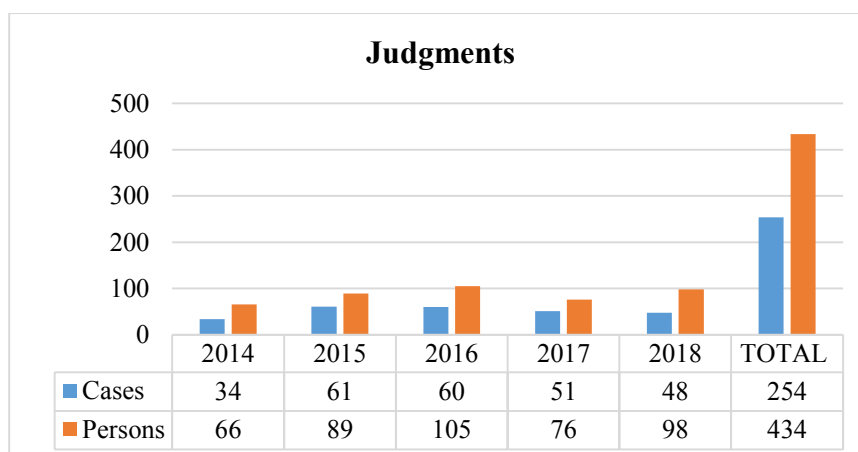


Chart 4. Judgments for committed war crimes (by years of research and total)

Chart 5 shows that during the period under review, a total of 188 convictions and 66 acquittals were rendered by all courts in Bosnia and Herzegovina. Thus, more than 26% of the acquittals were rendered. Most acquittals were made in 2014 (32%) and least in 2018 (17%).

The OSCE Mission to Bosnia and Herzegovina finds reasons for such results, in its thematic report, in inconsistencies in the testimony of witness-

es and in the absence of corroborating evidence to support the existence of the essential elements of the crimes charged and the evidence to support the form of their guilt.³³ Such a finding could also be accepted when it comes to processing war crimes at other levels (outside the Court of BiH, which was analyzed in the Thematic Report), but nevertheless, a more specific and accurate view would require special research.

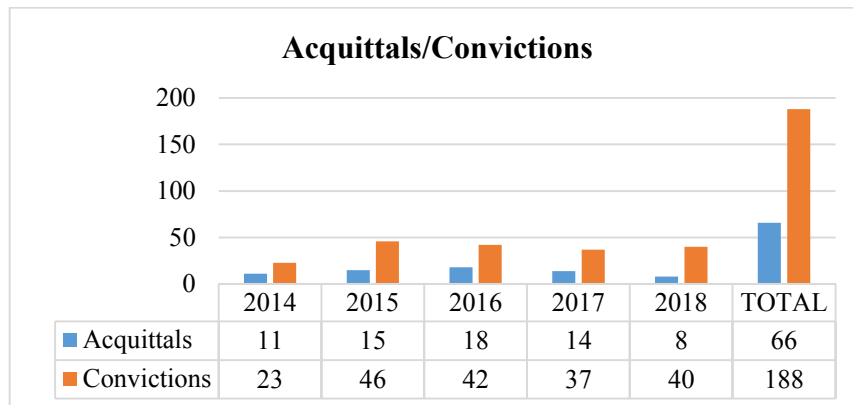


Chart 5. Structure of judgements for war crimes committed (by years of research and total)

Comparative analysis of war crimes cases with respect to the stages of the proceedings

Comparison of the volume of reported war crimes and investigations initiated (by number of cases)

Chart 6 shows the ratio of the number of reported crimes, that is, reports on war crimes committed and investigations initiated. It shows that the highest number of investigations (91.38%) was initiated on charges/reports in 2014, and later decline followed,

which in 2016 resulted in the smallest percentage (72.1%) of investigations initiated on filed charges/reports. The chart also shows that the total percentage of investigations initiated by all charges/reports in the observed period is 83.17%.

It could be concluded that this is a rather high percentage of investigations initiated in relation to the number of charges/reports submitted during this period, which again indicates that these are high-quality reports / reports that contained the basis of suspicion required for prosecutors to initiate an investigation.

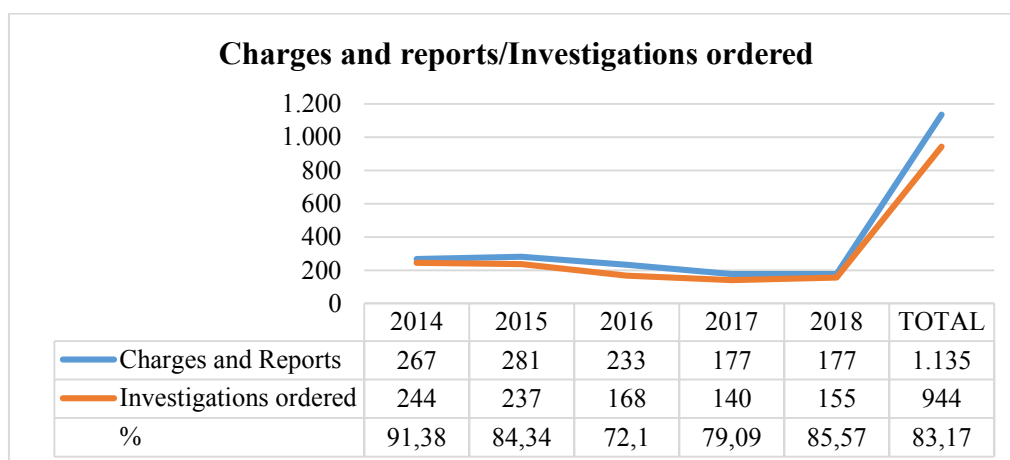


Chart 6. Comparison of filed charges reports and ordered investigations (by years of research and total)

³³OSCE, War Crimes Case Management at the Prosecutors Office of Bosnia and Herzegovina (Thematic report), op.cit., pp. 7-10

Comparison of the volume of investigations initiated and indictments raised (by number of cases)

Chart 7 shows the ratio of the number of investigations initiated and indictments filed in war crimes cases over the reference period. It shows that the highest number of indictments (42.19%) in relation to the number of investigations initiated was recorded in 2015, and that there is a constant decline thereafter, and that in 2018 the least number of indictments were filed in relation to the number of investigations initiated (29.68%). The graph also shows that the total percentage of indictments raised in relation to the investigations initiated in

the observed period is only 38.77%.

The very low percentage of indictments raised in relation to the investigations initiated can be attributed to various causes, which may include some objective ones such as the complexity of the case, the long distance between the commission of the crime and the time of the investigation, the unavailability of the suspects and witnesses of these crimes, etc. It can be argued with certainty that there are some subjective reasons that will not be presented here, but the need to further investigate this problem, identify any shortcomings and take action to remedy them, should be pointed out.

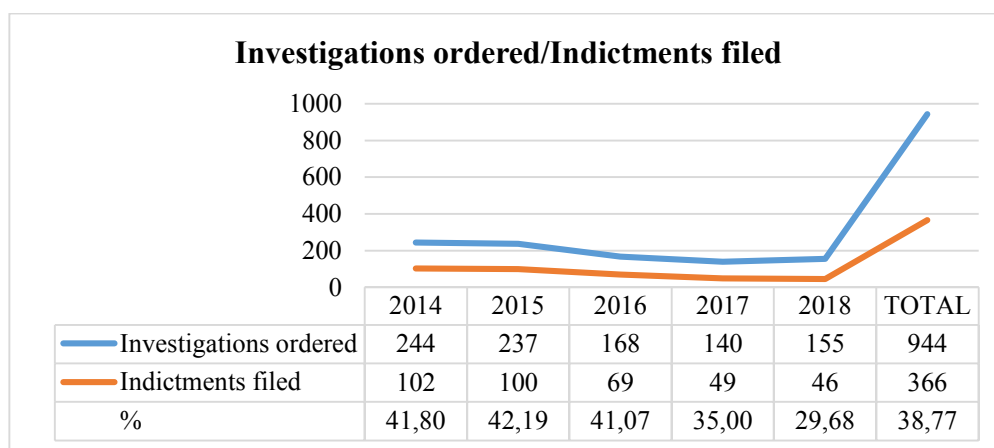


Chart 7. Comparison of ordered investigations and indictments (by years of research and total)

Comparison of the volume of indictments and convictions (by number of cases)

Chart 8 shows the ratio of the number of indictments filed and convictions in war crimes cases over the observed period. By far the lowest percentage of convictions in relation to the number of indictments filed in the observed period (22.55%) was recorded in 2014. Thereafter, there was an

increase and at the end of the observed period (2018), a percentage of 86.96% of convictions was recorded in relation to the number of indictments filed. In the observed period, a total of 51.37% of convictions were issued in relation to the number of indictments filed.

It is obvious that almost half of the cases brought before the competent court in the observed period were closed without conviction.

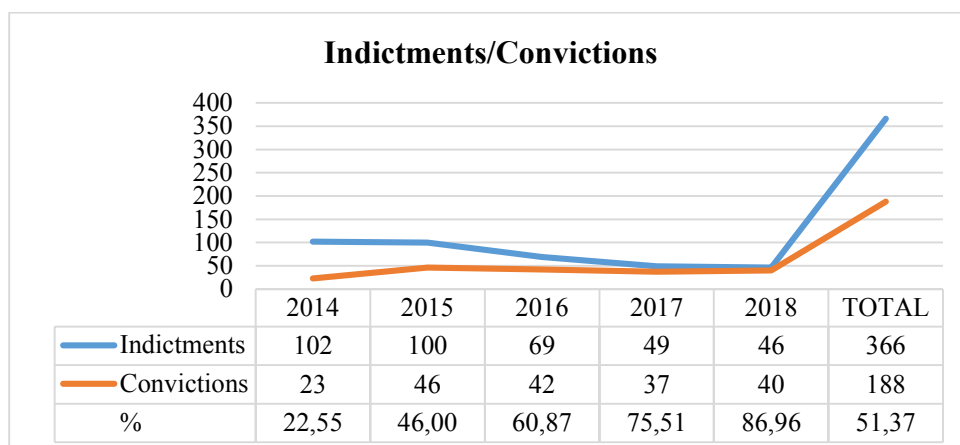


Chart 8. Comparison of indictments and convictions (by years of research and total)

Comparison of ordered war crimes investigations and convictions (by number of cases)

It seems interesting to compare ordered investigations³⁴ in war crimes cases and convictions in the observed period, as shown in Chart 9. It can be seen that the lowest number of convictions in relation to the number of investigations initiated happened in 2014, only 9.43%, and that it rose to a maximum of 26.43% in 2017. In total, in the observed period only 19.92% of cases in relation to the number of investigations initiated, ended with a conviction, therefore, every fifth case.

This information is a very clear indication of the inefficiency of prosecutors dealing with war crimes in

Bosnia and Herzegovina, and a clear proof of the inadequate use of available resources (human, material, financial, etc.) in war crimes prosecutions.

The data shows that the concerns and perceptions expressed by citizens, as well as by some domestic and international institutions regarding the effectiveness of prosecutors' offices in prosecuting war crimes cases, are very justified.

This kind of information calls for action of all relevant individuals and institutions to react from their domain to overcome these poor results. The seriousness of the situation should be considered given the importance of prosecuting war crimes committed in Bosnia and Herzegovina for the reconstruction, both by war and these crimes, of a devastated Bosnian society.

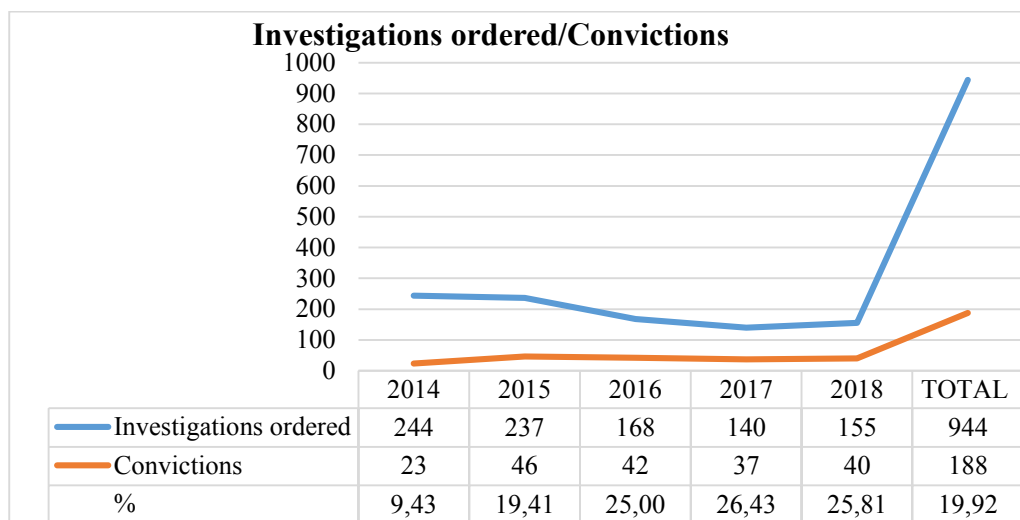


Chart 9. Comparison of ordered investigations and convictions (by years of research and total)

CONCLUSION

During the 1992-1995 armed conflict in the territory of Bosnia and Herzegovina, serious, systematic and mass violations of international humanitarian law occurred, resulting in various serious violations of fundamental human rights and freedoms, including murders, the persecution of the population, mass forced detentions, brutal rapes, as well as robberies of private and industrial establishments, therefore, it is reasonably concluded that the actual and final scale of the crimes committed will never be fully known.

³⁴Ordered investigations were deliberately chosen, because they already show and are fully the result of the activities of competent, expert and authorized bodies (Prosecutor's Offices) and show that in their opinion there was a basis for suspicion of the commission of criminal offenses and that since that time a number of institutions and persons were engaged in these cases.

The criminal prosecution and processing of war crimes committed in the territory of Bosnia and Herzegovina is the responsibility of several courts of different levels, namely the ICTY, courts in Bosnia and Herzegovina, as well as the courts of other countries, in accordance with the principle of universal jurisdiction.

With the establishment of the ICTY, the tradition of impunity for war crimes was undoubtedly broken, and all persons were held accountable, regardless of their position, which made it possible to identify key facts regarding crimes committed in BiH and greatly influenced development of international criminal and humanitarian law as a whole.

However, the fact that is justifiably worrying is that even after 24 years since the end of the war, judicial authorities in Bosnia and Herzegovina have not completed the prosecution of even the highest priority cases.

This is due, among other things, to the judicial authorities' intentions to achieve statistical results, failure to follow the directions and guidelines of the Strategies, implementation of various laws at the state and entity levels, as well as limited regional cooperation and dialogue, in which the practical implementation of signed agreements and protocols is completely absent so far. Therefore, a Revised Strategy has been drafted, which envisages the processing of the most complex and priority cases before the Court and the Prosecutor's Office of BiH, and other cases before the Entity and Brcko District courts before the end of 2023. However, while it is aimed solely at eliminating the challenges of war crimes prosecutions so far, as well as defining deadlines and precise instructions for implementing the war crimes target strategies so far, the revised strategy has not yet been adopted. The prosecution of war crimes committed in Bosnia and Herzegovina is very important for the reconstruction of the devastated Bosnian society, both by war and by these crimes. The results of the empirical research show that the number of reports of these crimes is decreasing, that almost one thousand cases involving almost three thousand suspects/accused persons are in the process, and that the burden of prosecuting these cases needs to be shared within the BiH judicial system, as envisaged by the War Crimes Strategy.

It is noticeable that in the observed period slightly less than 40% of the investigations initiated were terminated by the indictment, and that there was a downward trend in the number of indictments raised. Furthermore, just over half of the indictments result in a conviction, which is certainly small percentage and it is worrying.

The inefficiency of the BiH judiciary is even more evident when comparing data on the number of investigations initiated and the number of convictions. These data show that only every fifth case in which an investigation is initiated ends in a conviction.

Empirical research data show that the concerns and perceptions expressed by citizens, as well as by some domestic and international institutions, regarding the effectiveness of prosecutors' offices in prosecuting war crimes cases are very justified. Such data call for action by all relevant individuals and institutions to undertake activities in their own domain in order to advance this process and bring it to the level it deserves given the importance for the overall BiH society.

REFERENCES

- Babić, M. et al (2005). *Komentari krivičnog/kaznenog zakona BiH*. CE/EC, Sarajevo.
- Babić, M. & Marković, I. (2007). *Krivično pravo – posebni dio (drugo mdifikovano izdanje)*. Banja Luka: Faculty of Law.
- Comments of the Criminal Code of the Socialist Federal Republic of Yugoslavia 1978. Belgrade: Savremena administracija.
- Criminal Code of Bosnia and Herzegovina, Official Gazette of Bosnia and Herzegovina No. 3/2003, 32/2003 - ratified, 37/2003, 54/2004, 61/2004, 30/2005, 53/2006, 55/2006, 8/2010, 47/2014, 22/2015, 40/2015 and 35/2018).
- Degan, V.D., Pavišić, B. & Beširević, V. (2011). *Međunarodno i transnacionalno krivično pravo*. Belgrade: Union University, Faculty of Law.
- Dimitrijević, V., Hadži-Vidanović, V., Jovanović, I., Marković, Ž., & Milanović, M., (2013). *Haške nedoumice - Poznato i nepoznato o Međunarodnom krivičnom tribunalu za bivšu Jugoslaviju, drugo izdanje*, Belgrade: Belgrade Center for Human Rights.
- Đurđić, V. & Jovašević, D. (2003). *Međunarodno krivično pravo*. Belgrade: Nomos.
- Human Rights Council. (2008). *Resolution 9/11: Right to the truth* (24 September 2008). [Online]. A/HRC/RES/9/11. Available from: https://ap.ohchr.org/documents/E/HRC/resolutions/A_HRC_RES_9_11.pdf.
- Ivanišević, B. (2008). *The War Crimes Chamber in Bosnia and Herzegovina: From Hybrid to Domestic Court*, The International Center for Transitional Justice.
- Josipović, I. (2007). *Ratni zločini – Priručnik za praćenje suđenja*. Osijek: Center for peace, nonviolence and human rights.
- Jovašević, D (2004), *Sistem odgovornosti i kažnjivosti za međunarodna krivična dela*, U: Radovanović, D, XVI Seminar prava: Teški oblici kriminala. Belgrade: Institute of Criminological and Sociological Research.
- Karović, S. year 21st. (2012), *Kaznena djela protiv čovječnosti i međunarodnog prava. Polic. Sigur.*, 4, Zagreb.
- Korner, J. (2016). *Procesuiranje ratnih zločina na državnom nivou u Bosni i Hercegovini*, Analiza stanja.
- Kukić, S, et al (2019). *Sistem ranog upozoravanja specijalno izdanje – Pravda i istina u BiH iz perspektive javnosti* (15 april 2019). Available from: www.undp.ba/download.aspx?id=355.
- Law on the Court of BiH (consolidated text), Official Gazette of BiH No. 49/09, Article 1.
- Mahmutović, DŽ. (2011). *Ratni zločini u Bosni i Hercegovini - Kažnjavanje i reparacija – doctoral thesis*, Faculty of Law, University of Tuzla, Tuzla.
- Marković, I. (2010). Zločin protiv čovječnosti u Krivičnom zakonu Bosne i Hercegovine, *Annual of the Faculty of Law of University of Banja Luka*, No. 31/32, Banja Luka.
- Mrvić-Petrović, N. (2008). *Krivično pravo – opšti i posebni deo (peto izdanje)*, Union University, Faculty of Law, Belgrade.
- National War Crimes Processing Strategy. Available from: <http://www.mpr.gov.ba/userfiles/file/Projekti/Drzavna%20strategije%20za%20rad%20na%20predmetima%20RZ.pdf>.
- Novoselec, P. (2003). Temeljne crte novele Kaznenog zakona, *Hrvatski ljetopis za kazneno pravo i praksu*, 10 (2), Zagreb.
- OSCE (2011). *Achieving Justice in Bosnia and Herzegovina: Prosecution of War Crimes Cases 2005-2010*.
- OSCE (2019). *War Crimes Case Management at the Prosecutor's Office of Bosnia and Herzegovina (Thematic Report)*, Sarajevo.
- OSCE (2013). *War Crimes before Domestic Courts*, Belgrade.
- OSCE (September 2018). *Observations on the National War Crimes Processing Strategy and the Draft Revision of 2018, including the "Category A" Rules of the Road, Thematic Report*.

- Popović, D. (2009). *Vodič kroz tranzicijsku pravdu u Bosni i Hercegovini*, UN Development program, Sarajevo.
- RDC (2019). Human Losses 1991-1995. Available from: http://www.idc.org.ba/index.php?option=com_content&view=section&id=35&Itemid=126&lang=bs
- Seizović, Z. (2008). *Međunarodno javno pravo – zbirka eseja*, Zenica: University of Zenica.
- Simović-Hiber, I. (2007). *Sistem rasprava o ideji vladavine prava, osnovama krivičnog zakona, pojmu zločinacke grupe i internacionalizaciji krivičnog prava*. Belgrade: Institute of Criminological and Sociological Research.
- Škorić, M. (2005). *Mješoviti međunarodni kazneni sudovi*. Rijeka: Collection of works of the Faculty of Law of the University of Rijeka, 2.

BOSNIAN KINGDOM DURING SECOND DECADE OF THE 15th CENTURY

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Review scientific paper

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Received: 2019/22/06

Accepted: 2019/12/08

ABSTRACT

After the defeat of Hungary by the Ottoman Empire, in August of 1415, the Bosnian king and a few noble men made a decision to change their political loyalty towards the Hungary. King Ostoja tried to take care of inside matters that were ruling in Bosnian Kingdom. He called for a meeting (Stanak) at which he would even out with some noble men. Even Dubrovcani wrote about this event. In one of their letters they described the events that took place in Kraljeva Sutjeska. After the occurrence in Kraljeva Sutjeska, intervention of Ottoman army was expected. One of the facts that the situation was pretty serious is that some families sought asylum from Dubrovnik's authorities in case of alarming circumstances. One of Bosnian powerful nobles dies in 1416. King Ostoja and other noblemen were fighting over his property.

Keywords: King Ostoja, Stanak, noblemen, Dubrovcani, Hungarian king, Ottoman army.

INTRODUCTION

Bosnian Kingdom at the beginning of second decade of 15th century entered in conflicts that announced interference of neighboring countries. Hungary and Ottoman Empire had special interests in Bosnian territory. To accomplish its plan Hungary called for a meeting, Budapest assembly (Budimski sabor). The most influential people of the time attended the gathering. It was believed more peaceful days are ahead after this meeting. After all peace in Bosnia meant peace in the neighboring countries too. Therefore one of the most powerful countries in Europe, Hungary, wanted to make long term peace. That was the outcome of the Budapest assembly. But this peace was short lived. Besides the Ottoman army that had great aspirations towards Bosnia, there has been inner tur-

moil too. Bosnian nobles were desiring more than what they had. Great friction took place between the families of Kosača and Hrvatinić. These inside turmoils were weakening political military and economic power of Bosnian kingdom. The victory of Ottomans in August of 1415 forced king Ostoja and duke Sandalj to change their political orientation. They are leaving the Hungarian king and are siding with Ottoman sultan. Even he came out victorious during the conflict in 1415, Herceg Hrvoje, had to accept Ostoja as a king. In August of 1415 two meetings were called for (Dinić, 1955). At one of these there has been peace improvements among Bosnian nobles, Ostoja was accepted as a legitimate king and it was ruled out that Srebrenica should be returned to Bosnian power. Dubrovcani wrote about this event to Hungarian king (Gelcich & Tallóczy, 1887).

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At the second meeting that was held at the end of August a plan has been made to execute prince Pavle Radenović and his son Petar Pavlović. The meeting took place in Kraljeva Sutjeska at one of King's estates. Some of most influential Bosnian noblemen attended except herceg Hrvoje who was staying out of conflicts of the two houses of Kosača and Pavlović. Ivan Gundulić, a delegate at a Bosnian court (Pucić, 1858). From Dubrovnik, wrote a letter addressed to Dubrovnik's authorities about this incident. It stated that the murder took place during a walk of noblemen that were present at the court of King Ostoja in Kraljeva Sutjeska. At the time king Ostoja was accompanied by his son Stjepan, duke Sandalj and his brother Vuk Hranic, županj Dragiša Dinjičić, Vukmir Zlatonosović, Pavle Klešić and prince Pavle Radenović with his son Petar Pavlovic. At one of these walks in Parena Poljana, an argument arose between duke Sandalj and prince Pavle. Vukmir Zlatonosović joined this lengthy discussions and arguments. In this dispute between Petar Pavlovic and duke Sandalj, Sandalj's men attacked Petar Pavlovic and tied him down. Prince Pavle took a chance to escape but Sandalj's men caught up with him and killed him (Kurtović, 2009). He left two sons behind, Petar and Radosav (Ivić, 1907).

In prince's company was krstjanin Vlatko Tumurlic who fled to Franciscan monastery to Ivan Gundulić, the delegate from Dubrovnik, to save his own life. After the situation calmed in Parena Poljana, Vlatko Tumurlic took Pavle's dead body and buried it in Vrhbosna. Petar Pavlovic was captured and taken to Bobovac and later to the capital of Pavlović Borač (Jorga, 1899). Brailo Tezalović was among the escorts of prince Pavle and Petar and was captured by prince Vukc Hranic, Sandalj's brother. In this incident, Pribisav Muržić was also captured (Tošić, 2003).

When the situation completely calmed, Dubrovnik's delegate, paid a visit to duke Sandalj. On this occasion Sandalj told him: *Can you believe that this, by the mercy of God, I do and follow the way of justice just the way you, the Dubrovnik's elite, do aka. Behead those who commit treason in Dubrovnik. This is the way I deal with other loyal Bosnians.* (DAD, Lett. di Lev. VII). He stated that he did this to bring justice and that it was a matter of sins of Pavlovic family (Pucić, 1858). Followed these events, they started to divide the lands of Pavle Radenovic. Olovo went into hands of Vukmir Zlatonosović.

Duke Sandalj was accusing prince Pavle for mistakes in relations with Hungarian king. With this behavior, him and his son caused a lot of wrongdoing to Bosnian Kingdom (Lett. di Lev. VII). He declared friendship

to Ivan Gundulić and people of Dubrovnik. He used this opportunity to ask of him to recommend him to Dubrovnik's authorities (Pucić, 1858). This murder presented a political account of opponents at the time in Bosnian Kingdom (Tošić, 2003).

Petar and Radosav, Pavle's sons, wanted to revenge their father. They called for help from Ottoman army against the main figures in this incident, duke Sandalj and king Ostoja. The army of Ottoman sultan answered their call and entered Bosnian Kingdom. This forced large number of population to seek help from Dubrovnik in moving to safer regions. On October 3rd 1415, Dubrovčani allowed Ljubiša Bogdaničić and Vukosav Poznanović to, in case of danger, move to Dubrovnik. This is what they wrote: *you see and hear what is happening among Bosnian elite, and want to be love peace and harmony* (Pucić, 1858).

Some time later, on December 5th, they permitted prince Miliša Nikolić asylum in Ston or Rât or some other island. They wrote: because you fear Ottoman army (Pucić, 1858). Duke Sandalj was also threatened by the Ottomans. He also turned to Dubrovnik for help in the safety of his family and him. In November of 1415, Dubrovčani allowed Sandalj to buy 50 older grains for his money (DAD, Cons. Rog.I).

Armed with Ottoman army, sons of Pavle Radenović, Petar and Radosav were endangering even Dubrovnik's territory. On February 8th 1416, Dubrovčani took security measures of Ston, and people who were coming from Bosnia were allowed to take refuge at Rât. In February 1416, they complained to Radosav Pavlović who was together with Ottomans at borders of the Republic disturbing and robbing its people. They did the same with his older brother in March 1416, when mayor Đurađ and Stjepan Miloradović along with Ottomans were doing the attacks towards Dubrovnik.

Dubrovčani sent a letter to prince Petar in which they're informing him of threats from mayor Djuradj towards people of Dubrovnik (Stojanović, 1929). By this time, the Plavović family, with the help of Ottomans have been ruling the region of Konavla. This region will be stumbling stone between the Pavlović and Kosača families. The Ottoman army reached the borders of Dubrovnik causing Dubrovnik's authorities on March 21st 1416 to send out ships from the islands to ease the escape for those who were running away from the Ottomans. They decided to choose a representative among the people from Slano region and send him to the commanders of Ottoman and Vlaška army. Besides the conquests of Hum region, Ottoman army also conquered part of Podrinje and northern Bosnia, and the city of Vrhbosna with all its counties have fallen.

At this time, Sultan Mehmed I, names Isak-beg as military commander. Ottoman commander's duty was to keep track of Bosnian king's and noblemen whereabouts (Klaić, 1882). By this time, some nobles started accepting Ottoman rulings in Bosnia. Among the first ones to do so were duke Sandalj and Pavlović brothers who "guard their lands by the mercy of God and great Sultan Mehmet-beg and his commander Izak" (Miklosich, 1858).

During the conflicts between Pavlovićs and Kosačas, herceg Hrvoje was staying aside. He was busy with taking back Split under his control. At the end of 1415, he was taking military actions too. He entered into conflicts with princes of Krch, with the help of Ottoman army. After the conflicts they(princes) were forced to ask Mlečani to mediate with commander Hrvoje (Ljubić, 1880). During the strong conflicts in Bosnian Kingdom between the Pavlović and Kosača, commander Hrvoje dies in April of 1416 (Šišić, 1902). During his lifetime he remained undefeated and in power, managing to get revenge on the enemies.

The powerful commander Hrvoje was succeeded by his son Balša who was only his father's shadow. Bosnian king Stjepan Ostoja, Dubrovčani, Splićani and Mlečani took great interest in his estates and wealth. King Ostoja benefited the most divorcing his wife Kujava and marrying Hrvoje's widow Jelena. In October 1416, Dubrovčani wrote to king Sigismund: that king Ostoja after he divorced his first wife, married Jelena, Hrvoje's widow, who after the marriage to king, gave as a gift the city of Omiš to her brother, prince Ivan Cetinjski (Gelcich & Tallóczy, 1887). Thanks to this relationship, Ostoja expanded his estates in the west, taking over the city of Jajce. King tried to reconcile with Hrvoje's successors too, securing the support of his former opponents. He tried to restore his reputation that has fallen in the recent years. Ostoja didn't have much luck in these efforts taking into consideration inside conflicts that shook the region. His marriage to Jelena gave new reasons for incident last in Bosnia. The Pavlović brothers who were at the borders with Dubrovnik's Republic were especially disturbed.

These inner turmoils caused more damaged to Bosnia than Hungarian and Ottoman armies. Dubrovčani in these matters were remaining neutral. However, atrocities in Bosnia meant danger in Dubrovnik too. During the 1415 and 1416 a lot of population from Bosnia ran away to Dubrovnik, so many poor fugitives were a burden to the Republic. In November of 1416, an order was issued for those who were beggars to be banished from the territory of Dubrovnik. Dubrovcani accepted Ostoja as a legitimate king so on

February 7th 1416, they paid the taxes in the amount of 500 perper, and later on November 20th 1416 paid off the remaining balance. Even though they accepted Ostoja as a King of Bosnia, that didn't mean his position was stable at the throne. At that time, in the years of 1415 and 1416, Bosnian nobles quarreled to the point of physical disappearance. Dubrovčani wrote to the Hungarian queen Barbara: *that Bosnia is completely left in ruins and that nobles are preparing mutual destruction* (Klaić, 1882).

New conflicts in Bosnia forced sultan Mehmed I to intervene. This intervention went in his favor because Bosnian king and its elite were his allies by now. His goal was to reconcile the Pavlović and Kosača families, therefore he sent two of his messengers to Bosnia calling for a meeting (Dinić, 1955). This was supposed to bring reconciliation between the two. The noblemen accused king Ostoja as a main cause of all evil that has happened. It was decided that he be arrested because he transgressed against "god's faith". Dragiša Dinjičić was accused for the murder in Parena Poljana. Feeling endangered king Ostoja and commander Dinjičić escaped one evening prior to this. His son Stjepan Ostojić was also against him, insulted with the fact he divorced his mother Kujava and married Hrvoje's widow Jelena. Ottomans were helping Tvrtko II. Some time later Dubrovčani wrote to king Sigismundu: *for now there's no army in either Bosnia nor Raška because the Ottoman sultan had to retrieve to Solun against his own brother "the false Mustafa"* (Fajfrić, 2008).

At the beginning of 1417 Bosnian kingdom experienced new inside conflicts. The feuded families were preparing for ongoing conflicts. After escaping the noblemen's arrest, King Ostoja took refuge in Southwest parts of Bosnia where he had his allies, the Radivojević. Further Ottoman conquests forced Bosnian population to seek safer territories. A large number of them found safe haven in Ston with the permission of Dubrovnik's authorities (Lett. di Lev. VII).

King Stjepan Ostoja benefited greatly from these inner turmoils, helping him keep the throne. He was originating the conflicts among one another. In the last conflict he was helping Pavlović brothers, who in return, were accepting his reign. This helped him to regain his reputation back. Dubrovcani accepted him as a legitimate king, payed him "svetodmitarski" taxes in the amount of 2000 perper (Cons. Rog. I). In the year of 1417 king Ostoja reconciled with Petar Pavlović, even he was one of the key advocates for the murder of his father Pavle.

During these conflicts, Dubrovčani would bow down to one then to another, sending gifts to Ostoja, Tvrtko II, then to Jelena and Kujava. Later on king Ostoja fled close Dubrovnik. On April 20th 1417 Dubrovnik's authorities issued an order to the commander of Ston to inform them of King Ostoja's and his wife Jelena whereabouts. If he was to find out that the King is in the neretva region or in Bišća, let the commander send two ships for the fish to king's table and a few liters of good wine, while the government will give other gifts to the King and Queen (Jorga, 1899).

METHODS

This research study by the name of Bosnian Kingdom During the Second Decade of the 15th Century represents novelty in terms of content. During the research I used existing scientific expertise literature that deals with problematic complex but with a shift and emphasis on a critical review of the replenishment of historical gaps and highlighting the events above. I used different scientific research methods from the chronological spatial, then descriptive, explicative and comparative. These methods have ultimately enabled the reconstruction of the historical reality based on unpublished and published sources and literature.

RESULTS

The Bosnian kingdom in the middle of the second decade of the 15th century has been intimidated by internal disagreements and conflicts, therefore some noble families were threatened with physical extermination. This led to a clash that happened in Kraljeva Sutjeska at a royal estate. This was also a political breakthrough for the opposition. In addition, some noblemen were interested in the rich estates. They tried to gain benefit by having possession of these lands. By taking over these properties would show the other noble families who the real master of the region is. By establishing their power in these areas, among other things, they could have established customs and other economic and financial relations.

King Ostoja himself sought to establish strong central government during the course of his reign. By establishing a strong central government he would show other nobles that he is the one who makes decisions in the Kingdom. This is why he himself often came into conflicts with the disobedient noble families. The situation in Bosnia during the second decade of the 15th century reveals some new details that were happening

in the Balkans. If you only look at the writing of duke Sandalj to Dubrovčani "I do it in Bosnia the way you do in Dubrovnik" it will give a clear picture not only of Bosnia but its neighbors as well. The murder that took place in Kraljevska Sutjeska was also motivated by the desire of the nobles for better situation in Bosnia. It was believed that the murder of the Pavlović family would resolve everything and that relations inside the kingdom and relations with the neighbors would stabilize.

According to the events that took place in Bosnian Dubrovčani were reserved. They believed that the trouble might knock on their border as well. If we take into account that after these unfortunate events many seek the help of Dubrovnik. Help was also sought by the most prominent nobles merely to take refuge in their city for their own safety. Sometimes there's a feeling that Dubrovčani were often reserved towards Bosnia. They expected change of government in Bosnia. They often avoided signing contracts if the government did not stabilize. Apart from that, The Republic did not like destruction of Bosnia. Often these atrocities from Bosnia passed on to the territory of The Republic. They would often, even if the conditions at their borders were calm, warn some nobles of possible dangers that could arise. They would also write letters to some noblemen, warning them of certain events that disturb The Republic. Frequent invasions of the Hungarian and Ottoman armies in the first two decades of the 15th century resulted in the devastation of The Kingdom. Besides that, it often came to the movement of the population itself. Thus, the population sought safer causing the weakening of economic power of both Bosnia and its neighbors. The Ottoman army, apart from resigning the population, wanted to see what the king was doing and what his military and political power was like. How much was there the influence of the Ottoman army is the fact that some noblemen in the second decade of the 15th century began to pay taxes to the sultan.

DISCUSSION

Historians have different opinions about the events that took place during August 1415. Dr. sci. Emir Filipović argues that the Lašva battle (Lašvanska bitka), better known in history as a Dobož Battle, marked a key milestone with the influence of the Hungaria in Bosnia. After this battle, Hungary's influence weakened while the influence of the Ottomans was strengthened.

The Doboj battle also produced a crisis in the Bosnian Kingdom and was the key to shaping further political reality in the country. Soon after these event in the kingdom, new complications followed. In August 1415, after the meeting of the Bosnian nobles not far from the ruling complex in Sutjeska, a politically motivated murder took place, execution of prince Pavle Radenović, who was indicted as one of the main culprits for recent events in Bosnia. After a short argument his head was cut off by the prince Vuk Hranić, and the king Ostoja took his son, Petar to Bobovac where he was supposed to be blinded. The Dubrovnik delegate and eyewitness of these unfortunate events testified that even queen Kujava was worried about her fate at that time. These events were the scale of many years of bloody conflicts between families of Kosača and Pavlović (Filipović, 2017).

Prof. dr Pavo Živković states that the prince Pavle and his son Petar were not with the king Ostoja, and thus they were not even on the side of the king of Hungary. King Ostoja and duke Sandalj were most dismayed by the scrutiny of the support Pavlović gave to the anti-king Tvrtko II whom they were trying to bring to the throne of Bosnia. For some time Tvrtko II resided in their territory. One document from mid August 1415 confirms this. An incident with the Dubrovnik's cattle occurred, which was stolen by Petar Pavlović men. The people of Dubrovnik threatened to complain to the king Tvrtko II at the time. From this comes a conclusion that a legitimate king for Pavle and Petar was Tvrtko II not king Ostoja. The event that took place at the end of August 1415 was a political murder and represented two different camps in Bosnia, one supporters of Tvrtko II and supporters of legitimate king Ostoja (Živković, 1981).

Prof. dr Esad Kurtović thinks that the absenteeism and passivity of herceg Hrvoje at a meeting in Sutjeska, in addition, he himself approved to punish the Pavlović who did not want to return under the influence of the Hungarian king. The main creator for the return of the influence of King Sigismund was duke Sandalj. From his writings to the Dubrovnik MP, Ivan Gundulić, it can be noticed that the relations of the Bosnian noblemen Pavlović and Kosača were brought into the attitude of hostility since the killing of prince Pavle. This hostility was also from earlier times in the mismatched, divergent and controversial policy. Pavlovići, according to duke Sandalj, did not want

to accept this outcome and experienced a political defeat. Prince Pavle Radenović paid with his life (Kurtović, 2009).

CONCLUSION

After the Doboj Battle, the king tried to tackle the inner conditions that were then ruling in the devastated Bosnian kingdom. Given that there were frequent conflicts in the kingdom that had been devastated by other powerful medieval states Bosnian king tried to strengthen the central government and yet show that he is the true master in Bosnia. He decided to deal with disobedient bosnian nobles. He called for a Bosnian meeting in which a premeditated clash with the prince Pavle Radenović had already been planned. The meeting was attended by the most influential nobles, except Hrvoje. The impression is that after the Doboj Battle (Dobojska bitka), herceg Hrvoje has remained aside for everything that will happen in Bosnia. He waited for the opportunity to restore the former power and glory he had at the beginning of the 15th century. Just the murder that took place proves that king Ostoja and the great duke Sandalj had great aspirations to the possessions Radenović held. Yet some of these possessions have been saved thanks to the son of Pavle Radenović. In order to avenge his father's death he invited the Ottoman army to Bosnia. A great fear spread through the Kingdom. People as well as some noblemen asked for help from Dubrovnik in case of danger. They were not very happy to accept the population that was seeking their protection. They themselves were waiting for a replacement at the Bosnian court. Even though they waited for this shift to happen, they did not miss the opportunity to be groveling to King Ostoja. They issued orders to some commanders to especially fish for king Ostoja. However, they did not miss the opportunity to grovel the fugitive king Tvrtko II either. During the difficult times, herceg Hrvoje dies for Bosnia. He marked two decades of his being. He even sometimes acted as king of Bosnia. He was one of the reputable nobles who will be remembered in Bosnian history. Ostoja's rule was marked by large historic events in the mid-second decade of the 15th century that were sometimes fatal for both him and the Kingdom. Yet in all those times, he was one of the few kings, in Bosnia, who opposed the arbitrariness of the nobles.

REFERENCES

- Državni arhiv u Dubrovniku (DAD), *Acta Consilium Rogatorum*, I.
- DAD, *Lettere e Commisioni di Levante*, VII.
- Dinić, M., (1955). *Državni sabor srednjovekovne Bosne*. Beograd: Srpska akademija nauka, (SAN), Posebna izdanja, knj. 231, Odjeljenje društvenih nauka.
- Filipović, E. (2017). *Historija srednjovjekovne bosanske države*. Sarajevo: Mladinska knjiga.
- Gelcich, J. & Tallóczy, J. (1887). *Diplomatarium relationum reipublicae Ragusanae cum regno Hungariae*. Budapest: Magyar Tudományos Akadémia.
- Ivić, A. (1907). Radosav Pavlović veliki vojvoda bosanski. *Letopis Matice srpske*, 245/1. Novi Sad.
- Jorga, N. (1899). *Notes et extraits pour servir a l'histoire des croisades au XV siècle*, II, Paris: E. Leroux.
- Klaić, V. (1882). *Poviest Bosne do propasti kraljevstva*. Zagreb.
- Kurtović, E. (2009). *Veliki vojvoda bosanski Sandalj Hranić Kosača*. Sarajevo: Institut za istoriju.
- Ljubić, Š. (1880). *Listine o odnošajih između južnog Slavenstva i Mletačke Republike*, knj. VII. Zagreb: Jugoslavenska akademija znanosti i umjetnosti.
- Miklosich, F. (1858). *Monumenta serbica spectantia historia Serbiae, Bosniae, Ragusii*. Viennae: Viennae Braumüller.
- Pucić, M. (1858). *Spomenici srpski*, knj. I. Beograd, Primetba XVI.
- Stojanović, Lj. (1929). *Stare srpske povelje i pisma, knjiga I/1*, Beograd-Sremski Karlovci.
- Šišić, F. (1902). *Vojvoda Hrvoje Vukčić Hrvatinić i njegovo doba (1350.-1416.)*, Zagreb: Matica Hrvatske.
- Tošić, Đ. (2003). *Pismo dubrovačkog poslanika Ivana Gundulića o smrti kneza Pavla Radenovića, "Zemlja Pavlovića. Srednji vijek i period turske vladavine"*. Zbornik radova sa naučnog skupa, Rogatica, 27-29. juna 2002. Akademija nauka i umjetnosti Republike Srpske i Univerzitet Srpsko Sarajevo. Naučni skupovi 5, Odjeljenje društvenih nauka 7, 357-366.
- Živković, P. (1981). *Tvrtko II Tvrtković, Bosna u prvoj polovini XV stoljeća*. Sarajevo: Institut za istoriju.

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